BOOK OF ABSTRACTS

24th Annual Conference of the European Real Estate Society

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Editors
Hilde Remøy, Peter de Jong, Erwin Heurkens
Dear readers and delegates at the ERES annual conference 2017,

It is with pleasure that we present you with this Book of Abstracts, comprising the contributions for presentation at the ERES conference. The call for abstracts resulted in a large number of abstracts, of which 350 were accepted and will be presented. The contributions to the conference reflect the high quality of research of the real estate research community. The ERES annual conference is the leading real estate research meeting in Europe and one of the largest property-related conferences worldwide.

The ERES Annual Conference provides an open forum for the exchange of ideas and the dissemination of research in areas such as real estate finance, management, development, economics, appraisal and investment. ERES incorporates national research societies, academic researchers, practitioners and doctoral students engaged in real estate.

We are looking forward to some intensive conference days with interesting conference presentations, lively discussions and productive exchanges of ideas and experiences.

We are happy to welcome you to the 24th annual conference in Delft, the Netherlands.

We would like to thank the ERES scientific committee who reviewed the full papers. Moreover, we would like to thank our academic committee who reviewed all the abstracts and helped with the scheduling of the sessions. Thanks also to previous organisers who contributed with good advice, and to Gunther Maier for maintaining the online submission interface. Finally, we would like to thank our sponsors for their contributions!

On behalf of the organising team,

Hilde Remøy
Chair
The conference would not have been possible without the support of the sponsors of ERES 2017. This is not limited to financial support, but also, as could be witnessed in the programme, with respect to the content. Thanks to the sponsors there is balance between academic and commercial research.

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New ways of working means flexible working. One of the main conflicts with flexible working is the difficulty, not to get totally absorbed by work-life. The capacity to regenerate is essential. One main place for regeneration is the home. In the home office the conflict of privacy and worklife becomes physical: The worksphere invades the homesphere- and vice versa. The Canadian Psychologist Ng (Ng 2010) states in a review on homeoffice workplaces, that there is no actual research focused on the relationship between spatial and environmental aspects of home offices and work behaviour. Little is known, on how home workplaces look like. Sherry Ahrendzen (Ahrendzen 1989) asked 30 years ago, what types of spatial arrangements are best suited for homeworkers. It makes sense to ask this question again under the light of today’s political, cultural and social background and considering today’s technical possibilities.

There are two essential Questions: How looks the workplace in the home office today? What are the best spatial and environmental arrangements when working at home?

Method: This home office study is embedded in a larger research project on the influence of environmental parameters on office workers. The overarching research project gives a superstructure for the home office study. A broad research of laws, standards and literature defines environmental variables and resulted in a database with key criteria and priorities for health, wellbeing and comfort (Hax, Redlein 2016). ‘What makes an effective workplace in conventional office setting may apply to home offices as well’ (Ng 2010). The database gives a structure to environmental variables in the home office.

To get a close look inside the home office, homeworkers in Vienna and in the suburban areas of lower Austria are interviewed in their homes. The workplaces are documented by foto.

Results: This is an ongoing research, starting in January 2017. The planned result is, to construct typologies of home office workplaces, in order to get a better understanding of the relationship between environmental settings and homeworkers work outcomes. First results will be ready on the conference in June 2017.
The courts are currently ill equipped to assess property valuations. Judges face conflicts in the system, and there is a lack of clarity regarding current market valuations. At present, arbitrary and unpredictable valuations are being accepted. Current outcomes can be harmful to litigants and wasteful to society. Judges face the same valuation uncertainty as the parties themselves. Expert witnesses consequently are always going to be called by the courts therefore the system is in need of a set of new protocols to minimize such a requirement.

This study intends to fulfill an identified need by providing more depth to the existing knowledge. The findings are designed to make a contribution to academic research in this field.

In order to minimize and eliminate errors, maintain credibility, and refrain from bias, property valuers must not deviate from the true value of property.

As part of my methodology I propose to utilize GIS method with the valuations that come to the court regarding the estimation of the peoples income well being and happiness. The people who bring property valuations to the court would need to be classified in areas and people in regard to employment.

KEYWORDS: property valuations, Family Law valuations, propety and divorce, valuations and the expert witness, property valuations and seperation
58 Public tendering procedures - an optimisation approach

Many people in search of homeownership in urban areas are currently facing high building and property costs. Those interested in realising ownership usually refer to housing associations, architects, or prefabricated housing manufacturers. Since the end of the 20th century, an increasing number of joint building ventures have appeared in the German housing market. Hence, they can be seen as an alternative in realising appropriate living space as well as a new instrument in urban development and design. Since municipal building areas are scarce, there is intense competition between different stakeholders. Joint building ventures compete among each other as well as among other types of housing. By means of an extensive catalogue of requirements for the allocation of building sites, municipalities manage to delegate certain responsibilities to the citizens. In order to ensure that this does not act against the general interest of joint building ventures, it is important to include the diverse interests of various partners by establishing a transparent and fair tender and award system. This study provides insights on the design of an optimised public tendering and which tendering criteria maximise the utility of potential home owners. The study adopts a choice-based conjoint analysis approach, using a web-based survey. The data were collected and analysed via the survey platform Sawtooth. The study was conducted with a sample of potential home owners in Germany, who evaluated tendering criteria. Understanding the potential home owners’ preferences of tendering criteria offers several opportunities and implications for municipalities and might help to enforce an efficient and effective tendering process.

KEYWORDS: Public tendering, Municipal building areas, Conjoint analysis, Joint building ventures
Many large Chinese Construction Firms (CCFs) have been entering and developing the overseas construction markets in line with the development of the integration of global economies since 1950s. However, two aspects affect CCFs developed their international construction market. One aspect is that many factors in the current dynamic global construction market, which may affect Chinese firms expanding their businesses overseas. The other one aspect is practical competitiveness framework for CCFs’ overseas business still absent. Therefore, it is necessary to establish a framework to analyse and improve Chinese construction firms’ international competitiveness.

The aim of this PhD research is to investigate factors influencing the competitiveness of Chinese construction firms in the global market.

This paper establishes a framework for improving Chinese construction firms’ international competitiveness via analysis of both quantitative and qualitative data employing a sequential explanatory strategy. Quantitative data is used to explore the top global construction firms and the key issues in the global construction market. Qualitative data is used to identify the key competitiveness indicators (KCIs) from the academic literature review and the annual reports and web pages of top global construction firms, and thus, a preliminary competitiveness framework was established by the secondary data. The Modified-Delphi method was applied in the interview to investigate the KCIs of a construction firm’s international operations, in order to refine the preliminary framework and then establish a new competitiveness framework for CCFs.

KEYWORDS: Key competitiveness indicators, Competitiveness framework, Chinese construction firms, Modified-Delphi method
A growing number of applied studies examine the impact of urban space quality on property price. Especially the planning and development of the immediate neighborhood (micro location) is an important influencing factor in regional economics. An image-based method for the estimation of location quality, in the context of property valuation, does not exist yet. We develop method for the determination of the quality of location using image processing, taking at the same time into account the classification in quality classes based on regional structural characteristics. With the help of automatic image analysis, a new information source is leveraged, which previously could not be taken into account within the scope of evaluation of location quality or within the scope of automated valuation models (e.g. hedonic models). In the field of image analysis, the extraction of parameters related to location quality is a new task. It is so far not clear to which degree meaningful parameters can be found autonomously by machine learning. This dissertation will investigate this question in detail and is to our knowledge the first approach for the automatic image-based valuation of location quality.

KEYWORDS: location quality, hedonic pricing, image processing, neighborhoods, machine learning
Real estate markets are characterized by heterogeneous goods, infrequent trading, geographic segmentation and information asymmetries. One of the most important differences between a perfectly competitive market and the housing market is the heterogeneity in the cost of acquiring information due to information asymmetry for different buyer types.

Historically, research shows that out-of-town buyers are informationally disadvantaged and therefore pay higher prices compared to in-town buyers (Lambson et al. (2004), Clauretie and Thistle (2007), and Zhou et al. (2014)). However, with the recent advent and usage of online platforms like Zillow, Trulia and Redfin a plethora of information about the housing market is provided free. If information asymmetry or search costs decrease systematically with increased availability of information, then the price paid for any property should be more equal, exhibiting less price dispersion, for all buyer types.

This research aims to investigate the price differentials between in-town and out-of-town buyers over a ten year window, testing whether information efficiency has improved over time. This time period overlaps the general dissemination and utilization of improved home search web sites.

As a theoretical framework, a sequential search model for heterogeneous buyers of real estate is applied following Wheaton (1990), Turnbull and Sirmans (1993), and Lambson et al. (2004) to examine how prices will be affected with our assumption of decreasing search costs. Hence, in a second step, a hedonic regression model is used for six US cities in two different time frames in order to show whether the premium paid by out-of-town buyers has decreased with increasing information efficiency according to Ihlanfeld and Mayock (2010), and Ling et al. (2016).

To the best of our knowledge, this is the first paper which compares the out-of-town buyer premium of different cities over time with respect to increased information efficiency.

KEYWORDS: Sentiment Index, Textual Analysis, Housing Market, Search query data
In recent times, regeneration of urban market space by city authorities in Ghana has been contested by market traders who ply their trade within markets. As part of an ongoing PhD research, this study examines why the market traders in Cape Coast and Kumasi resisted and protested the regeneration of the Kotokuraba Market and Kumasi Central Market respectively. This study also analyses the experience and coping strategies of market traders in the temporal markets. Semi-structured interview guide was used in gathering in-depth qualitative responses from 95 respondents in Cape Coast and Kumasi. Findings revealed that traders’ resistance and protests were influenced by low participation in the market project; non-payment of compensation; low assurance that spaces in the new market will be allocated to the market traders; city authorities’ refusal to disclose the prices of stores in the new market when it is completed. Additionally, resistance and protests were motivated by political (the fear that new markets may be taken over cronies of the ruling government), economic (losing their source of income and goodwill), social (inability to take care of dependents) and cultural (superstitious beliefs). Relocation of market traders was largely poorly coordinated, as more than 60 per cent of stores in the temporal markets in Cape Coast and Kumasi were closed. Market traders in Cape Coast and Kumasi had similar experience in the temporal markets. Trading in the temporal markets was characterised by low patronage by shoppers, low daily sales, loss of capital, depression, inability to save, breakdown of homes and death. In coping with the situation, there has been some spatial readjustment. Due to the low sales in the designated temporal markets, several market traders have secured additional spaces around the construction site, along busy roads and on the median of roads; some also head port to sell within the market and its environs; others have abandoned their allocated stalls in the temporal markets to secure a store in a different location. The study informs policymakers in Ghana and their development partners about the ramifications of low community participation in urban regeneration and poor coordination of relocation.
Income distribution, housing and poverty in Poland: the impact of housing affordability problems on poverty.

Since the fundamentals for the housing market were established after 1989, a large-scale privatisation raised and the dwellings were transferred to private inhabitants for a fraction of its value, increasing homeownership in the tenure structure. The market is determined by the groups of: homeowners – 69.04%, tenants – 4.16%, households with housing provided free – 26.78% Therefore, the paper examines the relationship of income distribution, housing and poverty with an approach to tenure structure, as well as probability of falling into poverty for those households which face housing affordability problems. Also, the impact of housing and the tenure structure on poverty reduction is evaluated. The research is based on housing affordability definitions and estimated housing poverty indicators, and the data source comes from the European Union Statistics on Income and Living Conditions (EU-SILC) provided by Eurostat, which provides a harmonized information on poverty, inequality, standard of living and other social issues, at both a regional and a national level. The result determines that, though the homeownership rate is high, homeownership and mortgages are more accessible to high-income households (4th quintile) hampering access to housing market to low-income households (1st quintile) and households in poverty, whereas the poverty is higher among the tenants than among the outright owners.

KEYWORDS: Income distribution, Housing, Housing affordability, Poverty
Is the China Housing Market in a bubble?

Over the last two decades China’s housing price index has risen by at least 70%. According to Reuters, average new home prices in China’s 70 major cities rose a record 9.6% in the year to October 2013; it was the tenth straight month of year-on-year increases. In 2016, Chinese cities account for the top eight rankings in Global Residential Cities Index according to International Real Estate Group Knight Frank. (Lenaghan, 2016) The accelerated growth is concentrated in Tier 1 cities and Tier 2 cities. In view of such soaring prices, the questions of house price dynamics and housing bubbles need to be addressed at China housing market, especially the segment where house prices surge the most.

Research questions: This paper poses two research questions: RQ1. What are the main drivers of China house prices? RQ2. Is there a bubble in China’s housing market?

Research methodology: The paper describes the application of combined enhanced rigorous econometric frameworks, such as Ordinary Least Square (OLS), Granger Causality, and the Vector Error Correction Model (VECM), Principal Component method to provide an in depth understanding of house price dynamics and bubbles in China. Thorough analysis has been performed on the diagnostic concerns and potential econometric estimate issues.

Findings: The empirical results presented reveal China house prices are driven primarily by three key factors: interest rates, GDP, China share market index. It finds these main drivers have long term equilibrium in relation to house prices, and any short term disequilibrium always self-corrects over the long term due to economic forces. The existence of long term equilibrium in the housing market suggests it is unlikely to be in a bubble in China. (Diba & Grossman, 1988; Flood & Hodrick, 1986).

China house price performance reacts strongly to interest rates and share market performance, reflecting both the importance of house financing and the close relationship between the share market and the real estate market.

Originality and value: The principal contribution of this paper is that it is the first rigorous study of housing bubbles in China at the national level, based on the top 13 cities’ house prices. Key policy implications presented in this research include the need for governmental affordability programs, and a balanced and complementary combination of financial policies and monetary policy decision making.
Under property informality, perceptions on transaction failure risks at purchase can diversify the spectrum of possible prices depending on anticipated occupation strategies subsequent to purchase. Based on survey data on 1514 residential property owners from Kinondoni municipality, Dar es Salaam Tanzania, binomial logistic regression models were implemented to predict pre-purchase perceived transaction failure risks and mixed effect models were utilised to examine the effect of the predicted risks on (2010 constant) price of three-bedrooms finished and unfinished housing units and 400m² plots. The results suggest that risk averse households pay on average around Tanzanian Shillings (Tshs) 349,000/= more to acquire formally titled residential properties than they would pay for similar but informal properties simply because of a lower perceived transaction failure risk for the former. Such lower perceived risk is however, unambiguously relevant only among unfinished housing purchasers. For vacant plots and finished housing units, a positive net risk-price premium is dependent on the anticipated occupation strategy subsequent to purchase. On average frequent visitation after purchase induces a higher risk-price premium over formal purchases for both vacant plots and finished housing units. A Legal title to a vacant plots has a small risk-price premium of around Tshs. 5,000/= over effective occupation for the same but a relatively higher risk-price discount for frequently visited plots among risk lovers yielding a positive net risk-price premium of around Tshs. 16,000=/=. These marginal risk-price premiums for vacant plots suggest that informal and formally titled plots sale on average around the same price regardless of whether the purchaser is risk averse or otherwise. Formally titled finished housing is on average, purchased at a higher price but such premiums are limitedly associated with risk aversion suggesting that such premiums emanate from factors other than the use of formal titles in transactions.

KEYWORDS: Price premiums, Housing transactions, Transaction risks, Ownership titles, Developing countries
'Housing affordability’ has been widely used as the key criteria to examine the ability of households to afford the housing expenditures. However, much less attention has been paid to the housing affordability issues that faced by Chinese households. This paper examines factors which would impact housing affordability, by linking the theoretical understandings in the macroeconomic environment, housing market and liquidity constraints. Quarterly time series data at the national level are employed for empirical investigation. The instrumental variable approach is employed to resolve the endogeneity issues and obtain the consistent estimators. Suggestions of taking measures to mitigating housing affordability difficulties would be discussed according to the empirical findings.

KEYWORDS: housing affordability, tenure choice, instrumental variable approach, regional variances
Oluwadamilola Aguda, Christian Leishman, Neil Dunse

81 Home Ownership Transition Influences among British Young Adults

In the UK, recent changes in tenure trends indicate that young adults are most likely to be caught in the middle between the decision of owning or renting (privately or socially). As the private rented sector continues to grow, young adults are mostly now found in the sector while home ownership has been shifting to older age groups. In the past, the literature had largely focused on the econometrics context on one end and the critical context on the other. To prepare grounds for the introduction of the socio-psychological dimension to the econometric context, this paper aims to investigate the possible socio-psychological factors applicable from neighbourhood contexts. Cross-sectional principal component analysis has been carried out using British census and deprivation data to ascertain these factors as they associate with tenure shifts. Following this, a fixed-effects regression of neighbourhood features of young adults against their corresponding neighbourhood homeownership rates is carried out. The procedure is essential to ascertain which variables would be ideal at the neighbourhood level. Findings indicate that suggested socio-economic features and deprivation ranks at the neighbourhood levels are potential contributors to homeownership. These would therefore suit inclusion in an emerging research question that concerns why the tenure shifts have continued amongst young adults, despite the slow continued economic improvements. The suggestion is that interactions between economic and socio-psychological factors may be important in helping to explain tenure shifts.

KEYWORDS: Housing, Young Adults, Home ownership, UK, BHPS
Olayiwola Oladipo Oladiran

240 The Drivers of Discrimination in Mortgage Lending

Housing is indisputably a key need that man needs to and aims to satisfy. However, satisfying this core human need requires huge capital outflow. Thus, intending homeowners rely on mortgage finance which is a suitable and viable option for buying their homes by making installment payment over a long period of time. Based on the important role of mortgage finance in satisfying this need, it is logical to infer that any intentional or implicit action or inaction that prevents an individual or group from accessing mortgage facilities is tantamount to a denial of their civil right, social opportunity, and a preclusion from homeownership.

There is, however, substantial evidence that discrimination exists in mortgage lending. Literature typically classifies discrimination in the mortgage market on the basis of gender, race, geographical location, and age and suggest that mortgage discrimination is driven by either intentional or instinctive factors. While traditional research describe mortgage lending discrimination using the Becker’s differential treatment or taste-based theory and Arrow and Phelps’s statistical discrimination theory, contemporary research appear to advocate that discrimination in mortgage lending is a product of disparate effect, thus suggesting that the disparate impact theory may provide the most suitable scope required for investigating this complex phenomenon. Despite the reinforcement of disparate impact theory by several scholars, research has found it difficult to totally disentangle these theories and there is no consensus yet as to which of these theories and adequately describe the factors that drive mortgage lending discrimination.

This research, therefore, reviews theoretical and empirical literature in mortgage lending with the aim of developing models that can effectively describe and analyse factors that drive mortgage market discrimination. This analysis will entail the investigation of relationships between variables used in the mortgage application with the aim observing causal factors of mortgage discrimination from the application stage to the mortgage decision, underwriting and loan administration stages which scholars have identified as major stages of the mortgage process in which discrimination plays out.

KEYWORDS: Mortgage markets, Mortgage Discrimination, Disparate impact theory, Statistical discrimination, Differential treatment discrimination
Nicolas Duran

18 The effect of small earthquakes on housing prices in the north of the Netherlands: a spatio-temporal-similarity approach

The largest natural gas field in Europe is located in the north of the Netherlands. Extraction from it has taken place since 1963, which has induced small earthquakes. Although this was known with fair certainty beforehand, whether households ever anticipated the region to become a riskier place to live at has not been determined.

Earthquakes can damage households’ houses structures, increasing maintenance costs. Additionally, they increase risk awareness from living in a prone to earthquakes area. Reducing effects on housing prices attributed to earthquakes can therefore be sourced on the anticipation of higher maintenance costs, or on increasing risk perceptions. The gas-extracting company already compensates for damages done on houses; therefore, foreseen increasing costs should not affect their price. Hence, by studying how earthquakes affect housing prices we focus on households’ willingness to pay to avoid living at a riskier place.

We explore this question by means of spatial hedonic models for housing prices in the three most northern provinces of the Netherlands, namely Drenthe, Friesland, and Groningen. Most realtors in the Netherlands set asking prices by fitting a hedonic model with data on previously transacted houses. This is one of the typically argued sources of spatial dependency in the housing market. We therefore employ a spatio-temporal-similarity weights matrix that mimics this asking price setting procedure, and use it to test the fit of several spatial econometric specifications.

We make use of detailed data on more than 250,000 transactions between 1993 and 2014. We are able to control for over 40 characteristics of the house and amenities provided at the neighborhood level. Moreover, we control for population increase and the time on the market by means of instrumental variables. To assess the earthquakes’ effect we computed the Peak Ground Velocity (PGV) at each house’s geographical point location for every earthquake that took place in the 5 years prior to the house’s sale.

We find no significant effect for PGV in the 5 years prior to the house sale on its price, unless the house was sold during or after the year 2012. In August of said year the largest ever-recorded earthquake hit the region and awareness of them grew noticeably. A house sold during or after 2012 would be transacted for a price almost 4% lower for every percentage point increase in seismic activity. The result is robust to several specifications.

KEYWORDS: Spatial hedonic models, Housing prices, Earthquakes
China used to have a planned economy where the land resources were administratively allocated by the government. To promote the economy and attract international investment, the Land Use Rights (LURs) reform in 1978 separated the rights to use land from the land ownership and enabled land transactions in an open market. The Central Government decided to form a Land Benchmark Price (LBP) to serve as a price reference point for land sales in the late 1980s with the LBP used in land valuation. The appraisal regulation in China stipulates that ‘at least two approaches are required to appraise the value of the same subject’ (MLR, 1999), hence the comparison method and the LBP method have become the two most popular valuation approaches to the LURs assessment of land with no construction.

The aim of this paper is to investigate the relationship between the benchmark price and transaction price in Beijing from 2009 to 2015. Two steps will be taken to achieve the analysis. Firstly, an investigation of the magnitude of the spatial-temporal autocorrelation of the land transaction price and the factors affecting spatial-temporal autocorrelation of the land transaction price. Secondly, the incorporation of time variables (t_i – t benchmark update month) is designed to test whether the update frequency of benchmark price influences the land transaction price and if so, how frequently does the LBP need to be updated. The data is sourced from the Beijing Municipal Bureau of Land and Resources, the National Bureau of Statistics and the China Urban Land Price Dynamic Monitor which are all government-based websites that provide land and economic related information to the public.

KEYWORDS: China real estate development, land valuation, land use rights, spatial autocorrelation
160 The Discount to NAV of distressed German open-ended real estate funds

The German open-ended real estate fund industry was strongly hit by massive outflows in the course of the global financial crisis. In total, 18 public and institutional real estate funds had to stop the redemption of shares and were ultimately forced to liquidate their portfolios. Investors of these funds either have to await the stepwise liquidation of the funds’ assets, which can take up to several years, or they can opt to sell their shares on the secondary market, often at a substantial discount to the Net Asset Value (NAV Spread). This paper attempts to explain the NAV Spread of distressed German public open-ended real estate funds. The unique monthly dataset contains fund specifics and macroeconomic indicators for the entire relevant period. Fundamentals like the leverage ratio and the liquidity ratio as well as industry-wide spillover effects from fund closures affect the NAV Spread. Moreover, we detect a considerably influence of macroeconomic uncertainty explaining the discount to NAV.

KEYWORDS: Liquidity Transformation, NAV Spread, Open-ended real estate funds, bank run risk, uncertainty
168 The Impact of Misvaluation in the REIT Sector

Misvaluation is defined as the act of misspecifying the current value of an asset or a company. Graham & Harvey (2001) report that misvaluation is one of the most important factors impacting on the decision of when and how to issue common stocks.

Within the REIT, investors as outsiders have difficulty to accurately determine the market value of REITs because information asymmetries in the real estate market are high (Garmaise & Moskowitz, 2004). Moreover, REITs rely mainly on external financings for their activities and always issue securities to cover a shortage of internal sources of capital (Boudry et al., 2010). Hence, misvaluation is more likely to be a significant problem for REITs. However, up to now, the effect of misvaluation on the REIT capital structure decisions has not been analyzed. By using the decomposing market-to-book model of Rhodes-Kropf et al. (2005) and the residual income model of Ohlson (1995) to estimate misvaluation, we conduct a comprehensive investigation of misvaluation’s impact in the REIT sector. First, we examine the impact of misvaluation on REITs’ financing decisions because the capital structure of REITs is entirely different from non-REIT firms due to their tax-exempt status. Second, we analyze how misvaluation can influence cash holdings and the use of bank credit lines. These things could be severe problems in the REIT sector because the mandatory payout is high and the ratio of cash to total assets of REITs is 12 times lower than that of non-REIT firms (Damodaran, 2005). Altogether our paper makes several contributions to the literature about the effect of misvaluation on the financing decisions and liquidity management policies of REITs.

The main results can be summarized as follows: First, REITs experiencing a high appreciation of stock price would have a greater propensity to increase the likelihood of an equity issue, whose purpose could be to exploit the low cost of equity capital relative to other forms of capital. Second, REITs are more likely to increase debt issuances and have greater credit line availability when their stock is overvalued. The reason for these results is that overvalued REITs generally have easier access to debt. Third, regarding the liquidity management policies, we find empirical evidence supporting that overvalued REITs use more cash than bank lines of credit for liquidity management because they can accumulate larger amounts of cash relative to other firms.

KEYWORDS: financial decision, liquidity management, misvaluation, real estate investment trust
255 Future yield after taxes (FYT): A more realistic yield rate than IRR or other types of yields?

Standard performance key figures in the fund industry like the Internal Rate of Return (e.g. for earnings yields) or the ratio of lease-revenues to the purchase price (e.g. for returns on sales) measuring the performance of Closed-End Real Estate Funds (CEREF) or Alternative Investment Funds (AIF) should not encourage the investors’ decision to spend capital in real estate investments (and also funds): these above mentioned key figures do not allow the comparison of Returns On Capital Employed with other investment types (e.g. money market instruments, lending rates or minimum guaranteed insurance interest rates). Our new measurement ‘Future Yield after Taxes’ includes this requirement of comparison without demanding strict assumptions. Using a sample of 510 CEREF/AIF -- issued by 78 German initiators for the period of 1985 to 2015 -- we are able to show, that the measurements of these funds’ Return On Investment end in the investors’ capital weighted ROCE of about 7.29 % p.a. before and about 4.00 % p.a. after German tax revenues. These yield results seem to be riskier than expected. For our empirical analysis, we collected the financial data from regular prospects of the issuers.

KEYWORDS: performance measurement, Closed-End Real Estate Funds, Alternative Investment Funds
To manage development pressures, smart cities need reliable information systems. In turbulent times, a robust valuation system can help to regulate transactions and guide property investment. Reliable valuations are particularly important for Gulf cities like Dubai whose property and capital markets absorb regional oil and global liquidity. The transformation of the Emirate from a fishing village to a global trade, tourism, financial and logistics hub stimulated property markets. Generally, as a market matures, investors downplay speculative bets, valuations standards tighten and players undertake more systematic project quality evaluations. The research investigated the UAE residential valuation system (‘RVS’) based on valuation output reasonableness, stakeholder information transparency, administrative capability, end-user trust and valuation standards salience. Mixed methods evidence involved embedded observations, transactions analysis, expert interviews and confirmatory discussions. Initial results suggest that key UAE residential valuation system improvements should focus on information dissemination, institutional capabilities and dissemination of valuation standards.

KEYWORDS: Residential valuation system, trust, capabilities, valuation standards, information
On the Potential of Multisensor Datafusion Approaches for Real Estate Valuation

Real estate valuation based on purchase prices is the approach closest to the market. However, in some submarkets only a few transactions take place and this approach fail because of the data. The usage of other real estate market data like offer prices, rents are obvious to use as extension of the data. To use this heterogeneous information, innovative methods for combination have to be derived. In multi-sensor data fusion first approaches already exist, e.g. for autonomous driving. In valuation context, offsets in data, different degrees of freedom (DOF) and accuracies play an important role. Reliable and secure decisions are made with the result of the fused data.

In Multisensor-System information are measured in different scales and coordinate systems. Transformation is necessary to combine the data. The sensor accuracy (e.g. laser scanning vs. radar) and reliability (e.g. field of view) is very inhomogeneous and changing in different situations. These difficulties arise with real estate market data, too.

In this paper we present a framework to adapt these fusion approaches for real estate market data. We discuss the used vocabulary in real estate context.

The transferability of the term sensor is discussed in real estate market context. Basic topics of multi-sensor systems will be adapted like the structure of the system (competitive, complementary, cooperative) and the fusion levels (signal-, feature- or symbol-level). On signal level, only similar data can be fused, which observe the same phenomena. On feature level, there is a chance to merge derived data from different sensors, which have the same model variables (e.g. purchase prices and offer prices) and have the same DOF. On symbol level, data from different markets like rents and purchases can be combined.

The derived framework can be used to make further investigations on market data in this context. The overall aim is the combination of different data with fusion approaches. It could be used in future to derive real estate market information in regions with few transactions.

KEYWORDS: Appraisal, Multi-Sensor
Ciprian Gheorghe

194 The analysis of interdependence between corrosion, physical depreciation and market value in the evaluation process of special construction assets – pipeline transportation systems

In the assessment of pipeline transportation systems is very important for the assessor to analyze how market value is influenced by the size of corrosion. It is also interesting to analyse the interdependence of corrosion, physical depreciation and market value. Evaluation of special construction assets like pipelines is a complicated process that does not use traditional approaches to evaluation, but rather a mixture of evaluation methods because each pipeline is unique in its own way, but also because its value is influenced by many factors.

This paper present how varies size of corrosion, physical depreciation and market value and the corrosion is influenced by several factors. The corrosion process is a complex mechanism that occurs during operation of all equipment and technological equipment in the refineries or pipelines systems or found in petrochemical installations and is done at oscillating temperature and pressure (high/low), in the presence of some work environments (type: crude oil, compressed gases, petroleum and petrochemical products, etc.). Corrosion is defined as the destruction, in a certain span of time, of metals and metal alloys as a result of chemical and/or electrochemical actions of the technological environments and surrounding or due to physical dissolutions. From the point of view of the assessor-engineer whose aim is to determine the assessment of pipeline transportation for petroleum products one is able to highlight the influence of corrosion within its depreciation.

The quantitative implementation of corrosion for the estimation of market value of technological pipelines is an ongoing concern of evaluators as engineers have been determining the existence of corrosion for a long time now, yet this could not be found in a mathematical relation that was to show the interdependence between corrosion, depreciation and the market value. The relation between depreciation and corrosion by means of this factor is very useful for assessors in predicting depreciation. The emphasizing of corrosion within the estimation of market value through the influence of the factor of depreciation due to corrosion is a first step in a broader process of research which is meant to mathematically highlight the dependence of impairment due to corrosion on the characteristics of the material which the pipe is made of.

KEYWORDS: market value, pipeline systems, physical depreciation, corrosion, valuation
157 CEO Overconfidence in Real Estate Markets: A Curse or A Blessing?

This paper studies the influence of CEO overconfidence on firms’ financial performance and corporate social responsibility (CSR) in the US real estate investment trust (REIT) market. CEO overconfidence has been shown to have both negative and positive influences on firms. This paper is the first to combine the two sides in a single framework. We find that firms with overconfident CEOs tend to have better CSR performance. In addition, better CSR performance can increase firms’ financial performance, but this positive relationship is undermined by the existence of overconfident CEOs. Our results not only shed light on the two sides of CEO overconfidence in the real estate sector, but also provide a new prospective for research on the CSR–financial performance relationship.

KEYWORDS: CEO overconfidence, corporate social responsibility, financial performance, REIT,
165 Real Estate Investment Risks: The Case of Central and Eastern Europe

International real estate diversification provides significant benefits which are inevitably associated with considerable risks and costs. This requires a thorough analysis of options in order to take account of substantial uncertainty and foreignness implied by international investment per se, as well as the real estate market risks inherent in foreign countries. These factors are intensified by economic and political distresses and make real estate investors use more discretion in their operations abroad.

Similarly, in the face of downturn, market players have become cautious about investing in Central and Eastern Europe (CEE) and shifted their investments away from many once booming markets. In other words, the crisis resulted in an increased perception of risk and a change towards more selective investment strategies in CEE, with international investors unprepared to take high country risks even though property risks may be low. Thus relatively more importance is attached to country risks vs. property specifics and gains when making investment decisions.

This study has been motivated by the perceived shortage of research on real estate markets and investment decision making factors in CEE, as well as the need for understanding these aspects in order to ensure sound investments in the region. It seeks to identify major risks of investing in real estate, with a particular focus on selected CEE countries. The paper addresses in the first instance the complexity of country risk as a composite risk and its components. Further, real estate investment trends and issues in the CEE markets are discussed, with specific investment risks for the CEE region identified. Finally, the importance of the factors influencing investment decision making is discussed, as perceived by international investors in the region.

This research contributes to a better understanding of barriers and risks of international real estate investment while assisting investors in improving their perception of opportunities and implications associated with real estate investments in the CEE region.

KEYWORDS: country risk, risk and return factors, international investment, CEE countries and region
Mo Zheng

376 Construction of daily hedonic housing indexes for apartments in Sweden

Many published indexes in North American and Europe are based on mean or median prices, or applied repeat-sale method for less requirements of characteristic related information on properties. But each house is unique. It is critical that the differences among properties could be captured in the house price indexes in the timely and comparable way. This paper constructed daily apartment price indices for entire Sweden and 3 major cities - Stockholm, Gothenburg, and Malmö. We applied hedonic regressions on a unique cross-sectional time series database of over 1 million apartment transactions in Sweden from January 2005 to May 2015. Our newly constructed daily indexes compared time dummy variable approach, characteristics prices approach and the imputations approach. We tested spatial dependence, and performed spatial econometrics models for regional comparison among major cities.

KEYWORDS: Housing Index, Hedonic regression, cross-sectional analysis, GARCH, time series
The recent global financial crisis (2007 – 2009) has shown what cataclysmic consequences the convergence of financial markets and real estate markets can have for national macro economies. The interweavement of the two markets provides opportunities for product innovations on the one hand and involves new risks on the other. Investors who are familiar with financial markets, do not necessarily know the peculiarities of real estate markets, and vice versa. The financial crisis has also shown how important it is, to adapt flexible holding strategies and to be able to unwind property investments quickly.

Real estate is the last major asset class without liquid derivatives markets. The reasons for that are not fully known and understood. Three aggravating factors are the heterogeneous structure of real estate markets, the difficulties associated with the measurement of financial performance in a timely manner and a certain degree of predictability of real estate prices.

Despite the size of the underlying market, the trading volume of property derivatives is comparatively low which results in large bid-ask spreads (i.e., high transaction costs). The conceivable migration of investors from the physical spot market to the derivative market has so far failed to materialise. The reasons for their reluctance towards property derivatives are not known or can only be conjectured as the literature in this field is scarce.

This paper seeks to find out why are real estate investors reluctant to use property derivatives. The aim of the research is to better understand the factors that determine the acceptance of real estate derivatives and those that keep potential users from applying them. With an in-depth qualitative research framework the view of potential users towards property derivatives shall be captured and current trading barriers be identified. Ways of overcoming them will be proposed. A better understanding of the investment behaviour and attitudes towards property derivatives will help explain why no liquid markets have been established yet, despite numerous attempts. Reasons for the low trading volumes on the two stock exchanges, the Chicago Mercantile Exchange (CME) in the U.S. and the European Exchange (Eurex) shall be identified.

KEYWORDS: Property derivatives, Systematic risk, Innovation, Hedging, Portfolio management
The Determinants of German Open-End Real Estate Fund Closures

One third of all German open-end real estate retail funds were forced to close during the first fund crisis in 2005/2006 and the second fund crisis in October 2008. We establish a panel logit model to test if fund closure probability, besides fundamentals, is also driven by external effects. Our results indicate that there is a significant influence of bank run risk, economies of scale and scope and industrywide spillover effects regarding the fund`s closure probability. Our hand-collected monthly dataset contains the entire population of German open-end real estate retail funds from August 2002 to June 2016.

A fund closure implies a serious challenge for the funds management and existing investors, since fund closures predominantly lead to fund liquidation. Hence, the fund management is forced to sell their real estate assets, which is associated with high selling pressure and significant fees. Furthermore, the fund investor`s capital is entirely constrained (i.e. investors are only able to sell their shares at the secondary market for significantly discounted price). Knowing the determinants of fund closure would help the fund management to adjust their portfolio strategy and diminish closure risk. However, the fund management`s responsibility for closure is limited due to the degree of industrywide and macroeconomic influences.

KEYWORDS: Liquidity Transformation, Open-ended real estate fund, NAV Spread, Logit
Studies have shown that certain tenants are frequently excluded from the housing market given landlords’ measurement of financial eligibility using opaque risk management approaches. What is arguably needed is a scientific model that would allow landlords to build their decision on the dependent variable they are most interested in; that is, customer profit. This would follow in the footsteps of other industries that commonly use customer profitability analysis, such as hotels, financial services, and the private health care sector. Using the case study of the German housing market, this study will construct such a model that landlords can use to evaluate tenant profitability. Using a methodology based on customer profitability analysis, the research will deconstruct the key variables that make tenants financially profitable in the eyes of a residential landlord, and demonstrate their interaction. This paper argues why and how a profitability approach adds value for the landlord and explains the model based on an extensive literature review.

KEYWORDS: Tenant profitability, Customer profitability analysis, Tenant risk, Housing
The impact of corporate governance on performance of Real Estate Investment Trusts (REITs) in the United Kingdom is explored in this paper. Corporate governance principles are required to limit agency problems and information asymmetric issues, which arise from the separation of management and ownership interest. Empirical and theoretical studies on corporate governance suggest that a use of internal and external control measures enables better performance by mitigating agency problem and asymmetric issues. Real Estate Investment Trusts offer a unique setting to study the effect corporate governance has on performance by tackling these problems. However, there remains a lack of substantial academic literature on how corporate governance affects Real Estate Investment Trusts and performance. Research on Real Estate Investment Trust performance and corporate governance have received notable coverage, mostly in the United States with limited study evaluating this concept in the United Kingdom, hence the need for this study to understand how this concept operates in the United Kingdom since its introduction on the 1st of January 2007. This paper draws on a PhD study that inter alia investigates corporate governance, investment decision-making and Real Estate Investment Trusts performance. However, for this paper, the attention will be focused on a critical review of the corporate governance control mechanism (internal and external) employed by Real Estate Investment Trusts in the United Kingdom. Tentative conclusions and recommendations will also be proffered for practice and academia.

KEYWORDS: Real Estate Investment Trust, Corporate Governance, United Kingdom, Performance
281 Diversification Power of REITs

This paper investigates the dynamic conditional correlations between real estate and stock market indices in Turkey, using daily, weekly, and monthly indices of both markets. The magnitude and the direction of these time-varying correlations can provide diversification benefits to investors. This study uses an Asymmetric DCC-GARCH model to estimate these dynamic conditional correlations. The literature implementing this type of models find an upward slope in conditional correlations between stock and real estate markets worldwide. Contrary to the literature, this paper finds a slightly downward slope, which indicates that the diversification power of the real estate market for stock market investors has an increasing trend over time. However, this downward slope disappears after the 2008 Global Financial Crisis. Further, this study finds that time-varying dynamic correlations are significantly and positively related to dividend policy of REITs. Dividends by REITs increase the conditional correlation between the two markets.

KEYWORDS: REIT, Conditional Correlation, Conditional Volatility, Diversification
The real estate sector has great potential to reduce the carbon footprint due to its large number of employed people and its resource- and energy-intensive production and maintenance process.

Countless empirical studies have shown that Green Buildings generate additional value in terms of transaction prices and rents. Most of their conclusions, though, are limited to specific submarkets, regions or specific aspects of sustainability. These limitations reduce significantly the reliability of their conclusions. In this context, the extensive green payoff evidence of some studies will have to be discussed. Hypothetically, not all relevant control factors have been accounted for appropriately which might result in an overestimated value of being green.

A hedonic regression will be applied to analyse the Green Payoff of a portfolio of 160 European office buildings held by a German investment management firm from 2011 to 2014. Our analysis extends findings of existing payoff studies as it includes not only sustainability certificates, but also green leases, actual consumption data, tenant satisfaction and undertaken refurbishments. In a second step, another factor will be included in the regression framework – the influence of super trophy status. After having controlled for large surface areas, unique architecture, excellent quality of amenities, building height, prominence and return characteristics, what can we conclude about the statistical significance and the size of Green Premia? How do these findings compare to the existing evidence of green payoff literature on benefits of sustainable commercial real estate in Europe?

KEYWORDS: green payoff, sustainability, green building, hedonic regression, trophy properties
The attractiveness of commercial real estate has grown again since the financial crisis of 2007-2008, whereas almost all institutional investors such as credit institutes, insurance companies, investment funds and even public sector entities continue investing in real estate assets. The importance of real estate valuation rose accordingly and besides the standard regulated procedure there is a need for transparent information between parties, in order to control the investment risk and reach a maximum investment yield.

Valuation is conducted in different real estate cycles, either during the construction phase having as purpose a Forward Purchase Deal, for completed and rented buildings that are purchased by an investor as classic investment or with the scope of own utilization. The focus of this paper is on all these phases and four main asset categories: shopping centres, office buildings, logistics and industrial properties as well as hotels, with the target of investigating the interests of the particular stakeholders at the valuation of such assets. The following question will be answered: How can the interests of stakeholders (developers, institutional investors, real estate agents, public sector entities) be presented according to the asset class and real estate cycle?

The valuation regulations (standards according to the law; e.g. ÖNORM in Austria), the valuation recommendations (not regulated; e.g. RICS standards) and the ethic codes of international real estate organisations - as answer to the principal agent problem - will be analysed and presented from a theoretical point of view. This will be the basis for the research which will be carried out based on anonymized interviews with more than 150 international stakeholders.

The aim of the paper is to create transparency and develop a better understanding of the views and decisions of shareholders when evaluating commercial property. Transaction Managers as well as Asset and Portfolio Managers will have a better picture of the stakeholders’ interests, of the business ethics and of the entire needed (side) information when a real estate valuation is conducted. Moreover, this will be a further scientific input to the literature on moral hazard in the real estate sector.

KEYWORDS: moral hazard, ethics, real estate valuation, principal agent problem, commercial property
LIDA AMINIAN, HARRY TIMMERMANS

331 Assessing urban quality of life through activity modelling

The rapid urbanization and its consequences on human life highlight the concept of Urban Quality Of Life (UQOL) as a research priority for both policy and academia. The applications of UQOL studies are very broad and reflect the motivations behind regional migration, residential choices as well as urban growth patterns. During the last decades many researchers have been involved in the field of environmental behaviour science and their results are mainly oriented towards the influence of built environment on enhancing the quality of life.

Traditionally, modeling quality of life in urban settings contains objective and subjective attributes, which obtain through cross sectional surveys, observations and aggregated methods. However, with this method it is difficult to address the cause of satisfaction, while with activity modeling satisfaction is the result of the degree to which the environment satisfies a persons needs.

We know on one hand that UQOL is a context based and scale-dependent study, and on the other hand people judgments about the environment vary significantly. Therefore, the satisfaction regarding built environment can also be measured through behavioral indicators. Activity modeling of households and individuals is one of the methods that provide opportunity to study the link between characteristics of urban form and micro-level behaviors. At the residential level, daily activity schedules of households are influenced by characteristics of urban environment. Therefore, the purpose of this article is to provide an overview of this link and explore the relationship between the built environment and physical activity with more innovative and comprehensive spatial survey methods.

KEYWORDS: urban quality of life, activity modelling, survey
Second home tourism has been a primary cause of real estate development of the Spanish coasts since the 1970s. Historically, Northern Europeans have been the driving force influencing the second home residential tourism market in Spain, which attracts thousands of foreign customers per year. Spain’s coastal region has undergone dramatic development due to this demand and in recent has become famous for being a prime destination for international retirees who tend to have their own specific demands and requirements when looking to purchase property abroad. Taking into account that the baby-boomer generation is poised for retirement within the next decade, Europe and its planners will need to develop proper responses through guidelines and planning of its territory, housing, and development, particularly those along the Mediterranean Sea. As a result, this research seeks to evaluate the territorial, cultural and natural attributes that underpin the decisions of the target group in case they search for a second home. The study area selected is situated along the Costa Brava on the Mediterranean Sea in the northeastern part of Spain, meanwhile the methodology consists of a 2016 self-administered questionnaire involving 191 European tourists, of which most were over the age of 50. A set of attributes were provided and categorized into the three categories mentioned previously, with a Likert Scale related to levels of importance. At first, the result’s rank was based on the attributes’ average weighted score. The top three considerations influencing the participant’s selection were cultural offerings including friendly people, security and cultural diversity, following by two of built environment attributes of proximity to shopping and well-maintained streets and sidewalks, and the natural environment attributes. Having evaluated the participants stated choices, further statistical differences were analyzed using a Pearson Chi-Square test which highlights the degree to which the specific stated characteristics of the participants influence their choices; for instance, the presence of a mild winter is more important for this group than others, which is further supported by previous studies. The final step is the use of a logistic regression model to ascertain the effects of the territorial, natural and cultural factors on the likelihood that participants choose a second home on the Costa Brava.

KEYWORDS: Spanish Mediterranean Coasts, Second Home, Regional Evaluation, Retirement Migration, Costa Brava
Hendrik Jansen

280 Retrofitting Business Suburbia – Opportunities and Challenges in the (re)development of suburban business locations

Aim of Research: The centres of the global knowledge economy are no longer only to be found in inner cities: thanks to the increasing importance of soft locational factors as well as the flexibilisation in choice of location thanks to technological improvements, knowledge-intensive service companies are now also appearing in so-called international business centres (Trip 2007, 275) in the suburban hinterland of metropolises. These suburban business locations have become an international phenomenon and can be found in almost every global city around the world. Still in the discussion about the redevelopment of suburbia these places are often ignored.

Problem: Many of these suburban business locations are facing significant challenges in terms of vacancy, underutilization or lack of urban design qualities. While some of them entering a lifecycle where redevelopment becomes inevitable, newly designed parks are often planned with higher standards. In the context of growing pressure on housing market in global cities, these places more and more get into the focus of cities as places for mixed-use and housing developments, while building laws and restrictions complicate the redevelopment.

Methodology: The research is based on a mixed method approach, which includes mainly qualitative methods. The basis is build by half standartized expert interviews in Frankfurt am Main (Germany), Zürich (Switzerland) and Boston (USA) with city officials, real-estate developers and public institutions. Additionally planning documents and instruments for spatial development are analyzed and site visits are conducted.

Expected contribution: This contrition is giving an overview about the re-development of suburban business locations in the metropolitan areas of Frankfurt am Main (Germany), Zürich (Switzerland) and Boston (USA) in a comparative perspective. It points out the specific challenges in each planning context and is showing successful examples as well as failures. By presenting specific case studies, the process of retrofitting is illustrated and visualized. There is a focus in all case studies on the role of urban planning instruments and their effectiveness in each national context. Finally these examples show the transformation form mono-functional spaces to integrated neighbourhoods with mixed-use structures and integration of housing. In this sense these places have become experimental fields in managing the growing pressure of residential markets.

KEYWORDS: Business Suburbia, Redevelopment, Adaptive Reuse, Retrofitting, Office Parks
The ideal office building suitable for tomorrow’s housing. The case of the European Quarter in Brussels.

During the past years, due to the ongoing economic and financial international crisis that has hit the whole Europe, the production areas at risk of crisis have increased significantly.

This phenomenon has generated the presence of disused office buildings that require a conversion and a retrofitting to be reinserted and to be made useful to community.

Therefore, it is necessary to intervene in order to give new life to this heritage, in social, productive, commercial and residential terms, through the reuse of the no longer used for production properties and the effective reuse of soils.

Acting in this way, the aim is to reduce the consumption of soil allowing functional rehabilitation of the already built-up or urbanized areas without the use of new building soils.

At the same time, the economic crisis has worsened the socio-economic conditions of an increasing share of population, leading to higher demand for affordable housing and social allowances in the majority of European countries.

The retrofitting of office buildings in residential areas could be the answer to the growing demand for new housing.

This paper explores the opportunities and challenges of the redevelopment of vacant office buildings into housing units in the Brussels Capital Region. This research investigates the feasibility of this conversion from three different aspects, including the considerations in legal terms, the architectural aspects and the financial viability.

KEYWORDS: Urban & Real Estate Development and Regeneration, Vacancy, Office Buildings, Adaptive Reuse, Housing
Are REIT Investors Overly Optimistic after Equity Offerings?: Evidence from Analyst Forecast Errors

Optimism around Initial Public Offerings is well documented. However, Seasoned Equity Offerings are often surrounded by less optimism. Based on analyst forecast properties for a large number of REITs, we find that REIT analysts tend to be relatively optimistic after IPOs, whereas this tends not to be the case surrounding SEOs. Our results are more pronounced when REITs are bigger and have more analysts following them. Our results are robust for a number of multivariate specifications. Our findings suggest that possible underperformance of REITs after the IPO may be caused by over-optimistic stock markets.

KEYWORDS: REIT, Over-optimism, Analyst Behaviour, IPO, SEO

Debt Diversification in Public Real Estate Companies

Following the tradition in general finance literature, research on public real estate companies’ capital structure has focused on testing whether established capital structure theories (i.e. the trade-off theory, the pecking order theory, and the market timing theory) can explain the observed leverage ratios and their variation. However, due to ignoring the heterogeneity of leverage, the reported results are mixed. Recent financial literature on industrial firms suggests that in addition to the level ratios, the type of debt is also of significance. In this paper, we analyse the debt structures and level of debt diversification in the Public Real Estate Companies as well as their impacts on company performance. We study the degree of debt diversification across different subsamples of Public Real Estate Companies, i.e. whether they tend to borrow with one type of debt or they choose to diversify across multiple sources. Further, we investigate the persistence of such diversification and look at the phenomena through the prism of capital structure theories, in particular, by addressing the question of how Public Real Estate Companies’ choice of debt type varies with firm characteristics. Finally, we investigate the implications of debt diversification for the cost of capital and growth.

KEYWORDS: Real estate finance, Public real estate investment, capital structure, debt diversification
Avis Devine, Eva Steiner, Erkan Yonder

346 Decomposing the value effects of sustainable investment

We provide the first systematic, international decomposition of possible financial benefits of sustainable real estate investment on corporate performance metrics across the two leading country-markets in terms of sustainable property certifications. In the UK, where a baseline level of environmental reporting is mandatory, listed property companies benefit somewhat from investments in sustainability-certified properties through higher cash flow and valuation outcomes. In the US, which features no requisite reporting, the benefits of sustainable investment are stronger and comprise distinct cash flow, risk, information and corporate valuation effects. Our results suggest benefits of improved transparency and benchmarking from environmental performance reporting.

KEYWORDS: real estate investment trusts, sustainability, energy efficiency, valuation effects
42 A Social Networking Enabled Crowdsourcing System for Integrated Infrastructure Asset Management

Emerging information and communication technologies like building information modeling, internet-of-things, social networking, cloud computing, big data analytics, mobile application and so on serve as important catalysts to transform the practices of infrastructure asset management. Owners, occupiers, managers, operators and contractors of infrastructure facilities can now capture, process, share, integrate and analyze the data related to various infrastructure facilities collaboratively and cooperatively for integrated whole life cycle infrastructure asset management. This should help improve the overall efficiency of a community and/or city through optimal resource allocation; reduced maintenance and refurbishment cost; less energy consumption; lower risks of service disruption; increased transparency; and better strategic, tactical and operational decisions. This paper outlines the development of a social networking enabled crowdsourcing system for integrated infrastructure asset management. The system is designed to satisfy the requirements of different stakeholders in managing, operating and repairing a series of interdependent infrastructure facilities. Preliminary studies on the residential sector of Hong Kong reveal that the system could help improve the communication between stakeholders, enhance the transparency and effectiveness of asset management, and reduce the risks of bid-rigging in repair and maintenance schemes. By integrating the proposed system with the existing systems being adopted throughout the entire building life cycle, such as the building information modeling and asset management systems, facility condition and usage data that is not easily obtained through traditional means can be crowdsourced, co-created or co-processed for higher level decision support including but not limited to facility performance analysis, complaint analysis, service scheduling analysis.

KEYWORDS: Integrated facility management, Building maintenance, Renovation and refurbishment, Social networking, Crowdsourcing
44 The Changing Impact of Traditional Chinese Family Value on House-purchasing Decision in Urban China

This research attempts to examine the issue of housing affordability in urban China based on a set of online questionnaire survey. Including not only income, household saving and other economic attributes, this study also focuses on the important implication of social attributes for Chinese citizens’ house-purchasing decisions.

The analysis shows that the housing affordability is highly related to their social-economic conditions, such as their age, marital status, income and housing provident fund. Different from the previous hypothesis that the Chinese people tend to buy a house for staying with their immediate family, this research finds that traditional Chinese culture of family value only works when they are buying their 2nd house. For the 1st time home-buyer, we find a significant negative impact of staying with the immediate family. With the great change of socio-economic and education conditions in the process of urbanization, traditional Chinese culture of belongings does not work for all the family life cycles.

This study provides a new explanation for the homeownership status in urban China, while also reveal more about traditional Chinese culture about family value in the modern society. It helps deepen our understanding of the rationales behind the house-purchasing decision and will have practical significance to the practitioners.

KEYWORDS: housing affordability, social-economic variable, family value, China,
In the real estate industry, regulatory interventions increased after the subprime crisis 2007/2008 and were followed by a regulatory shock and, in parts, a restructuring of the industry. In addition, the digitalization has entered industries. New opportunities arise, (production and business) processes transform and the value creation shifts from production to service to software. In the large body of innovation research manufacturing industries and product innovations have been in the focus ever since. Non-manufacturing organizations such as in the real estate industry and transforming manufacturing industries with blurring boundaries fueled by the digital age are currently under-researched. This paper investigates the relationship between firm innovativeness, an organization’s overall potential to innovate, and its innovation output while considering the influential organization’s context. It sheds light on the impact of the external environment and the regulatory interventions that shape the industry structure. To address the heterogeneous subsectors of the real estate industry and to ensure comparability among them, we develop and empirically test a universally applicable measurement model of firm innovativeness that comprehensively captures all relevant aspects on a higher level of abstraction. Furthermore, we have purposely incorporated measures that rely on the respondent’s perception because perception determines reality. Variance-based structural equation modeling (PLS-SEM) is used to analyze the dyadic design of our study including a sample comprised of 241 individuals, i.e., top-level executives and their employees from 76 organizations of the German real estate industry. Results prove validity of the newly developed measure for firm innovativeness and show that environmental heterogeneity moderates the flow from firm innovativeness to new product and service introductions. Highly competitive environments negatively influence the introduction of new products and services directly, and environmental dynamism does not have an impact (for now). Contrary to the expectation, high levels of regulation prove to facilitate organizations to introduce new products and services as well as new internal processes.

KEYWORDS: firm innovativeness; innovation; external environment; regulation; industry structure; real estate industry
Digitalization is the current trend across all sectors, which is expected to provide new business opportunities, resource efficiency and climate change mitigation. One of the new key resources brought by digitalization is an improved knowledge of clients or users through new data. This knowledge is usually created with business intelligence, i.e. data gathering and analysis. Business intelligence has been the most important success factor for companies in several industries, in particular information technology. Data is gathered, distributed and analysed by platforms, which also promote external innovation. In most successful cases this has lead to successful ecosystems where owners, users and complementors innovate and develop content for the platform in cooperation with each other. However, similar platforms and ecosystems have not yet emerged in a large scale to the real estate and construction (REC) sector.

On REC sector smart buildings provide an excellent opportunity to gather data of conditions, indoor environment and user behaviour. This data can be used for developing the current products and services as well as new ones. However, currently only a small share of the companies on the REC sector actually have an access to the data provided by smart buildings. Additionally, the data is seldom distributed outside the company borders. Although the commercialization of external data is currently a hot topic in the academic literature, the companies on REC sector have not been utilizing it yet. External distribution of the data would also enable companies who do not have access to the data to develop their products and services accordingly.

Large scale distribution and utilization of data would promote cost and resource efficiency in current products and services as well as new business opportunities. In addition to building specific data, big data generated by large number of smart buildings would rapidly provide valuable information for example to building design, construction material manufacturing, energy production and insurance sectors just to name a few. The transformation to external data commercialization and distribution would require some stakeholder reorganization in the sector. The roles in the ecosystems benefiting of data distribution have already been discussed in the literature. Learning from the roles and platforms on other industries, the REC sector should be able to better benefit of the new opportunities of digitalization.

KEYWORDS: digitalization, smart building, business intelligence, big data, platform
Adaptable healthcare facilities through modular solutions

The healthcare industry is facing various challenges due to global megatrends, such as increasing average life expectancy, ageing population, technological advancements, urbanization and globalization. Currently, outdated hospital facilities are being thoroughly renovated in large and costly projects to meet contemporary operational requirements. Renovation work in hospital environments is particularly challenging, as the facility should remain operational during the renovation. Traditional ways of retrofitting tend to create a lot of disturbance, such as isolating sections for long periods, noise, and pollution. This study explores alternative ways to maintain a healthcare facility, without the need for major retrofits. The research approach is qualitative, utilizing stakeholder (owner - user - service provider) interviews as the main data. Based on the findings, the lifecycle sustainability of a hospital building would be improved if large, intrusive renovation projects could be replaced with multiple minor projects. Modular thinking could offer one solution to the problem. Modularity allows for more frequent minor maintenance procedures of hospital facilities, instead of major renovation cycles of decades. Modular solutions also reduce the operational downtime and costs, and create less onsite disturbance. On the other hand, modular solutions may be difficult to implement in existing buildings, which have not been originally designed to allow for such adaptability. Building on the interviews and review of existing literature, the study offers several potential solutions to improve the future adaptability and flexibility of hospital buildings. The benefits and challenges related to each solution are also discussed. The findings will benefit facility owners, managers and users, struggling with the requirements of contemporary healthcare facilities.

KEYWORDS: adaptability, retrofitting, flexibility, healthcare, modularity
Amim Ahmad

235 Big Data and Internet of Things: Applications for creating Smart Buildings

Technology is changing the commercial real estate (CRE) industry. Big data is the result of huge advancement in the devices that are used to capture data. The number of institutions & organizations using Big Data analytics, for decision making is increasing day by day. On the other hand, Internet of Things (IoT) is already having a significant impact on the industry. Combination of big data and internet of things is the future of technological advancement within CRE.

This paper will describe the current scenario and applications of big data and internet of things in the real estate sector, followed by analysing the challenges and opportunities in the domain of IoT.

The research will also introduce an IoT application model which can be applied in facilities management. Additionally, the author will define IoT with academic and industry perspectives and compare the same.

The paper intends to hint at other promising research areas and facets that domain experts can study in detail as the use of Big Data analytics and IoT spreads across the globe.

KEYWORDS: Internet-of-Things, Big Data, Real Estate, Data Analytics, Security

Daniel Piazolo

63 Digitalisation and Jobs in the Real Estate Industry

Digital technologies and automation of job routines will lead to the replacement of administrative and operative roles in which activities are most repetitive and predictable. Analyses find for Facility Management jobs a 70 percent chance of being automated. However, novel possibilities through the use of digital tools like artificial intelligence will create new employment possibilities within the various real estate areas like Facility Management and Property Management.

This paper will examine the likely loosers and winners within the real estate industry due to the digital revolution. A larger share of the real estate sector work force will perform complex, judgement-based problem solving. Higher-skilled and better paying jobs will emerge. Digitalisation is a job killer and a job engine at the same time.

KEYWORDS: Digitalisation, Disruption, Employment, Automation, Future of Work
60 Identifying Critical Attributes Using an Importance-Performance Matrix Analysis (IPMA): The Case of Stratified Residential Property Management in Malaysia

Stratified residential property management, one of the sub-sectors of the real estate industry in Malaysia, has been facing the pressures as the awareness amongst buildings occupiers of effective management has increased. In line with recent literature on the increasing awareness of residents and the critically needs of effective property management, efforts are required to identify and clarify the critical activities and its attributes in managing the stratified residential properties that could affect the property management service delivery. This study used the partial least squares (PLS) and structural equation modeling (SEM) and followed by Importance-Performance Matrix Analysis (IPMA) to examine the 11 activities and their attributes. There were 11 activities and each of them consists of attributes that played as measurement variables that were believed could affect the property management. The IPMA results indicated that maintenance and financial is the key activities that critically affect the stratified residential property management service delivery. Interestingly, it is also found that tenancy & marketing negatively affect the property management service as tenancy and marketing services are not major services for the residential property. It is believed that an identification of the critical attributes for stratified residential property management will lead to more effective and efficient in service delivery.

KEYWORDS: property management activities, stratified residential property, service delivery
Howard Cooke, Rianne Appel-Meulenbroek, Theo Arentze, Bauke De Vries

38 Adjustment of corporate real estate during a period of significant business change

There has been considerable debate in CRE research on models of alignment of the CRE portfolio with the business strategy. This paper seeks to understand what alignment actually existed during the financial crisis and recession between 2007 and 2014. The period in question was one of significant disruption to the business environment, resulting in changes to the strategy for businesses. Rather than consider alignment models that could be adopted the paper considers what actually happened and whether there was evidence of dynamic alignment of the CRE portfolio as a consequence of changes to the business.

The relationship between business performance and the CRE Portfolio is examined through seeking evidence with data from yearly reports for the correlation of financial and property data and various Key Performance Indicators relating to Effectiveness, Efficiency and Flexibility.

The ability to adjust the CRE portfolio to reflect changes to the business strategy, which in itself is adjusting to a different business environment, is essential. Without that ability to realign the CRE portfolio, a business will be financially hampered. It is important to understand whether that process does take place and the significant changes to the business

KEYWORDS: Alignment, Business Strategy, Recession, Dynamic, CRE KPIs
46 How to develop corporate real estate? A decision support tool for CREM

When planning to develop corporate real estate, Corporates have to choose between different forms of organization and sourcing. The choice of the most suitable form is a crucial decision and often problematic for companies and their corporate real estate management. Different forms like multiple prime contracts, general constructor or partnership based development forms differ with regard to their advantages, disadvantages and requirements for realization. In this context the purpose of this paper is to develop a decision support tool which helps Corporates to maximize their project outcome, project success and, in the long-term, to optimize their real estate portfolio when developing new corporate real estate.

To form a scientific basis firstly relevant objectives and requirements in decision-making processes from literature research will be presented. Secondly these decision-making processes and existing tools for comparable situations in literature will then be analyzed. Thirdly the deduced model, which shows the framework for decision-making from literature, is evaluated with a case study and aggregated to specific decision-making criteria from the CREM point of view. The underlying case study was a real estate development project for a German Corporate.

As a result 15 criteria, relevant in decision-making processes of Corporates, can be identified. On this basis, a model is chosen from decision theory, which supports the solution of such decision problems. This decision support tool sums up all decision criteria for CREM in a structure for the first time and will allow Corporates to structure their decision-making process for real estate development projects and will help to make them more transparent.

KEYWORDS: project development, corporate real estate management, decision theory, sourcing model
Improving CRE decision making at Oracle: Implementing the PAS procedure with a brute force approach

Purpose—Alignment of corporate real estate to a corporation’s business strategy is a long-standing issue. In the past multiple models have been developed to support this process, but research shows that they fall short on certain parts of the CRE alignment activity, often lack transparency and fail to choose the real estate strategy that delivers most value to the organisation. The Preference-based Accommodation Strategy (PAS) procedure has been proposed as a solution to these issues and results in two pilots are positive. However, to optimise the results, a brute force approach should be implemented in the procedure. This paper reports on a pilot study wherein this PAS procedure 3.0 was tested and evaluated.

Approach—A literature study is conducted to develop a theoretical basis for the implementation of a brute force approach in the PAS procedure. This procedure is implemented in a pilot study by building a mathematical model. During the pilot the users improved the reflection of their preferences in the model, in an iterative process of manually designing portfolio alternatives. A brute force approach is applied to the final model to yield the optimum portfolio alternative. The implementation of the brute force approach is evaluated and it is determined if the approach yields a higher preference rating than the stakeholders can achieve by manual design.

Findings—The pilot study shows that the brute force approach is able to improve the results over the manual design and yields a 7% increase in the real estate alignment compared to the current portfolio. The evaluation results reveal that the implementation process results in acceptance of- and trust in the model. Moreover, the users are very positive about the PAS and indicate that the model better reflects their preferences than their current process. They even indicate that they want to incorporate the tool in their daily decision-making process.

Implications—This pilot study was less complex than previous pilots, therefore the PAS procedure 3.0 should be tested in more complex pilots to discover the boundaries of the brute force approach but to use it where possible. This pilot study has shown that the PAS procedure 3.0 is able to improve the corporate real estate (CRE) decision-making process and hereby improve the corporate real estate (CRE) alignment. This will result in more added value of real estate to the businesses in which the tool is used.

KEYWORDS: Corporate real estate management, Preference measurement, CRE Alignment, Decision support systems, Decision-making
Ilir Nase, Monique Arkesteijn

75 What is Served for Breakfast? An empirical analysis of corporate real estate strategies and organizational culture

The quote Culture eats strategy for breakfast was made famous by Mark Field, president at Ford, in 2006 and has ever since been a guiding principle in management practice of corporations operating across the globe. General management profession has widely embraced culture as a key factor in strategy design. However, in corporate real estate (CRE) management it appears to be implicit within organizational differences at best or lacking proper consideration at worst. Analyzing the interrelationships between corporate real estate strategies and organizational culture is essential for delivering value to multinationals.

This research empirically investigates the link between CRE strategies and organizational culture through quantitative analysis of data from a worldwide survey with 231 corporate real estate managers. The empirical analysis is based on two well-established frameworks in each of the constituent fields. The CRE strategies framework originates from the work of Nourse and Roulac (1993), further developed by Gibler and Lindholm (2012). It is particularly selected because it has been empirically tested with a similar pool of CRE managers. For the assignment of organizational culture we use the Competing Values Framework developed by Cameron and Quinn (1999, 2006). The choice of this framework is based on its extensive use across a wide variety of industry sectors.

The findings indicate strong patterns of association between preferred strategies and cultural groupings based on the attributes of each culture. First, organizational culture effectiveness criteria emphasizing flexibility and discretion as opposed to those that focus on stability and control provide a clear dividing line in strategy preference of survey respondents. Strategies that have employees as their core target are prioritized by the ‘Clan’ and ‘Adhocracy’ cultures while Reducing real estate costs was the main concern among respondents identifying with ‘Market’ and ‘Hierarchy’ cultures. Second, compared to the previous ‘CRE Strategy’ survey of 2010 (Gibler and Lindholm 2012) there were very little changes in the importance that managers responding in 2016 place to CRE strategies in supporting core business. Third, expected outcomes were observed in the association of certain cultural profiles with particular industry sectors. Finally, factor analysis indicates two clearly distinguishable groupings based on the scope of each strategy namely real estate and non-real estate related.

KEYWORDS: strategic corporate real estate management, , corporate real estate strategies, , organizational culture
Herman Vande Putte, Tuuli Jylhä

**79 CRE stakeholder categorisation – Applicability of the four group technique**

Since Freeman (1984) stakeholders are an established concept in management sciences and practices. This is not different in the field of corporate real estate management, where stakeholder analysis and administration became an essential tool for strategy design and execution.

Delft scholars traditionally divide corporate real estate stakeholders in four groups – general management, asset management, facility management and technical management. More recently Den Heijer (2012) reframed these groups and positioned the stakeholders external to the corporation in the same four groups. She then used these extended groups to categorise all stakeholders of the accommodation of universities. More applications or critical publications of the early four group categorisation technique or the extended version of it don’t exist. This is a lacuna for the development of the corporate real estate management discipline and for its education.

This paper aims at deepening the understanding of the four group categorisation technique as used by many scholars in the field of corporate real estate management, and at checking its applicability.

The research starts with a short survey, through literature and interviews, into the current issues on the categorisation of corporate real estate stakeholders and the four group categorisation in particular. Thereafter the five cases published by Edwards & Ellison (2004) are analysed using the four stakeholder group technique. This leads to an assessment of the perspectives and categories used for each group and the fit between them. The outcome is a series of five well-considered examples that can be used for further research and for the education of the four group stakeholder categorisation technique.

**References**


**KEYWORDS:** Stakeholders, Corporate real estate management, Categories, Applicability
Owners and managers of corporate real estate (CRE) are continuously facing the challenge of aligning their portfolio to rapidly changing organisational requirements. These changes pressure the decision-making process in order to reach the most efficient financial decisions. Times of innovation and change are associated with re-evaluation of the strategic fit of CRE to core business. This is followed by increased divestment of CRE through various disposal strategies. If parts of a corporation’s portfolio become obsolete, the necessity for interventions arises. There are different management interventions known for realigning corporate real estate with the core business that can add value to a firm. This paper aims to shed light on which interventions can be applied, and aims to answer the following research question: How can the decision-making in disposal strategies in corporate real estate (CRE) portfolios in the Dutch banking sector be improved?

This study establishes a toolbox to guide and improve the decision-making in CRE disposal strategies through empirical evidence from the Dutch banking sector, which is characterised by a fast-changing context. This research uses a comparative case study approach to analyse, and compare the data obtained from desktop research and field studies. The desktop research comprises of a theoretical exploration of the concepts underlying the topic through literature review and document analysis. The fieldwork comprises 8 expert interviews with representatives of the selected organisations. The four case studies investigated in this paper represent a market share of approximately 90 per cent of the Dutch banking sector. Two expert interviews, one with CRE, acquisition and facilities managers, and the other with an executive board representative are conducted for each case.

The preliminary results of this research indicate a strong relationship between the corporate organisation characteristics, legacy and strategy; the identified disposal drivers and the decision-making in CRE disposal strategies. The weighing of variables and order of steps within the execution of these strategies is largely dependent of the organisational goals and objectives, with the CRE strategy as the embodiment of these. The comparative case study also shows that limited size and the focus on a specific market segment can lead to the in-applicability of disposal strategies, decision-making processes, and theoretical CREM concepts.

KEYWORDS: Portfolio, Disposal, CRE strategy, Case studies, decision making
Alexander Brand, Daan Bollinger, Peter De Jong, Theo Van der Voordt

65 Real estate implications of transitions in Dutch health care institutions

Due to structural changes in laws and regulations and ways of financing, Dutch health care organisations are in a phase of reorientation and transition. As such, many strategical issues have to be solved that will influence their corporate real estate strategy. In such a dynamic context real estate represents a high risk. The transition requires increased transparency and understanding of performance. The current Dutch situation can be described as:

- Increased vacancy arouses. Hypothesis: Health care organisations prevent vacancy by disposing of or reinvestments in existing locations, with improved quality of the remaining real estate.
- Lower rates and increased uncertainty. Hypothesis: The response will consists of increased focus, demanding a proper preparation.
- A growing dilemma of lower budget for real estate and high need for investments. Hypothesis: The level of available financial resources for the renewal of the stock and guaranteed sound management is questionable.

The purpose of the research is to test these hypotheses in order to gain a better understanding of the qualitative and quantitative (financial) mutations in health care real estate and to bridge the gap between the current supply and the future demand. To which extent are Dutch health care organisations ready to realise the transition by the introduction of new concepts, in order to meet the future demand of health care real estate?

Based on a survey, relevant real estate related data including performance parameters has been collected by AAG, a consultancy firm and shared service centre for health and care, in 2015 and 2016. This database is the starting point for benchmark analyses on the resilience and flexibility of health care organisations to provide the required transition.

The data include qualitative data about the location, building, and user experience, and quantitative information (financial, physical, features). Mapping the current situation (IST) generates a better understanding of the (im)possibilities of the health care real estate in the Netherlands (1). In order to forecast the effects of the transition it is necessary to use future scenarios (SOLL) to reveal resilience and flexibility (2). Such scenarios are qualitative as well as quantitative – determining the possible maximum investment and improvement (3). These scenarios will be hold against the actual plans of the health care organisation (4).

KEYWORDS: Health care real estate, Transition, Flexibility, Performance, Match between demand and supply
The role and impact of Data Centres on developing new Corporate Real Estate Strategies for resilient business

Enhancing our cities adaptive capacity to react to adverse conditions, generated by climate, environmental, resource or community driven vulnerabilities, is part of a global new approach to strengthening our living and working environment. The creation of a resilient business environment plays a key role in the competition between modern day global cities. Various rankings of resilient global cities list technology innovation, digitalization and access to data as crucial factors in achieving a success status.

The development of Data Centres (DCs) forms a growing sector as part of new strategies for global business. Safe data storage and management have been identified as a key business strategy components for banking, finance, retail, TNT and global service companies alike. Precise design requirements and challenging location constraints for developing such DCs are better tackled as part of a Corporate Real Estate Strategy (CRES) aligned to each global company’s business needs. At the same time technological advances and the constraints for local property markets generated by the development of DCs in overcrowded urban centres require more research on future implications.

What is the role and impact of Data Centres on developing new Corporate Real Estate Strategies in line with resilient business requirements? How can decision-making factors for developing new DCs be included in the management of global companies’ property portfolios?

The proposed research is two-fold. First a case study approach will be used to analyse the role and impact of DCs on the alignment of new resilient business strategy requirements with CRES for global companies. Second, future implications of DCs becoming a core component of global companies’ portfolios will be assessed in order to establish requirements for a more resilient CRES approach.

KEYWORDS: Resilience, Data Centres, Corporate Real Estate Strategy
In the Netherlands fourteen publicly funded research universities accommodate more than 270,000 students and 53,000 staff members - together they manage about 4.4 million m² Campus NL (gross floor area, data 2015/2016). This paper elaborates on past, present and future of Campus NL, based on literature, previous campus research - including Den Heijer’s dissertation (2011) - analysis of recent (campus) strategy reports and interviews in 2016 with more than 35 campus directors, policy makers and board members of the fourteen Dutch universities.

The results of this research are presented in four steps, aligning with the four tasks to design an accommodation strategy (DAS steps): (step 1) assessing the campus anno 2016, compared to 2006 and clarified with historical background, (step 2) exploring changing demand, based on developments in society and higher education, (step 3) generating future models, derived from ten campus trends and (step 4) defining strategic choices for Campus NL and their functional, financial and physical consequences for universities.

This paper covers subjects like the changing academic place to learn and work, the total costs of (campus) ownership and sustainable campus ambitions. The paper will also discuss how applicable both the (DAS) research method and Campus NL results are to other universities and their campuses.

KEYWORDS: campus planning, university campus, corporate real estate management, sustainable real estate, workplace research
Purpose – This paper aims to explore the alignment of Corporate Real Estate (CRE) strategies of Dutch Universities of Applied Sciences (UAS) with the developments in higher education.

Methodology/approach – The paper first illustrates the key developments in higher education learning and teaching, and relevant CRE management literature. Subsequently, it presents two studies that examine the CRE strategies of large Dutch UAS, to align their CRE with current and potential future developments. These are explored based on interviews and scenario analysis with experts in the field of higher education and CRE management.

Findings – The findings of the two studies show that CRE in the short term is well aligned with recent and current developments in higher education. Yet, in the long term, CRE-managers in general doubt the probability of some developed scenarios and are not sufficiently prepared for disruptive developments due to inflexibility of the CRE portfolio.

Originality/value – There is still limited understanding of how to optimally align school buildings to education. Furthermore, the future is unclear. The two studies in this paper contribute to insights about strategies of CRE-managers in the education sector to translate current and assumed developments into future proof accommodations. The presented frameworks and the scenario approach are applicable in other sectors as well.

KEYWORDS: Corporate Real Estate Management, Alignment, Scenarios, Strategies, Higher Education
68 Estate autonomy and accountability of higher education institutions – the Polish case

The paper presents the results of studies on the estate autonomy and accountability of publicly funded higher education institutions in Poland. An attempt has been made to answer the questions: Was the level of HEI campus use in recent years the subject of public and administrative control? Were the decisions on significant extension of campuses economically viable? The questions are of special importance in view of the deepening demographic decline, the lower level of public funding and the growing estate operating costs. An analysis of empirical data shows that when considerable resources, both national and European, were available for HEI infrastructure upgrading and development, Polish HEIs were not under an obligation to show how they manage the assets at their disposal. This may have contributed to a substantial, albeit not always judicious increase in the space available, which in turn may give rise to financial problems of individual HEIs and affect the future of the whole system of higher education.

KEYWORDS: campus, accountability, autonomy, higher education institutions
University education assets as a property sector

Universities internationally have recently increased their campuses to attract a broader coverage of students in a very competitive university education market (e.g.: international students). This has seen many universities establish a CBD office presence via vertical campuses in addition to their traditional campuses. Universities have considered a range of options to access the office property space, with the attractiveness of universities as major office space tenants and university education assets now being critically assessed as a potential property sector for investors; e.g.: included in a property fund. Using an extensive survey of Australian universities, superannuation funds, property funds and valuers, critical issues in the successful delivery of education assets as a new property sector are assessed for these various stakeholders in the education asset delivery process. A number of local and international case-studies are also presented to highlight specific strategic and practical issues for education assets as a property sector and universities as major office space tenants.

KEYWORDS: University education assets, CBD office space, Vertical campuses, Pension funds, Property funds
Although science parks are established globally for decades, still limited attention is paid towards research into possible typologies within these real estate concepts. Science parks are believed to enhance, among others, innovative output, entrepreneurship, and economic value for firms and regions. Past academic research shows mixed results on these performances and suggests that the lack of clear results is due to not taking into account the wide variety of types of science parks that exist in reality. Prior attempts in categorizing science parks are characterized by the limited number of cases and variables. Therefore the present study serves to fill this gap in the literature by developing a more comprehensive analysis of science park typologies. A large-scale survey on science park characteristics is distributed among all known science park managers/owners in Europe in order to collect data on both physical and non-physical science parks features. The selected variables of science park features are based on prior academic research. The total list of science parks is compiled through a number of sources including desk research (case studies reported in the literature), member lists of science park associations and other registers. A cluster analysis is conducted to group the different science parks into types with clearer differences. The typologies of science parks, derived in this way from data, provide a further understanding of science parks in general and offers researchers and practitioners a means to compare, market, and benchmark science parks more adequately.

KEYWORDS: science parks, technology parks, cluster analysis, campuses, typology
Purpose: This paper advances the concept of meta-Corporate Real Estate Management (metaCREM) as an adjunct to existing knowledge work in the field. It argues for its existence and relevance, and suggests a number of areas where research with such a focus could occur to advance knowledge in the field.

Method: The method is what might be called a ‘reflective argument’ based on the authors’ lengthy engagement in the field and their recent metatheoretical work on CREM.

Findings: MetaCREM is identified together with multiple meta-objects that are forms of meta-work applicable to metaCREM. This established that meta-work already occurs in CREM. A landscape of potential areas for research was identified that encompassed existing work and potential areas of future endeavour.

Implications: The paper’s implications are largely for theory and theorisation. Relevance to practice is secondary through potential improvements to theorisation of problems that may flow on to practice.

KEYWORDS: corporate real estate management, knowledge production, metatheory, research, theory
394 Professionalism of construction client organisations

Real estate organisations, whether public or corporate, are operating in a rapidly changing context. This change is not only induced by changes in the work processes accommodated, but also in a changed perspective on client-supplier relationships. Value thinking, total cost of ownership, circularity, increased risk awareness are reflected in new collaborative designs. Performance based contracting, co-creation, integrated contracts are expressions of this development.

These new types of collaboration are commonly accepted to cause a different project approach, with adapted roles and responsibilities for both client and contractor. Less attention has been paid to the organisational preconditions in which new project approaches should be embedded in order to safeguard success.

The Construction Client Maturity Model has been developed within TU Delft to assess the level of professionalism of construction client organisations. The application of the model in several construction client organisations reflects the existence weak or blind spots of client organisations with respect to several aspects of professionalism.

Next to insight in these aspects, further research within TU Delft reveals different elements and responsibilities within the commissioning role to be spread across different departments within one organisation, interfering with clear control and governance structures. Furthermore, the project based governance structure of investment activities, in itself hinders organisational learning.

The combination of these issues, causes knowledge acquisition, distribution and organisational learning related to the implementation of new client-supplier relationships to be complicated. Real estate organisations therefore should pay specific attention to both organisational embedding of the required changes and enforcing organisational learning.

KEYWORDS: Public commissioning, Real estate, Procurement, Organisational learning, Maturity model
171 The impact of EU funding on real estate asset management of public universities in Estonia

The main research object of the paper is real estate owned, used and disposed by universities in Estonia. The main research question asked within the paper is, how to achieve the financing sustainability and avoid the potential financing gap in keeping up the set of real estate in terms of universities’ limited budgetary conditions after the major cut of the support via the EU structural funds in Estonia? Three main autonomous public universities in Estonia are analysed as a case study – University of Tartu (UT), Tallinn University of Technology and Estonian University of Life Sciences.

Universities real estate asset management (UREAM) model implemented in Estonia is rather straightforward – public universities own and manage their real estate assets and they have the whole autonomy to decide over their sets of real estate assets’ acquisition, management, development, maintenance and disposition. Therefore, the primary mode of UREAM in Estonia is non-rental and decentralized, which by universities’ law is not seen to be change in the future. At the same time, the universities see real estate as a supporting service to their primary service – they have established a real estate department to deal with the operational real estate decisions, but the strategic and financing decisions are made on the level of universities’ board.

From the financing side, the universities are largely dependent on the governmental budget and its limits; e.g., approximately 90% of the origin of the UT revenues is from public sector. During the Estonian Research and Development and Innovation Strategy (RD&I strategy) Knowledge-based Estonia, phase II at 2007-2013, universities used extensive amount of the EU structural funds for developing several new buildings. As the development and maintenance of the infrastructure require long-term budgetary stability, then one of the main concerns for the universities is, how the budgetary limits support the achievement of goals of the Estonian RD&I strategy on its 3rd stage, during 2014-2020?

The aim of the paper is to evaluate the impact of the EU funding to UREAM on the universities’ budgets in Estonia during the Estonian RD&I strategy phase II and III (2007-2020). The implemented methodology involves mainly the document inquiry with the quantitative benefit-cost analysis, but also the interviews with universities-level elites. The research results are the basis for further managerial and policy implications of UREAM in Estonia.

KEYWORDS: university real estate, financing sustainability, asset management, benefit-cost analysis, EU funding
5 A stress testing scenario analysis for house prices: an application to the Greek market

The global credit crunch of 2007-2008 and the subsequent European sovereign debt crisis had a significant negative impact on real estate asset values in general and house prices in particular, in many countries around the world. This further had a direct impact on mortgage loans, thus creating a major burden for financial institutions as the quality of their credit portfolios declined rapidly. As a response to the effects of the crisis on financial stability, stress tests have been introduced as a means to assess the capital requirements of financial institutions. While these have focused on a global analysis of the capital position of the institutions, more focused results are required for particular type of products, including mortgage loans and real estate investment portfolios. To this end, this study presents the application of a Monte Carlo simulation approach to stress testing house prices in Greece. The Greek market has experience a major decline in asset values over the past 6-7 years, due to the deteriorating economic environment. The adopted approach is combines an econometric model that relates regional houses price indices to economic variables, with a simulation approach based on mid-term economic scenarios. Empirical results are presented for a sample portfolio of residencies in Greece provide by a leading real estate service provider in Greece and South-East Europe.

KEYWORDS: House prices, , Automated valuation models, , Monte Carlo simulation
HANKYUL KIM, KYUNG-MIN KIM

288 Real estate as an Inflation hedge

Under the presidency of Donald Trumps, U.S. inflation is expected to rise. Trump’s new government has a plan to spend over one trillion U.S. dollars on infrastructure to stimulate the U.S. economy and create jobs. This concrete policy plan spurs investors to bet on rising inflation. As inflation cause an investment made today to be worth less tomorrow, investors focus interest on which assets provide effective hedges against inflation. To answer this question, we estimate the extent to which various assets hedges against the expected and unexpected inflation rate during the 2007-2016 period in various cities. We find that office and house provide complete hedge against expected inflation, but stocks show little relationship with both expected and unexpected inflation.

KEYWORDS: Real estate investment, Inflation hedge

ASHISH GUPTA

35 Risk Factors in Indian non-listed Real Estate Funds

Global Financial Crisis of 2008 and Demonetization of 86% of currency notes in circulation in India on 8th November 2016 have yet again emphasized the importance of risk in real estate investments. In good times risks are overlooked by investors but in challenging times importance of risks is realized. These risks assumes even greater significance in an emerging economy like India due to issues of transparency and corporate governance. For investment decision making it is important to understand various risks across the life cycle of an investment including entry, monitoring and exit stages. This studies will develop better understanding of risk factors impacting non listed real estate funds in India. It would evaluate both macroeconomic and fund specific factors across the life cycle of a real estate fund. In absence of reliable data, this study would include primary survey of various real estate professionals associated with real estate fund management in India. We would use factor analysis to identify significant risk factors and sub-factors.

Unlike other Asian countries like Singapore, Malaysia, Hong Kong and China, there is hardly any academic research available in India in this area. With fast growth of economy, likely listing of first REIT and increasing transparency real estate sector in India is expected to see substantial flows of capital. This research will contribute towards developing better understanding of risks in Indian real estate for institutional investors, across the life cycle of invested capital.

KEYWORDS: Non-listed fund, Risk factors, Real estate fund management, India, Real estate fund
The long-run performance of total returns in Prime Central London residential property and estimating changes in correlation to alternative asset classes.

Residential property in Prime Central London (PCL) is a market with potentially half a trillion GBP in assets. Whilst various measures of capital growth of the market are available, information on total returns are far harder to come by.

Whilst changes in capital growth are widely discussed in media and print the PCL residential is a sizeable market that has come under less academic scrutiny than other property asset classes. With growing investor interest in segments such as the private rented sector there is an increasing appetite for analyses focused upon residential property in the UK.

In this study we use Knight Frank propriety information on aspects of the PCL market to construct return indices. We then analyse the sensitivity of PCL returns to returns in other asset classes, including alternative UK real estate sectors. We focus upon modelling correlation shifts between PCL and other asset classes during times of market growth and decline. The indices and analyses conducted in this study will provide results that will benefit and better inform actors such as private and institutional investors in the market.

KEYWORDS: Real estate returns, asset correlations, time-varying risks, residential real estate
CHARLES OSTROUMOFF

348 Property Portfolio Management - Monitoring, Managing and Mitigating Property Market Risk

This paper examines portfolio risk management techniques and tools, commonly used in equity and bond portfolios, to: measure, manage and mitigate property market risk / beta. The techniques used to measure and manage property market risk uses annual historical capital value returns of UK indices (Peter Scott’s data from 1920 and MSCI-IPD Data from 1972). These values are then adjusted for inflation and a trend line is established to form a dynamic gauge identifying where we are in the property cycle by indicating when the market is over / undervalued, based off historical metrics. By measuring and monitoring the property market practitioners (asset allocators / fund managers / risk managers) can use an innovative beta risk management tool (MSCI-IPD Futures) to apply risk on / risk off strategies at specific points in the cycle. Whilst the analysis and approach was applied to the UK property investment market, the approach can be applied to any property market where high quality historical data is evident and where a listed futures market has developed.

KEYWORDS: Portfolio Management, MSCI-IPD Futures, Risk Management, Capital Values, Property Beta

ROBERT HILL

295 Residential Real Estate, Risk, Return and Home Characteristics: Evidence from Sydney 2002-14

While residential real estate is a key component of household wealth little is known about the investment characteristics of different types of properties. This paper outlines and applies a methodology for examining the variation in risk and return of individual homes. We use large data sets of home prices and rents for Sydney, Australia, from 2002-14, to estimate flexible spline hedonic models which incorporate spatial and characteristics smoothing. Using these models we construct unique home price and rental estimates for a large sample of properties for each time period. These imputations are used to examine the dynamics of risk and return for residential real estate by estimating a market model on total returns. We find that both the returns and their volatility are tied to certain home characteristics such as the region of the residence and whether the property is a house or apartment. Perhaps most surprisingly we find that there was a negative correlation between risk and return in the Sydney housing market over the period examined.

KEYWORDS: house prices, residential real estate, hedonic regression, market model, smoothing spline
314 The determinants of European non-listed real estate funds’ performance

The paper investigates European non-listed real estate funds’ performance between 2001 and 2014. The database uses information about 363 funds, collected from Inrev Database. The goal of this analysis is to consider how the fees charged by a fund, its leverage, size and duration impact on the performance of the fund itself.

The findings suggest the existence of a negative relationship between the return of a fund and redemption fee, performance fee and management fee. On the other hand, marketing fee, leverage, size and duration have a slightly positive effect on the performance of a fund. In addition, when analysing funds separately based on their investment style, we find that leverage has a positive effect on the return of core investment vehicles, while it affects slightly negatively the performance of more leveraged value-added ones. This suggests that an excessive use of debt impacts negatively the performance of a non-listed real estate vehicle.

Finally, we show how throughout the time period studied the effects of the different independent variables, included in the model, on the performance of a fund did not significantly change and they have not been affected by the spread of the GFC.

KEYWORDS: Non-listed real estate funds, Performance analysis, Fees-performance relation, Closed-ended Real estate funds, Real estate indirect investment

Graeme Newell, Jufri Marzuki

32 The significance and performance of UK healthcare property

Recent years have seen increased attention given to the alternate property sectors; this includes self-storage and healthcare property. This paper assesses the significance and performance of UK healthcare property over 2007-2016. The risk-adjusted performance and portfolio diversification benefits of UK healthcare property (and healthcare sub-sectors) is assessed against the other main UK property sectors. A comparison of the UK healthcare property sector with the healthcare property sector in other countries is also provided. The strategic property investment implications are also highlighted.

KEYWORDS: Healthcare property, Risk-adjusted returns, Portfolio diversification, UK healthcare property
The initial phase of the redevelopment process is often characterised by higher uncertainty due to missing (building) information, which often leads to inaccurate estimations. Improving the accuracy of the initial budget of adaptation projects may lead to higher acquisition prices, and thereby dissolve the difference in value perception between developers and investors/owners of vacant buildings.

Within this research, the deviation between the initial budget and the realised costs and revenues are investigated, as well as the main causes for budget inaccuracies in redevelopment projects. A mixed methods approach is applied in this research to increase its reliability and robustness. This method enables cross-checking the results which are collected through literature, survey and case study research.

The research findings reveal that construction costs are averagely underestimated in redevelopment projects. Remarkable is that the revenues and the total floor area are underestimated as well, indicating that most project developers are cautious towards risks in the initial phase due to a high level of uncertainty.

Literature research is used to gather a large amount of causes of cost inaccuracies in all types of construction projects. Survey research and case study research are used to quantify these. The results of each of the three methods reveal that ‘design changes as requested by the developer’ is the main reason for deviations in the budgets, together with ‘redevelopment-specific factors’ (e.g. missing information about the existing building). A deeper investigation of the reasons for design changes shows that these are mainly caused by changing market characteristics.

The research findings reveal a difference between commercial and public parties. According to project managers working for a housing association, cost inaccuracies are mainly caused by strategic behaviour (e.g. deliberate cost underestimation or strategic misrepresentation), indicating that projects led by public parties are more prone to strategic behaviour than projects led by private parties, irrespective of the type and size of the projects.

As the results prove that the budget inaccuracies are mainly caused by external factors, it is recommended that owners participate in the redevelopment process until most of the risks are diminished. This can be achieved by selling the building under certain conditions and by actively contributing in investigating the existing building.

KEYWORDS: adaptive re-use, estimating accuracy, cost control, risk management, budget management
Property development is a multifaceted, dynamic and risky enterprise. Property development projects are fraught with risks and uncertainties spanning through the stages of the development process. Risk and uncertainty, if not well managed, could have harmful impacts on development project by affecting time, quality, and cost of such project. In Nigeria, evidences abound of property development failures and abandonments with the attendant social, environmental and economic consequences. Development projects are abandoned before completion or completed projects are not disposed over six months. In other cases, completed projects are foreclosed by development lenders due to inability of the developers to service their loans. These problems could be attributed to development companies not employing formal strategic risk management in project evaluation. The aim of this paper is to review literature and previous research on application of risk management techniques in property development industry with a view to identify the possibility for further research in Nigeria. The review used various sources such as textbooks, journal articles, reports, masters’ dissertations and doctoral theses relevant to the study. The review showed that, generally, risk management is still largely handled in a subjective manner. Any notion that developers are now applying a wide range of rigorous and sophisticated risk management techniques is erroneous as this is scarcely manifested in actual practice. In the Nigerian context, there is probably no research on risk management by development companies; few risk management studies were limited to risk analysis/assessment; while others focused on building construction risk which is just one of the stages in the property development process. This paper recommends the development of an advanced risk management framework applicable to the Nigerian property development industry.

KEYWORDS: Risk, Deep uncertainty, Risk management, Property development, Nigeria
Briefing is changing from a static list of spatial and technical statements to dynamic, comprehensive and coherent specification of behaviour and performance throughout the lifecycle. This makes the brief a key tool for raising performance and reducing risks. Making goals, constraints and requirements explicit in a brief defines expected performance in unambiguous terms that facilitate interaction between stakeholders. Such interaction is essential for the performance of both buildings and processes that produce, maintain and operate buildings.

Risk management is also facilitated by explicitness and interaction but even more by continuity in the lifecycle. This facilitates anticipation of future stages, deployment and testing of scenarios, and comparison of predictions to actual measurements: what is expected of a building in briefing and design can be held against post-occupancy evaluations. Such comparisons contribute to the calibration of further expectations and serve as precedents for similar buildings.

The above require information means that (a) ensure integration and continuity, and (b) bridge the gaps between briefing and design or use. BIM promises a solution to questions of integration and continuity, eliminating the need for stage-based types of briefing and developing instead an integral, dynamic collection of use information in direct relation to building information. Integration of briefing in BIM is, firstly, inclusive: it does not restrict briefing to specific stakeholders, tasks or stages. Secondly, it makes briefing a logical extension of other activities in BIM, allowing for shared authorship and custodianship by various stakeholders. Thirdly, it makes BIM cost effective by increasing return on the considerable expense of developing and maintaining a precise and accurate virtual model.

The paper describes how briefing information (goals, constraints, requirements) can be accommodated in BIM and connect to design entities towards automatic conformance checks at various levels of specificity. The resulting information custodianship options are analysed towards robust solutions that go beyond current briefing practices. Finally, the paper describes how post-occupancy data can be incorporated in BIM in direct relation to briefing information. This applies to both quantitative data from environmental monitoring and qualitative data from e.g. surveys.

KEYWORDS: briefing, programming, BIM, lifecycle, post-occupancy evaluation, integration
Although it is well known that there are many sources of risks in real estate investments, particularly in commercial real estate investments, the works are frequently commenced without consideration of risk resources and uncertainties in the project evaluation and investment decision making processes. The nature and impact on investment value of environmental, economic, real estate sector, and project risks are observed to vary from the beginning of the project development process until the end of it. Dynamic methods are often used in commonplace feasibility studies and integration of risks to calculations and periodically updating feasibility analyses are found to be usually neglected. However, project-specific risks such as the ownership of land, land development rights, and demands of the owners of neighboring parcels and economic risks directly affect the feasibility of the investment and can be major sources of failure.

In this study, risk perceptions of upper middle managers of large-scale real estate development companies were evaluated and risk management approaches implemented within the companies were discussed. The scope of the study was limited to companies that are members of the Turkish Contractors Association (TCA), to which only the biggest real estate firms of Turkey can be members, and members of other important associations. In the construction and real estate market, two of the most important sectors in the Turkish economy, members of the TCA realize 70% of construction works within the country and 90% of the works undertaken by Turkish contractors abroad and have the ability to represent the industry. In this study, the impact of risk according to its resources on the preparation and implementation of real estate projects and risk perceptions of managers were examined based on the responses received to the questions electronically sent to the members of the TCA and other important associations. The study results revealed that that developers carry out risk management and decision support system activities, use intuitive risk analysis methods, utilize risks in integrated decision-making processes and the risk items that the developers consider are identified. According to the study results, sales forecasts, and the changes in foreign exchange and interest rates are significant in risk management in line with academic studies. The study results have also revealed that risk management activities of large-scale companies operating in th

KEYWORDS: Risk dynamics, risk perceptions, real estate development projects, decision support systems, risk analysis and risk management
André Thomsen

259 Obsolescence – understanding the underlying processes

Obsolescence, defined as the process of declining performance of buildings, is a serious threat for the value, the usefulness and the life span of built properties. Thomsen and van der Flier (2011) developed a model in which obsolescence is categorised on the basis of two distinctions, i.e. between endogenous and exogenous cause-effect relationships and between physical and behavioural cause-effect relationships. In this way, the model presents a classification of underlying factors of obsolescence. However, these underlying factors, more specifically the underlying cause-effect relations, are still a black box. In this paper, the box is further disclosed by tracking back the underlying processes, resulting in a series of prototypes of detailed hypothetic cause-effect mechanisms. Applied to the adapted model, the results are initially tested on an iconic chocolate factory. Conclusions are drawn about the results and more generally about the usability and the further development of the model.

KEYWORDS: life cycle analysis, obsolescence, conversion non-residential, feasibility, building pathology

David H. Downs, Steffen Sebastian, René-Ojas Woltering

329 Public vs. Private Market Arbitrage – Can Growth REITs Benefit from their High Valuation?

This paper examines the impact of the ratio of price-to-fundamental value on the stock market performance of real estate securities following seasoned equity offerings and senior debt issuances. Using a global sample of real estate securities, we distinguish between growth stocks, i.e. those with the highest stock prices relative to the private market value of their properties, and value stocks, which tend to trade at substantial discounts to their net asset value (NAV). Consistent with the notion that newly issued equity is ultimately priced similar to pre-SEO levels, we find that growth stocks perform significantly better than value stocks in the 36 months following the SOE. We also examine the long run performance following senior debt issuances and document a substantial outperformance (underperformance) for growth (value) real estate securities in the 36 months following the offering. Overall, our findings are consistent with the hypothesis that growth REITs can benefit from public vs. private market arbitrage.

KEYWORDS: public vs. private market arbitrage, net asset value, value vs. growth, debt offerings, seasoned equity offerings
Residential real estate is a key component of household wealth. While we have some insight into the aggregate returns of this asset class---thanks to real estate price indexes---we have little understanding of the characteristics of investment in individual properties. This paper outlines and applies a methodology for estimating and examining the variation in risk and return for unique homes. We use large data sets of home prices and rents for Sydney, Australia, from 2002-14, to estimate flexible spline hedonic models which incorporate spatial and characteristics smoothing. Using these models we estimate total returns---the sum of capital gains and rental yield---for a large sample of properties for each time period. This enables use to consider the risk and return of investment in individual parcels of residential real estate and explore the benefits of diversification. As a reference point, we contrast housing with investment in equities. We find that there is dispersion in returns and their volatility---though significantly less than shares---and that this is tied to certain home characteristics. However, when we investigate the benefits of holding a diversified portfolio of homes over a single home we find they are small compared with the corresponding case for equities.

KEYWORDS: house prices, residential real estate, hedonic regression, market model, smoothing spline
Evidence from the US Commercial property market suggests periods of extended stable performance are generally followed by large concentrated price fluctuations. This extreme volatility may not be fully reflected in traditional risk (standard deviation) calculations. This research studies 38 years of NCREIF commercial property market performance data for normal distribution features and signs of extreme downside risk. Methodology covers the recognised Z Test and the fractal geometry, Cubic Power Law instrument. For the reporting of annual returns on quarterly figures, the industry preferred investment performance measure, the results showed the data to be both asymmetric, and being taller and narrower than a normal bell curve distribution with fat dumb bell downside tails at the perimeter. In highlighting the challenges to measuring commercial property market performance, the research revealed a better analysis of extreme downside risk is by a Cubic Power Law distribution model, being a robust method to identify the performance of an investment to the vulnerabilities of serve risk. Modelling techniques for estimating measures of tail risk provide challenges and have shown to be beyond current risk management practices, being too narrow and constraining approach.

KEYWORDS: Extreme risk, Standard deviation, Commercial property market performance, Power Law distribution
The existing literature still debates on the existence of calendar anomalies. One explanation given is the cause of cluster release of macroeconomic news. This research investigates the presence of the more advanced calendar effect in the REIT market which in this study is called macro-calendar effect.

The aim of this research is to examine the existence of macro-calendar effect in the REITs market in a global context by identifying the characteristics of this phenomenon. Further, we will provide alternative strategies, using the macro calendar effect, for REITs investors that can outperform the traditional buy-hold approach enhancing their REIT investment returns.

The research approach adopted includes a comprehensive literature review on the origin of macro-calendar effect coupled with collection and analysis of quantitative data from eight countries with a period between 2006 and 2015. The latter is based on regression analysis to determine the statistical significance of macro-calendar effect and the development of alternative investment strategies.

The findings provide evidence that the macro calendar effect is not universal and a different approach to the strategy is required for various countries. The main conclusion indicates that the macro calendar effect exists on a rather small scale. It is not entirely explained whether the anomalies are actually based on macroeconomic releases since other influences are not fully isolated.

This research argues that the REIT market is still not at its strongest form of efficiency to reflect all available information into the price. Therefore, alternative strategies could be developed. Investors should be informed on how to react to this phenomenon.

Finally, the developed strategies have the potential to outperform the traditional buy-hold strategies and allow REIT investors to maximize their investment returns.

KEYWORDS: REITs, macro calendar effect, announcements, international investors, market efficiency
In this paper we analyze if the non-financial performance of real estate firms is associated with a decreased cost of capital. Specifically, we assess if firms with higher environmental, social, and corporate governance (ESG) performance benefit from reductions in the cost of debt capital. As ESG performance is associated with higher transparency, it is likely to be rewarded by private debt holders through better lending conditions. We draw on an international sample of real estate companies to test our contentions. Our findings suggest that firms with high ESG performance have a lower cost of debt relative to firms with low ESG performance. The results of this study bring important contributions to the academic literature and have significant practical implications.

KEYWORDS: non-financial, debt, banks, real-estate, performance
The availability and use of credit have increased significantly over time due to economic growth and development, stronger institutional investment structures, increased financial innovation and integration, as well as firm-level considerations. Although many firms and households have delevered their balance sheets in response to the recent financial crisis, many governments and financial firms, and especially public real estate firms, continue to maintain significant levels of debt. This raised a lot of interest among academic on the determinants of public real estate firms’ capital structure choice. In fact, some recent research has provided evidence on the consistency of U.S. REIT capital structure choices against existing theories of optimal capital structure (e.g., Harrison et al., 2011).

However, empirical evidence of the effects of net operating income on financial structure is still inconclusive, especially with respect to the European market. REITs and REIF are quite unique as their performance can be disentangled in two main components (current and capital gain returns). However, what determines the dynamic of those two components and how it affects REITs/REIFs capital structure is still an open question. This paper aims to fill this gap. Precisely, we first investigate the dynamic of profitability to analyze which component has been the most variable in the years before and after the crisis, which REITs/REIFs institutional features affect this dynamic (e.g. portfolio characteristics), and whether an increase of current income volatility leads capital gains volatility or vice versa. More importantly, we will test empirically the effect on financial leverage and debt composition on the two performance components.

The results of this research will also have important implications for lenders of public real estate entities because we will shed light on the winning policy of banks (i.e. those who bet on the asset or income flows?).

KEYWORDS: Reit Performance, capital structure, Current Growth yield component, lending
185 Financial and Corporate Governance Changes in Public Firms Transitioning from Non-Traded to Exchange-Listed Status: A Clinical Study of REITS

In this paper, we look at the changes in corporate governance and dividend policy of non-traded REITs’ whose managers elect to list on a stock exchange. Following their listing, we find that transitioning REITs have on average larger, more independent boards and are more likely to have an independent compensation committee and nominating committee. In addition, they have higher CEO compensation, higher board remuneration, and have more institutional owners investing in their shares post-listing. We document that several transitioning REITs complete reverse stock splits right before going public affecting initial shareholders’ wealth negatively. Finally, we find that despite having an FFO payout comparable to that of traded REITs, non-traded REITs have a lower return of capital, a higher dividend payout ratio and pay more of their dividends out of capital than do traded REITs.

KEYWORDS: non-traded REITS, listing, corporate governance, dividend policy, traded REITS

Muhammad Najib Razali

186 The dynamic and volatility of global islamic REITs in mixed asset portfolios

Islamic REITs provide a new prospect for property investment while following the Shariah guidelines in order to meet the demands of the Muslims community. The establishment of I-REITs in Malaysia has attracted other countries especially in Middle East to introduce I-REITs as part of the investment portfolios. Previous studies has shown that IREITs able to show competitive advantage especially within mixed-asset portfolios especially in Malaysia. Since Malaysia has first introduced IREITs therefore research on IREITs only focus in Malaysia. However this study will assess the dynamic and volatility of global I-REITs consist of Malaysia, Singapore and Dubai. The study concentrates on comparisons between I-REITs and conventional REITs in respective countries. The GARCH model will be employed to test the level of volatility of I-REITs within conventional REITs.

KEYWORDS: I-REITs, REITs, Dynamic, Volatility, Portfolios
Risk expresses the change in the expected values and is the key factor in making decision on large-scale investments with fixed capital. However, unlike uncertainties, risks can be foreseen and incorporated into project plans. The real estate development risks in academic studies vary according to classification types and approaches. Basically, risks are divided into four main groups, which are environmental risks, economic risks, sector-specific risks, and project-specific risks. Costs have recently been following a certain trend in Turkey and housing supply has been increasing based on the increasing demand. There is a requirement for risk management in the real estate development process to keep the risks under control and prevent undesired consequences. The steps to be taken in risk management can be listed as identification of risks, analyzing risks, development of response strategies, and monitoring procedures. In this study, a macroeconomic risk management framework for a mixed-use real estate project that had been started in 2010 was established and the identification, quantification, analyzes of the risks were made. The scenario-sensitivity method was used to analyze the risks. Retrospective response planning (avoid, mitigate, accept and transfer) scenarios were developed and their impact was evaluated for the selected project. In addition, if-then analyzes were used to investigate the actual and target values were and reasons thereof were investigated. According to the research results, macroeconomic variables such as real estate rent index, exchange rates, interest rates, and economic outlook were effective in the deviations from the expected values.

KEYWORDS: Risk management, real estate development projects, macroeconomic indicators, risk analysis, risk management strategies
This paper investigates whether and how strongly the share of households owning their homes in a community affects residential property taxation by local governments. Homeowners bear the full property tax burden irrespective of local market conditions, and the tax is more salient to them. Homeowner communities may hence oppose high property taxes in local elections in order to protect their housing wealth. Using granular spatial data from a complete housing inventory in the 2011 German Census and war-related housing damages as a source of exogenous variation in local homeownership, we provide empirical evidence confirming that otherwise identical jurisdictions choose significantly lower property tax multipliers when the share of homeowners in their population is higher. This result appears to be independent of local housing market conditions, which suggests tax salience as the key mechanism for this effect. We find strong positive spatial dependence in tax multipliers, indicative of property tax mimicking by local governments.

KEYWORDS: Property taxation, Homeownership, Spatial interactions, Political economy,

Hedonic modelling is essential for institutional investors, researchers and urban policy-makers in order to identify the factors affecting the value and future development of rents over time and space. While statistical models in this field have advanced substantially over the last decades, new statistical approaches have emerged expanding the conventional understanding of real estate markets. This paper explores the in-sample explanatory and out-of-sample forecasting accuracy of the Generalized Additive Model for Location, Scale and Shape (GAMLSS) model in contrast to traditional methods in Munich’s residential market. The results show that the complexity of asking rents in Munich is more accurately captured by the GAMLSS approach, leading to a significant increase in the out-of-sample forecasting accuracy.

KEYWORDS: GAMLSS, GAM, Residential housing, hedonic modelling, Out-of-sample bootstrap
This paper analyzes the return sensitivity of value and growth stocks to changes of five interest rate proxies. The analysis is based on monthly data over the 2000 to 2014 period for a global sample of 487 listed real estate companies in 24 countries. This rich setting offers substantial heterogeneity in interest rates across time and countries. We find that value stocks are more sensitive to changes in the short-term rate than growth stocks. This is consistent with the theory that investors with a short investment horizon trade-off the high initial yield of value stocks against a lower risk short-term rate. In contrast, growth stocks are more sensitive to changes in the long-term rate, which is consistent with the future cash flows of growth stocks being discounted at a higher rate. We also find that value stocks are more sensitive to changes in the credit yield. Since credit costs have a direct impact on a firm’s cost of capital, this result is consistent with risk-based theories of the value premium, which argue that value stocks are riskier, because they tend to have higher leverage and a larger default probability.

KEYWORDS: REITS, Interest Rate Sensitivity, Value vs. Growth
197 A statistically founded sales comparison approach

Automated valuation models (AVM) are increasingly often used by institutional mortgage lenders and real estate agents to determine the value of real estate. Usually, AVM use hedonic models as a basis for appraisal. However, the results are often criticised by real estate professionals, as they lack transparency and comparability to traditional appraisal methods.

Therefore, we provide an alternative approach for automated real estate valuation of self-used property in Austria: Instead of using pure hedonic models, we develop a statistically supported sales comparison approach. Therefore, in a first step we select comparable houses or flats in the surroundings of the valuation object; in a second step, we adjust the prices of these comparables using hedonic methods; finally, the market value is derived as a (inverse distance-weighted) mean of these comparables. The quality adjustment parameters are differentiated with respect to property characteristics, time and location, and thus provide a basis for structured valuation of the results.

For our research, we have an extensive data set for Austrian single family homes and flats at our disposal. We apply generalized additive models (GAM) that take into account nonlinearity as well as discrete and continuous spatial heterogeneity. The results are shown in an interactive appraisal dashboard hosted by DataScience Service GmbH.

KEYWORDS: Sales Comparison Approach, Hedonic Models, Generalized Additive Models, Geographical Information Science
A study on the determinants of office rent: the cases of world cities

Spatial integration and increased connectivity have hugely affected regions and cities across national borders, and real estate assets, including offices, have inevitably felt the effects of global consolidation. Despite the abundance of discussions on the real estate and office markets, research that focusses on this phenomenon has rarely been conducted.

Thus, this study aims to reflect the effects of inter-city connectivity on the world’s office market and office rents. The spatial scope of the paper is 50 major cities throughout the world, and the time scope is the period 2010-2014. This study is distinctive in that it conducts a comparative study amongst cities worldwide, and tries to discover a previously unidentified determinant of office rents. The basic assumption of the study is that the spatial integration effect, represented by air connectivity, positively affects office rents. Three models have been set up according to aspects of air connectivity: the number of flight seats, the number of flights, and ASKs (available seat kilometres). Formerly established determinants of office rents, vacancy and GDP per capita are also set as independent variables.

Panel analysis of the 50 cities resulted in the following: In the case of Europe and North America, which comprise 80 percent of all samples, correlation of rent and air connectivity turned out to be significantly positive in all models. This empirical result satisfies the basic assumption of the study that increased spatial integration significantly affects world office rents on the whole. Asia Pacific samples, however, turned out to have a statistically insignificant correlation between rents and air connectivity. This result suggests that Asia Pacific’s regional complexity is not fully reflected in the models, and shows that the study has some limitations with respect to explanatory power.

Considering the office market’s importance in both the commercial real estate market and the real estate market as a whole, it is a crucial task to determine factors that affect office rents to properly understand the asset market and predict the market’s future movement. This study acquires significance in this context because it involves considering how connectivity effects may lessen uncertainty in the real estate market and improve efficiency in this market, where illiquidity has long been thought of as one of its feature

KEYWORDS: Air Connectivity, Office Rent, World City, Determinant, Panel Model
105 Automatic image analysis and real estate

The year of construction (age) of a property, as well as the period of construction has an essential influence on the structure and the value of a building. Current automatic classification models of properties apply hedonic approaches that are mostly based on location (address). An additional automatic classification based on the age and/or period of construction in real estate valuations is still missing.

Driven by this observation, the aim is to undertake fundamental research in the jointly interdisciplinary fields of image analysis and real estate evaluation in order to develop novel automatic visual analysis methods for the estimation of age/period of construction of buildings. We employ photographs that show the face of family houses to predict the period of construction and the coarse age as well as the region the building resides in.

Image analysis has a long research tradition and is today applied in many different domains. In the domain of real estates, however, the major focus of image analysis lies in the area of satellite image analysis for the classification of land cover. Detained building information cannot be extracted from satellite images. In contrast to other existing approaches, we employ unconstrained photographs of buildings (e.g. by brokers, owners and real estate experts) as an input to visually extract information about the building. For this purpose our business partner provides a large database of real estate valuations. These valuations contain detailed object property descriptions such as year of construction, condition, amenities, address, value, etc., as well as several images per object in different views.

In our presentation we will first give a literature overview bout existing papers which are in context real estate (building) an image analysis. In the following we would like to present first results from our research. Therefore we apply the method from (Lee, Maisonneuve, Crandall, Efros, & Sivic, 2015) and our first results are satisfactory.

Source:


KEYWORDS: image analysis, facade segmentation, year of construction, , aliterature overview
86 Housing portfolio asset valuation using mass appraisal methods

It is increasingly the case that Public Housing Authorities are required to account for the financial performance and condition of their property portfolio on a regular basis. This is certainly the case in Australia where property and housing are largely the responsibility of State Governments rather than the Federal Government. In terms of asset values and performance, these are required annually, in market terms – not a nominal replacement value based on costs.

How should such portfolio valuation and assessment tasks be undertaken to be able to make portfolio estimates to a given level of accuracy at a minimal cost?

These issues will be discussed in relation to two New South Wales (NSW) State Government housing portfolios:

1. Land and Housing Corporation

which manages a portfolio of 150,000 public housing properties; and

2. Teacher Housing Authority

which manages a portfolio of 1,500 properties to provide accommodation for school teachers in mainly remote areas of NSW.

In both cases, mass appraisal methods are used but most critical is the choice of the benchmark properties on which the mass appraisal models are based.

KEYWORDS: housing portfolio, asset valuation, mass appraisal, quality assurance
There is widespread interest in how cognitive reasoning is used in expert professional practice. However, little is known about the cognitive reasoning in relation to a property valuer decision making. This study utilised the CTA to identify and describe, the cognitive reasoning of property valuers during a valuation task. Six subjects (comprising two expert valuers, two intermediate valuers and two novice valuers) undertook a valuation of a commercial property in a simulated context while thinking aloud. Verbal protocol reports were transcribed and coded using a deductive method. Content and event-sequence analysis yielded the varied knowledge states that valuers of different level of expertise prioritised and the cognitive processes used to operationalised these knowledge states. Further mapping of thought sequence indicated that expert and intermediate valuers had better and well-structured patterns of thought which demonstrate greater degrees of cohesiveness and interrelatedness between cognitive processes. Expert and intermediate valuers used cognitive processes centred on data interpretation and meta-reasoning activities initially to schedule valuation analysis or establish valuation strategies, and latterly to re-interpret and diagnose previously acquired information to update the outcome of their past valuations. Novice valuers’ processes of solving the valuation problem show fewer linkages between cognitive processes, suggesting underdeveloped cognitive structure and quick disengagement from task. The methodology used for recording, analysing and interpreting verbal protocol reports of valuers is shown to be capable of providing insights on cognitive processes, which is useful for research on practitioner expertise and its development.

KEYWORDS: Valuation analysis, Valuers, Commercial property, Cognition, CTA
Almost all financial crises in the world showed a real estate element if it was not the main cause after all, and so did the 2008 financial crisis with subprime mortgages. As a result of that the G 20 concluded: never again. It meant that Central Banks and Financial Market Authorities started to investigate how to solve the problem and take precautions.

In the Netherlands they first of all questioned the auditors. Their defence was that they relied upon valuation reports from certified valuers. Other than that in 2011 the Auditors addressed the problem to the valuers in a management letter.

To improve the situation representatives from the Auditors and the valuers sat together and developed 28 recommendations about valuer’s independency, education, scope of work, the valuation itself and quality assurance procedures. The underlying guidance were international standards, from the auditor’s side the IAS and IFRS and from the valuer’s side the IVs and EVS. The recommendations were followed by good practices, examples for both disciplines to help them to interpret the recommendations.

The paper will show the recommendations as well as the process at which the Netherlands Register of Certified Valuers was formed.

KEYWORDS: Valuation, International European Valuation Standards, Cooperation with Auditors, to prevent financial crises, to discipline the valuation profession
Clayton et al. (2001) and Van der Werf and Huibers (2015) showed that first-time appraisals differ from their successive repeat valuations in Canada and The Netherlands. First-time appraisals seem to follow the normative valuation process more closely and use more contemporary comparable data. Repeat valuations tend to be sluggish and tend to anchor on the prior valuation. In bearish, contracting markets this leads to assessed values that, on average, are higher than the unobservable market value.

In the UK context there has not been similar research into first time appraisals thus far, although evidence of anchoring to either selling price (Gallimore and Wolverton, 2008) or previous estimated (Havard, 1999; Havard, 2001) in the UK context exists. The concept of recurring valuations and the effect of possible anchoring on the assessment of market value has been researched as well (Gallimore and Wolverton, 2008; Diaz and Hansz, 1997; Hansz, 2004; McAllister et al., 2003; Crosby, Lizieri and McAllister, 2010), though, as far as we know, no study has examined the rotation of appraisers specifically to understand what processes are occurring when a new appraising firm is being appointed or assets rotate between a number of appraising firms.

Based on interviews, combined with literature review a conceptual model has been developed to describe the processes that take place when appraisers are undertaking either first-time or repeat valuations. Potential weak spots have been revealed that are vulnerable for biases. Further analysis of these weak spots could potentially lead to less valuation bias.

KEYWORDS: property appraisal, recurring valuations, anchoring, conceptual model, first-time valuation
Kaia Kask, Ene Kolbre, Aivar Tomson

282 Valuers’ national professional qualification system in Estonia: development and perspectives

The paper aims to tackle the importance of lifelong learning process on the example of valuers profession in Estonia. As far it is known to the authors of this paper, similar kind of research approach has not been used in academic papers so far, filling in the research gap in this way both in valuation profession literature and also in educational science in general. On the other hand, there is also hypothesized that the lifelong learning plays quite a crucial role also in the survival of the national professional qualification system of authorized valuers. For the sustainability of the national valuers profession, it is important to build up on a country level a quality-based professional qualification system. The quality of the valuers profession in Estonia lies on three main pillars: the valuers base-education and self-training, the national professional qualification system, and supervision system, based on periodic reporting of valuers professional activity and periodic auditing on valuers workplace.

The research is based on the whole population of valuers in Estonia. Both qualitative and quantitative data are used within the research, gathered via the Estonian Association of Appraisers (EAA) since 2004 up to present. Database contains three layers of data: (1) data from the valuers professional authorization exam protocols, (2) data from the valuers periodical auditing reports and (3) data from the valuers yearly professional activity reports, which are aggregated in MS-Excel. All the gathered data are personalized, where the name of the valuer is taken as dependent variable.

The paper concludes that in Estonia, the sustainability of the valuers national professional qualification system as a whole is under pressure, as the overall costs to keep up the valuation qualification system is very high, compared to the other qualification systems and there is a need to find out a way, how to run the system in a more cost-effective way. Also, from many of the valuers, there is a pressure to lower the overall level of requirements of the valuers authorization exams.

There is also a general problem that some of the authorized valuers have been moved to work for commercial banks, where they belong under the jurisdiction and supervision of the Financial Supervision Authority in Estonia, but not under the supervision of EAA, creating overall unfair treatment among authorized valuers and making the meaning of the whole supervision system questionable.

KEYWORDS: valuers lifelong learning, Initial Professional Development, quality of valuers profession, Continuing Professional Development, professional qualification system
Automated valuation modelling is the valuation modelling to appraise large quantity of properties in order to obtain an single point estimate for mortgage lending. In the paper we present a comparison among several different spatial techniques in order to determine the value. Based on a sample of rents in the residential market of Bari an application of Location Value Surface Models (O’Connor, 1982) an introduction of dummy variable, a Spatial Extension Method (Cassetti, 1972) and a Mixed Spatial Autoregressive Model is proposed. The comparison among different methods confirm the potential in the application of Spatial technique for AVM purposes.

KEYWORDS: Automated Valuation Methods, Valuation, Residential Rents
320 Flood impact on property value: The case of Canada

Background – Whether due to climate change or due to bad urban planning, flooding is an important issue around the world. The point about climate change impact on sea level and precipitation intensity is well known. Those impact will eventually increase the number of flooding area. Another reason for change in flooding area is the urban development and bad water management planning. Quebec City, in Canada, has been sued in court over the impact of flooding likely due to deficient water management for the city. In the same area, flooding area maps have been updated to take into account new risk. Been in these flooding area is likely to have an impact on real estate value.

Purpose – This paper intend to bring a contribution about the value lost in flooding area. The paper present preliminary result using Quebec (Canada) data and include the impact of media coverage of risk in the pricing process.

Approach / Methodology / Design – We use transaction databases, geographic information system (GIS) and building characteristics in order to analyze the impact of been in flooding area on the value of a residential building. Since houses near water usually has value added we control for the water shore distance. Literature shows that flooding area usually has impact on real estate value. Nevertheless some study show mitigated results. Uk data has been used to develop a methodology and are presented in a forthcoming paper. Quebec City data are based on transaction prices for the last 5 years as well as official municipality valuation.

Results – As of now, results are preliminary but at the time of the conference, we will have the results for Quebec city that we will be able to relate the result to those of UK presented last year at ERES 2016.

Limitations / implications – Quebec City data has individual characteristics associate with houses but the historical data are 5 years (compare with 20 for UK) and for a smaller area than what was available for UK.

Practical implications – This is relevant to compute the value of mitigation installations (dam) or to assess the compensation to be offered to owner impacted by area that are newly at risk of flooding. Flood related depreciation is also relevant for insurance industry for coverage valuation.

Originality / Value – We use GIS data allowing and use original data from Quebec which include a high media profile area and several normal areas.

KEYWORDS: Real Estate, Flood, GIS
An attractive environment is likely to influence house price. We have high regard for the quality of living environment and living function. Especially, one of the crucial factors of choosing residence is the construct of public facilities that provide much service, such as park, school and green space. The aim of this study was to find the effect of parks and green space on housing price. The research used hedonic price model and geographic information system (GIS) to evaluate the effect of parks and green space in Kaohsiung in Taiwan.

The result shows that housing price is determined by the effect of different characteristics. For parks and green space, the more close to parks and green space is, the higher total price is. When the transaction cases surround more parks, the value of property would go up. This situation leads to higher price on transaction cases. When land use zoning is non-residential kind with the purpose of residential type, the total price would raise. The total price of townhouse is higher than apartment, condominium and mansion. There is a negative correlation between building age and total price.

However, there is a different result that the effect of difference distance of parks and green space within 500 meter radius on transaction cases. We found that the distance of parks and green space within 500 meter radius is not main factor on transaction cases. The existing and quantity of parks and green space is the main reason for transaction cases. We infer that this is the reason why the result did not fit the expected outcome. The housing price would become higher when it is close to green space.

KEYWORDS: Park and Green space, Hedonic Price Mode, Housing Price, Geographic information system
179 Automated Hedonic Valuation Models: A Variety of Projects in Research and Industry

Real estate valuation is often cost- and time-intensive. This is particularly the case for mass appraisal in portfolio management or time critical valuations for acquisition or risk management purposes. Therefore, investors, operators and service providers are looking for solutions to automate real estate valuation. From the institutional perspective, it should be considered that banks, insurance companies, larger housing companies and their service providers, are potential users.

Automatic Valuation Models (AVMs) are often based on and tested by regression models, in particular hedonic models. Hedonic models are fast and cost-efficient as the calculation as well as the data management related to internal and external parameters can get highly automated. The definition and calibration of these models requires large data sets with appropriate parameters.

In a first step, a valuation model can be developed based on the data collection and its statistical analysis. On the next level model validations, adjustments and optimizations are carried out. The results of the developed valuation models and their underlying regression equations should be manually examined, interpreted and documented, in order to assure optimal results for various valuation scenarios. The model automation is considered as a crucial step for the efficiency of mass appraisals. As a result of this automation, manual inputs, valuations, controls and other processing steps are mainly avoided. This increases the speed of the processing and at the same time decreases resource consumption. AVM has been established as the main term for this group of models and processes. The goal of efficient valuations with simultaneous quality assurance has been discussed for several years. The current status of the model development and its application on the valuation process are subjects of current research. To identify the gap between the demand of excellent AVM and achievements to date the study examines 1) past research in scientific theory, 2) the past development projects in the valuation practice, and 3) the perspective of associations, political systems and legislations on AVMs.

The evaluation of the three research components assesses the achieved interim level and indicates further research requirements. Analyzing these three research components across several countries, similarities and differences can be identified. In particular, this refers to a certain acceptance and intensity of use of AVMs.

KEYWORDS: Automated Valuation Models, Portfolio Management, Real Estate Investments, Real Estate Valuation, Hedonic Models
36 Automatic Reconciliation

Purpose Final reconciliation is the final phase of the valuation process. It involves weighting the indicate values to reflect their contribution to the overall estimates... (Smith et al., 1995p.16) This phase of real estate appraisal is normally achieved after the application of several distinct appraisal methodologies in order to reach the opinion of value of a property. It is a matter of fact that the final result of these different valuation methods may vary. Therefore in the final part of the valuation process the valuer is required to assign a weight to the different methodologies in order to reach an appropriate opinion of value. This process is essentially based on a subjective judgement.

Design/ Methodology/Approach The work provides methodologies to assign the weights through simple mathematical procedures that can be used in order to support subjective judgment in the valuation process. The models proposed can be applied also to other phase of reconciliation inside the valuation process and is based on the collection of previous property data in the same market segment.

Findings Two different methodologies to support the valuers in the valuation process and in particular in the phase of the choice of the weights for final reconciliation purposes.

Research limitations/implications The implication is the development of an information system to help the appraiser in providing these weights. The models proposed are only two but represent a much larger field of research.

Practical Implications The models may help in determining more consistent valuation reports.

Social Implications Consistent valuation reports may contribute to the stability of the social and economic system especially after the 2008 non agency mortgage crisis.

Originality These are the only model proposed in literature for such kind of problems.

KEYWORDS: reconciliation, valuation, market valuation based
Property valuers, first of all, assess the value of the rights to the property. The enterprise, itself, is not that often the subject of their valuation. In case of enterprises carrying out its business activity at the special purpose property, the proper definition of the valuation subject (is it an enterprise or a property?) and the selection of the valuation method constitute a key issue.

The valuation of the commercial property generating income in relation with the business activity carried out there, such as for example a fuel station, is done using the profits method basing among others on historical sale and cost data. The profits method requires both the knowledge of the market specificity where a given valued property operates and of the trade executed by a reasonably efficient operator (REO) there. Obtaining the income from this type of property is conditioned by having current assets (e.g. fuel and nonfuel goods in case of fuel stations), equipment, employees, etc. It results in numerous similarities in the calculation of the net operating income for property valuation to the calculation used to assess the enterprise value with a discount cash flow (DCF) method. However, there are many differences with regards to this calculation which do not let equate the property valuation calculation with the valuation of the enterprise carrying out its activities at the special purpose property such as a fuel station.

The presentation focuses on the comparison analysis of the calculation of the special purpose property market value in profits method and the calculation of the fuel station valuation as an enterprise in DCF method. The comparison analysis of fuel station valuation also shows both the similarities and differences between the valuation based on the Polish standards and the RICS (Royal Institution of Chartered Surveyors) standards. The aim of the research is to show the differences between the valuation of the fuel station as a property using a profits method and the valuation of the fuel station as an enterprise using a DCF method. Literature studies and case studies were used in the research. The research was carried out from November 2016 to February 2017.

KEYWORDS: property valuation, enterprise valuation, fuel station, property, profits method
Real estate is considered to be an imperfect market. It does not meet the standards of a hypothetical perfectly competitive market. This is partly due to information asymmetry. The Dutch housing market, however, seems to be moving from a market with limited information, to a market with an increasing amount of available information. This reasoning makes housing increasingly attractive for data analytics. Several data solutions applied have been programmed to date. Automated Valuation Models (AVMs) are one example, where data is mainly used to predict the value with vacant possession of owner-occupied housing. Most AVMs apply a hedonic pricing model where value is decomposed into housing and locational characteristics. These characteristics from rental and owner-occupied housing transactions and valuations have been collected from databases of Colliers International to construct an AVM. Indexation plays a crucial role in AVMs to correct for the difference in time of historic transactions. This is where a hedonic index for Dutch owner-occupied housing is constructed and tested with 7,500 repeated sales. Compared to the index of the Dutch Central Bureau of Statistics, this index is 32% more accurate in areas with a high urban density and 19% in areas with a low urban density. This is due to the inclusion of housing and locational characteristics. Apart from an AVM to predict the value with vacant possession for owner-occupied housing, a similar methodology can be used to construct an AVM to predict the market rent of rental housing. Market rent can be compared to the actual rent and the difference is an input for a machine learning algorithm that combines both AVMs and predicts the value in use. This algorithm has been trained and tested on anonymised data from valuation models. The accuracy becomes better with the inclusion of Colliers’ valuation experts giving their opinion on future trends of the ratio between value with vacant possession and value in use. This makes the algorithm particularly driven by man and machine, where the experts rely on knowledge and experience. This combination has led to an algorithm to go from value with vacant possession to value in use (predicting the ratio) with a mean absolute error of 2.1% and a median absolute error of 0.9%, tested on 1,400 observations. The value in use finds its use case especially with investors who want to get a quick and accurate estimate the value of their housing portfolio.

KEYWORDS: Value with Vacant Possession, Market Rent, Value in Use, Predicting, Machine Learning
The real estate capital is one of the most resistant forms of the process through which the social surplus product was consolidated, making possible the development of cities. The gradual layering of these traces has given shape to structured and complex urban environments, characterized by the complementarity between homogeneity and heterogeneity. This led to the multiplicity of functions that properties gradually were able to play, and the expectations that these potentials have engendered in the players of its growing enhancement process: administrations, owners, large and small investors.

This paper focuses on the interpretation of the urban pattern of the historic city through the analysis of the housing markets. The research deals with the case study of the town of Syracuse, a complex urban context from several points of view. Firstly, the city has a particular geographical and landscape planning; secondly the sequences of historical phases that have characterized its urban development; finally, the amount of public and private investments that over the past three decades have helped to make it one of the thirty major touristic destinations in the world.

The formal and functional articulation of this real estate market justifies the use of different, layered and structured analysis tools to identify sub-markets and to place among them some unique properties as residual cases (gaps) or exemplary cases (overlaps). Those cases are traditionally considered outlier due to a relationship between value/price difficult to interpret in the light of the consolidated analysis tools.

KEYWORDS: Real estate market, Cluster analysis, Complex urban context, Fuzzy clustering , Property valuation
In the aftermath of the global financial crisis, the role of real estate appraisals/valuations within secured lending has been increasingly scrutinised. Some countries were very slow to realise that processes within the real estate industry may have some part to play in trying to ensure that the GFC was not replicated in the future. For example, in the UK, real estate was quickly implicated as a major part of the problem but slow to be included within suggested solutions (Vickers, UK Independent Commission on Banking Chair, 2011).

Market valuations have underpinned loan decisions in many countries and only in a few countries such as Germany has there been any substantial attempt to depart from this tried and trusted concept and basis of valuation. However, recent developments across Europe have included discussions around the replacement or supplementation of MV with a long term or sustainable value. Recently, the European Banking Authority was charged with developing a long term value methodology although this worked is currently stalled. TeGOVA and RICS are active in these discussions. The German based Mortgage Lending Value is an established valuation method but it has not found universal favour across Europe, including within RICS and TeGOVA.

This paper will examine alternative concepts, bases and methods of long term or sustainable value. It will examine the bank lending valuation problem and discuss what banks should really be requiring of valuations. It will question whether a long term or sustainable concept can actually exist and whether the real requirement is for a more rational economic fair value model that acts counter cyclically; restricting lending in boom markets and encouraging it in fallen or underpriced markets. It will examine work undertaken in the UK to see if these models are viable and at what level can they be operated; for example national or local market segments or at the individual property level.

KEYWORDS: Commercial Real Estate, Long Term Value, Appraisal and Valuation, Real Estate Cycles, Secured Bank Lending
The scientific literature has increasingly linked gentrification with the turis-
tification of urban space, starting from the hypothesis that the continuous
and massive invasion of tourists can be considered as the arrival and im-
plantation of a population with greater economic resources which tends to
displace the resident population. Although the newcomers (tourists) would
be a temporary population, would permanently occupy the urban space,
and would do so with patterns of behavior contradictory to those of the
original population (Hiernaux & Gonzalez, 2014). From this perspective,
tourism not only promotes processes of gentrification in progress, but can
be interpreted as a gentrifying element in itself. As a domain of the city
by consumers with high incomes that ends up displacing the original pop-
ulation, which witnesses the loss of their own space of residence (Cócola,
2015).

This paper aims to study whether in the city of Barcelona are occurring
processes of gentrification originated in tourism. Since the end of the 90s
Barcelona has been experiencing spectacular tourism growth. Between
2000 and 2015 the number of tourists has increased from 3,141,162 to
8,303,649 (Barcelona Turisme, 2016), an increase of 164%, which has
made it possible to place Barcelona among the main tourist destinations
in Europe and the world. Similarly the name of overnight stays in hotels
has experienced a spectacular evolution, going from 7,777,580 in 2000 to
17,656,329 in 2015. If overnight stays in hostels and holiday homes are
added to those made in hotels, in 2015, there were 29,124,621 overnight
stays, 90% more than in 2010.

The paper examines the gentrifying effect of tourism from a double per-
spective: 1) the effect on the supply of permanent housing, and 2) the im-
pact on residential prices. From the first perspective, the analysis of uses
reflected in the Urban Cadaster reveals that between 2000 and 2016, the
increase in tourist property (hotels, hostels and holiday homes) has been
detrimental to the permanent housing stock (25,000 fewer permanent
houses between 2011 and 2016). In terms of prices, the OLS models test-
ed show that the tourist attraction increases the sale and rental prices of
houses (with an impact that can be estimated between 30-35%), making
housing less affordable for residents and promoting the social transforma-
tion of the neighborhoods most affected by tourism. It can be concluded,
therefore, that in Barcelona a marked gentrification is taking

KEYWORDS: Gentrification, Tourism, Housing Prices, OLS Models, Real
Estate Markets
Global investors change the rules

Increasing cross-border capital flows are inevitably leading to greater global integration in commercial real estate. But integration is not happening at every level in every market. The largest cross-border investors focus on one layer of the market only.

This layer of the market be priced differently, for some or all of these reasons:

- Due to investors’ risk free rate (RfR) being different to local investors’ RfR
- Due to this layer’s objectively lower risks and therefore lower risk premium
- Due to different motivation: capital preservation rather than most return per unit of risk
- Due to different risk sensitivity (more attuned to political risk, less concerned with volatility)
- Due to Merton’s investor recognition hypothesis

The characteristics of this market layer are:

a. Reliable liquidity, b. Transparency, c. Big lot sizes, d. Locations with recognised brands

A key issue is the effect of this trend (towards global integration) on market pricing, which we will quantify. Bond investors might call this layer triple AAA; equity investors might call it blue chip; real estate does not yet have a corresponding label. The trend has implications for indices, valuation (potentially), asset allocation and market structure.

Keywords: Required return; cross-border; capital flows; risk free rate; AAA.
François Viruly, Stan Garrun

34 Market maturity and the availability of data in Sub-Saharan Real Estate Markets

Market maturity is closely associated with the availability of market data. This paper provides a comprehensive analysis of the availability of Commercial property market data in Sub-Saharan Africa. It also adds to the existing body of literature, which suggests that the availability of data has a critical role to play in improving market transparency, the quality of valuations, and the analysis of risk. Indirectly, the availability of data affects the appetite of investors to enter these markets. The research also considers the importance that South African investors who have entered these markets place on existing data. It concludes with suggestions for potential interventions that could considerably improve the availability of data across the Sub-Saharan continent.

KEYWORDS: Sub-Saharan Africa, market Maturity, Market Data, Risk analysis

Martin Hoesli, Jean-Christophe Delfim

61 Risk Factors of U.S. Real Estate Investments

This research investigates macroeconomic risk factors pertaining to the various types of real estate exposure, i.e. direct, listed and non-listed investments. We apply panel model techniques which make it possible to take advantage of both the cross-sectional and time series dimensions of our data. Much emphasis is placed on comparing sensitivities to risk factors across the types of real estate exposure. This is important in order to assess whether indirect (listed and non-listed) exposures react in the same way as direct investments to the macroeconomy and how well such investments replicate direct real estate behavior. The empirical analyses are conducted using U.S. data from 1984Q1 to 2016Q2. Allocations both by sector and geography are taken into account. For indirect exposures, we also control for size and leverage. Our results indicate that the GDP, money supply, construction costs, expected inflation and expected economic activity positively impact returns, while long-term interest rates, the term and credit spreads, unemployment and unexpected inflation negatively impact returns. The various types of real estate exposure generally respond similarly to risk factors.

KEYWORDS: Risk factors, Real estate investments, Non-listed real estate, Listed real estate, Macroeconomy
The price impact of liquidity in international office markets

This paper investigates the relationship between market liquidity, as indicated by transaction activity, and real estate asset pricing. Prior research has typically focused on the US or UK markets, but this study draws upon office market data for 36 cities situated in 20 countries over the period Q1 2007 to Q2 2015. Prime office yield is used as the dependent variable when the effects on pricing of transaction activity are modelled. Transaction activity is captured in absolute terms using volumes and in relative terms through the measurement of turnover rates. Turnover rates are measured in two ways: as the proportion of stock in terms of physical area that traded and as the proportion of stock in terms of total value that traded. A range of econometric techniques are then applied in order to control for well-known endogeneity problems when estimating the impacts of trading on prices, and vice versa. The results indicate the extent to which transaction activity has a significant effect on pricing after controlling for other fundamental drivers. In addition, the research provides further insights into variations in transaction activity between major global office markets.

KEYWORDS: Capitalization rates, Liquidity, Transaction activity, Turnover rates, Yield modelling
Among others, Ghysels et al. (2007) found, that fundamental economic indicators alone are not able to fully explain the dynamics of commercial real estate returns in the United States. Even more clearly, Khadjeh Nassirtoussi et al. (2014) state that investors often change their purchasing behavior according to irrational and emotional assumptions. This work tries to investigate aspects of these yet insufficiently researched factors influencing the direct real estate market in more detail.

With news being one of the major information sources for investors, it can be assumed that they might affect decision making processes and hence may also influence prices. This behavior should be especially interesting in the direct real estate market, as the buying process, compared to stocks, for example, is comparatively long. Accordingly, the question arises as to whether, media can be used to explain market dynamics when sentiments are extracted from news items with different algorithmic approaches.

This idea is tested by looking at the commercial real estate market in the US. Thus a data set of about 40,000 SNL news items was collected covering the time span from from 2005 until 2015 where all news articles had to contain the keyword Real Estate and were geographically limited to being published in the United States. First of all, a Naïve Bayes classifying algorithm is applied to extract market sentiment, as it is among the most promising ones in performing neuro-linguistic programming tasks, according to Antweiler and Frank (2004). Outcomes are further compared to the results of a support vector machine algorithm developed by Cortes and Vapnik (1995), which, in short, creates a linear decision surface to allow for a sentiment classification of text samples. Both algorithms count among the most popular supervised learning methods.

In order to quantify the impact of sentiment in the commercial real estate market, both the CoStar Composite Repeat Sale Indices, which represents all property classes and types, as well as the Moody’s/RCA Commercial Property Price Indices are applied to investigate the relationship between media sentiment and property returns in different sectors of the Real Estate market.

To the best of our knowledge, this paper is the first work applying algorithm-based textual analysis on news articles to create a measure of media sentiment on the direct commercial real estate market in the US.

KEYWORDS: Sentiment measurement, Textual Analysis, Algorithm based evaluation
224 A Reappraisal of Models of Commercial Property Cycles in the light of the Noughties Boom and Bust

A critical analysis of models of commercial property cycles provides the basis for a reappraisal based on the experience of the noughties boom and bust. The research quantifies the scale and timing of the cycle by reference to quarterly data and places it in an international context. The core of the analysis is the dynamics of the upswing and downside of the UK commercial property market over this period, setting it in an historical perspective. It encompasses the relationship between capital and rental value growth, the roles of investment funds and banking finance, and transactions by different types of purchasers and sellers. The analysis draws on data from MSCI/IPD on investment and capital values and from Property Data of transactions. It asks whether this time it was different? As a contribution to this answer this question it examines the role of globalisation and the changing business model of banks and new investment vehicles over the decades leading up to the boom and bust.

KEYWORDS: property cycles, property investment, bank lending, investment vehicles
Developing countries have improved their markets by accelerating capital movements with the economic and financial policies they have implemented and made an important contribution to integration with the outside world. For this reason, investors are looking for ways to increase their returns by targeting alternative investment instruments in order to benefit from international capital movements in emerging markets. Lease certificates (sukuk), real estate certificates and real estate investment funds stand out in the financing of real estate projects. Real estate investment funds, one of the increasingly attractive alternative investment instruments, are known as investment instruments for individuals and institutional investors with high financial wealth from the first day they were established in developed and emerging markets. A real estate investment fund is an institutional structure that enables individual savings to be brought together and is utilized collectively in professional investments in real estate.

In this paper, the development of real estate investment funds and the current situation in various countries around the world have been analyzed and the development and current status of real estate investment funds as a new investment fund instrument in Turkey have been examined from the perspective of legal regulations and implementation. Firstly, the structure, types, main projects that the funds make or tend to make investments, the basic problems of investors and solution opportunities regarding the real estate investment funds established in accordance with the legal regulations, which were put into effect by the Capital Markets Board in Turkey, were evaluated by means of secondary data as well as data collected from investors in face-to-face interviews. Fund structures, selection of the invested real estate projects, returns of investments the projects, the development of the funds, and the basic problems were analyzed using the data gathered through face-to-face interviews with the managers and experts of about 10 funds, which have obtained the required permissions from the Board and have been operating, valuation firms that are influential in the field of real estate investment funds, custody companies, investors, independent auditors, and companies that supply products to the funds.

KEYWORDS: Money and Capital Markets, Real Estate Investments, Real Estate Projects, Real Estate Investment Funds, Real Estate Mutual Funds
The purpose of this paper is to examine the performance attributes and investment characteristics of listed real estate companies vis-à-vis listed infrastructure companies. Utilising Bloomberg data, the paper investigates the inter and intra performance of the five largest global stock exchanges, namely New York, Tokyo, London, Shanghai and Hong Kong. A growing school of thought has emerged inferring that performance dynamics of real estate and infrastructure are inherently similar in composition but can be distinctly different in terms of outturn. Nonetheless, many fund managers have a propensity to ‘group’ real estate and infrastructure commodities within their alternative investment basket with little thought or consideration afforded to the idiosyncratic nature of the underlying assets driving performance. As such, one key question to ask is whether this pooled rationale is justified? Or should commodities linked to real assets (including real estate and infrastructure) be afforded special dispensation attributed to diversification potential and risk mitigation within the confines of a listed investment portfolio.

Against the above contextual background, this paper attempts to shed empirical light on risk-return behaviour and diversification potential of infrastructure and real estate companies listed on the aforementioned international stock markets for the period of 2000-2016. To achieve this, we construct risk-adjusted return series (Sharpe Indices) for different major infrastructure sub-sectors (namely transport, utilities, renewable energy and telecommunication) and the real estate markets based on company-level data. A set of inter asset correlation matrices over different sub-periods are then developed to study the temporal dependence of returns between the sectors and across the five stock markets. Cointegration and Granger Causality models are devised to further explore the temporal dynamics of their interaction based on long-term cointegrating and lead-lag relationships.

KEYWORDS: real estate, infrastructure, listed companies, risk-adjusted return
39 Revaluation of Investment Properties by REITs

This paper uses a unique dataset to analyse the determinants and timing of REITs’ revaluation on investment properties. The decision of revaluation is a discretion by REITs managers and the amount of revaluation will impact REITs’ reported income. We find that REITs revaluations are driven by property acquisition, asset management fees, and past REITs stock returns. REITs companies tend to do revaluations toward the same direction. We also discuss whether revaluation amount and direction predict future REITs stock returns.

KEYWORDS: Revaluation, REIT, stock return, investment properties

369 Geographic Focus and Systematic Risk in REITs

We examine how the systematic risk of large commercial real estate owners is associated with geographic diversification. In particular, we analyze time-varying equity betas and geographic exposure of publicly traded pure-play lodging REITs. Contrary to popular expectation, we find that stock investors perceive smaller risk in geographic focus rather than diversification. Further, regional focus becomes insignificant in reducing the risk if the focus expands beyond two or three regions. The findings are robust to multiple measures of geographic diversification. Our study re-affirms the impact of geographic focus in the context of commercial real estate as a risk minimization strategy.

KEYWORDS: REIT, stock beta
83 Investment risk in real estate and other financial assets

Measuring the level of risk remains a fundamental issue in the context of the investment undertaken. There is a widespread belief that money market it is the safest, then the real estate market and at the end, the least secure a capital market. The author decided to check on the actual data by analyzing the rate of return and the level of security in those three markets for the last ten years. The subject remains valid especially in the context of indirect investment, such as in real estate and other assets. Loss of property funds are touching investors in Poland so far. To carry out the study there will be used descriptive statistics, risk measures, and an analysis of equality of means ANNOVA.

Article will be divided into two parts, the theoretical part will be described studied markets and instruments with recall relevant scientific literature which deals with the mentioned problems. In the next part the author makes a critical analysis of quantifiable risk measurement methods, indicating that markets may also be uncertainty disturbing sometimes the perspective for the investor.

In the last part of the research there will be analyze of the markets using a comparative statistical methods which allow for effective verification formulated hypothesis.

KEYWORDS: risk of investment, risk measure, financial market, real estate
Stephen Lee

267 REITs and the Mixed-asset Portfolio over the Business Cycle

This study examines whether an investment in real estate investment trusts (REITs) would have improved the performance of the US 60/40 mixed-asset portfolio over four phases of the business cycle (early/late recession and early/late expansion). Empirically we find that the risk and return characteristics of the various asset classes are highly dependent on the phase of the business cycle. For instance, REITs returns were highest during the early-expansionary phase of the business but least in the late-recessionary phase. Stocks performing best in the late-expansionary phase and least in the late-recessionary phase of the business cycle, whereas bonds achieved their best returns in the late-recessionary phases and least in the late-expansionary phases. We also show that although an allocation to REITs of between 5% and 15% would have increased the Sharpe performance of a 60/40 mixed-asset portfolio in the late-recessionary and late-expansionary phases of the business cycle a similar allocation in the early-recessionary and early-expansionary phases would have resulted in a decline in Sharpe performance. Lastly, although, the phases of the business cycle were evaluated ex-post, the finding that an allocation to REITs can have both positive and negative effects on portfolio performance is of significant importance for the decision-making of portfolio management.

KEYWORDS: REITs, Mixed-asset Portfolio, Business Cycles, Asset allocation, Portfolio Management
This article analyses how cognitive and emotional biases affect investor decisions when buying or selling office buildings. To meet this aim, we conducted qualitative research to detect the most important biases. We carried out a total of 26 interviews from across the industry covering investors, fund managers, brokers and valuers. The questions cover three main topics: (1) what triggers the investment decision of buying or not buying an office building; (2) to see who is involved in the investment decision; and (3) to see how practitioners in real estate determine the value of an office building.

We transcribed and analysed the interviews. The main results show that (1) some investors and fund managers assume the exit yield of their investment is equal to the initial yield when they estimate the Internal Rate of Return (IRR). Therefore their assumptions are anchored (biased) to acquisition price of the office building. Also (2) the assumptions and scenarios considered by investors and fund managers are framed by the data source they used such as MSCI, PMA or similar data. In addition, (3) their judgments are affected by social influences; the pressure and herding effects from other brokers, valuers and asset managers. Finally, (4) investors and fund managers are willing to take higher risks with the money of the fund than with their own money.

KEYWORDS: Cognitive Bias, Emotional Bias, Office Property Investment, Qualitative Social Research, Experimental Economics
Interest rates are determined by the market participants at the expectation of inflation of the currency and the risk they bear. Based on it the profitability and risk of a calculated venture the allocation of capital is planned. For example CAPM is based on a risk free investment, which normally should represent the actual inflation, but currently there are negative interest rates. The difference between the risk free investment and the risk adjusted preferred investment is the overperformance. When the assumption especially in terms of inflation are wrong or manipulated it forts to a misallocations of capital. Also real economic growth has to be bigger than the real inflation, otherwise the capital stock depreciates. To keep the value of the capital stock it has to grow with the devaluation of the currency. Stable and sustainable growth needs a stable capital stock and reliable information during the planning horizon.

Inflation in Germany is measured by the HVPI. It makes no differences between the various sectors of the economy. By the trickle-down effect and the spill-over in the economy there is a time lag between the asset price inflation and the consumer price inflation, reinforced through the principal-agent conflict, in our case the government and the market participants. We take a look on the actual measurement of inflation in Germany and analyse the increase in fiscal spending respektively taking and in general the increasing interventionism. Further the true cost of energy, property and real estate without statist intervention and its increase in the time. Added the risk allocation of interest rates inflation adjusted in different economic sectors. Seeing Real Estate dynamic and hedge the law- and inflation risk. Summarized with an alternative measurement of inflation and a short-, mid- and long term perspective for Germany under the influence of inflation and its effects on real estate.

KEYWORDS: Inflation, Interventionism, Adulteration, Germany, Interest rates
Mathieu (2016) finds investor sentiment to be a significant factor in explaining REIT returns and REIT return volatility in the US. As Freybote and Seagraves (2016) show, particularly institutional investors tend to rely on the sentiment of specialized real estate investors, by analyzing the buy-sell-imbalance as an indicator of the demand for a particular asset. Based on the aforementioned factors, the objective of this paper is to complement the sentiment-investigating literature by applying two methodologies of textual analysis to real-estate-related newspaper headlines, in order to create sentiment measures and test relationships to US REIT prices. Furthermore, this study analyzes, if real estate related news do reflect, cause or enhance market performance in the real estate sector.

For this purpose, a set of about 130,000 newspaper articles from four different US newspapers, with a time frame from 2005 until 2015, was collected. Following the approach of Bollen et al. (2009), sentiment analysis is applied with a term based methodology, by counting words that indicate positive or negative sentiment derived from different research approaches. Moreover, this dictionary-based methodology will be supplemented by and compared to the results of a machine learning tool, the Google Prediction API. In consequence, qualitative information from news stories and posts are converted into a quantifiable measure achieved by analyzing the positive and negative tone of the information.

To test the explanatory power of the created sentiment measures on REIT market movements in the US (FTSE EPRA/NAREIT), a regression model is employed. Due to the unique characteristics of REITs, variables to control for macroeconomic changes, the general stock market and also representatives for the direct real estate market are included in the model. Results show, that the created real estate sentiment measures have significant effects on the REIT market. Different measures were found to have varying relationships. Furthermore, the created sentiment measures are more powerful in times of a decreasing REIT market than in increasing times.

To the best of our knowledge, this is the first research work applying textual analysis to capture sentiment in the securitized real estate market in the US. Furthermore, the broad collection of newspaper articles from four different sources is unique, as normally only one or two different sources have been used in literature so far.

KEYWORDS: Sentiment Analysis, Textual Analysis, REIT market, US
The link between monetary policy and the direct European office market: some empirical evidence

Since the financial crisis Central Banks have used unconventional monetary policy and increased the quantity of money available in the economy. The purpose of this paper is to study the effect of money supply on commercial real estate prices. The paper uses a panel estimation to determine the relationship between office price indexes and explanatory variables, both at different locations and at different periods. The panel analysis allows understanding price movements across the 15 main office markets in continental Europe between 2005 and 2015. To pick-up the relation between prices and money supply, we have constructed, for each market a monetary index adapted to commercial real estate. Results show that office prices are driven by economic variables, but there is also a positive relationship between the monetary index and the office prices. Restricting the analysis between 2010 and 2015 we found a reinforced causal relation between prices and money. Quantitative easing has an important impact on real estate.

KEYWORDS: European real estate market, Office prices, Monetary supply, Panel Estimation
146 Examining the performance and asset allocation components of property in changing market conditions

Global property investment cycles have moved through periods of boom-bust in the early 1990s and late 2000s. These events significantly impacted both the structure and development of the Australian property market, and how Australian fund managers invest in property assets. An important part of property investment analysis is comparing financial performance against competing investment asset classes. There is a need to compare investment performance with indices and to study the impact of changing financial market factors on institutional property asset allocation trends.

Using 21 years (1995 – 2016) quarterly data series this research examines Australian industry superannuation balanced fund eight leading investment classes over different economic cycles: pre-GFC, GFC impact and post-GFC recovery. The current trend towards increased risk aversion means superannuation funds are placing higher weighting to property, cash and Alternative assets. Noticeably, the proportion allocated to equities and bonds has declined since the GFC. Current allocation to property is 11%, with higher weighting to direct property, 8% (+4% since GFC). Post GFC, allocation to listed property has declined from 6% to 3%.

Performance of the investment asset classes vary across different economic conditions with Alternative assets providing the overall best mean return (2.9%). In comparison, mean quarterly return for Direct property was 2.6%, although this is offset by low volatility (1.7%), resulting in best Sharpe ratio (0.41). Those asset classes linked to the equity markets (Australian and International equities, and Listed property), performed better in stable and growth economic phases but underperformed significantly during economic recession. For the property sector, the current falling interest rates mean a lower cost of debt has partially driven earnings, while making the sector look more attractive than stocks and bonds.

KEYWORDS: Property Investments, Economics Cycles, Investment Analysis, Asset Allocation, superannuation
230 Light Industrial Real Estate between a Capital Market Asset Class and a Corporate’s Strategic Ressource. Evidence from the German Corporate Real Estate Market.

Continuously falling yields on well-established real estate asset classes (e.g. office, retail) increase the focus on alternative asset classes such as industrial properties in germany. In contrast, the majority of light industrial property is owned by the occupying corporates and therefore not available for the capital market. Simultaneously, the big market segments in United States and Asia demonstrate that renting for corporates is an alternative procurement. Given that the capital market doesn’t appreciate real estate investments of non-property companies two main questions arise. The first question is targeting the reasons for such high ownership ratios and the second one is focusing on the future market trends. This article demonstrates if there is a possibility of establishing new asset class light industrial real estates as well as it tries to identify possible motivating forces in the perspective of german corporates.

After a literature based elaboration of the term light industrial real estate the development status and relevance is outlined in an international as well as german context. Furthermore, findings of an already published study of Just and Pfnuer (2016) were analysed in a more comprehensive multivariate data analysis. Applying cluster and discriminant analysis the article aims at identifying clusters of german corporates having an above averision to real estate ownership.

The applied multivariate analysis uncovers groupings of german corporates who have a notable smaller tendency to real estate ownership than other corporates. The analysis finds dependencies due to significant differences of the clusters in terms of sector, space and firm size. Furthermore the clusters seem to be exposed to specific driving forces of the structural change.

One of the main requirements of establishing light industrial real estate as a new asset class in germany is the reduction of the generally high real estate ownership ratios. This article presents first hints for which corporates renting light industrial real estate is an imaginable alternative to the ownership and uncovers thereby potential adresssees for institutional investors.

KEYWORDS: light industrial real estate, ownership ratio, corporate real estate, rental-model, cluster analysis
370 The Hybrid Nature of Real Estate Trusts

When do real estate trusts exhibit superior performance, when they mimic the underlying real estate or when they behave like stock? We test whether real estate trusts outperform common stock only when it mimics underlying property fundamentals. We also explore what capital market conditions correspond to and/or contribute to when securitized real estate behaves more like underlying property fundamentals. To explore this issue, we examine the investment performance of real estate trusts over the Great Depression and also the Great Recession. A distinguishing feature of our study is that we are the first to analyze the investment performance of real estate trusts (RETs), the predecessor to modern day real estate investment trusts (REITs), which traded over the late 19th and early 20th century. We compare the behavior and performance of RETs to REITs in the process. We find evidence consistent with the notion that securitized real estate exhibits superior performance only when it mimics the direct real estate market. This performance is fueled in part by cheaper borrowing costs, greater availability of debt and equity financing, and loosening credit standards. With the advent of a crisis, securitized real estate exhibits a greater co-movement with common stock. When this occurs, real estate behaves in a similar fashion to common stock and any abnormal performance disappears. This corresponds to tighter lending conditions and higher borrowing costs. We also show that RETs behave in a similar fashion to REITs.

KEYWORDS: Great Depression, Great Recession, REIT, Real Estate Cycles
The commercial property sector has a big impact on economic, social, and sustainable aspects of European market. The factors, eg. globalisation of businesses, general economic performance including financial stability, investment environment, banks’ lending conditions, supply and demand, influence property market, especially commercial property, fluctuations. According to the European Systematic Risk Board’s report on commercial property and financial stability, commercial property markets tend to be significantly more cyclical than residential property markets (ESRB, 2015).

Some EU countries control the property market fluctuations less or more through various policies only applicable at national level. However, there is a need to recognise these policies and apply best practices across all European countries in order to avoid financial loses and provide sustainable investment environment for businesses.

The research aims were to analyse the fluctuations of commercial property markets in the selected European countries, eg. the UK, Germany, France and Sweden and to discuss the factors, which impact on commercial property market booms and busts. The research aims have been achieved through a critical analysis of literature and a support of statistical analysis.

The reviewed literature and analyses of the property investment environment in the Europe shows that some countries have a good practise to manage the property market fluctuations. The study concludes that the built environment life depends on rationality of the fluctuation. This life can have a lot of alternative ways. These ways of the built environment life are enabling to find an optimal combination of variants for the sustainable built environment. Property market performance is the important element of any national economy and many important regulatory points depends on countries governments.

KEYWORDS: commercial property market, property market dynamics, investment environment
Charles-Olivier Amédée-Manesme, François des Rosiers, Philippe Gregoire

175 Commercial leases, terms and options in the light of game theory

In this paper, a lease rate valuation model is developed whereby the market rent is subject to binomial movements. We then consider a commercial leasing game where different renters, large and small, find a location in different buildings owned by competing landlords operating under a rent negotiation process. When supply for office space exceeds demand from large firms, the latter always pay an advantageous rent. We demonstrate theoretically that small firms are better off in a building containing a large firm and thus will accept to pay a premium to lodge in such buildings rather than opting for a lower rent in a building occupied by small firms. The conditions leading to opposite results are also discussed in the paper. Using data from New York City, Chicago and Los Angeles, we discuss lease rates in light of the predictions of our theoretical model.

KEYWORDS: Leases, Options, Rent contract, Negotiation,

Nuntana Dechpolmart, Dolachai Lertsachanant, Tool Nampanwiwat, Chotipat Nimitput, Nattakan Thiamkeerakul, Ladanat Wootthirat, Supeecha Panichpathom

85 Customers Intention to Revisit Hotels Equipped with Waterpark Services

The competition within hotel industry in Thailand is fierce. One key performance index is occupancy rate, especially during low season. Previous studies based on Western countries showed that hotels equipped with waterpark services drew customers to make repeated visits. However, waterpark development is a high investment. This study, thus, aims to analyze the power of waterpark equipped within hotels in attracting repeated visits. The three main constructs, which significantly relate to intention to revisit, are theme of waterpark followed by safety and cleanliness, and servicescape. Using a structured questionnaire, all valid 267 respondents rated their opinions with five-point Likert scale. Using exploratory factor analysis to reduce measurement items used for all three constructs and multiple regression analysis to analyze the relationship between intention to revisit and three constructs, this study suggests that investing in waterpark can draw intention to revisit.

KEYWORDS: Intention to revisit hotels with waterparks, safety and cleanliness, servicescape, waterpark theme
This study extends award-winning research – prior papers were recognized with best paper awards at the ERES meeting and two ARES meetings – into the key drivers that create and destroy value in real estate development and deal making. Particularly illuminating is considering how findings as of 2017 compare results reported in 2004 in Shifting Foundations of the Real Estate Knowledge Structure: Revisiting the Review of Real Estate Principles Texts.

This investigation considers the assessment as of 2017 of research initially conducted a dozen plus years ago – prior to the 2008 capital markets crisis, people favoring urban places, pro-nationalist politics, challenging globalization and cross-border investing – to examine the commonalities and divergences between different approaches to development and deal-making. Through analyzing the relative contributions of major categories of activities and specific sub tasks to creating and destroying values in real estate development and deal making, insights emerge that can guide important strategic decisions. This research isolates tasks that are of common relative importance in deal making in contributing to value being created and value being destroyed.

For property stakeholders (researchers and public officials, developers and investors, professionals and practitioners) understanding the relative contributions of different aspects of property projects, both development and existing properties, is important, essential knowledge. The results of the research provides guidance for opportunistic strategies to create value and to mitigate value loss. These findings have powerful applications to firms engaged in deal making activities, real estate development, and investment managers committing capital.

Beyond comprehending the relative importance of the different value contributions of elements of the property ventures, it is most important to understand which factors have become more important and which factors have become less important in a post-crash, urban-focused nationalist prioritizing world. Insights into the behind-the-scenes, below-the-surface relationships of what is involved in creating and destroying value in development and deal making can enable market participants to pursue the rewards and protect against the downside of their property involvements.

KEYWORDS: Risk Management, Performance Attribution, Innovation, Development Economics, Value Creation
The Downtown Line was announced on 3 July 2009 providing a much needed mass rapid transit from the central part of Singapore to downtown CBD. This study studies the economic value of Downtown Line on property prices along Bukit Timah and Dunearn Road (prime residential areas) using a difference-in-difference approach. We seek to validate the premium for residential units located within walking distance of public rail network, as well as provide an added dimension on the Singapore’s housing prices with proximity to a rail network, with an up-to-date look on the latest network addition. The policy implications, such as government intervention on the densification efforts surrounding stations located away from downtown, will be examined.

KEYWORDS: train lines, accessibility, proximity, residential values, transport network

Loss given default (LGD) for residential real estate loans is affected by real estate market trends due to the impact on the value of debtors’ main collateral. Banks specialised in real estate lending are expected to be better at selecting lending opportunities, properly evaluating real estate collaterals, and managing the recovery process. The recovery process is expected to differ for specialised lenders but there is no consensus about their differences from other market players.

The paper examines LGD for a representative sample of European banks to underline the key differences related to real estate specialisation. Results show that real estate banks, on average, perform a better recovery process. Moreover, real estate banks not fully specialised in real estate can better manage the real estate market cycle effect, reducing the pro-cyclicality of LGD.

KEYWORDS: Loss Given Default, Real Estate Banks, Real estate market, Lending
The macroeconomic forces that drive REIT returns in Australia

Real Estate Investment Trusts (REITs) represent a viable alternative to direct property investments. They offer enhanced liquidity and risk diversification. In addition, the securitisation process provides a level of governance not typically offered in direct property markets. However, as an openly traded security, it experiences risk exposures inherent to equities such as interest rate risk, default risk, inflation and so on. This study explores the nature and magnitude of various macroeconomic risk factors that drive REIT performance.

Utilising data from the Australian market over a 20 year period spanning multiple economic cycles, REITs were found to have an adverse relationship to unexpected inflation and default risk suggesting that REITs are not an effective hedge against inflation. On the other hand, increasing spreads in the yield curve and changes to expected inflation and were found to correlate positively with fund performance. The latter effect possibly being due to higher expected rents. These effects are greater for highly leveraged funds and those that adopt a stapled trust structure. This is expected given their greater reliance on debt and the wider set of operating activities which compound exposures to market and financial risk. These funds also exhibited a greater overall exposure to market risk. Size risk was also considered with small cap funds exhibiting greater exposure to the risk factors than medium and large funds.

The practical implications for asset allocation strategies is that portfolio managers and other investors seeking to take a long position may select highly leveraged funds with a stapled trust structure operating in a low interest environmental with higher expected inflation; whole those wishing to adopt a more defensive stance may consider less heavily geared funds with external management.

KEYWORDS: REITs, securitised property, capital asset pricing, financial risk factors, property investment
2 Decision support system for property markets in the form of rating

Cities and regions wishing to achieve a dominant position in the network via their policy try to attract as many entities and types of activity as possible. When examining the structure and the character of the surrounding space, it is possible to determine whether there are attractive prospects, and whether there is growth potential in the analyzed area.

Although recent years have witnessed the growing popularity of various support systems, comprehensive and effective information systems that facilitate the real estate market continue to be in short supply. The authors propose rating as a modern tool providing objective comparability criteria to classify the residential market. The main aim of this study was the development of the rating score procedure for residential markets as a specific knowledge platform to help in the making of reliable decisions. The classification will take into account demand and supply separately distinguished by determinants or destimulants of the markets, with the use of specific categories of information relating to residential, economic and political, social, spatial and location condition of market space. The authors propose the model of classification the markets in the form of procedure that enable to elaborate the decision rules on the residential property market.

KEYWORDS: residential real estate market, rating, decision support systems
24 Influence of Less Cash Economy on Real Estate as Asset Class in India

The return on an asset class are a reflection of the country’s macro-environment. Indian real estate sector had been a preferred alternate asset class largely due to positive macro-environmental factors like sustained GDP growth and Foreign Direct Investment. Indian real estate sector exhibited a unique characteristic wherein the primary as well as secondary sales transactions contained a high cash component to circumvent the high rate of taxation. In fact Indian real estate had gained the popularity as a preferred investment destination among masses due to its ability to consume and generate hordes of cash. The resultant cash economy was indirectly incentivized by the availability of high denomination currency notes which facilitated the transactions. The attractiveness of real estate as investment destination was also facilitated by the fact that through cash absorption, the sector could provide a safe haven for the unaccounted wealth.

Government of India, in a sudden move on November 8, 2016, demonetized the high denomination currency notes of 500 and 1000 Rupees. This move had a tremendous impact on economy due to the fact that 86% of currency notes in circulation were of high denomination. The demonetization forced the routing of all the high currency notes through the banking channel. Moreover Government of India imposed restrictions on cash withdrawal from the banks to discourage cash economy. This demonetization drive resulted in vacuuming of old high denomination currency notes from the circulation. Though a new currency note of 500 and 2000 Rupees were introduced by the Reserve Bank of India, the demonetization drive will result in limited availability of cash in the economy. The limited availability of cash will De-incentivize the efforts to evade taxes on real estate transactions through cash payments.

The author aims to study the impact of this macroeconomic factor resulting in to less cash situation on the Indian real estate as a choice of alternate asset class among Indian investors especially in the residential markets of National Capital Region of Delhi. The study will include a survey of the perspective investors through structured questionnaire in the Indian real estate sector on their choice of asset class for future investments. This study will help the investors to assess the attractiveness of Real Estate in India as investment decision in the post demonetization era.

KEYWORDS: Demonetization, Real Estate Asset Class, Demonetization impact on Real Estate, Indian Real Estate Sector, Investment in Indian Real Estate
Martijn Dröes, Philip Koppels, Boris Ziermans

250 Information Asymmetry, Lease Incentives, and the Role of Advisors in the Market for Commercial Real Estate

Using a unique transactions dataset, this paper examines the determinants of lease incentives in the Amsterdam office market. The study focusses on the type of landlord involved (institutional/privately owned) and whether the tenant or landlord used an advisor to help them with the transaction. The results show that an institutional landlord, ceteris paribus, offers 11 percentage points more incentives than a private owner. In addition, a landlord who uses the services of an advisor pays 16 percentage points less incentives. An advisor at the side of the tenant increases incentives by 7 percentage points. If both parties use an advisor lease incentives are not statistically different from using no advisors at all. The results in this paper highlight the crucial role of market information, information asymmetry, and bargaining in the market for commercial real estate.

KEYWORDS: Commercial real estate, Advisor, Office market, Information asymmetry, Lease incentives

Kevin Muldoon-Smith, Paul Greenhalgh

341 Situations Vacant: A Conceptual Framework for Commercial Real Estate Vacancy

Commercial real estate vacancy is a key indicator of property market efficiency, economic performance and urban resilience. However, there has been little conceptual reflection into the abstract notion of vacancy beyond binary distinctions of natural and structural vacancy. Although useful simplifying meta-concepts, neither accounts for the internal complexity and imperfection that permeates real commercial property markets. Consequently, the objective of this article is to outline a conceptual framework that describes vacancy across the commercial real estate building life-cycle – from initial construction to final demolition and redevelopment. The originality of the research rests in its utility as the first known holistic examination of commercial real estate vacancy beyond that of an abstract economic factor, while its value is explicit in the conceptual typology which can be used by researchers interested in market imperfections and consequent interventions.

KEYWORDS: Natural vacancy, Structural vacancy, Commerical real estate, Building life-cycle, Resilience
Mergers and acquisitions are a feature of modern economies. However, research on conventional bidding firms in mergers and acquisitions (M&As) has shown, on average, shareholders are worse off in the long-run (Alexandridis, Mavrovitis and Travlos, 2012). This study examines the long-term post merger performance of US Equity Real Estate Investment Trusts (REITs) to see if this under-performance extends to the largest REIT sector in the world. In contrast to the earlier REIT data samples used by Campbell, Giambona and Sirmans (2009), we find, prior to the macroeconomic event of the financial crisis, that existing shareholders of bidding firms earn significant and positive abnormal returns. This outcome supports the synergy motive for M&As in the REIT sector. Results from announcements occurring after the onset of the financial crisis show signs of negative and significant abnormal returns, suggesting these M&As were driven by the agency and/or hubris motive.

KEYWORDS: Equity REITs, Mergers and acquisitions, Post-merger abnormal returns

The central London office market has received much attention in the literature. Regarded as a highly liquid and relatively transparent direct commercial real estate market, research has examined, for example, the cyclical nature of the market, market adjustment, the division of the market into submarkets, and the importance of international investment. However, relatively little research has examined spatial patterns of rents and prices. Partly this may reflect limited data for heterogeneous real estate assets. This paper uses transactions data on offices over a long time period and focuses on the main central London office submarkets. Different models are estimated to attempt to capture space and time varying influences on the property market. The results highlight the importance and significance of neighbouring and contiguous influences in real estate pricing. Considering a number of central locations, we find price and distance to be inversely related even across markets which have a high level of accessibility.

KEYWORDS: London, Offices, Spatial
This study reviews and critically discusses correction-procedures (also called unsmoothing-procedures) for appraisal-based indices. Indices tracking values of direct commercial real estate investments are in custom constructed in an appraisal-based style: Since transaction prices are scarce, values from regular intervals of appraisals for each index property are taken for index calculation. Alas, appraisal-values not necessarily match transaction-prices or true market values of properties. Instead they deviate from market-values due to biases which result from surveyors’ behaviour in appraisals and index construction processes. In the past, some scientific authors suggested to correct (or unsmooth) appraisal-based indices from several types of biases. They claim that the corrected index returns should rather match the returns of the true market values than the original index returns.

Primarily appraisal-based indices were calculated and published for the USA and UK as convenient target markets for investors. So one long series of an appraisal-based index which is appropriate for time series analysis is the NCREIF Property Index for U.S.-properties. The total index is composed of an income and a capital/appreciation component. The application of the correction procedures and the focus of this study is the NCREIF Appreciation Index. The techniques of the correction-procedures are discussed referring to the NPI and meaningful modifications are proposed.

KEYWORDS: correction-procedure, unsmoothing, appraisal-based, appreciation index, direct real estate
Financialization model for new public transport investment via increasing values of residential units in Istanbul, Turkey: A proposal for financialization of public transport infrastructure investments

In the study, it has been intended to be investigated that, how to design a ‘financialization mechanism for new public transport investments in urban spaces’. In that sense, there are two main research questions in the study, respectively, ‘how are transit projects funded, and in that what role can value capture approach play in funding transit projects?’ have been intended to be investigated, with regards to the case for Istanbul, Turkey in the study. So as to begin for such a study, firstly it is to be generally perceived that, how the prices of residential units have been affected according to the investments carried out within urban spaces in some parts of Istanbul, Turkey. Via this respect, the increase in the accessibility level of any real estate due to the effect of being located within an amount of distance from the metro station, cause in price increases, which have been empirically investigated in an amount of studies through the method of hedonic price model, in literature. Following the general review of such investigations in how the prices of residential units to be affected according to the investment carried out within urban spaces, the main concern of the paper is taking into ground that, there have been developed two main financialization models for the implementations with regards to financialization for new transportation infrastructure investment, namely, ‘earmarking system’ and ‘land value capture (LVC) model’ in literature. Via mixing some combinations of the related models, called, earmarking system and LVC system, it is planned to propose a kind of implementation model for financialization of new transport infrastructure investments, that will be accepted by the public communities within urban spaces, which requires sound, fair, and transparent administrative practices and public communities’ involvement in key decision making processes in our study.

The related prices are taken as the dependent variable in the models, which are planned to be derived from the questionnaires with regards to the purchasing prices of the related dwelling units in the housing market. Furthermore, the related data for the model is planned to be gathered via the questionnaires carried out for the real estate agents located within the study area that are located within a 1 kilometer diameter from the metro station.

KEYWORDS: Financialization of urban public transport projects, earmarking system, property taxes, land value capture
50 The Operational Efficiency of REITs

This paper examines the extent to which the operational efficiency of Real Estate Investment Trusts (REITs) is related to their operational performance, risk and stock return. In this paper, the operational efficiency of a REIT is measured as the ratio of its operational expense to revenue. Higher operational efficiency ratio (OER) indicates less efficient REIT. Using a sample of U.S. equity REITs during the 1993 – 2015 time period, we find that REITs’ operational performance measured by return on assets (ROA and FFOA) as well as return on equity (ROE and FFOE) is negatively and significantly associated with their previous-year operational efficiency ratios. The results also show that more efficient REITs explore less market risk, measured by stock return volatility, and credit risk, measured by cash flow coverage ratio. Furthermore, there are evidences that the cross-sectional stock return of REITs could be partially explained by their operational efficiency ratios, and that portfolio consisting of high efficient REITs earn, on average, higher cumulative stock return than portfolio consisting of low efficient REITs.

KEYWORDS: REIT, Efficiency, Performance

108 How can the sharing economy affect the consumption pattern in the real estate market?

The real estate market has undergone some transformations in recent years. In many cases there has been a gap between the desire of the entrepreneur and the consumer of real estate, which has caused a fall in real estate sales. The crises in the economies brought about several innovations in the pattern of consumption and in the daily life of the people. One of these changes was the creation of the concept of resource sharing, which had great acceptance of the markets. This new way of consuming can alter the perception of the individuals about the real estate market, not only in the decision to buy a property, but also of what type of property to live. Sharing economy offered a response to economic crises and the future of consumption can be transformed by these changes. The objective of this work is to better understand how the sharing economy can change the consumption pattern in the real estate market, offering to the entrepreneur a better understanding of this new phase that the world is living.

KEYWORDS: sharing economy, real estate, consumption pattern, mesh, buying decision
How does the credit constraint affect the house prices in the Netherlands?

The aftermath of the recent global financial crisis has led to a stricter macro prudential policy in the mortgage market in the Netherlands, which requires a graduate curtail in the maximum loan-to-value ratio. This policy change would no doubt exert substantial impact on the housing market, especially for the first time buyers. Given the substantial changes in the mortgage lending, the question arises that how would the stricter lending criteria affect the house prices? This paper tries to investigate the association between credit constraints and house prices.

In a broad context, the macroprudential policies seem necessary and essential to reduce the vulnerability of the financial system, especially with the evidence of the subprime crisis. The credit rationing such as a tightened ceiling loan-to-value ratio is the widely used maroprudential policy in the housing market (Jácome and Mitra, 2015). The housing situation in the Netherlands, however, is unique in the context of Europe.

Literature has demonstrated the strong linkage between mortgage lending and house prices, and this linkage is only strengthened for Dutch market because households rely more on the mortgage loan to purchase a house due to the low saving rate. This study aims at exploring the channel through which maximum borrowing limit affects the house prices and attempts to provide a theoretical model to interpret the channel between them. Two measurements of the maximum borrowing limit are used to identify the influence of shrinking credit offering on house prices. Particularly, we are driven to investigate the potential consequences or impacts on the ownership market in a scenario of stricter lending policy. The results are expected to give some hints on the future of the housing market.

KEYWORDS: borrowing limit, loan-to-value, house prices, modelling, the Netherlands
Regional interdependence among four real estate markets is tested using a variety of testing techniques. Real estate markets are represented by their respective real estate indices using monthly data spanning over ten years. Various econometric tests involving error correction models and symmetric/asymmetric autoregressive distributed lag (ARDL) models are utilized in this study. The results reveal the absence of long-run relationships with the notion of cross-sectional efficiency. Nonetheless, evidence is found for short-run dynamic interdependence when the model allows for asymmetric responses.

Regional interdependence in real estate markets have become evident in the midst of the global financial crisis in 2008. With the increased integration of economies, market liberalization and technological advances, markets in general became more interdependent than previously confirmed as witnessed in various studies such as Saunders and Walter (2002), Shen et al. (2010) and Oyedale et al. (2014). However, although many studies have investigated a series of developed and emerging markets. I’m unaware of an empirical investigation testing the GCC real estate markets especially the period following global financial crisis. This study is intended to shed light to fellow economists on the interdependence of four key real estate markets in the GCC through a series of empirical tests. Furthermore, it is of particular interest in this study to dissect the interdependence of the regional real estate markets and test its significance in both bull and bear markets. As such, an asymmetric model is specified and tested for presence or absence of asymmetry.

KEYWORDS: Interdependence, diversification, regional integration, emerging markets, capital markets
India’s Infrastructure sector has witnessed a significant slowdown in the recent past characterised by delay in several projects with some of them becoming unviable due to various reasons such as aggressive bidding, sluggish economy, delays in environmental and regulatory clearances, land acquisition issues, delay in dispute resolution and lack of adequate credit support, among others. This has resulted in massive losses for private infrastructure companies, putting some of them under significant financial stress. While lenders are doing their bit to re-structure the financing arrangement for such projects, renegotiating terms of public-private-partnership (PPP) contracts may prove to be a significant driver to get some of the projects back on track.

As a global phenomenon, World Bank (2004) on more than 1,000 PPP projects in Latin America between 1985 and 2000 found that almost 41.5% of all PPP projects had to be renegotiated. The study states that most renegotiated contracts underwent negotiation within two years of their award, and 85% of renegotiations occurred within four years of the initial award of a contract. These facts highlighting renegotiation within such a short period of contract award is indicative of aggressive bidding or faulty contract design.

The paper would discuss as the PPP landscape expands and India further establishes itself as a matured PPP market, new challenges and opportunities that will continue to emerge. These include innovative financing techniques to reduce cost to public authorities, improved project delivery techniques that can reduce cost of construction and ensure timely completion of projects meeting the desired quality benchmarks. Besides renegotiation, the government, to ward off allegations or litigation from bidders who lose out in the first stage by creating credible institutional mechanisms.

KEYWORDS: PPP, aggressive bidding, renegotiation, institutional mechanisms
The healthcare sector is expanding in the world in parallel to changing medical challenges, growing populations and also increasing number of senior citizens are creating higher demand for healthcare services. The Turkish healthcare market has also been shaping by the very same drivers and is expected to continue its growth with growing population and upsurge in healthcare spending. The healthcare providers are the Ministry of Health, universities and the private sector, with the Ministry accounting for two-thirds of country’s hospitals in Turkey. A large majority of health infrastructure in Turkey is old and out of date and is no longer appropriate to meet healthcare needs considering large and increasing population. Furthermore, the budgetary pressures on the government is forcing to explore alternatives to traditional public sector provision.

In response to the need for large capacity investments in healthcare systems, the Turkish government launched its Health PPP Program in 2010. The aim of the program is to develop new healthcare facilities and to improve service delivery. The government is also seeking private sector participation in the hospital infrastructure sector in Turkey. The Health PPP Program will consist of 50 projects with an estimated EUR 20 billion investment value. Around 15 projects under the Program are at various stages of tender, financing and construction.

PPP is a common model to finance such public facilities in Turkey with various applications such as Build-Operate-Transfer, Build-Operate-Own or Transfer of Operation Rights. The Build-Lease-Transfer model was introduced into Turkish legislation in 2013, commonly known as the City Hospitals/Medical Campuses Law, and it was specifically introduced to support healthcare PPP’s. Under the Build-Lease-Transfer model, the private sector finances and builds a facility and then leases it to the relevant public authority, with the state providing the public service. The infrastructure facility is leased for a maximum of 30 years and the public authority pays a lease fee to the private investor and operates the facility during the lease period.

This paper is aimed to investigate the new financing model in healthcare facilities in Turkey. Turkey’s medical campus programme, also known as hospital PPP’s, has been one of the most discussed topics in the country’s infrastructure sector and legal environment. The healthcare facilities projects are structured on a Build-Lease-Transfer model with strong demonstration effects for the rest of Turkey by promoting the use of PPP contracting, and demonstrating good practice in international PPP standards. This new financing model is attracting not only participation of Turkish private sector, but also international financing institutions, such as ICF and EBRD.

KEYWORDS: healthcare, medical campus, PPP, built-lease-transfer model, Turkey
211 What makes that some PPP projects are more attractive than others?

PPPs vary across industries and that some are more frequent than others. All types of PPP arrangements involve private operation and management and most have private investments as well. The main distinguishing characteristics lie in the mode of entry, ownership, risk sharing and duration of the partnership. This raises the question of private partners’ motives to engage in different types of PPPs.

This research investigates the factors influencing the survival of PPP projects in Poland over the period 2009-2015. Both Cox proportional hazard and competing risk models with time-varying covariates are utilized to distinguish between PPPs that succeeded to the operation phase and those that were cancelled on the procurement stage.

KEYWORDS: public-private partnership, government policy, project success, survival analysis

313 Impact of New Public Management and Public Governance on municipal real estate management in Poland

The main goal of this paper is to present a role of individual concepts of public management in the process of real estate management in Polish municipalities. Special attention is given to New Public Management and Public Governance. The preliminary research results were published* in 2016 and were based on survey conducted among municipalities belonging to single metropolitan area (Marona, 2016). Presented research are based on survey conducted in all metropolitan areas in Poland.


KEYWORDS: Public real estate management, Public asset management, New public management, Public governance, Good governance
During the last two decades, it has become increasingly popular to buy a second home, with a significant number of these acquired abroad. Several factors explain this trend, including: general growth in households’ income; more leisure time, longer holidays, part time employment; more flexible employment including remote working; the housing wealth effect; lower barriers of distance; greater mobility; the liberalisation of financial markets; domestic technology innovations; and new forms of hyper consumption (Paris, 2009). The demand for second homes by foreign buyers in Portugal has been increasing since 2013, in some cases surpassing pre-crisis demand. The motives of this new wave of foreign buyers in Portugal seem to have undergone significant changes. Before the crisis, the key motivations driving second home ownership by foreign buyers were leisure or lifestyle (holiday and or retirement) and investment (to let investment and resale potential and investment diversification) (King, Warnes and Williams, 2000; Janoschka and Haas, 2014). While increasing international investment in the Portuguese property market has attracted media and public attention, there are few studies that try to understand new buyer motivations. Similarly, there is a lack of both empirical and theoretical analyses that elucidate the way in which foreign second homeowners affect housing market dynamics. This paper aims to fill this gap through a comparative triangulated analysis of pre- and post- crisis motivations. We draw on a unique survey sample collected in 2006-7 of British overseas second homeowners. To understand the processes instigating post-crisis shifts, we draw on qualitative fieldwork conducted in 2016/2017 including semi-structured interviews with real estate professionals and other key actors. Alongside new motivations, our results reveal the continued importance of lifestyle mobility related with quality of life, lower costs of life, proximity, climate and security (Sardinha, 2013; Torkington, 2012, O´Reilly, 2007). Today, however, new incentives and strategies, related with taxation and immigration policy, are driving the increasing trend of second home buying in Portugal. We conclude that macro and micro factors related with changing economic and political factors provide the structural opportunities for a diversifying group of residential tourists, investors and migrants in Portugal and reflect critically on the sustainability of this trend.

KEYWORDS: second homes, holiday homes, immigrant investors, foreign investment, buyer’s motivations
133 Limits to the regulation of establishment of real estate through urban plans - the hotel sector and retail as examples

In many countries, local governments feel the need to regulate the supply of a certain segment of the real estate sector in a defined geographical area. Usually, their main objective is to prevent the oversupply of, for instance, hotels or retail in a specific area. As a consequence, the existing suppliers receive (economic) protection, in the form of limitation of competition.

An important way for local governments to regulate the establishment of real estate is through urban plans. For example, the local urban plan limits the accession of new hotels or retail to a certain number, percentage or other unit in a distinct geographical area.

This paper addresses the question to what extent it is legally allowed to regulate an economic sector, like hotels or retail, by way of an urban plan. Under which conditions is it allowed to restrict the maximum number of activities of a specific economic sector in an urban plan and thereby limit competition between suppliers? This question appears in many countries.

To answer this question, the paper will take into account European law (in particular the Services Directive) and Dutch planning law. Also, the most important European and Dutch case law will be discussed. To make it tangible, the hotel sector and the retail sector are taken as examples. It is in these segments of the real estate market, that the question to which extent regulation of establishment is allowed, is most often asked.

In the framework of this paper, in particular article 14, para. 5 Services Directive is relevant. The article in principle forbids restriction of competition by member states (including local authorities). It prohibits the case-by-case application of (a) an economic test making the granting or authorisation subject to proof of the existence of an economic need or market demand, (b) an assessment of the potential or current economic effects of the activity or (c) an assessment of the appropriateness of the activity in relation to the economic planning objectives set by the competent authority. Yet, this kind of assessments are regularly applied in practice by local authorities in their urban plans. The scope of article 14 Services Directive, including case law, will be part of this paper.

The answers to the questions of this paper are of relevance to prospective investors in real estate in EU countries.

KEYWORDS: Regulation, Services Directive, Urban plans, Economic planning, Limitation of competition
338 Railway vibrations: a challenge for sustainable real estate?

In the area close to the railway vibrations can be expected due to the use of the railway by trains. Especially cargo trains can cause vibrations which can affect the real estate and the well-being of the users of this real estate.

Railway vibrations are a complex issue. Passing trains – with persons or cargo – cause vibrations and these vibrations pass through the soil and can eventually reach the buildings in the neighborhood. But there are several parameters which determine if and to what extent a building can be affected by these vibrations: the type of train, the speed of the train, the rail track, the soil and the construction of the buildings in the area close to the railway.

Various organizations are involved in the governance of railway vibrations. Transport organizations are responsible for the trains. In the Netherlands ProRail is responsible for the railway. The owner of the grounds next to the railway has (in theory) some responsibility regarding the railway vibrations through his soil. And the project developer that wants to develop new buildings in the area close to the railway has some responsibility. The future users of the buildings (e.g. apartments) in general need a healthy environment to live and to work in. Not only noise but also vibrations cause annoyances which negatively affect the quality of living and working in those buildings. Severe vibrations may also cause damage to buildings or may negatively affect the function of the building (for example a concert hall with the subway under the building).

This paper explores the governance of railway vibrations in the Netherlands. The general question that is answered in this paper is: how Dutch legislation, policy and jurisprudence (case law) deals with ‘railway vibrations’ in relation to building and real estate. Also examples are given of the governance of railway vibrations in other countries: the United States, Canada, the United Kingdom and Germany. Another, more specific question is, if and how the developer of new real estate close to the railway can be (made) responsible for taking railway vibrations into account in the design phase of the building project.

KEYWORDS: railway, governance, vibrations, legislation, real estate
Rita Yi Man Li, Beiqi Tang

350 Evolution of mortgage regulations in Asian countries

Since the mid-1970s, at least six banking crises correlated with housing bubbles. When housing prices reach the peak or fall sharply, financial crises occur. In some places, housing is an economic growth driver and cornerstone of social stability. Whilst mortgage finance plays indispensable role in financial system stability, regulations provide useful framework in governing the rules of games for many homeowners. Well or poor design of mortgage regulations often affects economy from this perspective. History tells many of the changes in regulations are due to the major economic incidents. In this paper, we aim to study the evolution of mortgage finance regulation in Japan, Hong Kong, China, Korea, Singapore and Thailand.

KEYWORDS: mortgage regulation, Asia

Helen Bao, Lei Feng, Ye Jin, Scott Ziyou Wang

264 Trust and the Effectiveness of Land Use Policies: Perception, Attitude and Behaviour of Rural Residents in China

It has been found that political trust has a significant impact on rural residents’ participation in local governance, support to government policies, and contributions to public goods. The general consensus is that high political trust can improve the effectiveness of local governance by engaging individuals in the design and implementation of public policies. However, existing studies on the effectiveness of land use policies in China mainly focus on the dynamics between local and central governments. This approach inevitably overlooks the attitude and behaviour of rural residents. To bridge this gap in the literature, this project is set up to verify whether villagers’ trust in local governments influence the effectiveness of land use policies. I focus on the following four specific aspects of effectiveness of land use policy in China: 1) land tenure security, 2) land-related investment, 3) willingness to participate and corporate in land market reforms, and 4) land-related disputes and petitions. A large scale questionnaire survey will be conducted to interview rural residents about their perception, attitude and behaviour. Behavioral insights will be applied to analyze and interpret the findings. Results of this project will potentially improve our understanding of the role of social norms (such as political trust) in public policy domain. The ultimate goal of this project is to provide policy recommendations to promote sustainable urbanization and rural development in China through improving the effectiveness of land use policies.

KEYWORDS: Behavioural Economics, Social Preference, Fairness, Corruption, Quality of Governance
299 Land pricing on extension of leases in public leasehold systems

Public leasehold systems are highly contested when it comes to the extension of leases. Public leasehold systems often aim to capture land value gains, but this tends to be more difficult in practice than foreseen. Value capture by authorities, as intended by the system, results in counter movements of lessees that often gain public support to set lower leases. These political processes may even result in an end to these public land leasing systems. Based on a review of scientific literature on international experiences with extension of leases, a reflection is taken on the Dutch experience of lease extensions in Amsterdam and on the Wadden Islands. This reflection will be based on the use of the classical supply curve, which indicates that suppliers are willing to supply a higher volume of goods if the prices are higher. This willingness to supply by a potential supplier depends ideal typically on the supplier’s cost of producing the good. Supply of land in a public leasehold system in the case that leases are extended works a little different from this ideal type. Here it is the public owner that is the sole provider of leasehold land. In cases like this there may be a gap between the lease proposed by the technical advisors of a public landlord, which is based on the residual value of the land, and the lease that is considered to be acceptable in the political context in which a public leaseholder operates. Property markets anticipate on this gap by transaction prices of leasehold properties that do not fully take into account the extension lease as based on residual value in mind. The analysis of this paper is relevant for leasehold systems and other systems of temporary land use, including the land use rights in China, for which an extension may be due. It is also relevant for studying pricing in markets in which the public authority operates and may be informed by public aims in its setting of prices.

KEYWORDS: ground lease, Netherlands, implicit tax, land price, political process
367 Zoning change, anticipation behaviour and land value: a case study on overage payments

Capitalization effects in agricultural land value of a regional planning design are investigated. A recent case on regional design in which property rights are well-defined is used to theorize on market value of agricultural land in a situation of re-zoning. Our case-study shows that land prices increased rapidly in anticipation of a zoning change which reflects the underlying option value. Legal transfer documents furthermore reveal that overage clauses are agreed upon by parties as well. These overage clauses will be exercised ex post only if the regional design is successfully completed to anticipated zoning and land-use. This finding has important theoretical implications as such overage payments have neither been considered in appraisal standards, nor of compensation schemes in expropriation. Our theoretical stand is that ex-post overage payments while important drivers in bargaining are not part of existing definitions of property value. Our case shows that at odds to international valuation standards these agreed overage payments are nevertheless included by the Dutch Tax Authority in a recent tax claim.

KEYWORDS: land use change, anticipation effects, retrospective-payments, overage clause, capitalization effect
54 Consumers’ preferences regarding department stores

The main reason for this research was the bankruptcy of one the Dutch oldest and largest chain of department stores at the end of 2015. The main goal of this research is to find what, from a consumers’ perspective, a department store should look like. A four storey (1500 m² each) building was assumed to be vacant in the shopping areas of the large and medium sized Dutch cities. In addition, it was assumed that each floor would accommodate only one department. The two main research questions were: 1) as department stores may offer more than four departments, which are the four most preferred departments, and 2) to which floor should each of the most preferred departments be allocated.

This study measured consumers’ preferences by means of a survey among approximately 500 respondents. Six different departments were selected to be part of a department store: 1) Fashion, 2) Food, 3) Beauty, 4) Living, 5) Electronics, and 6) Active/outdoor. To familiarize the respondents with these departments, each respondent was asked to pick a number of sub-departments and services from a predefined list to fill each department. The floor area of each sub-department and service was provided. The sum of the floor areas per department had to be within the 1250-1750 m² range.

To answer the first research question, a stated choice approach was used. Each respondent was presented a number of pairs of the 15 possible combinations of four out of six departments. The multinomial logit (MNL) model was used to estimate the utility of each department. The order of preference appeared to be: 1) Fashion, 2) Living, 3) Food, 4) Beauty, 5) Active/outdoor, and 6) Electronics for females and 1) Electronics, 2) Fashion, 3) Food, 4) Living, 5) Active/outdoor and 6) Beauty for males.

The second research question was answered by having respondents allocating departments to floors of the building. Per respondent, this was repeated three times with three randomly picked combinations of 4 departments. Again, the MNL model was used to estimate the utility of each floor for each department. Building on the results for the most preferred combinations of departments, the preferred composition for females is Food at the ground floor, Fashion at the 1st floor, Living at the 2nd floor and Beauty at the 3rd floor. For males, the third floor should contain Electronics.

KEYWORDS: Retail Research, Department Stores, Consumer preferences
The stagnant economy and increasing popularity of the internet has changed shopping behavior. Consumers can use several channels simultaneously when reviewing and purchasing products. Consequently, consumers spend less time in a shopping center. This study investigates the acceptance and influence of mobile promotions on shopping behavior in a shopping center. Specifically, the effect of mobile promotions on consumers’ tendency to visit farther away located stores and their visit duration was measured.

An experiment was conducted as part of a survey amongst 731 respondents in three Dutch district shopping centers during Dec.2015-Feb.2016. Respondents were presented on an IPad with three promotions from different store categories (differing in value) at different positions in the shopping centers. They were asked if they would visit each of the promotion stores of which the location was shown to them on a map. Their reactions to these promotions in combination with their shopping behavior (stores that they had visited and planned to visit) were used to measure the distance they covered during their shopping visit as well as the change in this distance when including a promotion store.

For the analyses first, a Geographic Information System was used to measure the various distances. Secondly, Logistic regression models were estimated to predict consumer’s reaction to mobile promotions for five store categories (grocery, fashion, personal care, jewelry, and catering) based on the explanatory variables including personal characteristics and aspects of their shopping visit.

Results showed that promotions are most effective for personal care and catering stores and least effective for jewelry stores. Also, consumers are unlikely to accept mobile promotions from grocery, fashion and catering stores if they have to increase the distance they had planned to cover during their visit to reach the promotion store. Mobile promotions therefore seem ineffective in order to achieve longer distances by the consumer in a shopping center. However, consumers may visit promotion stores located along their planned route, consequently increasing the number of stores visited and the duration of their stay in the shopping center. Other variables affecting the acceptance of a promotion are age, shopping motivation, education level, interest in a mobile app, promotion channel preference, and whether the promotion was shown just when the consumer arrived at the shopping center.

KEYWORDS: mobile promotions, shopping behavior, omni channel, experiment, shopping center
The economic crises and growth of online shopping has led to increasing vacancy rates in Dutch shopping centers and a negative impact on shopping centers’ liveliness. However, nowadays, retailers have multiple channels to provide their consumers with a complete, so called omni channel, experience. The aim of the present study is to examine online product availability insight as an omni channel strategy for retailers to attract consumers to their offline shop.

To measure and predict consumers’ preference for an online product availability insight a stated choice experiment was conducted. Hypothetical choice situations, including an online and offline channel, were created based on an experimental design. The online channel was described by the attributes delivery time, appointment, costs, and retour effort. For the offline channel travel time, friendliness of personnel, product availability insight, and personalized service were varied. For both channels product price was included. Moreover, product category (apparel (jeans) and electronics (hard disk)) and time constraints (with and without a time pressure) were used as context variables. The choice situations were presented within a web-based survey to 618 respondents during November 2015-January 2016 in the Netherlands.

The data was analyzed by estimating Multinomial Logit (MNL) and Latent Class (LC) models. Results showed that the online product availability insight has significant influence on consumers’ channel choice decisions. Specifically, in case of a high involvement experience good (such as a jeans) consumers perceive this insight as useful. Furthermore the utilitarian related attributes, delivery time, costs, and travel time are important in channel choice decisions. However, friendly personnel in physical stores is an important factor when buying a jeans as well. In case of time pressure, consumers are willing to make more costs if it concerns a high involvement experience good. Furthermore, three segments were found for each product category, for jeans: offline shoppers, aversive shoppers, and multichannel shoppers, and for the hard disk they are: online shoppers, aversive shoppers, and offline shoppers.

Based on the findings of this research, several managerial implications for retailers are given. A product availability insight would be an effective strategy for funneling consumers to the offline channel, especially when it concerns a high involvement experience good.

KEYWORDS: retailing, choice modeling, omni channel shopping, stated choice expriment, product availability insight
119 Real Estate valuation and forecasting in non-homogeneous markets: A case study in Greece during the financial crisis

In recent years big financial institutions are interested in creating and maintaining property valuation models. The main objective is to use reliable historical data in order to be able to forecast the price of a new property in a comprehensible manner and provide some indication for the uncertainty around this forecast. In this paper we develop an automatic valuation model for property valuation using a large database of historical prices from Greece. The Greek property market is an inefficient, non-homogeneous market, still at its infancy governed by lack of information. As a result modelling the Greek real estate market is a very challenging problem. The available data cover a big range of properties across time and include the financial crisis period in Greece which led to tremendous changes in the dynamics of the real estate market. We formulate and compare linear and non-linear models based on regression, hedonic equations and artificial neural networks. The forecasting ability of each method is evaluated out-of-sample. Special care is given on measuring the success of the forecasts but also to identify the property characteristics that lead to large forecasting errors. Finally, by examining the strengths and the performance of each method we apply a combined forecasting rule to improve performance. Our results indicate that the proposed methodology constitutes an accurate tool for property valuation in non-homogeneous, newly developed markets.

KEYWORDS: Automated Valuation Models, Residential Market, Artificial Neural Networks, Valuations, Forecasting Accuracy
241 Big Data in Real Estate: Challenges & Opportunities

Big Data is changing the world we live in. The number of institutions & organizations using Big Data analytics for decision making is increasing day by day. According to a recent study by IBM, Every day, 2.5 quintillion bytes of data is created and hence 90% of the data in the world today has been created in the last two years alone. This data comes from everywhere: users surfing the web, consumer buying groceries, posts to social media sites, digital pictures and videos, transaction records, and cell phone GPS signals just to name a few. This data is big data. Although there is still no commonly agreed upon definition of “big data”, research analyst Gartner defines Big Data as High-Volume, High-Velocity, and/or High-Variety information assets that demand cost-effective, innovative forms of information processing that enable enhanced insight, decision making, and process automation.

On one hand we are having technological advances in Big Data Analytics while on the other hand Real estate industry is still evolving from analysis from simple reports and spread sheets. Thus, the need of the hour for the real estate sector is to be more proactive about Big Data.

This paper will describe the current scenario of big data in real estate sector and how it can be applied to this sector, followed by analysing the challenges hindering big data analytics in this sector and finally providing solutions for these challenges.

The research will also explain the 3V’s (Volume, Velocity & Variety) of Big Data in the real estate sector. Additionally, we will introduce 3 more V’s (Variability, Visualization & Value) to describe the real estate data.

KEYWORDS: Big Data, Real Estate, 3V’s of Big Data, Challenges, Analytics
Arnaud Simon, Saadallah Zaiter

57 Time Varying Betas of European listed Real Estate.

New REIT (Real Estate Investment Trust) regimes have been adopted in numerous European countries over the last 15 years. The aim was to increase transparency and intensify the link between listed and direct real estate; hence reduce it between listed real estate and the general stock market. However, in this paper, we acknowledge a positive jump in the European listed real estate market Beta.

We find different results depending on the country, on the size of the company and whether she has adopted or not the tax-exempt status (REIT).

We examine structural changes in the systematic risk (as measured by Beta) of 150 listed real estate companies (Both REITs and non-REITs) between 2000 and 2015.

Real estate betas have been through various structural breaks which coincide with multiple events. We try to identify the most influencing ones, that are not necessarily the regime shift themselves.

KEYWORDS: REITs, European Listed Real Estate, Systematic Risk Factor, Performance Analysis, Event Study

Vasiliki Vlachostergiou, Anastasios Karaganis

311 Forecasting the Greek office price index using macroeconomic leading indicators

The aim of the research is to evaluate potential forecasting models for the Greek office market, based on macroeconomic variables. As available data – i.e. the office property index – only cover a short time span, from 2006 until 2016, an alternative forecasting approach is examined and presented, along with its respective advantages, disadvantages and potential. The reference period includes partly the commercial market boom that started around 2000 and leveled up in 2006-2008, as well as the on-going recession period that started in late 2009. The proposed forecasting model examines the forecasting significance of the most commonly appearing, in the existing literature, macroeconomic variables, as well as additional parameters describing the particularities of the economic environment in Greece.

KEYWORDS: Macro-economic leading indicators, office prices, forecasting,
Digitalization is a global phenomenon and has an important impact on real estate industry. A growing importance of digital transformation is expected in the future. Especially the real estate sector with solid, physical and palpable buildings seems to deprive this trend.

This research paper will evaluate the recent and future situation of digital real estate trends in particular the DACH region [Germany (D), Austria (A), Switzerland (CH)]. The first part gives an overview to point out the current state of literature and to find a comprehensive analysis of the published literature. Especially the Switzerland publishes outstanding studies in this field. There is a number of publications concerning the future of real estate and the utilized technologies as the meanwhile mainly known buzzwords building information modelling (BIM), internet of things (IoT), augmented (AR) and virtual reality (VR), big data analytics, 3D-printing, cloud solutions and smart concepts. But an overall survey and summary was not yet made. The second part should identify the upcoming topics influencing the real estate industry. The aim is to analyze future business models and trends with their advantages or disadvantages for infrastructure, buildings and companies to structure and classify their future potential. Many new proptechs (consisting of the terms property and technology) coming up to shift the property sector into the digital era, so the development of alternative business models will become essential for real estate business.

KEYWORDS: digitalization, new technology, business model, proptech, trends
The measurement of user preferences has received much attention in consumer research in areas such as housing, retailing, recreation and transportation. A method that is widely used to estimate preference values of attributes of locations, products or services is conjoint analysis. Measuring the preferences quantitatively the method allows real-estate suppliers to determine the relative importance of attributes for meeting the demand of users. As an exploratory tool, however, it has limitations, as the attributes included in choice experiments need to be pre-defined and must be limited in number. Therefore, a complementary stream of research has focused on cognitive mapping methods to elicit consumers’ considerations of attributes and benefits in choice situations.

Arentze et al. (2008) and Dellaert et al. (2008) proposed a cognitive mapping method for revealing consumers’ mental representations of a choice problem in complex decisions. The so-called CNET method has similarities with means-end analysis. The cognitive mapping method does not impose restrictions on the number of attributes that can be included in the analysis. Furthermore, just as means-end analysis, it has the advantage of also revealing the benefits (reasons) underlying attribute considerations. On the other hand, it does not allow quantification of preference values and, hence, assessment of relative importance users associate to the attributes involved, as conjoint analysis does.

To combine the specific strengths of the two methods (conjoint analysis and cognitive mapping), in the present paper, we propose a new approach. The approach builds on the theory underlying the CNET model which states that cognitive links between alternatives and attributes and between attributes and benefits are more likely to be activated in a consumer’s mental representation if the expected gains of taking into account these links in terms of achieving better choice outcomes are higher (Arentze et al. 2015). In this paper we derive how this model can be used to determine the utility of attributes directly from mental representations and extend the model to complex decisions with multiple decision dimensions. In this way, the new method allows taking large sets of attributes into account and at the same time offers quantitative measurement of preferences. We illustrate the approach using data on 594 individuals’ means–end chain responses for a hypothetical shopping location decision problem.

KEYWORDS: Preference measurement, Shopping location choice, Cognitive mapping, Random-utility-maximization models
Angelika Kallakmaa

247 Housing market in Baltic countries: business as usual?

The economy of Baltic countries has quickly adjusted to new circumstances brought about by the global crisis. Despite of recovering of economy the growth has remained slow. The housing market and financial sector are tightly connected. Different factors influence the average housing prices, but there is always a link between credit and house prices. For example the housing boom in Estonia was mostly driven by a large credit supply and favourable loan conditions. Household’s financial situation in Baltic countries has improved and the stock of housing loans is growing. The aim of this paper is to outline the dynamics of the housing market after the crisis and compare the situation in Baltic countries.

KEYWORDS: housing, Estonia, housing loan, Baltic
Perceived quality of the buildings in the Paris office market.

Quality of the buildings in the Paris office market is often considered just as a mix of financial variables and objective characteristics. The main problem of this approach is that price is supposed to well reflect the quality of the property. However, real estate markets are not transparent, goods are complex and the information on the characteristics is difficult to obtain. The informational content of price might also reveal others aspects such as rarity, or just willingness to pay in an imperfect world. It suggests that, for market participants, price is less a mirror of the quality, than the origin of the idea of quality itself. For instance, transaction prices are often based on similar properties prices, more than on in-depth studies of the quality of the buildings. This situation can lead to disconnections with the reference value.

To address this issue, we develop a methodology directly based on the dimensions of the quality. Certifications or labels already provide indications of that kind, but these approaches are often normative, with arbitrary weights explicitly decided by experts committees. Specific approaches also exist (Breeam, HQE, Wired...) but they are partial and oriented toward a goal (environmental, connectivity). Here, we propose a new approach where the levels of quality for each characteristics are judged by market participants themeselves. More precisely, this approach consists in making explicit market quality judgments.

In the first phase, an experimental experience is realized. It is asked to a group of market participants to formulate global quality judgements on buildings of the Paris office market, described by their characteristics. Then an econometric procedure is applied to identify what are the most valued characteristics. This approach allows different buildings to be positioned relatively to a benchmark and provide an alternative way to consider quality, i.e. the reference value of the building. It also makes possible to track what are the evolutions in the quality judgements in the market across time.

KEYWORDS: Perceived quality of the buildings, Reference value, Paris office market, Revealing market judgment
The housing market plays an important role both in the social and economic life. Residential construction and the entire housing sphere have a fundamental effect on the standard of living of citizens and on the economic strength and development of the country. They play a tremendous role in: individual dimension – they satisfy basic human needs; community dimension – they provide a framework for basic social ties; material dimension – residential assets represent one of the most essential types of family, community, national and economic assets, whereas the housing sector is one of the most important components of the economic system, generating jobs, creating technical infrastructure and providing a foundation for the social infrastructure.

In the process of integration of the European economies, one can see a growing trend towards the convergence of the housing markets. Two groups of factors have a fundamental impact on the convergence processes:

1. Internal factors of a regional and national nature, mostly connected with historical conditions which determined the functioning of the housing markets, housing policy priorities, economic potential and investment attractiveness of the region and the country;

2. External factors, including social and economic factors of international magnitude. They have their source in the progressing integration of the European economies and are accompanied by the free movement of capital, migration of human resources and unification of cultural models and lifestyles.

The aim of the article is to assess the scope and scale of convergence processes in regional housing markets in Poland. Both the real and the nominal convergence are analyzed. The research on real convergence includes: ownership structure of the housing stock, the quantitative and qualitative structure of the housing stock, the level of unsatisfied housing needs. In a nominal dimension, the analysis of convergence relates to the level of residential property prices.

KEYWORDS: housing market, convergence of housing markets, regional housing markets
189 The incidence of low occupancy rate for residential properties in Nigeria, a case study of Nigeria’s federal capital territory, Abuja

The most important housing challenge in Nigeria and particularly Abuja is not the availability of housing but the inability of citizens to afford rent for the existing stock. Extremely high cost of rent and service charge culminate into low occupancy rate for residential properties. Property owners create an artificial scarcity by continually increasing rent on empty completed residential properties without any economic basis, for such rent fixing or increment. Most of these properties are not investment-driven developments. This study examines the causes of the voids and the solution. A simple questionnaire was designed and administered to key stakeholders to elicit probable responses from where likely solutions were proffered and credible recommendations drawn.

Keywords: low occupancy rate, rents, residential properties, policy, Abuja

Steffen Heinig

109 The quantification of text - Supervised learning methods - The application of textual sentiment indicators to the UK CRE market

In the real estate industry information are an essential good, which influences the behaviour of market participants. One main source of information about the market are news articles. For the financial markets and especially for the real estate market the quantification of text represents a new source for the extraction of market sentiment. In this study, I examine a newly constructed corpus of news articles regarding the London real estate market, with the help of supervised learning algorithms (i.e. SVM, Maximum Entropy, GLMNET). More than 100,000 articles are used over a period of 11 years (2004-2015). One central issue during this process is the annotation of the documents in the training corpus. Since the real estate market does not offer an annotated news corpus and labelling such a large corpus manually would be expensive in different ways, I propose a new method of how this gap can be overcome. The use of real estate related Amazon book reviews for the training process of the different classifiers has been proven to be quite promising. I used more than 220,000 reviews for the training process. The results suggest, that the book reviews are a good substitute and classifiers trained on the reviews are able to extract the sentiment from the articles. Satisfying graphical results reveal, at least for some of the different classifiers, that the underlying market sentiment was extracted. The textual sentiment indicators are also able to improve the performance of different models. In this study, I will use the textual indicators in a probit model to see whether they have any signalling power about future developments.

KEYWORDS: Sentiment Analysis, Supervised Learning algorithm, Quantification of text, Natural Language Processing
141 Saudi citizens perception about ownership of apartment as a residential option in Jeddah city

The Kingdom of Saudi Arabia (KSA) has adopted a set of strategies and regulations aim to encourage the vertical construction development. Among these regulations is that the Law of Ownership of Real Property Units and Plotting thereof in 2002, which gives the permission to issue an individual proof of ownership for each of the development’s premises or apartment.

As a result of this legislation, various development companies invested in these types of buildings due to the increase demand for the multi-storey building apartments located at the main cities in KSA as an alternative housing pattern. While the dominant preference is to live in detached villas in KSA, the significance of this study emanate from the objective to investigate the extent Saudi citizens in Jeddah city —as a case study— accept to live in this type of housing and the willingness to buy such properties and their suggestions to develop these types of housing.

In addition, this study will assist the policymakers and developers in KSA to provide suitable housing solutions for citizens. This study is twofold, present and analyse the secondary data besides another analysis for the electronic survey conducted by the researcher. These results reveal that the selection to buy these types of housing is less preferred because of low quality of the construction, the Size and less concern for the privacy issues.

This study recommends to raise the level of awareness regarding the selection of the housing type with consideration of the individual genuine needs and to enact legislations that preserve the rights of the owners as well as activation of the landlords union.

KEYWORDS: Housing choice, Apartment, Saudi Arabia, preference, Jeddah
The impact of housing conditions on educational achievements of children is a controversial subject in scholarly research. At the same time, the political debate seems to be rather certain about the positive influence of housing conditions and therefore usually aims at providing financial support for young families who want to buy a house. Exploiting different datasets for the unique setting of Germany, this paper aims to show that not housing conditions but (correlated) abilities by parents have a substantial influence on the educational attainments of children.

For the empirical investigation of the relationship between homeownership and the educational achievement of children, several logistic regressions are run. The PAIRFAM and the NEPS data provide a powerful resource for assessing the effects of housing conditions, children’s characteristics, neighborhood relations and parental characteristics and abilities in Germany. We include information on the parents accumulated by interviews and tests that capture a variety of skills and their relationship situation. The results of our study indicate that it is not the housing condition per se that can positively influence children as it has been noted in previous studies. There are rather skills and abilities of the parents that are correlated with better housing conditions which have a positive impact on children. This paper is most closely related to Barker and Miller (2009) as we also extend previous studies by using different data. What sets us apart is, first, our unique dataset. To our knowledge, detailed information on the parents’ abilities and skills has not been available in previous econometric analysis. Second, our analysis focuses on the special case of Germany. The German educational system can be considered as rather independent of the financial resources of the parents and more transparent with many possibilities to achieve higher education levels. Furthermore, the German housing market is characterized by more conservative bank lending practices than in other countries leading to lower homeownership rates. If there would be an effect of homeownership on education achievement, it should especially prevail in the German setting.

KEYWORDS: homeownership, housing environment, educational attainment, policy
256 Applying behavioural economics to residential energy efficiency policy

Behavioural economics (BE) provides a perspective to better understand and predict the decision-making mechanism of individuals. In the last decades, numerous literature discussed the application of BE in various subjects from both theoretical and practical aspects. There is also an increasing trend for the governments to incorporate the BE approach into the policy-making process.

To date, however, research on the role of BE in energy policy are mainly at the academic level. Some critical researchers argue that BE needs to establish its reliability before generalising the laboratory results to policy initiatives. This paper will take a closer look at the influence BE has had on both residential energy efficiency and policy-making, and provide an estimation of further research orientations.

Methods: This research will provide a panorama of the literature in BE with an application of the energy efficiency issue, collect examples that integrate BE approach in the making of policy to promote residential energy efficiency worldwide, summarise the generalised principles, tools and models, and accordingly, discuss the future opportunities, challenges and limitations.

Results: Research of BE has been widespread in recent years, especially in developed countries, with respect to policy-making. In the field of residential energy efficiency, well-designed BE policies can contribute by providing countermeasures towards, or even taking advantage of individuals’ irrational behaviour and prevalent cognitive biases, and influence residences’ behaviour patterns of energy usage. However, interest in research will not automatically translate into actual action steps. More empirical research and rigorous experiments should be carried out to realise the implementation of BE policy.

Conclusions: This research highlights the potential of BE to improve the residential energy efficiency. The insights from BE can help policymakers to design effective differentiated policy interventions through the understanding and prediction of consumer behaviour, especially phenomena that neoclassical economics failed to explain, to better achieve the energy efficiency goals. Given the current overall trend and vast scope, the issue of BE is likely to continue and deserves a further attention.

KEYWORDS: behavioural economics, building energy efficiency, housing policy, energy behaviour,
78 Maintenance Management Systems for Condominium Owners’ Associations under the German Condominium Act

In Germany many buildings owned by condominium owners’ associations were erected in the 1960s and 70s. Obviously, these owners’ associations now need to implement efficient maintenance management systems. In practice, however, there are often conflicts of interests between the different owners and it is difficult for them to come to an agreement. Owners often underestimate maintenance and repair costs and try to avoid building up reserves for contingencies as long as they can. In some cases deferred maintenance is the unfortunate consequence.

Under German Law (Condominium Act) there are no binding rules how maintenance management systems can be implemented by condominium owners’ association. The property manager of the condominiums, appointed by the owners in accordance with the German Condominium Act, is of crucial importance in this process. As an expert, he usually knows the condition of the building better than the owners. Instead of waiting for defects to occur, the property manager should inform owners timely about the repairs and replacements, which are to be expected in the next few years. He should encourage owners to increase the monthly rates payable for contingencies. It is highly recommended to avoid, that owners are required to make special payments to cover the repair costs, because the contingency sum is not high enough. Some owners might not be able to pay the amount required within a few weeks.

Research on four buildings, all located in Munich, erected between 1965 and 2004 and owned by different condominium owners’ associations shows, that the two conventional methods that are common in Germany to calculate maintenance and repair costs are not sufficient for property managers to successfully implement maintenance management systems. Firstly it is essential for property managers to prepare a 5-year-forecast of the expected maintenance and repair measurements required on the basis of the condition of the building. Secondly property managers are required to calculate on this basis the estimated maintenance and repair costs. Thirdly owners should decide in accordance with this forecast to adjust their monthly rates for contingencies. Thus maintenance and repair costs can be covered completely by the reserve, the owners have paid in advance for contingencies.

KEYWORDS: Maintenance, Contingencies, Condominium Owners Association, Repair Costs, Property Manager
Yunqing Xu, Albert Junjian Cao

263 Property-led urban development and housing market efficiency in urban China: the case of Suzhou

There has been a rising call for reforming the predominantly property-led urban development (PLUD) in Chinese cities, largely due to PLUD’s negative impacts in economic, environment and social arenas. However, such a reform has proved to be challenging as PLUD has become the most convenient and effective solution against economic slowdown at national and local levels. In the housing sector, market housing development has been under repetitive cycles of government intervention to tackle the impacts of rapid price inflation and economic slowdown. This study aims to gather empirical evidence of the inefficiencies in China’s urban housing market and discuss factors leading to those inefficiencies. Using Suzhou, a key city in the Yangzi River Delta, as a case study, it adopts an indicator system for China, based on an international expert survey, to investigate changes in local land and housing sectors as well as their underlying determinants and urban impacts. It argues that a comprehension of the prevailing institutional arrangements is needed to achieve in-depth understanding of local and national housing policy drivers, barriers and solutions. The paper concludes that de-coupling of PLUD and housing market intervention can work to enhance the efficiency of housing market and promote long-term and structural changes to improve urban sustainability.

KEYWORDS: Property-led urban development, housing market efficiency, housing policy, sustainability, urbanisation
Housing investment is a multi-component process due to the importance of the concept of housing for people in addition to the fact that economic approaches influence the processes relating to housing acquisition. Factors such as household size, characteristics of the desired housing, and consumer behaviors constitute a base for future housing needs. Such data can be used as a starting point in determining housing policies and real estate investment decisions. Economic behaviors such as a decision to purchase housing of individuals are also closely related to sciences such as psychology (rationality of consumer preferences), business administration (marketing), and economy (economic indicators). Consumer decisions are integrated ones constituted by the combination of several factors. The decision to purchase and/or demand of consumers for housing that vary in terms of timing is considered to be influenced by a number of factors such as the gross use area of housing, its price, number of rooms, and environmental features and marketing approaches are also determined in this direction. It is emphasized in the related literature that factors influencing the decision to purchase housing include the quality of the neighborhood where housing is situated, location, external appearance, neighbors, security and safety, proximity to shopping centers, proximity to schools, transport facilities, features of roads and streets, and proximity to public transport. With a collective examination of the data collected through face to face interviews and surveys made by those who purchased housing in the Ankara Province within the last year and the data obtained from municipalities and deed registry offices, factors influencing housing purchase decisions and the demand were analyzed. In short, it is observed that housing demand is depended upon many qualitative and quantitative variables and that in addition to macro-monetary indicators, the price, location, and other characteristics affect demand directly. According to the survey results, there is a significant relationship between the household size, gross usable area of housing, household income, and the price of housing and social and environmental variables are also found to be effective in making purchasing decisions.

KEYWORDS: Housing demand, customer behavior, legal and institutional regulations, factors affecting housing demand, Ankara Province
The main contribution of this paper is the empirical evidence of the regional variations in mortgage interest rates within the UK’s mortgage market. Variations in mortgage rates may reflect regional imbalances in the supply and demand for mortgage funds, also incorporating economic considerations of credit risk, pricing policies and various degrees of competition. This study differs from the existing literature in its provision of the previously unexplored findings. This is achieved by estimating a model incorporating three simultaneous equations, applying Understanding Society Survey data for the new mortgages originated in 2001-2014. Applying unique algorithm for calculation of contractual mortgage rates, modelling aims to determine whether mortgage rates vary by region, and urban versus rural location. With a competitive market and elastic supply of credit funds, regional variation in mortgage pricing should not exist. However, this paper finds that mortgage rates tend to be cheaper in England and Northern Ireland, also suggesting more expensive mortgage rates for the rural locations. These are important findings, as an awareness of the possibility of regionally asymmetric response to income shocks and monetary policy decisions may assist in optimising policy considerations.

KEYWORDS: urbanisation, housing affordability, tenure choice
In a number of markets with high house prices, governments have implemented various forms of stamp duty. Stamp duty is a tax on the transfer of assets, including residential property. Policy-makers claim that stamp duty increases are an instrument through which they intend to decrease property demand, and ultimately ease housing costs. However, empirical evidence suggests that such taxes are ineffective in achieving this objective.

We present evidence that the likely reason these taxes for this outcome is that the demand function of property buyers in these high house price markets are not elastic. The event study methodology is used to test the impact of stamp duty on the residential property price and transaction volume.

Following this, we develop a model to show that the real impact of residential property stamp duties is an increase in government revenue. Governments in high housing cost markets face an agency-like problem when determining taxation policy. Our paper aims to examine the impact on government revenue from stamp duty using data from Hong Kong.

Hong Kong presents a natural experiment in which to test our model. Often ranked as one of the world’s most expensive and unaffordable property markets, the Hong Kong government has introduced various stamp duties since 2010. While their stated aim is to stabilize housing prices and transactions, no prior studies have examined the effect of stamp duty on government revenue.

Our findings provide a timely contribution to the current discourse on housing affordability policies. While tax policy may not directly ease housing costs, through redistribution of wealth governments may still use tax policy to alleviate the affordability problem.

KEYWORDS: residential property, government revenue, stamp duty, taxation policy, housing price
Magdalena Zaleczna

181 A comparison of instruments and effects of the reforms of municipal housing stock in selected EU countries

In EU countries an assistance in meeting citizens’ housing needs has been an important task carried out by the local government for decades. Most typically the municipal housing stock was the basis in the allocation of housing to those recognized as entitled to the aid. Many reforms have been provided to modify applied solutions, they have had form of new rules for the privatization of both public stock and its management, new application of used measures and new solutions. There is a need of a comparison of instruments in use and consequences of their application among EU countries. The author is particularly interested in the differences and similarities between reforms and their consequences in the countries of the old EU and the post-socialist countries. It appears that not only the economic issues have an importance for results of reforms, but also the social perception and assessments of reforms.

KEYWORDS: municipal housing, social perception, reform, post-socialist
An impact of neo-liberal policy on a transformation of the housing market in Poland

The housing policy is based on the selection of the concept of participation of a state in meeting the housing needs of citizens. A scope of an intervention depends on a part of the responsibility for creating appropriate housing taken over by the state, and the reported housing needs. Analyzing data collected by parties responsible for the implementation of housing policies in different EU countries, you can come to the conclusion that the level of an aid granted by public bodies, both governmental and local is insufficient in relation to the reported needs, because millions of people are waiting for housing assistance. In Poland the official data indicating a low number of citizens waiting for social and municipal housing give an impression that the housing situation is in this country very good, but it is not well founded assessment. Both the quality and quantity of the Polish housing stock differ negatively from the standards in EU countries. The low number of applicants for the housing assistance is a result of the housing policy for the last 27 years. On the one hand an apartment has been considered as a free-market commodity and citizens should gain it by own effort, an ownership is a priority. On the other hand communal housing stock has been used by people who lived in it in transition, regardless of current income, thus blocking the possibility of exchange of tenants. A lack of new social housing and awareness of the long-term queue for housing allocation cause resignation from applying for housing assistance. This article is an attempt of a summary of the scope and tools of housing policy conducted in Poland since 1989. Authors focus on their economic and social impacts.

KEYWORDS: housing policy, society, Poland, neo-liberal
222 Empire building? Analysing the drivers towards mega-mergers in the English housing association sector

Fundamental changes to the economic climate, government regulations and investment funding have had a profound impact on the operating environment for English housing associations, forcing them to pursue new business models in order to ensure their long-term survival. Whilst mergers are not new for the sector, a new wave of mega-mergers has materialised, with super-sized housing associations projected to become amongst the largest volume housing builders in the country. Scale, however, does not necessarily guarantee automatic efficiency gains or increased development capacity. Yet with size comes status and influence, strengthening the ability for organisations to shape their operating environment and take control of their future. Drawing on organisational theory, this paper examines the way in which wider policy and business drivers alongside managers’ motivations and strategic choices have culminated towards this mega-merger activity. It also considers how other housing associations are to respond in order to compete with these super-sized rivals. The paper suggests that this trend is not only changing organisational forms and affecting organisational cultures but also transforming the future direction of the sector.

KEYWORDS: not-for-profit housing providers, affordable housing, financialisation, state regulation, investment demands
The private rented sector provides housing to a large proportion of European households. Within Europe, however, the nature and experience of the PRS in different countries is diverse. Private landlords in the UK experienced a boom period between 1997 and 2007. Hundreds of thousands of new investors were drawn to the private rented sector (PRS) by the availability of mortgage finance and the combination of rental returns and capital growth. This ‘golden decade’ was brought to an end by the global financial crisis. However, the same crisis greatly reduced the affordability of home ownership as lending criteria tightened. The result was that the PRS continued to grow as a proportion of all housing provision. Private landlords in Scotland have been affected by policy and legislation from both the UK government in Westminster and the Scottish government in Holyrood. From both directions there have been decisions made and policies implemented which have reduced the attractiveness of the PRS as an investment. The paper uses qualitative interview data to give voice to the perceptions and attitudes of a cohort of private landlords with current PRS investments in the city of Edinburgh, Scotland.

KEYWORDS: housing policy, private rented sector, landlords, Scotland,
Rodrigue Bazame, Harun Tanrivermis

389 Urban Development and Its Implications for Housing Policy: The Case Study of Burkina Faso

Since the first implementation of the Agrarian and Land Reform Act in Burkina Faso in 1984, urban development and housing policies have been important in the economic development strategies of the country and significant projects and programs have been enacted in the aim to improve households living in urban and rural settlements. Although the urbanization rate is one of the lowest in Africa, the country is experiencing a continual urban growth: From an urbanization rate of 12.7% in 1985, this rate is estimated to be at 31.5% in 2016. Furthermore, this urban growth is fundamentally demographic due to the relatively high rate of population growth and the constantly increasing rural-urban migration. The lack of urban planning, infrastructure and convenient housing supply are among the most challenging issues in Burkina Faso urban development.

The country experience in urban land use shows that in the 1950-2012 period 716,960 plots were produced, which cover 55,771 hectares for settlements and 19,463 hectares for urban roads. A comparison of the number of households in 2013 and the number of residential plots shows that there is a surplus of 57,133 units of plots, however, there are some disparities between the cities at the same time at the country level. Despite land allotment for housing production has been completed in cities, the government efforts in terms of investments in relevant infrastructure are utterly insufficient. Furthermore, a housing policy seemed to be inexistent in the country for long time: around 90% of houses are built by the owners without using a mortgage system and almost 4/5 of the existing housing supply do not have a legal proof or titles deeds. These issues and the squatting phenomenon common in the cities are interrelated with the real estate market, which is still embryonic in the country. The new housing program, in the scope of which the government is forecasting to build 40,000 houses units during the period 2016-2020 in all regions of the country through public-private partnership, is an opportunity to make up for lost time in the framework of the government’s housing policy responsibility. The aim of this study is to analyze the urban development and housing issues in Burkina Faso using national and international data within the framework of historical and current situation analysis.

KEYWORDS: Urban policy, urban land development, housing issues, Burkina Faso,
Emerging economies are saddled with deficient core infrastructure of housing more particularly for lower income category, India is no different either. Efforts of past 50 years to create a sustainable housing stock for lower income households has not yielded desirable results. Several policy initiatives by past and present governments did show resolve to address this issue conclusively but they did not succeed as well. Although within federal structure of India, land and housing rests with respective state (provincial) governments who act as per their own political ideology that results in inconsistent approach sending confusing signals to real estate industry. Certainly this is an unhealthy situation and it has so far kept the real estate industry at bay and their participation has been minimal in lower income housing.

So what is going wrong? We have demand for millions of affordable houses (size below 600 sq.ft. of built up area), we have several policy initiatives by state and federal governments, we have a hyper active real estate industry, we have notable intellectual pool to address engineering and other technical issues, but India is making a very slow progress in supply of affordable housing supply despite ambitious target of building 20 million houses by 2022, in urban area.

There are two critical pieces of puzzle, first – real estate industry has not embraced affordable housing sector despite understanding the opportunity, second – lack of mortgage finance to target customers. In last five years there has been significant changes in both these fronts that might make affordable housing darling asset of real estate industry.

Author intends to analyze current policy regime towards affordable housing, with focus on its connect with real estate industry. Author would highlight the roadblocks on highway of affordable housing supply with market perspective and how improved access to credit for target customers would accelerate the process of housing supply. Author would document the real time opinion of industry and target customers through primary survey whereas policy review would be based on secondary research. Research would conclude with an appropriate business case based on market fundamentals to speed up affordable housing supply in north India.

KEYWORDS: Real estate, mortgage finance, Affordable housing, business model, housing policy
The external effects of public housing have been a controversial topic in housing studies. Negative spillover effect of public housing on nearby property values may exist due to the deteriorated physical structure of public housing and the concentration of poor tenants. Some researchers believe that concentrated poverty by the public housing could lead to crime and youth misbehavior, thus resulting in further neighborhood decline. But, other scholars argue that public housing, such as HOPE VI projects, could contribute to neighborhood revitalization by removing disamenities of the neighborhood.

Although the results of empirical studies about the spillover effects of public housing are still inconsistent, the impacts of various assisted rental housing programs have been investigated continuously in the context of developed countries, in particular, using many U.S. cases. But, less is known regarding the effect of public housing projects in Asian countries having different institutional and market contexts. Therefore, this study aims to analyze the effects of public housing projects in Korea. South Korea has experienced rapid urbanization and economic growth, and it has a very unique housing tenure system, called Chonsei, and relatively lower level of residential segregation compared to U.S. cities.

Specifically, three research questions are addressed.

(1) What is the effect of public housing projects on nearby home values?

(2) Does the effect of public housing vary depending on the income level of target population?

(3) Does the effect of public housing vary depending on the rental tenure types?

KEYWORDS: public housing, spillover, difference-in-difference, hedonic price model, housing policy
Affordability of housing in Shanghai has deteriorated as house prices rose 46.1% in 2015 and 2016. This paper examines housing policy changes in Shanghai since purchase restrictions were imposed to stop housing investment by non-local residents and affordable and social housing provision provided in quantity since 2010. It employs an analytical framework of imposed and induced institutional changes to examine the practices in the housing market that seek to compromise government controls and the responses from the Shanghai Municipal Government to achieve housing market stability. The paper also reviews the provision of affordable and social housing in Shanghai to improve housing conditions of low-income households and provide help to low-middle income households to step on the housing ladder. It concludes that the government lacks a long-term strategy to stabilise house prices and needs to improve management of its expanding affordable and social housing stock to reduce abuse by some beneficiaries.

KEYWORDS: Housing prices, Shanghai, institutional changes, housing policy, affordable and social housing
7 Placing the theory of ‘affordances’ in Kenya’s public housing

The paper looks at public housing provisioning in Kenya given the perpetual to and fro movement of people from the rural areas to urban centers and back to the rural areas. Here, I choose to use my experiences from Nairobi Kenya as a foil to describe what I conceptualize here as quasi urbanization and the pitfalls this practice creates for social/public housing, social capital formation, social mix, and place attachment. To some extent, this back and forth movement is a major factor in the rapid spread of informal settlements across many parts of sub Saharan African cities. I start off with an old debate in the literature that seeks to clarify the distinction among houses, homes and dwellings. Even though not as an academic discourse, a number of Kenyans appreciate these differences and indeed describe their accommodations in urban and rural areas in terms closely resembling the academic distinctions among the three terms as houses, homes, or dwellings.

I intend to problematize (intellectualize) the fact that whereas there are thousands of Kenyans who are now second or even third generation born in Nairobi, the popular tendency among Kenyans (even among neighbors who have lived side-by-side for long) is to still ask one another ‘where do you come from?’ It therefore seems to be a popular (mis)understanding that one does not come from Nairobi or indeed any other major urban center but is often there purely for work, study, visit or just about any other activity but not as a ‘permanent resident’ so to speak who lives, works, and will age, die and be buried in Nairobi. I have heard similar arguments from other parts of Africa. To try and make sense of this conundrum, I will employ apply Chemero’s (2003) theory of affordances to answer the following three questions:

1. What is the history of urban housing in Kenya?
2. What shapes the sense of urban dwelling in Kenya?
3. What is the impact of these social and historical dynamics (questions 1 and 2) on public housing provisioning in Kenya?

KEYWORDS: Kenya, housing policy, public housing, affordances, place-attachment
56 Request and Potential for Social Housing Projects in Germany, by the example of the Federal state of North Rhine-Westphalia

The demand for residential housing in Europe has increased in recent years. In Germany, affordable housing space in growing regions is becoming scarce. This results in many household types hardly being able to provide themselves with adequate living space. Although there is a high demand for housing with rental control, the relevant housing stock has declined in recent years. Considering the rising demand and the simultaneously declining stock of subsidized housing, the underlying conditions for the profitability of housing projects with rental control must be optimized. In 2006, there was a redistribution of responsibilities between the federation and the states in Germany. As a result, the responsibility for subsidized housing was transferred from the federation to the single states. This has the advantage that the laws can correspond to regional needs, but the different underlying conditions are hardly comparable. With regard to the population and the economy, there is an increased interest in research and there are numerous publications concerning publicly subsidized residential housing. Although, currently there is no certainty regarding the influence of the nation-wide framework conditions on the typology of subsidized housing projects. Therefore, there is a need for a critical investigation of the aforementioned uncertainty.

This paper is part of a PhD at the Chair for Real Estate Development at the RWTH Aachen University, within which the regional and local differences between the laws and regulations are examined. The overall objective is to analyze to what extent the realized types of dwellings vary in selected federal states. Furthermore, it will be proven if this variation can be justified by differences in the funding guidelines. Within this paper the named issues and results are exemplary described for the federal state North-Rhine-Westphalia. The aim is to investigate the conditions of subsidized housing and to determine whether they influence the realized housing typologies.

The state-specific conditions as well as the various regional regulations of the state North Rhine-Westphalia were analyzed. Additionally, this examination was supplemented by a real estate analysis of recently built residential housing projects in the German region. Various project partners support the examination. The housing types of the individual case studies were empirically examined. Empirical data of subsidized residential units was therefore determined and the influence of the various conditions for publicly subsided residential construction on the typology of the accommodations was investigated.

Based on this investigation, it seems that there is a strong influence of the laws and offers for social housing projects on the realized apartments in North-Rhine-Westphalia

KEYWORDS: Social housing, Subsidized housing, Housing policy, Accommodation typologies, Real Estate Development
167 A changing model for Real Estate Returns: a factorial approach

This paper aims to describe the deformation of the factorial model that explains real estate returns over time. If economic and financial factors may be used to estimate a repeat sales factorial index, their impact on the model may change from one period to another.

This research based on the methodology of the factorial index elaborated in Baroni M, Barthélémy F. and Mokrane M, JRER, 2007, addresses this issue and highlights the changing impact of the interest rates. It also tries to identify specific events that provoked these changes.

To reach this objective, the index for the period 1982-2001 is considered as a basis, and then the weights of the factors are estimated by rolling periods with a one-month step until 2015. In this way time series of each factor weights are built and then analysed.

The BIEN database, provided by the Chambre des Notaires of Paris, which includes repeat sales transactions for residential properties in Paris and close surroundings over the 1982-2015 period is used to perform this study.

KEYWORDS: Real Estate indexes, Repeat Sales indexes, Factorial Model
138 Importance of housing wealth effect in selected European countries: evidence from panel VAR model

In this study, a system estimation of housing wealth effect on consumption by employing panel vector autoregressive model is conducted for a panel of 28 selected developed and emerging European countries. A system of three endogenous variables: consumption, disposable income and housing wealth (approximated by real estate price indices) is modelled. Since housing wealth effect should be more prominent than financial wealth effect, in this paper the dynamic relationship between consumption and housing wealth is empirically tested. The panel vector autoregressive (PVAR) approach allows for the response effect from consumption to wealth and income. In addition, it illustrates how response of consumption and housing wealth differ according to the nature of shocks to them. The data for unbalanced panel spans (when available) from 1990 to 2016. The dataset consists of yearly indices for personal consumption, disposable income, wages and real estate prices. Data sources used in the empirical analysis include the Vienna Institute for International Economics (WIIW) and AMECO for personal consumption, disposable income, wages, and Bank for International Settlements (BIS) database for real estate price indices. All variables are transformed into logarithms and are expressed in first differences. The estimation is conducted using generalised method of moments (GMM) and addresses the issue of unobserved heterogeneity by correcting for fixed effects. Impulse response and forecast error variance decomposition is presented, as well as VAR lag selection criteria, Granger causality test results and roots of VAR companion matrix. With the aim of comparing the magnitude of income and housing wealth shocks on consumption in developed and post-transition European countries, the main panel is divided into two subpanels. In addition, the impact of financial crisis in 2008 on housing wealth shock on consumption is analysed by splitting the data set into two sub-panels: first one spanning from 1990-2008 and the second one spanning from 2009-2016. The results of the empirical analysis reveal that the response of personal consumption to a housing wealth shock is more prominent for the panel of post-transition European countries when compared to developed countries. Also, the higher responsiveness of consumption to a housing wealth shock is evident before crisis, whereas in the post-crisis sample, housing wealth has no significant impact on consumption.

KEYWORDS: consumption, housing wealth effect, panel vector autoregression, Western Balkan countries, CEE countries
Real estate investments become more and more popular form of investing in Lithuania. Prime reasons for this are relatively cheap financing, growing income of residents and growing economy in general. Investments into residential real estate represent the most popular type of real estate investment among individual investors. When buying a residential unit with the purpose of value appreciation and income generation, individual investors often overlook major value drivers for real estate investments in a long run. Overconfidence, normalcy bias, expectation bias, bandwagon effect and other cognitive biases in decision making may lead to overvaluation of particular investment, general growth of demand and, finally, prices of real estate. The paper discusses major value drivers of residential real estate and major risks when investing into residential property, with special attention to low financial literacy of market participants, major cognitive decision making biases and limited knowledge how real estate market operates in general.

KEYWORDS: residential real estate, risk, investments, value drivers, decision making biases
289 Presale pricing strategy and developer competitive intensity: A case of the residential market of Foshan, China

In recent years, more and more attentions are paid to the second-tier cities especially the satellite towns around the first-tier metropolis. Foshan is a city located in the Pearl River Delta, with its city center only 18 kilometers away from the center of Guangzhou (the third biggest city within China). As the booming of the population in Guangzhou and thus the residential needs, more people choose to live in the city of Foshan and commute to Guangzhou through the Guang-Fo express. Therefore, the residential market of Foshan becomes not only attractive to the local developers but also a potential market to open up for the others. It leads us to wonder the status and strategies of different developers entering such a growing residential market. Previous research going over the residential market mainly reveals from the demand side, or say, the aspect of the individual buyers and sellers within the second-hand market. However, limited studies tell stories from the supply side of the residential properties. To better understand the housing supply, it is important to look at the first hand transactions between the developers and the buyers, especially the presale process.

Presale is adopted as a prevailing practice in real estate markets of China including the city of Foshan. This process can be seen as the only market in the developers’ domain since the developers unilaterally price their properties before the spot-sale. Therefore, the pricing mechanism to a great extent reflects the strategies of the developers when they enter into a market and compete with others. This study classifies different developers and investigates their decision-making mechanism during presale. In addition to the pricing mechanism, the traditional project features would also be considered in the study. Presale prices of more than a thousand of residential projects in recent years are disclosed by the Foshan real estate bureau and used in this study, in which tens of various developers are involved. Making use of the Geographically Weighted Regressions (GWR), this study incorporates the spatial connections and dependence among real estate projects and generates an evaluation of the impacts for each of the projects. It is of particular interest and significance to the field of housing studies and urban planning as it provides valuable implications about competitive development strategies for developers, policymakers and urban planners in the near future.

KEYWORDS: Competitive intensity, Presale, Residential markets, Real estate developer, GWR
Since the beginning of the 2000s, Turkey has been experiencing not only economic ups and downs but also changes in socio-demographic dynamics, which affect the family size and the composition of households. Household budget surveys show that traditional extended (three-generation) and nuclear families are the two common household types in Turkey. In the 1990s, extended family household was representing a cultural ideal, especially in rural areas. But, since the early 2000s, the effects of financial crises, soaring housing prices and the financial burden of caring simultaneously for older parents and children have combined to revive the practice of three generations living under the same roof. The increasing share of extended family household has important consequences for the housing tenure system, and a new tenure status, the so-called latent renter has emerged. While 59.4 percent of Turkish households own their own homes in 2012 it was 71.1 percent in 2004. As the ratio of private renters has been nearly stable during the same time period, and the public rental housing does not exist as an alternative housing tenure this significant decline in homeownership rate manifested itself in an alternative housing tenure of latent renters. Latent renters are the households who reside in their parents’ or relatives’ dwellings at either zero or significantly low rental price, and their ratio increased considerably from 5.8 percent in 2004 to 14.7 percent in 2012.

According to Haurin and Rosenthal (2004), the determining factors for homeowners’ length of stay in a particular dwelling clearly affect the nation’s homeownership ratios. The present study uses the 2012 Household Budget Survey with a sample size of 9987 households and aims to investigate the factors affecting the duration of homeownership and rental spells by taking into consideration the physical characteristics of housing units, the household type, head of household characteristics, and property prices and rents. Indeed, our study not only explores socio-economic and demographic factors behind the duration of residence for owners and renters, but also identifies the profile of latent renters as being the speedily growing housing tenure type in Turkey over the past decade. A preliminary analysis based on household budget survey data reveals that urban areas of Turkey, comprising approximately 70 percent of total housing, have a younger stock than the rural areas, and that urban homeowners are more mobile and change their dwellings more often than their rural counterparts. Among urban homeowners, small-size families tend to have longer durations of residence in comparison to larger-size families. In contrast, urban renters with larger families of five or more people tend to have longer durations of stay as compared to smaller families. On average, urban household heads are younger and more educated in comparison to their rural counterparts. We argue that higher homeownership rate in urban areas of Turkey can be achieved by promoting and producing relatively smaller size housing units with high accessibility to urban services. Obviously, affordable housing and mortgages for low and middle-income households is a crucial factor for achieving the homeownership sustainability. We also claim that since the small size families (single-person households, couples without children) and university graduated household heads in urban areas have longer lengths of stay as homeowners, government’s effective investments in higher education and the shift to smaller household size will help increase the homeownership rate especially in urban areas of Turkey.

KEYWORDS: Housing tenure, latent renter, homeownership rate, Heckman two-stage estimation, household budget survey
225 Exploring the determinants of liquidity with big data – Market heterogeneity in German markets

Purpose – The purpose of this paper is to examine the market liquidity (time-on-market) and its determinants for rental dwellings in the largest seven German cities with big data.

Design/methodology/approach – The determinants of time-on-market are estimated with the Cox proportional hazards model. Hedonic characteristics as well as socioeconomic and spatial variables are combined with different fixed effects and controls for non-linearity to maximise the explanatory power of the model.

Findings – Higher asking rent and larger living space decrease the liquidity on all seven markets, while dwelling’s age, the number of rooms and proximity to the city centre fasten the letting process. For the linear and non-linear hedonic characteristics heterogeneous implications are found.

Practical implications – The findings are of interest for institutional and private landlords as well as governmental organizations in charge of housing and urban development.

Originality/value – It is the first paper to deal with liquidity of rental dwellings in the seven most populated cities of Europe’s second largest rental market by applying the Cox proportional hazards model. Furthermore, the German rental market is of particular interest, as approximately 60% of all rental dwellings are owned by private landlords and the German market is organized polycentric.

Keywords  Liquidity/ Time-on-market; Housing real estate; Big data; Cox proportional hazards model; Non-linearity

Paper type Research paper

KEYWORDS: Liquidity, Time-on-market, Housing real estate, Big data, Cox proportional hazard model, Non-linearity
Rita Yi Man Li, Kung Chun Wah, Beiqi Tang

351 RMB and housing price in Hong Kong

Property price is a major concern for many Hong Kong People. In the recent years, we saw a phenomenon, the continuous raising of RMB and also the Housing price in Hong Kong. In this paper, we want to examine whether there are positive correlation between the raising property price and the appreciation of RMB. Based some literatures about geographical factor to affect property value, we would determine to use the Northern District as our observation. After almost 2600 transactions from 2009 to 2014 are estimated, we find that higher exchange rate of RMB against HKD and property value of Shen Zhen will significant cause more expensive property value. Moreover, the GDP in Hong Kong is not correlated with property price in this period. It implies that the upward trend of Hong Kong property market is not caused by national income rising of Hong Kong residents.

KEYWORDS: housing price, RMB, , ,

Karolina Czechowska, Konrad Zelazowski

254 House price fluctuations in the context of credit cycles: European perspective

The functioning of housing sector is determined by a number of factors, among which particularly important is system for financing housing investments. Traditionally mortgage loan is one of the main instruments of housing finance. Empirical studies emphasize that the developed mortgage lending market has a positive effect on the housing conditions of households and also induces growth in the area of housing construction and housing resources. However, an excessive increase in the scale of mortgage lending can be a source of instability in the real estate market and the banking sector.

The aim of this article is to empirically analyse the course of credit cycles and housing price cycles in selected European economies, as well as the assessment of the degree of cycles interdependence and synchronisation.

KEYWORDS: house price cycles, credit cycles, synchronisation of economic cycles, housing finance
Residential rents are analysed in the Walloon region in Belgium. In the region, particularly touched by urban sprawl, households rent accommodation in urbanised areas as well as in their peripheries. The average rents per square meter in urban agglomerations and peri-urban areas are the same. At the same time, important provincial differences exist. In particular, peri-urban rents in some provinces are higher than those in the biggest cities of the region. Are the urban and peri-urban rental markets different? The aim of this study is to evaluate the role of the regional territorial structure in the determination of rents.

With a hedonic regression model, this paper seeks the best treatment of spatial disparities in order to better understand rent determinants and their impact in the region with the focus on urban agglomerations and peri-urban areas. Regional and municipal variables and proximity to attractive foreign cities have been tested to understand the role of the regional territorial structure. For the same reason, the hedonic models are constructed in provincial submarkets. OLS, spatial and geographically weighted regression methods are applied. The map of location value response surface supplements hedonic analysis.

Significant disparities between the willingness to pay for the higher levels of comfort in agglomerations and peri-urban zones are found. The calculated market basket rent reveals a significant difference: the rent of a typical dwelling is 11%-18% higher in peri-urban areas than in urban agglomerations. Another finding is that proximity to several foreign neighbouring cities influences rents in Wallonia, while the accessibility to the biggest regional cities does not have a significant impact.

KEYWORDS: hedonic model, peri-urban area, rent, Wallonia, agglomeration
Examining Household-level Expectations on Housing Returns

In view of the dominance of housing in the average portfolio of private households, there is a striking paucity of empirical evidence concerning individual expectations on housing asset returns. Building on the well-developed literature on individual stock return expectations, e.g. Kilka and Weber (2000) or Kempf and Merkle (2014), this research aims at measuring individual expectations on housing returns. We attempt to disentangle two components of total housing returns: first, house prices rise and fall over time, giving rise to asset value gains and losses. Second, analogous to dividends for stocks, housing offers a cash flow in the form of (implicit) rents. The expectations regarding price appreciation yield and rent yield sum up to the total housing return expectations.

In order to examining housing return expectations, we use the second wave of the Panel on Household Finances (PHF) conducted by the Deutsche Bundesbank. In this survey, around 4,500 German households are asked in detail about their financial situation. This includes the composition of their portfolio and questions like the rent they think to be able to charge for their own house as well as sociodemographic information.

Based on households’ self-reported estimates regarding the present and future values of their own house and the implicit rental dividend on their house, we calculate total housing return expectations and analyze their cross-sectional distribution. The numerous items of the survey furthermore allow us to identify key factors influencing households’ expectations about house prices, rents and total housing returns.

Total housing return expectations display a great amount of cross-sectional variation and are correlated to numerous socio-demographic characteristics, financial literacy and past experiences. Surprisingly, total housing return expectations are moderately negatively associated with the size of housing net wealth - households more heavily invested in housing tend to ask for lower returns. Homeowners who are also landlords are furthermore more pessimistic in their expectations about total housing returns and both of their components, possibly because they are more cautious and realistic due to higher experience in real estate markets. Households who constructed their main residence are also generally more pessimistic, possibly implying that they regard their house primarily as consumption good.

KEYWORDS: Housing investment, Portfolio choice, Expectation formation, Financial literacy
Abolishment of rent control in residential market is seen as one of the solution to Swedish housing shortage. Politicians believe that it will provide higher incentives for investors and property companies to construct more rental housing and to stabilize property prices in the long-run.

The aim of the study is to find out if the abolishment of rent control in housing market leads to more residential investments and more stable returns on it in the long run.

The method is a comparative analysis of returns on residential investments in two case countries - with and without rent control - Sweden and Finland. Data covers the time period of 2000-2015 and include total, capital and income return on residential investments from Property databank in Sweden and Finland. The study considers the effects of abolishment of rental regulations on residential market with control for changes in fundamental variables like GDP, income, population growth, dwelling stock and interest rate.

The results of the study demonstrate that abolishment of rent control leads to more stable total returns on residential investments in the long run. It also leads to higher level of income return and less fluctuation in capital return in the long run.

KEYWORDS: Rent control, Property returns, Residential markets
Carlos Garcia Gimenez

236 Understanding Flippers and Their Impact on the Housing Market.

Since the last financial crisis, researchers have included investors’ strategy as a primary source for the acceleration of the house pricing boom that led to the last US real estate bubble. The motivation behind investors’ behavior ranges from high-expected returns to reaction to popular real estate reports syndicated by media outlets and contagion from similar investment strategies adopted within neighborhoods. This exponential increase in house prices enticed many participants (known as ‘flippers’) to profit from multiple transactions in short periods of time while the bubble inflated.

So far the literature has not reached consensus on the identification strategy adopted to study the flippers phenomenon. Number of transactions, holding period and profit margin are used individually or combined to define flippers and their impact on house prices. We review the different identification strategies and empirically test their implication using real estate transactions data in South East Florida between 1996 and 2016. We also extend the literature in three ways: we measure the impact of flippers on both prices and returns; we identify the term structure of flippers returns beyond the normally adopted two years holding period; finally, we introduce a correction for capital expenditures which is essential in the game flippers play.

KEYWORDS: House prices, Short term investment, Behavioral finance, Frequent trading, Term structure of returns, premia

Rita Yi Man Li, Beiqi Tang

349 Determinants of foreign direct investment inflow in real estate sector

Many of the previous research shows that ups and downs of real estate prices are affected by the foreigners’ investments. Some countries such as Australia have implement relevant measures to lower the incentives of foreigners to invest in their housing sector. The objective of this paper is to examine the major determinants of FDI inflow in real estate sector in five countries, i.e. Korea, Japan, Australia, Canada and the UK via Artificial neural networks. It shall investigate the relationship between foreign direct investment inflow in real estate sector, residential property price index, gross domestic product per capita, global house price index growth rate, global housing price index, effective exchange rate, housing price to income index and natural disaster. The results show that there are different determinants in different countries. While global housing price index plays the most important role in foreign direct investment inflow in Korea, Japan and UK, Gross domestic product and house price to income ratio is the most important factor in Canada and Australia respectively.

KEYWORDS: Foreign Direct Investment Inflow, Artificial Neural Network
271 An Empirical Study of Constraints on Housing Supply in Urban Ghana

Housing is a basic necessity of life. As a result of this, the severe housing supply problems experienced by most cities in the developing world are of utmost concern to governments and policy makers. The main focus of this study is to document the major underlying forces prohibiting housing development in Urban Ghana. We analyse both institutional and market-based constraints on the supply of housing. Using a purposive sampling technique, we surveyed CEOs of private real estate development companies within Accra and Tema with a Likert scale questionnaire to measure the severity of the factors hindering housing development in these areas. All the CEOs surveyed work for firms that are part of the Ghana Real Estate Developers Association (GREDA) and thus, have a good understanding of the constraints on housing development. The results show that real estate developers consider the supply problems in housing to be more driven by institutional factors than market forces. A large percentage of the CEOs report that land tenure arrangements, the lengthy procedure involved in securing building permits, the process of land acquisition and registration in Ghana are the major factors that significantly affect housing supply. The difficulty in accessing development funds, underdeveloped mortgage market, high interest rates are some of the market-based factors constraining housing development. Policy recommendations are proposed for a more effective and direct government intervention to improve urban housing supply.

KEYWORDS: Housing supply, market forces, institutional, constraints, urban

Guowei Gu

210 Plot Size, Allowable Area and Housing Supply

Housing supply is influenced by a significant amount of macro and micro factors. The aim of this paper is to examine the impacts of plot size and allowable area on housing supply in terms of spatial location and type of housing from the perspective of housing developers in Shanghai housing market. Using official property registration data from Shanghai Housing Administration Commission to test the effects of these two factors, I found that plot size is less effective than allowable area in measuring the impacts on housing supply, and housing supply in peripheral urban areas seems more productive than other areas. The empirical research results could help local planning authority to conduct a more focused land supply to facilitate a more efficient housing supply.

KEYWORDS: Housing supply, Allowable area, Plot size, Shanghai housing market, Plot ratio

In the UK there exist transactions involving residential properties, particularly apartments, where there is a clear distinction between the user rights of the dwelling and the ownership of the land in which the dwelling stands on. The majority of current hedonic analyses of dwelling prices focus on the impacts of its physical and locational characteristics. A few of these studies control for this distinction crudely by broadly categorising dwellings into freeholds and leaseholds. However, the length of an unexpired lease may have substantially varying impacts on dwelling prices, and consequently adopting such a crude indicator could lead to misleading predictions of value and biased estimates of value attributable to certain physical and locational characteristics. Our hedonic investigation examines the role played by the length of unexpired leases on prices of dwellings in Prime Central London. Empirical propositions tested include the effect of having a pure leasehold and a share of the freehold on dwelling prices, as well as the threshold and non-linear effects of the length of an unexpired lease. Our main conclusion is that it is important to control for lease expiry.

KEYWORDS: hedonic, leasehold, lease expiry, discounting, London
9 Measuring the Institutional Elements in the Residential Mortgage Markets

Residential housing finance stands for a significant amount of the business of financial institutions in many countries. For instance, outstanding mortgage debt to the GDP ratio is 48.1% in the European Union (28), which is the example of the most integrated regional block in the world. However, during the period before and after the latest global financial crisis it has witnessed seen that although the developments and their reflections in the mortgage markets show similar trends in many countries generally, these developments have had the distinct characteristics as well as different time spans, and also, their final effects on the economy have become different to a significant degree. The institutional features of the mortgage markets is one of the primary reasons for this differentiation. Because of this, it is important to determine the institutional differences in the mortgage markets by measuring. However, in the literature, it is observed that there are a few studies to measure the mortgage markets in respect to institutional factors.

This paper aims at measuring the the institutional features of the EU mortgage markets by constructing an index. We use two techniques; factor analysis and the scoring and threshold method by grouping the institutional indicators the subject (financial institutions, legal framework and openness of the markets) Thus we produce two indices. It is used data sets produced by the credible international institutions. Therefore, it is possible to capture the institutional differences among the mortgage markets of the EU member countries with two different analyses by using such a rich data set pertaining to three dimensions. When ranking the EU countries, it is seen that there are differences the countries in respect to financial institutions. These differences confirm that their markets exhibit a fragmented structure as well as the low integration among the countries in respect to the mortgage credit markets.

KEYWORDS: Residential Morrgage Markets, Institutions, European Union, Measuring Institutional Elements, Mortgage finance
121 Rationality in Mortgage Choice Decisions

The primary goal of this paper has been to address the question of rationality and subjectivity in mortgage contract choice decisions. These decisions are important because the size of a mortgage and the financial features of a mortgage contract are suggested to have important implications for both the household’s welfare and the stability of the financial system. Thus far, most of the existing literature has focused upon normative implications for rational mortgage choice decisions, providing only the one direction in generating both theoretical foundations and informing specifications in existing empirical studies. What is missing in the mortgage market literature is that the underlying forces leading to risky and uninformed financial choices may not be explained solely by supply and demand factors, but should account for subjectivity and irrationality within suboptimal mortgage choice decisions. This paper addresses these questions and explores whether, in addition to the supply and demand side factors, subjective considerations may partially explain observed/ex-post mortgage type decisions. This is achieved by employing a theoretical model comprising of a two reduced form equations applying three stage least squares and maximum likelihood estimation techniques. For the first time, cross-sectional estimations utilise data extracted from the Understanding Society Survey Data for the newly originated mortgage contracts, covering the period from 2009 to 2014. This periodical frame covers the UK’s variable market share peak, which is also a period of changing mortgage lending conditions and introduction of financial literacy measures.

Empirical results detect that subjective anticipation for the improvements in social status and expectations of better income increases likelihood of variable mortgage debt. Ability to take risks offers surprising results, suggesting that risk takers tend to prefer fixed rate mortgage options. The results also suggest that psychological reasons may explain why ARM borrowers tend to ignore the associated risk factors when choosing type of mortgage debt. The altering effect of time variation did not show significant results, empirically detecting persistent existence of the subjectivity in mortgage choice considerations. Policy implications may include development of training and financial literacy programs.

KEYWORDS: mortgage choice, irrational behaviour, risk taking, suboptimal mortgage, subjectivity
This paper presents empirical evidence of regional variations in mortgage lending conditions within the UK’s mortgage sector. This is an important question because mortgages constitute a major part of households’ liabilities and financial institutions’ assets, demonstrating potential to destabilise the financial system and economy in whole. So far, in spite of its importance, research on residential debt lacks a broader cross country insight on various mortgage market issues. The important point is that regional variations in incomes, house prices and employment rates may have generated a regional dimension in mortgage lending conditions, having different impacts in various regions according to the pattern of distribution of more risky mortgage contracts. This paper addresses the question of regional differentiation in lending conditions linked with mortgage contract choice decisions. The empirical estimation takes the form of a three-stage simultaneous equations model and investigates the regional dimension of mortgage lending conditions by inclusion of regional dummies and regionally differentiated variables in econometric estimates. Cross-sectional estimations employ data extracted from the British Household Panel Survey and Understanding Society Survey Data, covering the period from 2007 to 2014. This periodical frame includes the start of the financial crisis, presenting an opportunity to acquire a deeper understanding of how households’ mortgage choice decisions have altered following economic changes. Empirical findings suggest regional deviations in loan to value ratios and mortgage rates within the UK’s mortgage market. Policy implications may include the need for the enforcement of regional considerations in governmental mortgage affordability programmes.

KEYWORDS: loan to value ratios, regional differences, house prices
173 Revisiting the House Price-Income Relationship

We undertake a systematic analysis of the relationship between house prices and personal income using data for the 50 largest U.S. Metropolitan Statistical Areas (MSAs). We apply state-of-the-art panel data analysis tools, define income in multiple ways, allow for regional heterogeneity, and control for spatial dependence and endogeneity. We find that the house price-income ratio is not stable in the long run for most cities. In contrast, panel regression models that allow for regional heterogeneity and control for cross-sectional dependence yield stationary equations for MSA house prices. Among other findings, we show that relying on panel unit root tests is problematic. We also show that it is important to allow for heterogeneity across locations and to cater for endogeneity and cross-sectional dependence when analyzing the relationship between house prices and income.

KEYWORDS: house prices, personal income, panel data, cross-sectional dependence, regional heterogeneity

Theis Theisen

246 Housing at the later stages of life

When individuals are ageing, they may lose some of their functional abilities. This may have important consequences for their optimal form of housing arrangement. We set up a theoretical model for the optimal choice of housing in the later part of life. In the empirical part of the paper we estimate a multinomial logit model for choice of housing. Four modes of housing are distinguished: ordinary private housing, specially designed private housing, sheltered dwellings, and nursing homes. The model is estimated from a nation-wide Norwegian sample containing all individuals who have had some problems related to functionality. All households not included in the sample reside in ordinary private dwellings. We find a strong impact of weak functional abilities on the choice of housing, but the capacity of the nursing home sector and specially designed dwellings also plays an important role. Moreover, municipality-specific affects are important.

KEYWORDS: Housing, Optimal mod of housing, Nursing homes, Sheltered dwellings
Installation of elevator in old condos: value for money?

The Norwegian state housing bank offers economic subsidies to cooperatives undertaking after installment of elevators. The subsidy constitutes ca 50 percent of the total costs of such an installment, provided that certain conditions are met. The political motivation for this subsidy is to reduce the likelihood that residents in condos without elevators will have to move should they suffer from reduced mobility, e.g. due to old age.

In this paper we estimate the economics of after installment of elevators both from the societal point of view and from the residents point of view. Elevators might enable residents to live in their own apartment even if their health deteriorates. This will have both monetary and non-monetary consequences. We focus on the monetary implications of such an installation. If people can reside in their home for a longer time period, the costs of public services might be reduced, also the likelihood that residents may suffer injuries associated with falls when climbing the stairs.

About 70,000 Norwegians at the age of 80 years and older live on the first floor or higher in a building without elevator. In this study, we estimate the potential economic savings from reduced need for public institutions, reduced traveling and time costs associated with provision of services to elderly residents, and expenditures associated with falls in stairs. Also, we estimate the potential economic value of after installation of elevator for the residents in question (as measured by changes in the market price of dwellings). Our findings will shed light on whether after installment of elevators is economically beneficial to the society and consequently: whether the subsidy of a yearly 9 million EUR is economically justifiable from the societal point of view.

KEYWORDS: After installment of elevators, Societal point of view, Economic implication, Government policy
According to a recent report by JLL India, in 2011, India had about 76 million seniors above the age of 60 years, and it is expected that this figure will grow to 173 million by 2025, further increasing to 240 million by 2050.

As per the findings by National Family Health Survey in 2005-06 (NFHS-3), every three out of five households (about 63%) in India are nuclear. Increasing life expectancy, decreasing fertility rate, lower mortality rates and an overall enhancement of the standard of living across the world has contributed to people living longer than ever before.

A significant section of seniors today are independent, financially stable, well-travelled, socially connected, and as a result have well developed ideas of how they want to spend time after retirement. There is, today, a larger percentage of educated seniors than ever before in India.

Traditionally, seniors in India were taken care of by their children. However, as the younger generations are traveling to different parts of the country and abroad, a large segment of seniors today are staying alone exposing them to the risk of urban crime besides having gone through the hassles of day-to-day living in an urban ecosystem which is not sensitive to their requirements. Healthcare also remains as one of the most important need for seniors. Therefore, the senior community in India provides a remarkable opportunity to developers, service providers, healthcare players and operators to create solutions specific to this particular segment.

Senior housing properties aim to provide both housing and services to seniors. The three main categories of senior housing include independent living, assisted living and skilled nursing facilities. Memory care is another specialized type of care that may be included as its own separate category or as a subset of assisted living.

Tata Housing entered this space a few years back with its brand Riva. Some other senior living options are offered by developers like Ashiana, The Golden Estate, Max India, Covai and Paranjpe, to name a few. Most of the developers provide basic services such as dining, housekeeping, maintenance and security for a basic monthly fee.

This paper aims to identify the critical success factors to be adopted by the real estate ecosystem for increasing the attractiveness of the senior living asset class in India from investor and user perspective. This paper also explores the key strategies for addressing diverse needs of the senior residents.

KEYWORDS: Senior Homes, Old Age Living, Housing, Assisted, Retirement
The relationship between construction quality and energy efficiency in newly built residential buildings

Considering the climate change and urgent need for adaption of a new approach in building design and construction, the feedback from users is a highly valuable data. It is imperative to gather, analyse, and compare data on measured consumption for the purpose to increase our understanding about energy performance. Earlier research results indicate that energy and environmental targets are hard to deliver post-occupancy. It has been suggested that difference in the expected and delivered performance might be related to problems or lack of commissioning, inadequate building operation and even occupants’ behaviour.

In this paper, we intent to test the assumption that the quality of the designed building is expressed in its final product. We examine a number of building features where end-users reported problems and discuss their potential effect on the buildings’ energy performance. We investigate if the occurrence of problem varies depending on climate zone, production year, building size and energy performance class.

The data for this study was collected through survey. A total of 1,563 letters were posted with regular mail to all chairmen of condominium boards of residential estates built in Sweden between 2006 and 2014. We received 436 responses. We analysed data with help of descriptive statistics, principle component analysis (PCA) and Mann-Whitney test. PCA is used to group factors describing different quality problems and the Mann-Whitney test is used to investigate the significance level of differences in occurrence of specific-feature problems within subgroups.

The results suggest that problems which occur in the new produced residential buildings are related to construction quality and may have significant effect on energy performance. The analysis of data suggests that new construction faces problem with building air tightness (especially the quality of windows and doors) and installations (HVAC), which have a direct impact on energy performance. Moreover, we observe that quality varies over time and may be dependent on market conditions.

KEYWORDS: Residential real estate, Condominium apartments, Construction quality, Energy performance,
Are women more risk averse than men: Evidence from a residential real estate bubble

A substantial literature in economics and finance has found that women tend to be more risk averse than men. In addition, compared to their male counterparts they tend to shy away from competitive situations. However, there are no extant studies exploring the relative degree of risk aversion and competitive behaviour of men vs. women in a bubble market context. Bubble markets provide a rich context to explore the potential impact of behavioural biases and emotions in investors’ decision making processes (e.g. Shiller, 2000, 2008, 2014; Kindleberger and Aliber, 2011). Drawing on auction data from the Irish residential real estate market, in the middle of a real estate bubble, we find that female winning bidders are no less risk averse or less likely to shy away from competition than their male counterparts. Our results have implications for how gender impacts on decision making in highly charged emotional contexts.

KEYWORDS: bubble market, gender, risk aversion, competition
Motivated by the ongoing debates on the underrepresentation of women in top management and increased number of quota-based policy initiatives, this study investigates the relationship between gender diversity in boardrooms and firm performance. The real estate industry, a traditionally male dominated industry, may benefit from group heterogeneity, since a variety of perspectives, knowledge and experiences enhances decision making (Carter et al., 2003). In the context of mandated diversity policies, the North American market remains unregulated. Therefore, this study examines, whether there is a certain critical mass of female board members in the US real estate sector which positively affects firm performance.

With a dataset of 116 listed property companies from the USA in the period of 2005-2015, we find evidence for a positive significant relationship between the percentage of women on boards and Tobin’s Q. In detail, balanced boards (40-60% female representation) outperform boards with fewer women. Consequently, adding just one woman to the board has no effect on the performance, a situation which is referred to as tokenism. Additionally, the findings show that the proportion of executive female directors is statistically related to a positive performance. Beyond that, female CEOs improve the market based performance by approximately 20%. The model specifications control for unobserved heterogeneity by using fixed effects regression and mitigate endogeneity concerns by using lagged board variables.

This is the first real-estate-based gender diversity study for the US market considering differences between executive and non-executive board members.

KEYWORDS: gender diversity, Tobins’ Q, board structure, accounting based performance, critical mass
A puzzling observation on housing markets is the strong positive correlation between prices and trade volume for rising prices. Yet, in a declining market suppliers hesitate to adjust prices to a smaller demand. The majority of literature addresses this issue using search and matching models. A behavioral approach as it is very common in the economic finance literature has only been considered briefly to explain price rigidities. This work provides a theoretical model in order to better understand incentives on the supply and demand side of the housing market.

From a behavioral finance perspective and in particular the prospect theory, utility is determined by changes in wealth rather than absolute values. Prospect theory further suggests different attitudes towards risk for potential losses and potential profits. Thus, the price setting mechanism is influenced by a certain reference point, e.g. the originally paid price or the house's construction costs. Therefore, the market development dictates whether home owners accept purchase offers easily or are reluctant to sell. In particular, if the market faces a downturn and the market value of an object falls below the originally paid nominal price, sellers will be less averse towards risk. On the other hand, sellers might accept prices below the market value but above the originally paid price if the market developed favourably.

The most pressing question is how prices are determined on the housing market. Following finance literature, the price evolution can be thought of as a stochastic process, i.e. a Brownian motion. This would suffice to explain different attitudes towards risk for homogeneous agents. However, according to the underlying value function in prospect theory, the buyer would not be willing to buy a house at market price for sheer investment purposes, since it is too risky. Therefore, in my model, the personal assessment of a houses value consists of two components: the investment value and the personal housing value.

My model especially applies for the market for single-family homes, since this type of accommodation is typically owner occupied and makes up a large part of the housing stock in rural areas. Not only does the model help understand why households might be reluctant to sell even if the current housing situation is suboptimal in regard to e.g. household size. It does also suggest a higher ratio of vacant houses for markets which took a downturn.

KEYWORDS: price rigidities, prospect theory, behavioral economics
366 Listing strategies and housing busts: cutting loss or cutting list price?

Listing your house for sale has been referred to as ‘the most agonizing and among the most stressful decision’ that go with selling a home. This may seem particularly so for homeowners expecting to sell for less than their original purchase price. In this paper, we investigate whether listing strategies among homeowners who experience a potential loss differ from those not experiencing a potential loss. We use MLS data from the Randstad area of The Netherlands over 2008 - 2013 for which we have detailed information regarding the listing strategies. We find that those homeowners who expect a loss; set higher initial list prices, are more likely to and more aggressively revising their list prices downwards, and set final list prices still above those of homeowners not expecting a loss upon initial listing. Further, we find sellers’ motivation to be an important underlying driver in listing strategies.

KEYWORDS: housing, loss, property transaction, list price revision

110 Do homeowners save more? – Evidence from the Panel on Household Finances (PHF)

In this paper we analyse the impact of property ownership on the saving behaviour of households. We are particularly interested in investigating whether homeowners save more than renters or not. A related question is whether mortgage payments and other regular savings are substitutes or complements for German households. To answer these questions we use a large cross-sectional dataset on individual households’ finances and employ a matching estimator. We find that households owning property and repaying mortgages do save more than renters, if contractual savings and mortgage payments are summed up. However, the difference between regular savings flows of renters and owners is small and insignificant. Owners do not seem to substitute contractual savings with mortgage payments.

KEYWORDS: household saving, homeownership, survey data
Are all social capital investments equal in the eyes of homeowners and renters? Presumably, social capital investments that lead to increases in home values provide stronger incentives for homeowners than renters. In contrast, for social capital investments that do not directly impact home values, one would not expect homeowners and renters to differ in their investment rates. In this paper, we test this hypothesis using confidential and detailed individual-level panel data from Los Angeles county. We estimate the effect of homeownership on social capital investment, i.e., participation in social-capital creating activities, using a bivariate probit model and fixed effects models that control for individual-specific, time-constant heterogeneity that would otherwise cause omitted variable bias. Each model addresses the endogeneity of homeownership differently with identification arising from different sources. We find strong evidence that homeownership increases the rate of participation in block meetings, a social capital investment that should affect property values, and find no homeownership effect on three other social capital creating activities that likely do not: volunteerism, participation in a local political organization, and participation in a civic group. The results suggest that the effect of homeownership on social capital investment depends on whether the returns to such investments accrue solely to homeowners.

KEYWORDS: Social Capital, Homeownership, Housing externalities
The sources and effects of rental market underdevelopment in Central Europe. The results of a survey and DSGE model simulations

A low share of the private rental market observed in most Central European countries, including Poland, might be considered as a serious structural weakness in housing markets that may affect the macroeconomy. This paper assesses two important questions. The first one relates to the reasons behind this rental market underdevelopment. The second question is what can be done to increase the size of the rental market. We conduct an original survey among a representative group of Poles and find that preferences are strongly tilted towards owning. Results of logit regressions, as well as the distribution of answers to selected questions, indicate that these preferences are strongly influenced by economic and psychological beliefs. Inefficient institutions and the lack of professional renting services also turned out to be important in the housing tenure choice. Then, using a macro DSGE model we propose a set of reforms that aim at improving the efficiency in rental markets: (i) removing the bad tenant effect on the level of rents, (ii) equalising fiscal incentives for different types of housing tenure, and (iii) improving the standard of rental services leading to a shift in housing tenure preferences. Our computations indicate that introducing these three reforms would shift the rental share from 6.8% to 15.0%, contributing as well to macroeconomic stability.

KEYWORDS: Rental market, Survey data, DSGE model
It is widely accepted that maintaining a low crime rate is one of the government’s major responsibilities in order to ensure the attractiveness of cities. Furthermore, the cost of crime is considered to be quickly capitalized into housing markets serving as an early warning sign of neighbourhood transition. Various studies apply hedonic modelling to investigate to what extend different kinds of crime are capitalized into housing markets. This study follows a similar approach and applies a time fixed effect model on a small-scale panel data set of Hamburg city quarters.

During the past decade or so some new aspects have been added to this field of research as most hedonic models treat crime as an exogeneous variable. However, the literature has stressed the fact that crime should be considered rather as an endogenous variable. Relative to the total number of empirical studies on crime, only a few treat crime as endogenous applying valid instrumental variable approaches. Additionally, most studies are based on US data, manily due to data availability. Other studies that use data outside the US use rather large-scale data on city, state or country level.

This data set is collected from various public sources and applies familiar panel data models including an instrumental variable approach to account for the endogeneity of crime on a non-US data set. The land values of Hamburg are based on the sales-price collection of the governmental authorities and cover the entire city on a parcel level. The data is available for 6 consecutive years in total and can be filtered among others per dominant usage type of each parcel. The crime data is collected on a quarter level for the same periods and contains information about the crime level, the clearance rate and 9 different types of crime. Additionally, several socio-economic control variables on the city quarter level can be included.

The literature shows that in general changes of crime generate better results than levels of crime. Hence, we investigate a time fixed effect model regressing the changes of crime on the changes of land values for the respective periods. As instrumental variables, we use the density of public spaces and lags of the explanatory variable to account for the endogeneity. The preliminary results show a significant negative effect of crime on land values.

KEYWORDS: Housing Prices, Crime, Panel Data, Housing Markets
251 Measuring the noise cost of aviation – the impact of the Limited Use Area around Warsaw Chopin Airport on property values

The interactions between air transport activities, airport location, local society and the regional economy are of great importance nowadays. Air traffic growth enhances the development of the economy and brings benefits to the users. On the other hand, there are some negative external effects and the costs are borne to great extent by the local community. Sustainable development requires all the effects caused by the provision of air services to be included in a comprehensive assessment of air transport activities. The aim of this study is to discuss the role of air transport as an instrument for sustainable development, investigate the external costs of aviation with particular emphasis on the effect of aviation noise on the local community and estimate to what degree this impact is stable over a period of time. The social cost of noise was evaluated through a complementary market, namely a change in the value of properties located in an area affected by airport activities. Therefore the impact of the Limited Use Area (LUA) related to aircraft noise associated with the operations of the largest airport in Poland, Warsaw Chopin Airport, on the housing prices in Warsaw was measured through the use of hedonic price modelling. Our estimates suggest that the impact of aviation noise on land-use policy has implications for the housing market. The location of a dwelling within the Limited Use Area around Warsaw Chopin Airport reduces its value by about 3% on average in the years 2011-2014, the NDI value being 0.6. According to the results of estimations the LUA variable for the years 2007-2009 was statistically insignificant.

KEYWORDS: aviation noise, limited use area, property prices

248 The Impact of Proximity to Railway on Land Prices

After the system transformation in Poland, the development of land’s market for single-family housing in the suburban areas of large agglomerations has increased significantly. This is strongly related to suburbanization process and connected with the intensified migration of people from the main cities. As a result, it increases of car’s traffic, which significantly extend the time of travel to the city center of Poznan. The aim of this paper is to estimate the impact of proximity to railway stations on the prices of land designated for single-family housing in Poznan’ suburban area. In order to estimate the impact of proximity to railway stations on the prices of land designated for single-family housing the hedonic methods were used. The analysis covers the years from 2010 to 2014.

KEYWORDS: housing market, property value, railway
209 Spatial and time effect of subway on property prices

In the paper, we analyzed both spatial and time effects of subway availability on apartment prices in Warsaw, the only city in Poland with rapid urban transit system. We have used the data set contained in 6971 geo-coded apartment transactions for the years 2010 to 2015 in Warsaw. In this research, the hedonic method was used in OLS, QTL, SAR and SEM models. We found strong evidence that the new subway line (M2) influenced apartment prices even before it was completed. It confirms our hypothesis, and is in line with previous research in other countries. We observed a steady price premium adjustment process related to new subway line. The impact of the new subway line M2 on apartment prices gradually and significantly increased with time. An increase in distance to the subway station was reflected in a decrease in housing prices (from -1.7% per km in 2010 to -2.4% per km in 2015). We have not found similar effect for the old subway line M1. In case of the latter, the marginal effects did not change significantly in time.

KEYWORDS: housing market, hedonic methods, subway, property prices

277 Neighborhood Segregation and Black Entrepreneurship

We examine the causal effect of neighborhood segregation on black entrepreneurship. We address neighborhood sorting by analyzing city averages and omitted variable bias by instrumenting for segregation using historical railroad configurations. We find that segregation has a significant positive effect. Additionally, in order to minimize the effect of cross-city sorting, we use a narrower sample constructed from outcomes of young adults and find a similar effect. Our findings are important because historically entrepreneurship has been an avenue out of poverty, and entrepreneurship has been promoted as a way to decrease welfare and unemployment.

KEYWORDS: Segregation, Inequality, Entrepreneurship
The UK experienced a substantial rise in owner occupation over the twentieth century. Despite the recent fall in ownership rate, many tenants still aspire to own their own homes. These strong aspirations to own are attributed to a set of financial and non-financial benefits. Although the financial benefits are perceived to be significant and to outweigh housing benefits, there is a paucity of rigorous research measuring and confirming the significance and nature of the financial benefits from buying versus renting. This research calculates, for the first time, the historical pure financial returns from buying versus renting in Britain for first-time buyers and disaggregates the results by the eleven regions. It investigates whether the long-term growing homeownership aspiration in Britain has been sustained and rationalised by solid financial payoff or not. It is based on a DCF analysis of historical housing and mortgage market data from 1975 to 2012. The empirical analysis produces more than 18,000 simulations using a comprehensive financial model. The results of the research explore the return from house purchase differential between regions and develop a regional return ranking. It also explores the historical contribution of capital gains to the overall return by calculating the returns after excluding capital gains. The research investigates how much timing matters by comparing the returns at (or near) peaks and troughs over the major three housing cycles. The research finally explores how many holding years were historically required in order for house purchase by first time buyers to breakeven.

KEYWORDS: housing markets, owner occupation, private rented sector, financial returns, regions
Ingrid Nappi-Choulet, Julie Le Gallo, Marie-Laure Breuille, Kassoum Ayouba, Camille Grivault

373 Determinants of rents in the French private rental housing sector

In France, while more than 20% of dwellings belong to the private rental sector, the understanding of this market is still imperfect and is mostly limited to specific areas (e.g. Paris). The creation of the Observatoires Locaux des Loyers (OLL) network from 2013 intend to address this problem by providing to researchers high-quality detailed microdata of dwellings structural characteristics for several areas in France (Lille, Marseille, Toulouse, etc.).

In collaboration with the Ministère du Logement et de l’Habitat Durable (French housing ministry) and the Observatoire des Loyers de l’Agglomération Parisienne (OLAP) which manages the OLL’s, we are the first to capitalize on the OLL’s and OLAP work, i.e. to use their databases from 2014 to 2015 to improve the understanding of the private rental sector of all areas where there is an OLL. Specifically, we present in this paper an extensive analysis of the factors that determine the rent levels in that sector in France, based on microdata of dwellings structural characteristics provided by 14 OLL and the OLAP.

For this purpose, we use a hedonic regression model in which dwelling rent is characterized by a bundle of several characteristics. In addition to the dwellings’ physical characteristics (type of dwellings, number of rooms, total surface etc.), we use a set of variables that includes neighborhood characteristics (median income, accessibility, etc.) and a set of variables that relates to environmental quality (air pollution and proportion of green areas or forests). Since it is widely known that dwelling rents tend to be heteroskedastic and spatially autocorrelated, and that in the presence of such a phenomenon, the ordinary-least square estimator of the parameter of the hedonic model is inefficient, we use the nonparametric heteroscedasticity and autocorrelation consistent OLS estimator (OLS-SHAC). This estimator is robust against possible misspecification of the disturbances and allow for unknown forms of heteroscedasticity and spatial auto-correlation between dwelling rents.

In addition to the exploration of the determinants of dwelling rents, we propose a typology of the French private rental sector: using principal component analysis and hierarchical clustering, we find clusters of areas for which rent levels are explained by similar attributes (in term of magnitude). Our typology may be used to design areas-based policies rather than one for the entire French market.

KEYWORDS: Housing, hedonic model, France, STAR method, rental market
Income distribution, housing affordability and poverty. The case of Spain

This paper deeps on the relationships between the income distribution, housing and poverty. It follows the housing affordability definitions and estimates several indicators of housing poverty in order to identify their role to explain the likelihood to fall on poverty during a period of time pre and post Global Financial Crisis. It also examines the relationship between income distribution and affordability taking into account the tenancy status. The paper uses the survey called EU-Silc (Life Conditions Survey) for Valencia Region, Spain, which provides individual household information including income and housing tenancy to evaluate such differences. Results indicate a larger income inequality occurs in this region after crisis, that poverty is stronger in household tenants rather than in homeowners and that the likelihood to fall under poverty line is related to a combination between income and tenancy.

Key words: Income distribution, housing tenancy, housing poverty, Valencia
Compulsory Acquisition of private property rights is a process which demands increasingly high levels of transparency by the acquiring authority as agency for the government and understanding of process by the dispossessed owner. Increasingly, major infrastructure projects require short timeframes for completion, which flows from the land acquisition stage onwards throughout the construction phase to the ribbon-cutting completion. Shorter land acquisition time periods, often with implication for increased penalty payouts where delays are experienced, have reduced the capacity for acquiring authorities to negotiate with and inform landholders. One such project in Sydney is known as Westconnex, a major inner-city motorway from the Sydney CDB, and has suffered a litany of poor press. The Westconnex experience has highlighted significant deficiencies in the traditional process of acquisition, which has resulted in legislative change.

The purpose of this paper is to examine the current compulsory acquisition process in New South Wales and lessons that can be learned from the Westconnex project which could have wider application. This paper demonstrates the significant flaws in the current acquisition process, which resulted in changes to the Land Acquisition (Just Terms Compensation) Act, 1991. Crucially, the paper examines whether these changes have been fundamental or merely cosmetic.

KEYWORDS: Compulsory Acquisition, Motorway, Westconnex, Australia
Commercial urban development in municipalities is often follows the same linear logic that tends to dominate urban development regimes. While linearity might improve management efficiency, agility might suffer. Assessing the success of completed projects could improve municipal planning and development organizations to adapt for future changes. However, knowing the criteria for success and indicator’s for its measurement is a precondition for creditable project assessment. But how do municipal officials define the success or failure of urban commercial development projects?

To answer this question we use data from interviews with 20 municipal officials involved in commercial urban development in Finland. Interviewees were selected among the 32 biggest municipalities in Finland (=municipalities having at least 35 000 habitants) with geographical variation. The interviews were semi-structured and consisted of project specific questions (e.g. what, when, how, was the project a success) as well as general questions (e.g. how is success defined in commercial urban development projects). The interview length varies from one to two hours.

The interviews seem to indicate that municipalities lack understanding on when an urban commercial development project can be seen successful, especially when it comes to the usage phase. Often the only success requirement was stated to be the actualization of the building phase of the commercial properties. If other factors existed, they were mostly related to the planning phase (e.g. the fluency of the process, monetary gains from land sales). However, most interviewees noted that better assessment of the usage phase could be useful.

Based on the interviews it could be argued that currently the system does not sufficiently support and allow actions that improve learning and adaptability in urban commercial development in municipalities. Instead, it seems to encourage municipal officials to concentrate only planning and not on the usage phase.

KEYWORDS: Urban development, Local government, Community real estate, Commercial real estate
286 Privatisation and institutionalisation of organisational learning in urban development pilots

The initiation of ‘pilots’ in urban development is often a result of changing contextual circumstances like economic market conditions or new planning legislation requiring other solutions. Pilots require actors to innovate in terms of designing plans, handling planning procedures, managing development processes, and constructing real estate. They are often aimed at effectiveness, corresponding with the privatisation of planning powers witnessed in Western countries (Hobma & Heurkens, 2015). Also pilots urge actors to discover new ways of working through formal public-private agreements and informal processes of organisational change. This research investigates to what extent a brownfield redevelopment pilot project called Theo Koomenbuurt in Amsterdam has been effective in achieving its objectives, and whether the pilot’s privatisation aspects have hindered the institutionalisation of organisational learning (Wiseman, 2007).

In the pilot a housing association and the municipality applied three privatisation-oriented changes aimed at accelerating planning and development processes. First, a separate ‘spatial design quality team’ was set up to judge spatial-esthetic matters normally the responsibility of a municipal quality commission. Second, a flexible land-use plan and spatial vision were created to accommodate changing market needs. Third, ‘private quality safeguarding’, examining building plans and monitoring construction in accordance to the Building Ordinance, substituted the formerly public controlling role. The evaluation indicates that process acceleration took place and was considered effective (Heurkens, 2017). However, the municipal stance towards the pilot’s privatisation aspects, partly created by occurring market failures, hindered a process of institutionalisation of organisational learning. The case shows that the potential pilot impact to change urban development practices foremost requires informal organisational changes that support formal legal arrangements.

KEYWORDS: urban development, privatisation, institutionalisation, public-private partnerships, organisational learning
The role of planning policies in the property market, particularly in regeneration, has been recognised as to shape, regulate and stimulate the market (Adams et al, 2010 & 2015; Jones, 2014). These scholars pointed out the lack of market indicators to evaluate the outcomes of planning and regeneration policies, which shows that the need of regeneration policies to engage with property market still remains neglected and there was little discussion on whether urban regeneration policies encouraged sustainable property markets as important economic institutions. This paper intends to adapt a conceptual framework of market sustainability by employing three key concepts of market maturity, resilience and competitiveness to examine the impact of urban regeneration policies on the property investment market in the UK as an evaluation indicator for economic sustainability by utilizing a holistic and long-term approach.

The research method for this paper comprises two elements: firstly, the case study methodology to look at the formulation of the Manchester Model from the 1970s to the present time by studying written documents including the archived planning documents published by Manchester City Council, newspapers as well as academic papers; and secondly, undertaking semi-structured interviews to obtain insights on the interplay of the state-market relations through urban regeneration policies. The findings show that affirmative comments made by the interviewees indicated some positive impact of regeneration policies to make the property investment market more sustainable by strengthening its market maturity, the level of resilience and city competitiveness with an emphasis on economic growth and the increase of property value over the past fifty years. This desirable outcome mainly resulted from strong leadership of Manchester City Council, political stability and an appealing city image for investment and businesses. Moreover, the comments of the interviewees pointed out that the essential driving force to deliver successful urban regeneration in Manchester has been the vision for a sustainable future partly by creating sub-property markets in different zones of the city centre based on its strategic master plan. However, there are some doubts on elite leadership and uneven distribution of city success.

KEYWORDS: Regeneration, Property Market, Economic Sustainability, Planning Policies, State-Market Relations
One of the emerging problems we currently face in the Netherlands is the high vacancy rates of office buildings. Along with the globally dynamic markets and financial crisis came the awareness for office vacancy as a risk for the functioning of office markets. Uncertainty in the investment and office market is much greater now than it has ever been. Demographic trends such as a shrinking labor force, changing ways of working by use of telecommunication possibilities, technological innovations may lead to an even stronger reduction in the demand for office space in the future. On the other hand, high demand for housing is another case because of the demographic changes such as ageing, a trend of decreasing household sizes, urbanization and immigration to big cities.

Risk avoidance and risk management directly affect projects’ profitability. The flexibility concept, in terms of flexible space, flexible market and flexible financial models can allow investors to manage risks. This is why, including architectural designs which support flexibility and flexible decision-making processes in the real estate investment process is a necessity. Including flexible design effectively into office design and investment valuation processes could increase the value of office investments, by decreasing the risk of future vacancy. Buildings should be reused to meet new demands. Whereas there is a supply and demand mismatch in the office sector, office buildings should meet the requirements for new purposes.

There is a knowledge deficiency of the costs and benefits of flexible design and future options as compared to conventional development strategies. Architectural design options to be created in the future by flexible design can be expressed financially. In this paper, the built environment is seen as a product of an ongoing, never ending design process, in which the environment transforms part by part. Office investments are not fixed and static. In today’s conditions, flexible and variable design processes and products can create added value for offices. Office projects should be flexible enough to turn options into opportunities with a design potential.

KEYWORDS: Real Estate Development, Flexibility, Office Vacancy, Office Market
Our paper will focus on the role of iconic occupiers in development of the Rotterdam Innovation District. This area combines two distinct port areas, RDM Campus and Merwe-Vierhavens (M4H). We will analyse the two approaches of redevelopment of these areas using the conceptual model of multi-helices. These approaches resulted in different preliminary results: a firmly organised redevelopment project resulting in a campus environment versus a loosely organised organic redevelopment process resulting in several lab like innovation environments. We characterise the redevelopment of the RDM site by the Triple Helix of university-industry-government relationships fostering innovation. The M4H area as a less preplanned redevelopment is following the Quadruple Helix, blending in the perspective of civil society in knowledge production and innovation, and the concept of the Living Lab.

Certain occupiers are positioned as network builder. These are perceived to be good examples for the branding of M4H or their innovative character are called ‘area ambassadors’. Two of these are regarded as world famous brands and for that as ‘iconic’ occupiers of the area. This in contrast to the iconic buildings that feature the Rotterdam skyline. Studio Roosegaarde creates interactive designs exploring the dynamic relation between people, technology and space. Atelier van Lieshout is a multidisciplinary firm that operates internationally in contemporary art, design and architecture. By collaborating with these iconic end-users the City Ports organization wants to direct more attention to M4H, to create a stronger image for the area and to benefit from the extended network of these users. Previously, we published our preliminary findings on the arrival of Studio Roosegaarde in the area in 2015. Our paper will evaluate the role of Studio Roosegaarde as network builder for the area up until mid-2017 and we will make a start with describing and understanding Atelier van Lieshout’s iconic role.

Next to interviews and desk research, we aim to research the network in M4H and RDM using Actor-Network specific methods. And we will put forward an analysis of the role of our own institution, the Rotterdam University of Applied Science, in developing the Rotterdam Innovation District. The university is a prominent actor filling in the university-part of the Triple Helix at RDM and is currently exploring a greater involvement in M4H including the recent opening of a student hub in the area.

KEYWORDS: Innovation district, Network building, Urban area development, Redevelopment, Iconic occupiers
Tom Daamen, Erik Louw

304 Sustainable Development of the European Port-City Interface: Evolving Insights in Research and Practice

Seaport regions are the most urbanized and challenging places on the planet. Home to the highest concentrations of human enterprise and diversity, seaport regions offer the best conditions for cities and industries to develop and create economic as well as social wealth. In Europe, many seaport regions accommodate economic clusters and industries that need to innovate and transform in order to survive and contribute to a prosperous port as well as a liveable city—two goals that are often at odds with each other in seaport regions across the union.

The innovation and transformation needed in seaport regions demand new planning approaches and governance arrangements on the interplay between economic and spatial conditions. At the geographical centre of such arrangements lies the so-called port-city interface: waterfront zones that serve as areas of transition between the services and amenities-based urban economy on the one hand, and the production and distribution-based business of the port on the other. The usual planning and development approach to these areas is port-to-urban transformation. In this approach, former places of production become ‘places of consumption’ characterised by upmarket property development and iconic architecture—transformation projects that frequently yield criticism with regard to the sustainability of their outcomes in economic, social as well as environmental terms.

Throughout the past decade, it has been observed that responsible authorities in seaport cities have started to reconsider the transformation-oriented planning and development approach to their respective waterfront zones. This reassessment seems influenced by progress in academic understandings of the European port-city interface in tangible as well as more elusive—but no less significant—terms. Authoritative policy advice organisations such as the Organisation for Economic Co-operation and Development (OECD) and the International Association for Cities and Ports (IACP) have also adopted conceptualisations of the port-city interface that promote sustainable planning and development approaches to waterfront zones.

This ERES paper revisits, updates and expands upon a 2007 paper on the sustainable development of the European port-city interface. Adopting an interdisciplinary perspective, we will draw together and assess the—largely case study-based—body of academic literature on the changing European port-city interface and the related phenomenon of waterfront

KEYWORDS: Port-city interface, Waterfront developments, Planning
302 Using quality indicators to assess urban regeneration in residential areas

Urban spaces are diverse and dynamic places where different activities and events take place. The diversities and changing characteristic of urban places have always been influenced by macro developments, such as globalization and economic situations and, as a consequence, new visions and methods are needed to manage these multi–scale issues in the existing urban environments. Urban regeneration programs are the tools to face diversities, inequalities and major challenges in urban areas across the world. In the last two decades, many towns and regions have been involved with regeneration programs to eliminate deprivation and improve the individual spaces as well as the collective ones (Roberts & Sykes, 2000). The primary goal of these programs has been mostly economic, but in recent years it has shifted toward concepts such as quality of life and human development. Urban regeneration processes have been regarded as a key element of urban policy to promoting land values and environmental qualities (Adams & Hastings, 2001). It contains various approaches to tackle economic, social and physical issues of urban centers and therefore involves different planning actions and stakeholders (Couch, Sykes & Boerstinghaus, 2011). In recent decades, many of implemented actions regarding regeneration program emphasize on human development rather than economic growth of the regions. Thus, the reflections of the link between regeneration and these aspects bring out new questions whether the components of regeneration activities have been characterized with respect to human development indicators (Wei et al., 2015). It is therefore crucial for planners to develop an evaluative tool to monitor the effectiveness of regeneration programs. This tool contains indicators, which demonstrate the regeneration initiatives for resident’s interests and contains different life domains the context of neighborhood improvements. In this regard, this article aims to develop a model and a survey to evaluate the outcome of urban regeneration and empirically test whether those projects were successful in terms of enhancing indicators of resident’s life quality. The findings will allow us to have a better understanding of urban development projects and the real impacts of physical interventions on residents. This can lead to improved design guidelines for the practitioners and will bring insights to both theory and practice of urban regeneration.

KEYWORDS: urban regeneration, survey, quality of life, measurement
Assessing the Housing Attributes for the Elderly in Klang Valley

The world is ageing including Asia countries which population is ageing rather rapidly. Malaysia is predicted to become an aging nation by 2030. Most of the elderly prefer to age in place. As housing is a basic human need, a home is a must for survival. It can be a major indicator of the well-being of people from all backgrounds and ages including the elderly. However, homes sometimes can be a death trap for the elderly. Accidents at home could occur due to poor health and they could be isolated from the community which could lead to loneliness.

In the context of increasing elderly population, there are issues relating to providing housing attributes that can assist the elderly to age in place peacefully. Therefore, this research aims to identify the appropriate housing attributes for the elderly to age in place. Researcher will be focusing on vertical homes such as apartments and condominiums and the housing attributes preference among the major ethnics in Malaysia which are the Malay, Chinese and Indian. The focus group will be observed through a discussion regarding their needs in housing attributes for the elderly. The group comprised of the elderly, elderly care givers and children of the elderly. Feedback from the focus group is then utilized to construct a questionnaire. The questionnaires will be analysed and finalised into a set of housing attributes ranked according to their level of importance based on the Relative Importance Index.

KEYWORDS: Elderly, Housing Attributes, Vertical Homes, Multi-ethnic, Klang Valley
3 Land valuation in infrastructure projects – a reflection on the new infrastructure contribution planning tool from Victoria, Australia

Planning instruments help transform and shape cities and are often described in passing as they assist with implementation of city and state infrastructure. Recent amendments to the Victorian state Planning and Environment Act 1987 allow for a new system for levying and collecting contributions towards the provision of essential local infrastructure in growth and strategic development areas and include a new tool – the Infrastructure Contributions Plan (ICP). This paper critically outlines the process, with an emphasis on how Infrastructure Contribution Plans can assist with greater operational transparency and accountability, which is paramount to a modern city model. An important ancillary aspect to this process, particularly at the forefront of planning for new infrastructure, is for a transparent and accountable valuation process, working in harmony with the planning system. Valuation adds benefit to how infrastructure can be planned and realised for net community benefit, offering a balanced and robust consideration of socio-economic impacts. The authors argue that there is a real opportunity for built environment professionals in the fields of land use planning and development to work more collaboratively with property valuers for the broader goal of infrastructure provision, which supports more inclusive cities.

KEYWORDS: Built environment, Infrastructure contributions, Planning instruments, Valuation
29 Real estate and urbanism – In search of a rationale that inserts real estate into mainstream spatial sciences

Urban design influences the value of private properties when it does not simply generate new ones. Furthermore present urban planning, which is the most common institutional framework for urban design, requires financially balanced urban plans or even beyond it in search for public funds to interventions outside the plan area. This enhances the role of real estate in urbanism as it is the value added to real estate that allows for the funding of public features within urban planning.

Two relevant issues derive from this approach – urban planners have to give a new and awkward place to real estate knowledge within their teams and the value added by the urban plan has to be calculated.

The current Portuguese planning law requires municipal plans to evidence their economic feasibility without public disbursements and to provide an algorithm to allocate costs and benefits among initial property owners. This is however done without either the least mention to the role of real estate or to a purposeful concept of value added by the plan. The latter issues are the subject of the presentation with illustrations from the Portuguese urban planning framework.

KEYWORDS: urbanism, real estate development, urban design, value added, urban planning
Innovation is a buzzword promoting urban development and many public/private resources are invested in developing particular areas. Since the late 1950s, campuses have been the most popular areas developed to stimulate innovation in many industrialised regions. Many campuses developed as isolated locations in the periphery of cities. With the increased urbanisation processes, some of these locations are already in the inner city or adjacent to urban areas. More recently, the perception of cities as the natural environments for innovation is leading towards an urban shift in innovation-driven area development.

Either way, this practice has been influenced by the assumption that geographical proximity plays a central role in the creation, diffusion and application of knowledge, which is widely discussed in economic geography. Accordingly, there has been a theoretical debate on whether diverse or specialised environments are more favourable for innovation (i.e. cities or regional clusters respectively). Although ‘diversity’ is considered an essential aspect of innovation processes, the existing research explaining which type of environment is more beneficial to innovation is inconclusive. This ambivalence poses challenges for stakeholders involved in campus development. On the one hand, planners and developers of new areas struggle with location decisions since different locations have associated advantages and/or disadvantages in stimulating innovation. On the other hand, managers of existing campuses deal with implementing strategies to support their goal of stimulating innovation at chosen and/or given locations.

This paper aims to support strategic decisions in the development of new and existing campuses intended to stimulate innovation based on different location alternatives. This paper assesses a planning tool that proposes relevant aspects to stimulate innovation in different locations (Curvelo Magdaniel, 2016). This tool is used to analyse and compare 39 campuses with different locations characteristics across industrialised countries.

Findings reveal five types of location patterns in existing campuses developed to stimulate innovation. These patterns show differences in connectivity aspects outlined in the tool as relevant for innovation. These findings demonstrate the usefulness of this planning tool, which considers location as a relevant decision shaping campus development and other innovation-driven area developments.

KEYWORDS: Campuses, Location, Innovation, Urban development, Knowledge economy
Creating employment opportunities and increasing the national income, the tourism sector contributes to increased prosperity. In the Tenth Development Plan of Turkey covering the 2014-2018 period, it has been emphasized that sustainable tourism activities will be enhanced within the scope of an environmentally sensitive and responsible tourism understanding and the sociocultural and environmental degradation associated with tourism will be reduced. In the implementation of tourism activities for local and regional economic development, the main objective is minimizing the impact on the environment and socio-cultural structures.

In this study, sustainable tourism opportunities in settlements, of which development is based on tourism, are elaborated and the Göreme Municipality, whose tangible and intangible cultural assets are at risk of being lost due to the indirect effects of uncontrolled tourism, are chosen as the study area. Settlements such as Göreme that owe their economic development success to culture tourism have to protect their existing natural, cultural, and social features in order to ensure the continuation of this development. While conservation of the gained identities of settlements is a necessity for urban and regional development, it is also a requirement to feel the sense of belonging to the city or the region. The Göreme Municipality is a settlement with an identity thanks to the existence of a cultural landscape and in such settlements, although the main objective of tourism is to enhance the quality of life economic viability, the sustainability of tangible and intangible assets that should be protected should not be thrown into the background. However, the study results suggest that with the transformation of the old residential buildings of the region built using traditional materials to hotels due to demand pressures, the local population becomes alienated from the town and the culture around them.

The sustainability of the intangible cultural heritage has not been achieved; the real estate in the region changed hands with the appeal of hotel investments to investors out of the region; and the low level of utilization of the local people from increased revenues has led to a failure in ensuring regional development and a fall in the quality of life of residents in the area. It is understood that in case the current trends continue, tourism will have a damaging structure rather than providing economic contribution for the local com

KEYWORDS: Sustainable and cultural tourism, local and regional development, real estate ownership, transformation, governance
Richard Peiser, Raymond Torto, Shohei Nakamura

355 Are There Investment Premiums for Mixed Use Properties?

This paper investigates whether properties in mixed-use development have overall better financial performance than the other properties. We strategically choose four cases that we think well represent recent mixed-use developments in the United States, and compare key financial indicators for properties within and outside a half-mile radius from the project boundaries. The empirical study relies on quarterly property information since 2012, which we obtain from the National Council of Real Estate Investment Fiduciaries.

Our panel regression analysis shows that office and retail properties within the mixed-use geographies have 37% and 48% higher market values respectively than those outside. Total returns are also higher for office (67%) and retail (63%) within the radius as well. By contrast, we find no clear return premium for being located close to the mixed-use geographies for apartments. Higher market values for apartments within these areas for apartments suggest that any mixed-use return premium is already bid into their prices. We also test the robustness of the conclusion by using Walk Score as an alternative mixed-use indicator. Our findings are mixed and probably support the developer and financier biases against the complexity of engaging in mixed use projects.

KEYWORDS: mixed use, walkability, investment return, office returns, apartment returns

Fung Darren, Rita Yi Man Li, Li Herru, Beiqi Tang

358 Building safety index: Structural Equation Modelling approach

In many countries, accident compensation is one of the most important factor that motivates the contractors and clients to provide sufficient safety measures to their workers. Yet relationship between various factors are under study. This paper aims to study the various factors which affect the compensation on sites via construction of building safety index via structural equation modelling approach.

Court cases dated from 1982 to 2015 which are all related to construction accident in Hong Kong are collected. 14 categories of information have been recorded and have been used to construct the model and have been estimated. Those 14 variables are age of plaintiff, gender of plaintiff, plaintiff’s monthly income before accident, future loss of earning, pre-trial loss of earning, loss of earning capacity, special damage, future treatment, death of plaintiff, duration of judgment, level of court, contributory negligence and PSLA. Finally, there is a latent variable called level of injuries has also been included in the model.

KEYWORDS: Building safety, Court cases
Neil Crosby, Steven Devaney, Pat McAllister, Peter Wyatt

162 The implied internal rate of return in conventional residual valuations of development sites

Explicit discounted cash flow methods are used in many countries to assess the value of property investments or their likely rate of return given a particular price. These are typically supplemented by simpler models for the purpose of estimating market value and this has led to debate over the merits of different approaches. A parallel situation exists in the case of UK development sites: both cash flow appraisals and simpler residual valuations are used by the real estate industry to assess site values and development viability. Yet traditional residual valuation methods involve making assumptions that are inconsistent with financial theory and this makes it difficult to compare the required returns for such schemes against those used for other investment opportunities. Hence, in this paper, we explore the relationship between the profit and interest allowances used in traditional residual valuation models and the internal rates of return that they appear to imply. This is done with reference to a number of simulated examples of different schemes and the implications for practice are then assessed.

KEYWORDS: Development appraisal, Development viability, Internal rate of return, Residual valuation,

The Athens city-center building stock is in bad situation, due to the lack of appropriate urban policies for a very long time and the current long-lasting economic crisis. About 35% of the real properties are derelict. Due to the high renovation and modernization costs of the buildings, as well as the low rental values, they are gradually abandoned. Additionally, their very high degree of co-ownership renders buildings’ renovation an extremely difficult task both for owners and developers.

The building stock has been progressively excluded from the processes that could support the economic growth and the socio-economic development of the city. For the financial sector, buildings are no longer an object of interest, not because of their low market value, but because of the high risk in financing investments and the lack of interest for the mortgage market thereon. A vicious circle has been established: the buildings are depreciated due to the degradation of the urban environment and vice-versa.

A model for the renovation of the buildings has been elaborated. This model is based on the property rights consolidation, in order to achieve the flexible use and management of the buildings as physical, legal and economic entities. It supports and promotes the mobilization and collaboration both of the private and public sectors, and PPP schemes.

The main factors that have been taken into account are:

- Real estate development: The model supports the use of financial engineering schemes, following a deep analysis of the market and numerous feasibility studies.
- EU State Aid regulations: Under current financial conditions and local market failures, State aid and/or grants are required.
- Key legal issues: co-ownership decision making, tools for applying State policy regarding owners compliance to property obligations, institution of a legal framework permitting the compulsory purchase of abandoned properties to the benefit of private entities/developers and fast track investment.
- Finally, the whole administrative process and governance matters are regulated by the model, according to the existing European and national frameworks for urban projects.

Research funded by the Onassis Foundation, following a MoU signed between the Foundation and the Greek Government.

KEYWORDS: derelict buildings, renovation, reuse, urban regeneration, Athens
70 Anticipating urban mining

In recent years there has been growing interest in urban mining from various environmental and economic perspectives. Materials hidden in buildings are attractive alternatives to raw ones, while building activities are responsible for a large share of waste. The paper is a summary of findings from an analysis of possibilities for urban mining in Amsterdam, focusing on prospecting for metals in residential buildings. Both global literature and interviews with Dutch demolition experts suggest that performance in metal recovery from buildings is as high as it can get. However, estimation of metal content in buildings and of waste processing rates is far from reliable, accurate and precise enough to support such claims or identify possibilities for further improvement, especially in relation to processes of urban and real-estate redevelopment and rejuvenation. To improve understanding and embedding of urban mining in these processes, we propose (a) a BIM-based information infrastructure that connects to municipal and owner information processes, so as to progressively collect all relevant information, allow for validation, verification and localization of valuable resources, as well as identify opportune moments for their extraction, and (b) policies that overcome the fragmented institutional character of the building sector, making information sharing a consequence of networking based on trust and shared values, driven by both demand and soft incentives relating to circularity.

KEYWORDS: urban mining, circularity, renovation, demolition, BIM
In recent times, there have been a series of significant terrorist events in major cities internationally. These attacks have resulted in substantial loss of life, property damage and financial loss, reputational damage and breaking down of societal relations. One of the primary targets of these attacks is crowded places/ commercial real estate developments (transportation hubs; hotels; entertainment venues; sporting arenas; restaurants; and other urban developments). As a consequence, new research is required on how best to protect such developments going forward with this research designed to contribute significantly to the protection of real estate assets.

The purpose of this research is threefold:

- It is designed to understand the current consideration of counter terrorism protective security in the real estate development process;
- It will ascertain the barriers to implementing counter terrorism measures; and
- It will identify how counter terrorism security measures could be introduced, including at what stage, in future significant real estate developments.

The impact and significance of this research is important for the informing of future counter terrorism protective security policy in the UK, US and Australia, hence the need to take expert opinion from key stakeholders in the respective jurisdiction.

KEYWORDS: Real estate development, Terrorism
342 Perceived success VS real added value in project development. Analysing cognitive content and information modalization in the early phase concept development: A case study of a commercial real estate project in Norway in the 2010s.

A distinct feature that characterise the building project as a cognitive process is the transformation of thoughts into built physical objects. Being a complex human activity, this process typically involves several influential actors, each driven in different ways by their own aims, competencies and goals. A critical challenge to the value potential of the project development, is that of retaining a shared goal across the influential actors and their different agendas.

This paper investigates modalization as it unfolds in a collaborative project process as the cognitive feature of qualifying and disseminating input (information) towards a project`s development from concept to physical object. The case study furthermore goes to demonstrate how certain modalities carry on as affordances between the new built environment and its users.

By mapping the information content of the cognitive process of early phase concept development in an empirical case study of an actual, built project, we aim to re-engineer the synthetic process of concept development. In doing so we gain an analytic viewpoint on the cognitive process, and furthermore provide some new insights into the problem of retaining the built object as a shared goal across the project organisation and through the construction process.

Our findings indicate that a large share of conceptual concerns were diverted towards processual concerns such as how to get it built as opposed to a focus on what to build – as in the future affordances of the physical product of the development. Upon uncovering this difference between the cognitive modalities of process VS product concerns, we aim to contextualise this dynamic by comparing the metaphysical and pragmatic difference, reflected by the ontological transformation from concept to physical object. It is this transformation that produces the affordances that represent the value of the architectural object.

By connecting modalities of information to physical modalities, we aim to make a direct connection between distinct features of cognition and the added value potential embedded in the affordances of the product in a project development. This production of added value, in the life of the user, depends on directing the cognitive labour of a project team towards a shared object of thought, which in the case of a building project must be the physical object, as this is the cognitive joint which enables continuity between design, (production) and use.

KEYWORDS: project development, cognition, information theory , added value, case study
Cambridge is a historic city in the UK with an international reputation. The CB1 development is a major real estate regeneration project around the train station aiming to provide a gateway to the city. Once complete it will provide over 50,000 sq m of offices; 5,000 sq m of retail; 1,250 student units and 330 residential dwellings. When creating such a masterplan on a brownfield site with multiple existing buildings and in a sensitive context, multiple decisions to demolish or adapt need to be made.

This paper tracks the history of the CB1 development through a review of planning documentation and media articles, and through interviews with key stakeholders, including the developers, town planners, architects, engineers and local campaigners, identifying where and how key decisions relating to adaptation and demolition were made.

The case study reveals complexities of decision-making in a real-world context. For example, for some of the existing buildings there were conflicting viewpoints about their future. The demolition of a Victorian terrace in favour of two new-build office blocks saw opposition from a local campaign group and the city councillors. However, the planning refusal was taken to appeal by the developers, who were then granted permission by the Planning Inspectorate. Arguments put forward included the lack of architectural significance, supported by the building not being listed and the public benefit brought about by demolition.

The paper also explores the technical aspects associated with buildings which were demolished or retained through the creation and analysis of a database of existing and new buildings. The exploration builds upon international research analysing features that increase adaptation potential. Considering such aspects as, the condition of the building; floor to ceiling heights; standardised floor plates; and intangible values, such as architectural significance.

The paper therefore assesses the CB1 development from both a technical and social perspective. The conclusions encourage actions to ensure holistic and sustainable decision-making in the future, recommending: the need for early stakeholder engagement; clarity on the strength of outline planning permission; and the recognition that heritage conservation and new build can both contribute to place-making. The paper also demonstrates the need for compromise, with inevitable conflicting viewpoints on a development of this scale.

KEYWORDS: Masterplan, Adaptation, Regeneration, Decision-making, Demolition
245 Modelling of optimal office location in sustainable urban environment – investors’ perspective and planning policy

Extensive research on benefits (economic health and environmental) of sustainable office buildings does not cover sufficiently buildings’ impact on urban sustainability. Even though the multi-aspect impact of built environment on cities’ development is a well-known and broadly discussed phenomena and encompasses, among others, transportation issues, access to urban amenities, urban functions, land use, natural environment protection, health, quality of life and local economy.

Creating and improving local conditions for living and investing is the responsibility of local governments. In Poland, planning tools like land-use planning isn’t obligatory for municipalities to elaborate, and it is perceived as intentional activity or additional initiative taken to stimulate local development.

The purpose of this paper is to analyze the links between sustainable urban development, planning policies and office site location decisions making process of real estate investors and conceptualize a model of a green building location that meets real estate investors’ needs and requirements of urban sustainability.

Criteria adopted for best-sustainable locations were elaborated on the basis of literature on urban sustainability and on office locational choices.

To determine most sustainable location of office buildings and to evaluate sustainable neighborhoods, we conducted analysis in GIS and calculated selected metrics (mixed land-use, walkability and clean transportation accessibility). In the next step we conducted semi-structured, in-depth interviews with investors engaged in sustainable office development projects in Cracow, asking them to define decision-making criteria of office building location.

Conclusions from application of the model of office location and confrontation it with locations of existing office buildings in Cracow, could enhance sustainability of office buildings measured from sustainable urban development perspective and represented by buildings’ locations, and could contribute to better effectiveness of planning policy tools.

KEYWORDS: sustainable urban development, land-use planning, office building location, sustainable building
In inner London many real estate companies own and actively manage clusters of ownership—spatially concentrated property portfolios. The literature has framed this feature of the London property market as the revival of the estate model of development. That is, on the one hand, it is argued that the well-known London’s Old estates are evolving from hands-off family businesses into professionally actively managed portfolios. On the other hand, it is argued that there are emerging clusters of ownership similarly actively managed. However, little is known yet about why property owners choose to cluster their portfolios, challenging risk diversification theories, what their active management comprises and in what institutional context they operate.

Using an institutional account, this research examines clusters of ownership exploring their investment and management strategies and how the institutional environment affects these strategies. Methodologically, this research follows a multiple case study design and combines quantitative and qualitative methods, with predominantly qualitative methods. Quantitative data sources include the annual reports of property companies, which were analysed using descriptive statistics. Qualitative methods include semi-structured interviews with cluster owners and other stakeholders, which were analysed using content analysis.

Research findings suggest that property owners derive a threefold advantage from clustering and actively managing their property portfolio. First, they gain an edge over the market by reducing the transaction costs involved in new acquisitions as a result of their detailed local knowledge and concentrated ownerships. Second, they deploy an instrumentalised form of place-making in their neighbourhood by curating the mix of uses and tenant mix, their placement, and the space in-between the buildings. Third, they can occupy some of the empty governance space left by a budget-strapped planning system. These private interest-led forceful practices, coupled with a receding planning system, present new challenges to inner city regeneration power dynamics.

KEYWORDS: London estates, clusters of ownership, transaction costs, place-making, receding planning system
IKENNA CHUKWUDUMOGU

82 Investment decision-making behaviour in urban post-disaster rebuild

In 2010/2011, Christchurch, the largest city in the South island of New Zealand, was a site of thousands of earthquakes. The stronger earthquakes destroyed the commercial inner city and public infrastructure. Many commercial property owners lost their buildings.

Property owners who lost buildings had to negotiate pay-outs with insurance companies and decide, once paid out, whether they should rebuild in Christchurch or sell up and invest elsewhere. The very great majority of those who decided to reinvest in the city are ‘locals’, almost all of whom have had no prior experience of property development as opposed to property investment.

More than 5 years on, the rebuild is still going on and this study seeks to understand their decision-making behavior in this environment

KEYWORDS: post-disaster, Christchurch, rebuild

MARIJANA SRECKOVIC

326 Organizational Capabilities and Performance: Comparing Architecture and Real Estate Development Firms

Building on the resource-based and organizational capabilities view this study explores the impact of organizational capabilities (relational capabilities and managerial capabilities) on the performance of SMEs in the architecture and real estate sector. We assume differences in entrepreneurial orientation for architecture and real estate development firms operating in uncertain dynamic environments and therefore explore the differences in capability levels and firm performance for these enterprises. Employing data from Austria, Germany and Switzerland, the research results indicate that under higher environmental uncertainty, relational capabilities are more important for the performance of architecture firms whereas managerial capabilities show a more significant effect on performance for real estate development firms. This study integrates Porter’s value chain concept and the organizational capabilities model and delivers a contribution to the organizational capability theory. Furthermore it is the first empirical analysis that applies the organizational capabilities framework to SMEs in the architecture and real estate industry.

KEYWORDS: Managerial capabilities, Professional service firms, Relational capabilities, Entrepreneurial orientation
Marcelo Cajias

227 Understanding real estate markets with big data – liquidity and rental co-movements in Germany

Market liquidity conditions and rental growth are said to match along hot and cold market cycles over time. Substantial deviations from these phases explain either overrented or underrented expectations by landlords or an essential change in tenants’ housing demand. While the assessment of housing markets by central banks, governments, institutional brokers and private households focus nowadays primarily on price indices, a general liquidity indicator and its potential co-movements along the residential cycle is missing. This paper develops a theoretical model and empirically explores a new form of market equilibrium in which liquidity and rental indices determine residential market cycles. The results with big data capture the development of 250 German residential markets accurately and show that markets do develop across cycles over time, but not always along the hot or cold phases as described by Krainer, 1999. The paper also explores the results spatially across the strong segmented German rental housing market.

KEYWORDS: German housing, Liquidity / time-on-market, Survival regression, GAMLSS, k-Means
There are many aspects that add and subtract economic value in terms of real estate selling prices in a delimited region. The different approach of this paper is that a measurement of diversity indicators has been included to analyze its influence in the housing prices over the region of Barcelona Province. Another aspect has to do with the analysis of the influence of these diversity vectors at different territorial scales. Assuming capabilities of diversity to regulate urban systems, different multivariate models have been developed in order to assess the formation of values in the territory. Using different databases it was possible to calculate diversity factors in terms of census tracks information, population income, quotidian mobility, separated also by activities and socioeconomic groups, adding also a calculation of diversity of land uses, productive sectors and services. Other parameters involved were structural features of buildings, level of education of the population, the structural and environmental features of dwellings, percentage of services, among others. Using listing prices hedonic models are built, and the asking price is regressed over these continuous indicator, among other control variables. The results are presented as tables and SIG maps at different levels of approximation: Barcelona municipality, Metropolitan Area of Barcelona (AMB), administrative Barcelona Metropolitan Region (RMB), Metropolitan Transport Area (ATM) and finally Barcelona Province. The results suggest that the diversity factors have a significant influence among the others indicators of its kind. Despite of this result, the influence level and the diversity variables present in the models have to do directly with the territorial scope considered, since the measurements used for their calculation are tied to a specific space margin. Land use diversity and diversity of localized work places have an impact on prices. Other amenities also exert influence on the spatial distribution of values, including for example number of baths, swimming pool, elevator. Results also confirm that important determinants of housing prices are related with the floor area and socioeconomic stratification of the neighborhood (education level). In addition diversity based on total mobility patterns also has a main influence, making a difference on residential market values into the different regions.

KEYWORDS: diversity, real estate prices, hedonic prices, Barcelona region, multivariate modeling
383 House price dynamics of the top 13 cities in China

Background: According to International Real Estate Group Knight Frank, Chinese cities account for the top eight rankings in Global Residential Cities Index, as indicated that regional cities such as Nanjing, Shanghai, Shenzhen and Beijing grew over 30% in year 2016. (Lenaghan, 2016) Since regional house prices play pivotal roles in China’s regional economy as well as in Chinese’ daily lives, to understand regional house price dynamics is of utmost importance.

This paper poses two research questions: RQ1. Is there house price spill over effects among the top 13 cities in China? RQ2. Is there regional house price heterogeneity between the first and second-tier housing markets in China?

Research methodology: The paper describes the application of combined enhanced rigorous econometric frameworks, such as the Principal Component Method, the Vector Error Correction Model (VECM), Granger Causality, Variance Decomposition and Generalised Impulse Response tests to provide an in-depth understanding of regional house price dynamics in China.

Findings: The empirical findings reveal that first tier cities such as Beijing, Shanghai, and second tier city Chongqing, function as a source of spill-overs. Spillover effects occur among all of the target cities in China.

Further, the result indicates there is close relationship between house prices in two major segments of China housing markets and macroeconomic variables including interest rate (IR), China share market performance (CNSHARE), unemployment rate (UNEMP) and GDP in China. Moreover, heterogeneity on house price dynamics was identified. Second tier top 8 cities housing prices are self-corrected to long run equilibrium at quicker speed than those in first tier cities. This may reflect the information transmission mechanism in second-tier cities are much simpler than those in first-tier bigger cities.

Originality and value: The foremost contribution of this paper is that it is the first rigorous study of house price dynamics and the spill over effects of the top 13 cities at the first and second-tier housing markets in China. Additionally, the data set renders the study of particular interest, because it incorporates an analysis of the golden era of China’s prosperity performance of house prices from 2003 – 2013, and new normal age (2014 onwards) slowed down period.

KEYWORDS: Spill over, regional house price dynamics, long run equilibrium, interest rates
There are many causes of imbalance regional development. This study explores the idea that new infrastructure investment could subsequently lead and increased private construction investment differently over time and space. It further explores another idea – that the effects of each of the two kinds of infrastructure investment (social and economic) on each of the two main kinds of construction output, housing and commercial construction, may be quite different. In addition, yet another idea is explored – that the effects of increases either in the residential or the commercial built stock of a region may be that it calls-forth (provides the need and demand for) more infrastructure investment in that region – that infrastructure demand may be a function of the number of households, and, more particularly, of the number of dwellings, and of the amount of transport demand generated by commercial activities. Therefore, the aim of this research is to provide different views on the nature of the relationships between infrastructure investment and imbalance regional development in GB. The results show that the causal relationships differ across regions, and the economic infrastructure investment (transportation) has a deeper influence on both private commercial and residential investment than the social infrastructure. This research tries to improve the understanding the linkage between infrastructure investment and private construction investments in terms of their relations with economic growth, private property prices, and private construction outputs.

KEYWORDS: Regional Development, Infrastructure investment, Econometric analysis
Graham Squires, Alex Lord

293 The Uneven Geography of Financing Cities through a Betterment Tax: Using the Community Infrastructure Levy (CIL) in England

In urban public finance, finding alternative ways of supporting local service provision has become an increasingly important issue. With central government funding increasingly scarce, local authorities have been encouraged to find new ways of supporting themselves. In the UK this has taken the form of an in depth review of local government finance, together with the devolution of policy tools that incentivise local authorities’ to embrace the pro-growth agenda. Part of this suite of measures is a revised approach to betterment taxes and ‘planning gain’ through the introduction of a Community Infrastructure Levy (CIL). CIL provides local authorities with the opportunity to organise their policy on planning gain contributions in a transparent fashion through the development of a ‘charging schedule’, a formal component of a local authority’s legal planning documentation. The charging schedule sets out the fee (or range of fees) applicable to any development occurring within that local planning authority’s jurisdiction, typically expressed as a sum (£) per m2 of built space. The proceeds of CIL are then to be spent on locally identified infrastructure priorities, not necessarily related to mitigating the impacts of an individual development.

The rationale for making infrastructure investment a priority for local, as well as/rather than central, government has turned on the academic logic that, public finance dedicated to new or improved infrastructure can have profound effects on local economic growth. As a consequence a central tenet in the ongoing struggle to effect revitalisation in urban England, has come to focus on the renewal of infrastructure dating to the Victorian, Edwardian and post-war periods. This paper seeks to explore the implications of this locally-financing infrastructure provision through a betterment tax (or arguably an impact fee) such as the Community Infrastructure Levy (CIL), and uncover whether the policy tool ‘fits’ a design of land value capture, using future revenue streams with a betterment tax realised in the present. Moreover the paper aims to report on ongoing research comprising, firstly, an investigation into the origins and emergence of the CIL policy, and, secondly; to study the variation in CIL’s implementation when considered in the context of the dynamic uneven economic geography to which it applies.

KEYWORDS: Public Finance, Infrastructure Planning, Community Infrastructure Levy, Betterment Tax, Urban Policy
8 Active innovation resistance - the example of joint building ventures

Purpose: Joint building ventures are defined as an association of a group of private individuals who are willing to build jointly. They can be seen as a reliable partner for municipalities in urban development for example regarding sustainability aspects. However, their share in the German housing market is still low. For various reasons, potential home owners have a lack of knowledge of joint building ventures and perceived barriers can cause active resistance. This study provides insights on supporting efforts regarding joint building ventures and gives answers to the question which factors promote or hinder potential home owners’ willingness to join joint building ventures.

Design: The study adopts a quantitative approach, using a web-based survey. The data were collected via the survey platform Qualtrics and analyzed via SMART PLS 3.0. The study was conducted with a sample of n=550 potential home owners in Germany, who were questioned about their attitudes toward join joint building ventures.

Findings: The results of the structural equation model reveal that the potential home owner’s attitude and willingness to join joint building ventures are affected by several barriers such as price, effort expectancy and information availability. Additionally, it can be shown that there are significant differences between the effects on the willingness to join regarding sociodemographic characteristics (sex, age and net income).

Practical implications: Recognizing factors which promote or hinder potential home owners’ willingness to join joint building ventures offers several opportunities and implications for municipalities and might help to understand and influence potential home owners’ evaluation process and to reduce active innovation resistance.

KEYWORDS: Joint building ventures, Urban planning, Active innovation resistance, Evaluation process
Health is the basic condition of economic growth and the investment on health facilities should be parallel to other investments. In general, the distribution of those facilities will encourage balanced economic prosperity. After 1990’s privatization of health facilities had started but very little research done about factors affecting the outcome. In this paper the distribution of public and private health facilities are investigated with respect to, socio-demographic, economic and education levels of provinces.

Distribution of Public and Private Hospital beds with respect to province population throughout time is analyzed. Public hospitals are generally distributed with balanced population except some southeast and east Anatolian provinces. Private hospitals are five times less the volume of public hospitals and 15 provinces have no private hospitals. Most of the private hospitals are located in a few higher income provinces and rest is distributed by population. Regression model the number of hospital beds are taken as dependent variable and population of provinces, income and education level are taken as independent variables. According to analysis, public hospitals are affected by population and education levels. For private hospitals only population is found to be effecting the distribution. So, in parallel to health facilities, distribution of education and job opportunities should be considered throughout Turkey.

KEYWORDS: Hospitals, Spatial Distribution, Privatization, Turkey
Environmental product variety is a significant factor to generate agglomeration economies for any shopping area. However, the intangibility of these multifaceted environmental externalities sometimes limited researchers and practitioners to mathematical models or 2 dimensional visibilities, which could not give a holistic overview. This study, thus, aims to establish a methodology process to generate three-dimensional (3D) visualization of the spatial distribution of the previously intangible environmental product variety characteristics. Using geostatistical and spatial analysis tools provided by GIS, the hotspots of specific attributes such as higher rental value, product variety, and shop density, could be revealed. The algorithms of PCA and CA were used for further spatial data mining, to extract the core and periphery product variety layers and the unveiling the different features among clusters. This research compared several shopping areas from the cities of Taiwan, each with over 1200 points of interest (POIs) field surveyed data from 2014-2015. The results showed that this spatial extracting model could successfully illustrate the 34 layers of retail agglomeration areas in 3D maps. The arranged core and periphery layers clearly unveil the spatial distribution of the intangible environmental variety. However, although the regression showed that higher variety can generate higher rents, the spots with highest rents does not with the highest number of product variety layers but closely link with the core layers of product variety and the highest pedestrian spots, such as the main MRT entrance. Spatially dominant anchor stores, such as department stores and cinemas, sometimes could generate sub-centres with higher rents.

KEYWORDS: Agglomeration economies, Geostatistical analysis, Retail shops, City centre attractions, City centre revitalization
Urban development and shaping of spaces are closely associated with a city’s economic activities and demographic characteristics. After the announcement of Ankara as the capital city in 1923, the size of the city was understood to be very insufficient and a new zoning plan was started to combat the inadequate housing assets and even cooperatives were established to accelerate housing construction for public officers. However, it is noteworthy that the development was too slow until the 1950s, after which date the urban scale grew rapidly due to the growing population and diversifying economic activities, new development areas turned to settlements, and naturally, natural vegetation was rapidly destroyed. Despite the increasing housing stock in the city, the demand for and prices of real estate in general, and particularly housing, are very high, which encourages allocation of new settlement areas as residential housing areas. A process, whereby an increased density in residential areas is provisioned with the new development plans made by the Municipalities, the Housing Development Administration, and the other public authorities, is experienced and with the urban transformation and renewal projects, the current housing stock is being swiftly renewed. In these circumstances, space use and spatial development in the city are managed based on revenue or economic rent rather than public policy and sustainability goals while fringe urban development also leads to increased infrastructure investment and local service costs.

In this paper, the population, number of housing, and spatial development relationships in the 1923-2017 period were first dealt with based on macro data and the results of that study were analyzed in integration with remote sensing data and the man-made structures and the development in residential areas identified with satellite data were comparatively evaluated. In the second stage, factors affecting the change in the total land assets in the province were examined with a regression model and it was established that the process of transformation of land to land lot was shaped by the impact of demographic factors. In order to regulate the use of space at the provincial and regional levels, there seems to be a requirement to primarily control the migration to the city; manage urban development based on public policies; restructure planning policies on equitable sharing of the economic rent created by planning activities in the city.

KEYWORDS: Urban space and development, vegetation and man-made structures, land use change, housing development, public policy requirements
Does Adversity Affect Long-Term Consumption and Financial Behaviour? Evidence from China’s Rustication Programme

In this paper I examine the long-term consequences of adversity on consumption and financial behaviour, using the largest forced migration experiment in history. From 1966 to 1978, 17 million urban youths in China, mostly junior or senior high school graduates, were sent to the countryside to do farm work for an average of three to four years under a rustication policy. Using data from the mini-census in 2005, I find that the rusticated generation behaves more conservatively than the non-rusticated generations over the long term, as they consume less housing and purchase more insurance and pension. In addition to the cross-generational influence, I investigate the intragenerational effects of rustication with data from the Chinese Household Income Project and the Chinese Twins Survey in 2002. A similar conservative behavioural pattern is revealed. Individuals with rustication experience spend less on housing, accumulate more saving and insurance, and invest less in risky assets, compared to their age-eligible but non-rusticated peers. Applying a habit-forming model, I suggest that one interpretation for the conservative behaviour lies in the habits formed during adversity. The results shed light on how a policy, especially in the early stage of life, influences one generation over the long term.

KEYWORDS: adversity, long-term effects, housing consumption, financial behaviour
ALFRED LARM TYE, DANIEL FELIX AHELEGBEY

337 Spatial and Temporal House Price Diffusion in the Netherlands: A Bayesian Network Approach

Following the 2007-08 Global Financial Crisis, there has been a growing research interest on the spatial interrelationships between house prices in many countries. This paper examines the spatio-temporal relationship between house prices in the twelve provinces of the Netherlands using a recently proposed econometric modelling technique called the Bayesian Graphical Vector Autoregression (BG-VAR). This network approach is suitable for analysing the complex spatial interactions between house prices. It enables a data-driven identification of the most dominant provinces where temporal house price shocks may largely diffuse through the housing market. Using temporal house price volatilities for owner-occupied dwellings from 1995Q1 to 2016Q1, the results show evidence of temporal dependence and house price diffusion patterns in distinct sub-periods from different provincial housing sub-markets in the Netherlands. In particular, the results indicate that Noord-Holland was most predominant from 1995Q1 to 2005Q2, while Drenthe became most central in the period 2005Q3–2016Q1

KEYWORDS: Graphical models, Spillover effect, House price diffusion, The Netherlands, Spatial dependence

CAROLIN FRITZSCHE, LARS VANDREI

97 The German Real Estate Transfer Tax: Evidence for Single-Family Home Transactions

This paper uses recent data for single-family home purchases to study the effects of the German real estate transfer tax. We aim to separate the tax’s short-term anticipatory effects from its long-term effects on real estate transactions. The data indicate that an increase in the transfer tax is negatively correlated with the number of transactions that take place in the market for single-family homes. We estimate that a one percentage point higher transfer tax produces enormous anticipation effects and yields approximately 6% fewer transactions over the long run.

KEYWORDS: Real estate transfer tax, housing markets, property taxation, anticipation effects
382 House prices dynamics of Australia’s largest four cities.

Background/Importance: In the most recent Australian housing boom starting from 2012 till present, prices soared. As at 2016, there is an emergence of a four speed regional property market. Sydney and Melbourne are at top growth of 15% while Perth had experienced downturns of 4.3% (Knight, 2017). It is important to attain understandings of the regional house price dynamics and their spillover effects.

Research questions: This paper poses two research questions: RQ1. Is there house price spill over effects among the largest four cities in Australia? RQ2. What are the regional variations between house prices and macroeconomic variables in the largest four cities in Australia?

Research methodology: The paper describes the application of combined enhanced rigorous econometric frameworks, such as Variance decomposition test, Generalised impulse response test, Granger causality, and the Vector Error Correction Model (VECM), to provide an in depth understanding of the regional house price dynamics in Australia.

Findings: The empirical results presented reveal Sydney as the dominant source of the spillover of house prices in the four major cities. It finds changes in house prices in Sydney result in contagious spillover impacts in the house prices of other three main cities due to the transmission mechanism of information. Melbourne house price variance does not come from itself both over the long run and over the short run, which is largely influenced by the contagious spillover from other regions. Spillover effects are identified in these four major housing markets.

Empirical results present evidence that long run relationships exist between various macroeconomic variables and house prices in these cities although heterogeneity was identified.

Originality and value: The foremost contribution of this paper is that it is the first rigorous study of regional house price dynamics in Australia including thorough analyses on macroeconomic relationships and spillover effects both. Additionally, the data set renders the study of particular interest, because it incorporates an analysis of the most recent housing boom (2012–2015 in the datasets).

KEYWORDS: spillover, macroeconomic, long run equilibrium, interest rates
In England, for over three decades planning obligations have been the main mechanism by which non-market housing has been delivered. Since around 2005, at the local planning authority level, tests of the financial viability of development projects have become a central consideration in planning policy making and development management concerning the provision of non-market housing. In essence, ostensibly to ensure that development is deliverable, a financial viability test involves a quantitative calculation of whether policies regarding requirements for non-market housing compromise a competitive financial return to the land owner and the developer. In a period of high levels of innovation and/or volatility in the English planning and housing policy regimes, this has been a fundamental change in the planning system. The research investigates changes in the supply of non-market housing in London in terms of its level and composition. Drawing upon data obtained from the Greater London Authority’s Development Database, the research investigates the relationship between national policy adjustments relating to housing and planning obligations, the supply of affordable housing, and land value capture in London and how this has evolved in the last decade.

KEYWORDS: financial viability, planning policy, development appraisal, housing supply, affordable housing
265 Predictors of choice of residential housing: a case of a developing country.

Purpose - This paper investigates the predictors of choice of residential housing in Kampala, the largest metropolitan area in Uganda. The city is growing exponentially with a diverse population estimated at 1.5 million and so there has been a steady growth in the residential market. The city is working on range of housing solutions to meet the market needs. The study will draw from the APH Model comprising of the three key dimensions’ mobility, community facilities, and community social capital to examine whether when choosing a housing option, decision makers are subject to a variety of influences.

Methodology - The researchers investigated the choice behavior of residential houses based on a sample of 384 respondents and adopted the exploratory, cross sectional and quantitative research designs in this study. The data was collected through five point scale questionnaire survey, coded using Epi Data and analyzed using SPSS.

Findings - Findings suggest that there is a positive relationship between residential choice and mobility, community facility and community social capital.

Research implications - Findings suggest that ease of mobility, access to amenities and community social capital are key determinants in influencing the tenants’ decision on choice of residence.

Practical implications - The paper addresses the predictors of residential choice among tenants in a city of a developing country; thus, aiming to inform real estate developers and city councils on what influences residential choice of tenants in a typical setting of a developing country city.

Social Implications – The paper will enable a market oriented approach to delivery of real estate products to tenants by providing information on what variables are key to consider when developing real estate products for tenants.

Originality - The methodology applied in this paper provides an innovative way to measure choice of residential housing among tenants in developing country context.

KEYWORDS: Residential Choice, Uganda, Housing, Tenants., Mobility
There have been extensive rearrangement of the Turkish planning system in terms of both institutional restructuring and reform of planning laws between 2000-2014. Planning reforms have emerged a recentralized planning system that remarkably differs from the period of 1985-200, which adopted decentralization of planning authorities. New regulations basically provide the basis for government institutions to be more influential in urban development processes, and strengthen the power of the role of some municipalities in planning whilst defenestrating others. In this paper, the prospective impacts of the new planning system on housing development are discussed. The discussion of the new planning system from the housing development perspective is based on documentary analysis and semi-structured interviews. The interviewee sample includes two main groups: the first group involves planning authorities and the second group involves market actors in housing development sector. This system-wide discussion aims to reflect policy-makers, governmental decision-makers and market actors’ perspectives on the housing development views on the new planning system beyond and the opportunities and/or conflicts that arise.

KEYWORDS: planning regulation, policy, planning regime, market, housing
This research is inspired from the existing challenges of compulsory acquisition of land by public authorities in Scotland. The exercise of the power of compulsory acquisition is a common instrument of land procurement for public projects and is often resisted, by the affected landowners, for various reasons. There is continuous effort at policy level to harmonise the procedure and derive fairer compensation mechanism for the loss of land and property rights. The first step towards achieving this bigger objective will be to understand the role of land and property in the overall well-being of an individual landowner. In this context, this research identifies and creates a list of valuable ‘functionings’ of individual landowners who have suffered losses due to compulsory acquisition, servitude and severance under various public projects in Scotland.

The method of Qualitative Content Analysis is applied to analyse case reports prepared by the Lands Tribunal for Scotland. In depth analysis of nineteen relevant cases is performed with the use of NVIVO software and a list of eighteen functionings is obtained towards the end. Results state that financial functionings are most frequently discussed at the Lands Tribunals. The debate on the loss of financial benefits from expected and planned development on land, in the near future, is most debated topic by the landowners.

Findings from this research can be advanced, in future research, to create a universal list of functionings offered by land and ownership rights that shall help in understanding the role of landownership in well-being of the landowners.

KEYWORDS: Capability approach, Compulsory purchase, Functionings of landowners
116 Efficiency of the processes in the Italian municipalities: A lever for land development

The aim of the paper is an exhaustive overview of Italian LPA’s efficiency and its growth during the years, a ranking have been made to reassume the survey’s results. Globalisation has generated remarkable effects on the public administration (PAs). Today, PAs play a decisive role in urban redevelopment and transformation. Since public administrators are the decision-makers and project-planners, they influence project feasibility from many viewpoints (architectural, environmental, economic-financial).

In such a competitive system, typical of the global market, the aspects related to efficiency of Public Administrations’ licence-issuing procedures plays a key role for the realization of a property investment. The Paper deals with this topic by showing a survey’s results which - since 2008 -involved the main Italian Local Public Administration and which analyzed processes and actions put in place to promote the attraction of real estate investments. The research work was based on the answers to a questionnaire administered to 110 Italian Municipal Authorities that govern a chief town of a province. These cities have homogeneous features, they are comparable and representative of the wide scenario of local administrative bodies ruling this specific industry in Italy. The survey analysed the town-planning and building procedures implemented in the largest Italian Municipalities, and it studied the issue of the efficiency of permit-granting procedures by analyzing:

- the time requirement and the method applied to issue town-planning and building permits;
- the charges for primary and secondary urbanization works;
- the monetization of standards;
- the possibility to retrieve the necessary documents to define a project (web site, paper documentation, digit tables, etc.)

The survey studied two different aspects that influence the real estate development process:

- town planning;
- building activities.

The survey results point to both positive indicators and some negative aspects which local public administration authorities need to overcome in order to re-launch Italy in the field of competitive global tourism.

KEYWORDS: Bureaucratic efficiency, Development, Public administration, Real estate investment, licence-issuing
The density of cities has led them to experience various levels of civil unrests which span peaceful protests to violent riots. Triggering mechanism of such events can be economic or political conditions and ideological or religious divides. In recent years we have seen social media (facebook, tweeter etc.) play an increasing role in organizing protests and disseminating information to a broader base, therefore magnifying the potential fallout for a city. From the Arab Spring in Egypt to the riots in England, Turkey and Ferguson/Baltimore in the US social media were used by various groups to expand the civil unrest, with the government in certain cases taking the unprecedented measure of blocking social media. In response to such social media use emergency responders are now trying to monitor such platforms to allow for an effective response to potential violent actions.

The paper focuses on the use of social media in triggering civil unrest and the short and long-term effects for cities/countries and their hotel industry. A combination of socioeconomic and hotel performance indicators [Average-Daily-Rate (ADR) and Revenue-Per-Available-Room (RevPAR) for luxury, mid-price and economy hotels] are used to assess the effect of such events in recent years. The preliminary results suggest that more intense civil unrest even within a short period of time has lasting effects for cities as well as the luxury hotels. Longer unrests have additional spillover effects among mid-price hotels.

KEYWORDS: social media, civil unrest in cities, hotel performance
The relationship between land availability and business development

This paper explores the relationship between land availability and the intensity with which industrial land is used. There is a growing research interest in measuring the impact of planning and land-use regulations on business development. In order to establish the impact of planning restrictions, it is necessary to have knowledge about the extent of substitutability of land for business uses. This paper seeks to contribute insights to this knowledge by examining the degree that firms are substituting capital for land. It has a particular focus on capital investment in new built structures and any refurbishment of existing ones, which will alter the intensity with which land is used. In areas where land supply is restricted, firms will seek to use their land and premises more intensively. As this will often require additional expenditures on refurbishment or expansion, one would expect to find increased investment in the existing stock of buildings in areas with lower levels of greenfield supply. To establish the influence of land availability on building investment, this paper uses a novel micro dataset on building permit activity at sites allocated for industrial and business uses in the Netherlands. This dataset is combined with detailed quantitative measures of the amount of land available at industrial and business sites. This research finds that the overall amount of land allocated for business development in the local market area does not appear to be influencing the level of refurbishment and redevelopment on sites. In addition, there is no evidence that expenditure on new built structures is higher in areas where land availability is restricted, which would suggest that the scale of buildings is intensified. It thus seems that substitution is difficult for the firms that are located on industrial and business sites and this might pertain especially to manufacturing firms.

KEYWORDS: business development, planning regulations, industrial property, land availability
Michal Gluszak, Iwona Forys, Jan Konowalczuk

244 Airport noise, land use controls and real estate values: critical review and meta-analysis

The externalities resulting from airport operation has been a subject of empirical investigation in economic literature, at least since 1960s. Most of the research focused on negative relation between airport noise and property values. The results were summarized in meta-analysis of 23 previous studies based on North American data by Nelson (2004) – suggesting significant noise discount, but also country level differences.

The study extends the scope of analysis, covering airports outside United States and Canada (mainly in Europe). Additionally, in the paper we discuss the joint effect of airport noise and land use restrictions enforced in selected areas around the airport on property values. We argue that the nature of land use controls related to airport operation can significantly affect the relation between noise and property values, and should be controlled for in order to get unbiased results in hedonic models.

KEYWORDS: airport noise, property values, land use controls, meta-analysis
The role for and of Islam in urban planning is typically overlooked or misperceived, with the question of how ‘Islamic’ contemporary Muslim cities are not addressed. Despite numerous works on Muslim city planning and characteristics, these have not provided a simplified model of Islamic goals and features which can be utilised for general testing and comparison. In this study, such a model is constructed using the Qur’an, Sunnah, and sources detailing planning and administration of cities in the Caliphate from 622 AD to roughly 650 AD. Eight major objectives are linked to 21 observable features, which can be used to measure conformance of a subject city with the theoretical ideal based on Shari’ah. The measured conformance differences can also be used to compare modern cities across time and with each other. This allows clearer identification of contextual factors responsible, and can depict the fluctuating influence of Islamic objectives. The constructed model additionally exhibits Islam’s compatibility with and relevance to modern urban planning paradigms, including economic and environmental sustainability and social cohesion. Adaptation and application of Islamic planning objectives in contemporary cities can then rationally be utilised to ameliorate current shortcomings, improving urban conditions for Muslim and other communities.

KEYWORDS: Islamic city, urban form, testing model, urban planning
Inter-city public transit system, like high-speed rail and inter-city railway, continues to promote the development of regional economic integration, however, relatively little is known about the impacts of inter-city metro system on regional integration. Different from western countries, in China, the primary commuting mode is traditionally public transit within urban although there is higher reliance on automobile for commuting in past years. Therefore, citizens’ commute behavior and residential location choice is mainly influenced by traditional public transit system, especially urban mass rail transit. The construction and operation of Guangfo Metro, the first urban metro system that directly connects two cities- Guangzhou and Foshan in China, stimulates the immigration of residents and movement of enterprises from Guangzhou to Foshan during past decade, because of more affordable housing price and improved accessibility in Foshan. At present, Foshan acts as satellite city of Guangzhou economically and socially at a large extend, particularly after the operation of Guangfo metro. Therefore, Guangfo Metro system is a special and good case for observing the influence of inter-city metro system on regional integration, especially its impacts among satellite city in the context of China. The paper investigates the territorial influences of inter-city metro system on residents’ willingness to pay on residential property in Foshan by conducting a panel data analysis on real estate project-based transaction price around existing and proposed Guangfo Metro stations. This study contributes to understand the inter-city metro investment and its impacts on regional integration in metropolitan area in the context of China.

KEYWORDS: Inter-city metro system, Regional integration, Satellite city, Commute behavior
The Paris Agreement adopted by a consensus of 195 countries in December 2015 went into effect on the 4th November 2016. In Norway, as one of the countries that had ratified the agreement, the government has introduced the Green shift – climate and environmentally friendly restructuring as the way forward to reduce the climate gas emissions in 2050. One of the most important measures is reducing emissions in the building and construction sector. The purpose of this paper is to explore how we can develop a stronger and more integrated approach from the planning and design of sustainable buildings to sustainable facilities management (FM). We have to bridge the traditional gap between design, construction and FM by developing effective solutions analysed over the life cycle perspective of buildings. The answer to the Green shift for real estate and facilities management (FM) also needs to be a coordinated approach from the strategic and tactical levels in organisations to the implementation on operational level.

Our theoretical framework is based on models for life cycle analysis of buildings, and organisational models for sustainable FM. In the case studies conducted by our Master students over the last two years, they have employed how sustainable FM is being handled strategically and operationally in large public institutions managing their own buildings. The main focus has been on university buildings, but some other institutions representing cooperate real estate have also been included in the studies.

This paper takes the form of an exploratory approach based of the different case studies. Our findings indicate that the integrated approach based on an understanding of the life cycle perspective including planning, design, construction and FM are normally present in new construction projects, but the knowledge regarding the environmental impact and reduction of carbon emission gases when designing zero emission buildings are only present in pilot research and development projects.

We have looked at how to bridge this gap better from planning to facilities operations and FM, and we see the need to develop better conceptual understanding and communication between the strategic / tactical and operational level in campus operation and development. By way of discovering further exploratory findings, the case studies have been supported by literature research from academic journals as well as documentation from a number of applied projects.

KEYWORDS: Sustainable buildings, Sustainable facilities management, Campus development, Life cycle analysis, Environmental friendly solutions
The vacancy rate in the office building market in the Netherlands is 16% (DTZ, 2015b; NVM, 2015). Currently there is both a quantitative and a qualitative mismatch. The high vacancy is mainly explained by an over-supply in relation to demand for office space. The demand is expected to decrease further due to aging of the population, a changing economy and the lower need for space. The qualitative mismatch is explained by vacant property that is too old, of insufficient quality and at the wrong location. That new offices are still being constructed is not the result of a quantitative question but because of a replacement market (Van der Voordt, Remøy, & Hendrikx, 2012).

A possible new end-user is the creative industry. The different working standards of this industry lead to a different use of office space than the large-scale offices of the production economy. Adaptive reuse can create a solution for the need of new developments in the office market. If vacant buildings can be adapted in such a way that they meet the demands of the growing creative sector, this could partly solve the vacancy problem.

The following main research question had to be answered: ‘In which way can property owners adapt their vacant offices in order to attract and retain the creative industry?’ To be successful in the transformation of a vacant office building into work places for the creative community, in this research project a strategy has been developed that explains which characteristics a vacant office building must meet, which facilities it must offer and how tenants should be selected and managed.

The problems the property owners encounter during vacancy have been researched on the operational levels of property, facility and community management by a detailed literature research, three in-depth case studies with successful redevelopments for the creative industry in Eindhoven, Rotterdam and Amsterdam, and interviews with several experts in practice.

KEYWORDS: Adaptive reuse, Creative industry, Office buildings, Strategy, Sustainable
Hannah-Kathrin Viergutz

155 Sustainable Planning for Hospitals. An analysis of the general conditions and the relevant factors for the development in hospitals in Germany

Hospitals are an essential element of every health care system and have priority in the healthcare industry. Healthcare buildings are highly complex infrastructural buildings and their future-oriented planning and long-term economy is extremely relevant for the sustainability of a hospital. These facilities are open 24/7, 365 days a year and used by numerous of patients, employees, visitors and suppliers. More than 1,1 million employees work in over 1,900 hospitals in order to guarantee high quality medical care all over Germany (cf. Statistisches Bundesamt, 2015).

All hospitals have to deal with individual challenges regarding the building plot, structure of hospital buildings (comb structure, linear structure), the progression of medical technologies and patient wishes (cf. McKee, M. and Healy, J., 2002, p.45).

Problem definition: The big challenges for hospitals in Germany are currently the demographic development of the population, the rural exodus and the progression of the medical technologies (cf. Klauber, 2015, p.2). This paper will explore the effects of varying changes in health care developments on the flexibility of hospital design and how much the future viability and existence of an hospital depends on its location and the inherent hospital functions as well as realised planning decisions in the past and its future perspective.

State of research: The regional planning of healthcare buildings is of high interest for politics, people and the economy. According to my research, there are various scientific publications which deal with this topic in Germany as well as on an international level (e.g. McKee, M. and Healy, J. (2002): Hospitals in a changing Europe).

Objective: Based on an analysis of different locations and building types of hospitals as well as their underlying basic conditions in Germany, the overall objective of this research is to evaluate the future potential and risk level for hospitals.

What are the primary future challenges for hospital buildings? And in which way does hospital planning react those challenges?

Methodology: Literature study, structural surveys of hospitals in Germany and interviews with the CEOs, project leaders and employees, architects and the local administrative unit are conducted in order to focus on weaknesses in hospital planning in the past to avoid in future-oriented planning.

KEYWORDS: hospital buildings, health care, sustainable planning, Germany
354 The potential of adapting existing rating tools to incorporate resilience at the building scale.

This is a period of rapid urbanisation, population growth and manifestation of climate change (RICS 2015). Simultaneously the notion of resilience, resilient cities and resilient buildings is gaining traction. Resilience issues are either chronic; that is slow and continuing or acute; rapidly occurring and unpredictable. Resilience issues can be governance and policy or social, economic or environmental in nature. Some resilience issues, such as flooding, is an acute resilience issue that can be mitigated through effective building design.

A response at the city scale has been the 100 Resilient Cities initiative where member cities set out resilience issues affecting them and a strategy to address them. The Rotterdam resilience strategy has a model with concentric circles showing buildings at the smallest level, followed by precincts, cities, metropolitan areas, countries, regions and finally the world. The inference is resilience needs to be embedded at building level and it will filter outwards. However to date, no appraisal tool/model exists to relate the 49 resilience issues to buildings. Furthermore none of the existing rating tools for building sustainability explicitly deal with resilience. The debate to date about resilience is largely at the city scale and practitioners have little awareness or practical guidance as to how resilience might be mitigated at the building scale in new build or retrofit.

This paper identifies the gaps in knowledge and practice, and investigates the viability of using addendums to existing voluntary rating tools and mandatory tools as a means of acknowledging the building related resilience issues.

KEYWORDS: resilience, sustainability, rating tools, buildings
15 Developing a new green office building rating system based on tenant demand

This paper reports on the development and potential implementation of a new green office building rating index. It is intended to provide a market-driven green scoring for US office buildings that includes buildings below the level of LEED. The index data are drawn from demand-side data from tenant surveys for individual green office buildings features and from supply-side data from hedonic analysis of rent rolls. The index also includes qualitative input from institutional industry leaders on how it could be useful to them in practice in market their somewhat green office space to potential tenants. This paper details the development and first steps towards implementation of the scoring system. A variety of proposed models, including some that separate out LEED and non-LEED buildings, are analyzed, discussed, and optimized, and tested on a captive sample of 198 US office buildings. A reasonable model shows that about one-third of the non-LEED buildings score higher on this scoring system than lower-scoring LEED buildings. This indicates a market may be present for this type of index.

KEYWORDS: LEED, Sustainable Real Estate, Green, Office, Sustainability
Does the Energy Label (EL) matter in real estate market? A stated preferences analysis in Barcelona

Buildings energy performance has become a milestone in EU environmental policy in the last 15 years. Nonetheless, in some country, such as Spain, the full acceptance of EPBD is a novelty with scarce evidence of its relevance in real estate market, from the standpoint of owners, as well as of tenants. There are different reasons: on one hand, the real estate crisis has paralyzed most of the completions of new/refurbished efficient buildings; on the other hand, information is not complete and the consumer’s perception of the relevant benefits/cost could be incorrect. For this reason, we use a choice based experiment to analyse the trade-off between energy label and other specific attributes of the housing market with the intents to establish: 1) if EL is really important for the consumer; 2) the amount of the marginal WTP for energy qualified buildings; 3) if there are some socio-economic or behavioural characteristics that are able to explain the preference heterogeneity. With this aim, a RPL (Random Parameter Logit) model is employed, the form of which is suitable to accommodate various empirical situations where the assumptions of the Multinomial Logit model have to be relaxed.

Results suggest that EL does matter in real estate market in relation to other attributes pertinent to the buildings/apartments, such as air conditioning, interior layout, amenities in common areas or extra spaces. Marginal WTP for an A label, instead of an E, is significantly superior to the stated savings in energy costs. The respondents’ utility function seems also to be influenced by educational level and by the preference for owning a house, instead renting. This latter finding have deep implications claiming an integration of energy policies into the broader framework of housing policy and a more focused public communication in the field of buildings energy performance.

KEYWORDS: buildings energy performance, energy label, choice experiments, RPL model, housing policies
Today, church facility managers do not know their future maintenance budget requirements, with general information about repair and maintenance costs and their significant influential factors being not available in a structured way. The heterogeneous owner structure (each parish is the owner of their sacral building) does not allow to record uniformly cost data and provide minimal information about the building itself (e.g. name, location, age). Likewise, figures are only required in case of subsidising the parish. Thus, accurate maintenance planning is indispensible, especially in times of expected decreasing tax incomes and high responsibility for valuable buildings.

The analysis presented here is the basis of a following investigation that will provide support for church facility managers to calculate the maintenance costs for sacral buildings in a medium and long term perspective. It focuses on repair and maintenance costs of 250 sacral buildings.

Sacral buildings in this study are randomly selected catholic churches. The presented results are based on cost data collected from one catholic diocese of Germany. These cost data contain all transactions concerning maintenance measures over six years (2010 to 2016), which means nearly 14,000 transactions.

First, the data is ordered systematically. For that the structure of the DIN norm 31051 Maintenance fundamentals is used. Initial results reveal how much costs are assumed in smaller measures, like technical service and inspection, and in greater measures, like repair and improvement. Furthermore, statistical methods are used to analyze the cost data in detail e.g. distributions. Second, the data is analysed by taking building elements and also available building characteristics (e.g. the age) into account. This procedure enables to investigate e.g. the construction’s or installed service’s effect on the costs and to clarify e.g. whether old buildings are more expensive than younger ones.

Consequently the results reveal first correlations of repair and maintenance costs and buildings/characteristics.

KEYWORDS: repair costs, maintenance costs, sacral buildings, real estate management
6 Specifying cost-influential factors on operating costs of laboratory buildings

Making investment decisions during a property’s planning process in terms of life-cycle costing means to consider both the immediate, initial costs (construction costs) and the long-term, follow-up costs (occupancy costs) - summarily a building’s life-cycle costs. Therefore, the calculation model has to be clearly defined and to follow an appropriate data structure. Besides, the processes during the life cycle have to be priced to enable the investment calculation. This approach is ideally executed with specific and realistic values for the building. However, today’s life-cycle costing, especially for laboratory buildings, is characterized by a high degree of standardization, uniform calculation parameters and fixed specific values i.e. for the purpose of benchmarking in the context of sustainability certifications.

The aim of this study is to identify and operationalize specific cost-influential factors on operating costs of laboratory buildings in order to develop specific life-cycle costing through reference to a practical tool for planning costs. Likewise, this tool could even allow benchmarking within sustainability certifications. In this context, cost-influential factors won from literature and existing data pools are integrated in an interview guide to conduct qualitative expert interviews. These serve to filter the essential cost-influential factors on laboratory buildings’ operating costs. Therefore, the cost drivers are structured after six categories: strategy, use, construction and technological characteristics, location, and miscellaneous. In the interview, the expert assesses and explains the cost-influential factors regarding their impact on the different cost groups like supply, disposal, cleaning, inspection, levies and contributions, and security services. The weighting and shaping of the cost-influential factors will help afterwards to specify the operating costs for each cost group in life-cycle costing of laboratory buildings.

The object of investigation is narrowed to laboratory buildings with an exhaust air volume flow of 12,5 – 25 [m³/(m² UFA)] per hour which corresponds to an 4-8-way air exchange. (UFA - Usable Floor Area)

KEYWORDS: life-cycle costing, operating costs, cost-influential factors, laboratory buildings
30 Construction waste management: a study with special reference to practice in Indian micro construction sites

In India it is usually found that the general construction practices are a source for many waste/unused materials that become a liability at the end of the construction process and are normally dumped at landfill sites causing erosion of the soil and the ground strata. Even the smallest of the construction sites are ultimately having a number of unused and waste items such as the rubble, bricks (new and broken), sand, cement, steel, paints, pipes, plumbing items, wires, switches, etc. This kind of wastage happens mainly due to the fact that in construction activity a certain quantity is accounted as breakage and hence some portion, however insignificant, of the total ordered quantity is always left unused/partially used or in damaged condition. This Research shall attempt to arrive upon the following:

1. What is the quantum of these wastes – in proportion to the total area built??
2. What are the kind of materials that are most often available during and post construction as wastes that finally get dumped on a land-fill area?
3. How these materials can be effectively used:
   a. Within the site that is producing these wastes?, b. What are alternative building blocks that can be produced from these wastes?, c. For third-party benefit


51 Green Building, Advertising and Price Premium

Empirical researches have repeatedly proven the presence of premium in green buildings around the world; however, supply of such buildings in Taiwan was sparse even though the government promoted for more than a decade. This study aims to determine whether Taiwanese green building premium is developer-induced or market-driven. We collect green condominium building advertisement in New Taipei City to calculate advertisement greenness and compare with transaction data. The result shows that increase in development cost and market demand both have impact on price premium, but being green is not the main eye-catcher in advertisements. Advertisements for residential buildings focus mostly on green or not green but not how green.

KEYWORDS: Green building, Sustainable property, Green premium, Advertisement
Sustainability represents an innovative component of profitability for real estate finance, in line with the dynamics that characterize the today different sectors in the global landscape.

Among other instruments, real estate funds which aim to ensure sustainability as an essential component of their investment strategy opt in diversifying their investment portfolios, including a green component represented by certified buildings.

In instance, there has been a significant expansion of this segment within the US market, followed by a relatively recent development on the European framework.

In light of these recent trends affecting the European market, the present research paper is intended to ascertain the impact of the green component on the financial performance of European REITs.

In particular, the adopted selection criteria refer to the two European most widespread certifications: LEED and BREEAM, which provide standards for evaluating sustainable buildings from an environmental point of view. The objective is to demonstrate the degree of correlation between the adoption of implemented sustainable policies and financial performance (particularly, selected indicators have been: ROE, ROA, FFO and alpha).

In addition, the widely validate state of the art Fama-French Five Factor Model has been applied for the estimation of funds performances, improving the meticulousness of the work as one of a kind.

The rationale of this research arises from results of previous studies that investigated on green investment funds and comparable traditional funds performances, questioning whether pursuing green investment goals, would improve return performance (Eichholtz, Kok, and Yonder 2012). The work is oriented in validating the hypothesis, which states that sustainable and environmentally friendly components positively affect investment portfolios, focusing on the European property management industry.

Therefore, this paper has the ambitious aim to fill the gap in current literature on REITs mainly focused on the US market.

KEYWORDS: Sustainable policies, Financial performance, Green buildings, Green investments, European Reits
238 Profitability calculations of future energy efficiency standards for residential buildings from the perspectives of owners and tenants. A case from Germany.

According to the Energy Performance of Building Directive, by 2021 all new housings have to be ‘nearly zero energy buildings’. Currently, the definition and the resulting requirements for buildings are a subject of controversial political discussions in Germany. This paper aims to analyze the financial effects for owners and tenants resulting from the proposed ‘nearly zero energy standard’ by 2021.

The objective is achieved by investment calculations using the method of complete financial plans. The analyses of the economic effects rely on building energy efficiency calculations of well-known engineering consultancies for two representative Multi-family-houses that form the political debate.

Our analysis shows that the specific valuation approach has a significant impact on the result. The discussed ‘nearly zero energy’ standard seems to be efficient according to the federal Energy Saving Ordinance (EnEV), but comes to high costs for owners or tenants. That is, because increasing standards of energy efficiency require higher investments, which are not compensated by the achieved reductions in energy consumption. Due to that, the discussed ‘nearly zero energy’ standard leads to higher living expenses for tenants, or to lower returns on investment for owners. In addition to that, the stronger requirements result in GHG avoidance costs that are much higher compared to the ones in other sectors.

The study is limited in its results to the analyzed building types. Nevertheless, it is of political relevance by showing that further deviations must rely on various efficiency considerations, if real estate actors shall not be overburden and the environmental law effective.

243 Energy and climate policy for the building sector – Which perspectives have to be taken into account and what are their requirements regarding successful policy implications?

Energy and climate policy for the building sector is a subject of controversial discussion. Against this background, the paper aims to dissolve the complexity and thus generate expertise for politically sustainable decisions.

Therefore a. perspectives relevant for policy implementation are elaborated from the literature (i.e. owners, tenants, producers, macroeconomic), b. their specific valuation approaches are exposed and c. regarding the current policy for the building sector discussed.

On this basis we can show that ‘efficiency’ is a term of wide variation in the political debate, depending on which perspective is taken. We can present a conceptual model, which shows the interdependencies and interactions of the different valuation approaches. In addition, we can present minimum requirements for a sustainable policy that could be worked out from the discussion, which we use in the end to discuss the appropriateness of alternative control indicators (i.e. primary energy, GHG-Emissions or the energetic quality of the shell) to create equality of interests as a foundation for a successful policy.

The work is highly compatible with the interests of the various stakeholders. As a result, it provides a basis for policy implications to enforce energy efficiency and climate protection in the building sector successfully.

KEYWORDS: Energy and Climate Policy for Real Estate, Environmental Economics, Real Estate Perspectives, Conceptual Model for Policy Implications, Different valuation Approaches
301 Energy behaviour in offices and the impact on pricing decisions

Since 2008 in the UK the operational energy consumption of premises that are regularly accessed by members of the public has been assessed on an annual basis. Details of these assessments are published as Display Energy Certificates (DECs). A significant number of these premises can be categorized as commercial office space. This represents an opportunity to investigate the relationship between operational energy assessment ratings and value.

By supplementing the energy assessment data recorded on DECs with market transaction data, this study investigates the effects of operational energy certification on rental values. DECs are annually assessed and the significance of the relationship between energy consumption and value can therefore be assessed over time. This research also applies hedonic price modelling techniques to control for other factors that affect office rental value in order to determine whether there is a significant relationship between operationally energy efficient buildings in the UK and values, particularly when compared to their relatively energy inefficient counterparts.

KEYWORDS: Hedonic Pricing Method, Display Energy Certificate, Commercial Office Space, Rateable value, Environmental Assessment Methods
266 Retrofitting a 1970s social housing neighborhood for carbon neutrality - a case study from Austria

The existing stock of buildings plays a key role in achieving goals of energy efficiency and carbon neutrality. Particularly difficult are social housing projects from the 1960s and 1970, which on the one hand were built according to low standards of energy efficiency, and on the other hand are now occupied by an overaged population of lower economic status. In Austria, such neighborhoods constitute a substantial part of the rental housing stock.

In this paper we report a project in the city of Salzburg that attempted to analyze the opportunities for converting such a neighborhood toward carbon neutrality. We investigated the legal, institutional, and political framework conditions, analyzed the current technical status of the buildings as well as the social and economic status of the population. In a second step, a number of technical scenarios for investing into energy efficiency of the settlement were developed and evaluated economically. Based on this, we developed recommendations as well as specific steps for their implementation.

The paper also takes a critical view of the political and administrative processes, the stakeholders involved and the regulatory framework.

KEYWORDS: retrofitting, carbon neutrality, energy efficiency, social housing, 1970s
Since the inception of mankind, finding shelter has been one of the basic needs of human beings. From cave dwellings to mud huts, the housing stock today has taken the shape of multi-story apartments in urban areas due to the dearth of land and low rise buildings in smaller towns. The in-born desire to own a house has made ‘Real Estate’, one of the traditionally preferred asset classes, a natural choice for excesses to be invested along with the demand for residential use. This has resulted in an unfettered over-supply of global housing stock. In developing countries like India, liberalization of traditionally socialist economies have led to the boom of new avenues of earning, increase in employment and migration to metropolitan cities. However, due to lack of expertise in construction technologies, the consumers are concerned about the standard of developers, the lack of accountability, poor structural concrete of buildings and risks associated with these projects. The aim of this paper is to identify the reasons of poor quality of structural concrete in multi-story building projects in real estate sector and suggesting measures to improve the condition along with proper documentation. The current discourse just keeps to tangible aspects like timely completion and reasonable cost of a building but does not consider intangible but important factors like overall quality which consumers can comprehend and thus expect it to be of a certain level as their life long savings are invested in them. However, the aim of commercial projects or public clients lie in their interest for return on their investments. Most of the real estate buildings have issues of poor quality of structural concrete, abnormal maintenance of structure and possible collapse during mild earthquakes due to subpar design thresholds. Such eventualities lead to loss of life, rebuilding and in most cases high maintenance costs. This paper examines the reasons of poor quality of structural concrete in buildings in (a) Design Phase, and (b) Execution Phase. The reasons for these have been analysed and studied. The aim is to develop awareness for the structural designers, project management consultants and executors and suggest code provisions, including developing methodology for proper execution and documentation for future reference.

KEYWORDS: Sustainable Development, Real Estate, Concrete Quality, Construction, Multistorey Buildings
Local market factors influencing office stock greening process: A case study of three British cities

Evidence continues to emerge that green buildings achieve higher financial performance than conventional buildings (referred to as the green premium in literature). This green premium has been promoted as a potential driver of development of new green buildings as well as the green transformation of the existing office property stock. While the validity of this claim is still a subject of an ongoing debate, the office property market is highly susceptible to a range of local factors which could overshadow or undermine the power of such a premium in this regard. Adopting a case study approach, this study examines the local market forces influencing the office stock greening process in three British cities. Data was obtained through semi-structured one-to-one interviews and analysis of relevant documentary evidence. A total of twenty-five commercial real estate professionals were interviewed across the three cities, namely London, Manchester and Edinburgh. The results of the analysis show that office stock greening process differs among the cities and each market is influenced by distinct local factors. Findings suggest that while green premium may have the prospect of driving the green transformation of city offices, its impact is still largely muddled by the prevailing local market factors.

KEYWORDS: green premium, greening process, local market factors, office buildings, UK

Reducing construction phase greenhouse gas emissions of detached houses through material supply chain management

Construction phase greenhouse gas emissions are most important emission sources of new buildings from the perspective of climate change targets. Energy efficiency improvements have highlighted the role of such emissions. Although living environment of detached houses have been criticized from the greenhouse gas perspectives, it is shown that this may not be justified. In addition, detached houses offer a great way for major reduction of construction phase emissions of buildings. In the study it is presented that through building material supply chain management of detached houses, it is possible to achieve the construction emission level of below 40% in relationship to average emission level of new buildings.

KEYWORDS: greenhouse gasses, Construction phase, detached houses, sustainable cities
402 Sustainable smart cities: green architecture and sustainability applied on real estate

Successive deployments of Smart Cities around the world are hindered by the difficulty in attracting a critical mass of inhabitants. New technology is not enough as a driver to guarantee a sustained adoption rate within the new cities. The concept of Sustainable Smart City aims at solving this issue by putting aspects related to livability and sustainability at the center.

While the role of architecture in Sustainable Smart Cities is even more important than in Smart Cities, the principles that underlie their design and, ultimately, their success, have never been systematically studied and assessed.

This research work systematizes and validates the needs of Sustainable Smart Cities and then proposes a framework of principles for their planning, design and maintenance. The needs are validated with field studies of Songdo City in Incheon, South Korea, Ulaanbaatar, Mongolia and Minsk, Belarus.

By defining the guiding principles underlying the design of Sustainable Smart Cities, the proposed framework will also enable architects, engineers, decisionmakers, and international organizations to benchmark the solutions to be implemented. These principles can be readily implemented in interventions planned for European cities, emerging cities, and underdeveloped cities subject to poorly strategic planning.

KEYWORDS: Sustainable Smart Cities, Green Architecture, Smart Cities, Sustainability, Energy on Buildings
Ever since the definition of private property rights, use of that property and the buildings that were built upon provided vehicles for returns on capital invested. This process, emerged in British and Dutch economies of the 15th and 16th centuries, has evolved into the real estate industry as we acknowledge it today. Parallel to commodification processes in industrialised free market economies, the real estate industry has been and is constantly developing tools and processes to enhance efficiency and liquidity of the investment vehicle; private property and the buildings that are built upon. This ongoing process has led to a growing discrepancy between real estate investors/developers as principals of buildings and architects as agents of building construction and design. In this discrepancy and the polemic public debate that has emerged with it, architects are defending moral and ethical values of building design while simultaneously forced to serve the rules of real estate industry, one of their main client groups. The controversial Principal-Agent conflict that emerges between principals of real estate and architects is the focus of this research project.

The paper presents several case studies of buildings that illustrate the relation of real estate imperatives and architecture. The case studies are buildings and building projects from the late 19th century until recently completed projects. They cover both projects designed by so called starchitects as well as buildings that have been developed with a minimal interference of architects. All buildings have been assigned by real estate investors or developers that are driven by a short or long term return (or at least a secure hedge) on their capital invested.

KEYWORDS: Real Estate and Architecture, Star Architects, Principal-Agent
Over the past few years, environmental sustainability as a whole has gained significantly more attention globally, and the connection between sustainability and the built environment has been made clear. The built environment is now more widely known to have major implications on both climate change, and resource use. This study draws on a previous study, which identified environmental pressure as one of the key future forces of change in the real estate market. The findings of the earlier study are revisited to establish which of the expected outcomes have realized, which have proved to be irrelevant, and which might still occur in the future.

Future studies employ a number of different tools and methods to forecast the future. This study first utilizes a method called environmental scanning to reveal the forces through which the environmental pressure shapes the current real estate market. Following the environmental scanning, the possible impacts of the forces are identified and their causal relationships are structured with the help of a method called the futures wheel. The futures wheel is a qualitative method based on expert opinions, and resembles structural brainstorming. The results of the future wheels are complemented utilising expert interviews. The results are analysed to verify the potential future impacts of those forces, and to finally arrive to a consensus about the most probable future impacts of the forces as currently foreseen.

The study finds that while the future views have developed from the earlier study, few key issues remain. More specifically, the presumed primary sustainability influences are still related to the rise in demand of green buildings, and the existing density paradigm in urban planning. Another important finding is that, not all identified influences derive from environmental pressure, but stem from other major forces of change, such as urbanisation or digitalisation.

The study offers insight into potential future pathways in the field of sustainable real estate. Most importantly, the study design enables attaining a holistic view of the possible impacts to the real estate market, as the combined methods reveal the complex relationships and even indirect impacts that could otherwise go unnoticed.

KEYWORDS: future studies, futures wheel, environmental pressure, real estate market, sustainability
Building integrated renewable energy production, such as solar energy solutions, reduce the greenhouse gas emissions (GHG) caused by operational energy consumption of buildings. What is less understood, however, is how the investment in these sort of energy solutions affects the overall GHG emissions caused by the person or the company that makes the investment.

In general, all economic activities cause environmental impacts. Thus, it has been suggested that the boundaries of environmental assessments should not be based on physical boundaries, but rather monetary budgets. For example, carbon footprints of consumers have revealed that investments in energy efficiency do not only reduce the GHG emissions caused by energy consumption, but also the emissions caused by consumption of other goods and services. This is due to the reality that consumers must withdraw the funds for the investment from some other purposes. However, when the investment in energy efficiency starts to make profit, the situation is reversed. The money saved from declining energy consumption is used on goods and services, which again increases the GHG emissions. The phenomenon is called the environmental rebound effect. The rebound effect caused by an investment is usually negative, meaning additional GHG reductions. The rebound effect caused by (energy) savings is usually positive, meaning additional GHG emissions prompted by the new consumption enabled by the savings.

The purpose of this study is to assess the carbon footprint, and demonstrate the rebound effects over time, caused by investments in large scale building integrated solar energy production. The study takes into account the embodied GHG emissions in the new energy system. The rebound effects are estimated with various assumptions about the alternative consumption or investment. The study highlights why the monetary and time dimensions are important, when considering the overall environmental impacts of green investments.

KEYWORDS: building integrated energy production, solar energy, carbon footprint, rebound effect
Urban planners’ control over earthworks can result in remarkable greenhouse gas reduction

Urban planners are in a unique position to steer and regulate urban regeneration. Given the massive material flows of new construction, it seems evident that the environmental objectives of urban planning should target the immediate development phase as well as the future use phase of the built environment. Nevertheless, the potential of urban planning to contribute to mitigation of climate change is often only considered to lie in the use phase. Densification, improved public transportation infrastructure and new energy efficient buildings are seen to be the core elements of sustainable urban development. However, the gains attributed to reductions in transport and housing emissions contribute to climate change mitigation only after the demerits of new construction are redeemed.

Within the current time frame of climate change mitigation targets, the negative effect of the immediate emissions from construction becomes extremely relevant. Multiple studies have stressed the rising importance of the construction phase in a building’s or residential area’s life cycle GHG emissions. In addition to emissions from aboveground construction, earthworks account for a considerable amount of GHG emissions. In Finland, the yearly consumption of natural mineral aggregates is approximately 100 million tonnes, and local depletion of materials gradually lengthens the transport distances. Surpluses of soil and blasted rocks are more often seen as being troublesome to discard as opposed to being useful resource. The purpose of this study was to investigate if reducing the GHG emissions of earthworks could be a relevant part of sustainable urban planning.

A single case study was conducted to assess the magnitude of GHG reduction that can be achieved by an urban planner’s control over earthworks. The case area was a 120 hectare wide residential development for 5,000 inhabitants, located in the Northwest corner of Helsinki, the capital of Finland. The case study covered three planning solutions that intended to reduce the transportation of rock and soil materials: (1) local use of blasted stone, (2) a hill made of surplus clay, and (3) minimal refurbishment of a pond. The three planning solutions reduced the GHG emissions of earthworks by 2,360 tonnes. In addition, particle emissions were reduced by 420 kg. The immediate GHG emissions savings were equivalent to 250 inhabitants giving up use of private vehicles for 10 years.

KEYWORDS: urban planning, environmental sustainability, GHG emissions, earthworks, case study
231 The target profit model as an incentive indicator in the building industry

True to the motto who motivates with money, has no better arguments explores this article some of the dangers of monetary incentive systems in the building sector and represents a concept to meet mutual interests without direct indicators of incentives.

Incentives (and the associated incentive schemes) are only required if the motivation is missing one of the Contracting Parties. A study published by the trade journal in 2013 shows, that up to 138 million Euros get lost by missing commitment of employees in German companies.

This scenario can be applied slightly different to the building industry. The result of missing employee’s motivation of these companies can be represented on the basis of structural damage: A study of IOM building research reveals that the loss ratio in 2013 was the highest since 2002, the total amount in the years 2002 to 2008 is EUR 51, 26 million.

Never the less, the extent of the damage of several ten-million-euro should not found the occasion to design a model for increasing motivation of employees engaged in the building industry, but rather represent a incentive scheme for all contractors of the building industry, which eliminates the need for an additional external increase of employees – motivation.

The target profit model (originally: target cost model, derived from target costing) has its origin in the facility management industry and represents the opposite of the previous cost plus fee as well as hidden income and risk premiums. Joint negotiations between the client (client, architect, Builder) and the enterprise that receives the order, in which a guaranteed win for the agent (Target profit) is defined separates the concrete definition of the output image, and the actual cost of construction (construction-related costs with wage costs and overheads share, but without risk and profit markups). The agent’s incentive is the guaranteed profit notification of the customer. The target profit-model means cooperative negotiations as well as the fixing of a guaranteed construction / project profit, taking into account the results-oriented performance and disclosure of actual costs on the part of the contractor. During the proceedings, the following aspects become defined: Composition of remuneration (result: monthly payment amount, Price adjustment rules, Bonus/malus rules and Service contract agreement after the completion of the building project.

BIM helps to digitize the system.

KEYWORDS: Target Profit, Digitization, cooperative negotiations, partnership, BIM
1 Valuing Visual Accessibility of Scenic Landscapes in a Single Family Housing Market: A Spatial Hedonic Approach

This paper uses a hedonic modelling approach to assess the effect of visual accessibility of scenic lands on housing price. It estimates households’ implicit willingness to pay for the visual accessibility of privately owned voluntarily protected scenic lands in a single family housing market. These lands are protected in perpetuity for natural, historic, and scenic characteristics. The premium price effect was captured using the visual accessibility variable, a combined weighted measure of visibility and proximity. This is named as Gravity Inspired Visibility Index (GIVI). A comprehensive review of eight environmental amenity from multidisciplinary sources provides basis on significance of ‘proximity’ and ‘view.’ A detailed methodology on developing spatial interaction variable using 3D GIS and viewshed technology is provided. This variable was used to estimate the capitalized premium from the preserved lands. Both global (adjusted R2= 0.52, AICc= 29828) and geographically weighted regression (GWR) models (adjusted R2= 0.59, AICc= 29729) estimated the marginal price effect. The results indicate an average 3.4% price premium on mean home value from the GWR model. The article offers a useful framework for evaluating effects of land protection for planning and real estate scholars. It also offers useful insight to conservation agencies, local governments, professional planners, and real estate professionals for prioritizing land sites with scenic views and for property development.

References:

KEYWORDS: Spatial Hedonic Model, Land Conservation, Geographically Weighted Regression, Viewshed analysis, GIS
359 Fix it with Green: The Valuation Impact of Green Retrofits on Residential Transaction Prices

There is a modest amount of research on the valuation impact of green housing features and no found research on renovation and remodeling that include green features, called ‘green retrofits’. In this paper we use consistent controls and methods to investigate the valuation implication of green retrofits on residential transaction prices. We find that renovated properties in our sample sell at price levels 6.32% higher, on average, than properties that have not been renovated, all else equal. However, green retrofits, sell 9.54% higher, on average, than non-renovated properties. Green retrofits sell for about 12.67% higher, on average, than ordinary renovated properties. It appears that investment in residential green building features is being capitalized in housing prices. By encouraging green investment, Fannie Mae’s new HomeStyle® Energy mortgage program should not only promote energy conservation but also increase housing stock value. We also find that green retrofitted properties spend fewer days-on-the-market as compared to other transactions.

KEYWORDS: Green retrofit, Green building features
Jonas Hahn, Jens Hirsch, Joseph-Alexander Zeitler, Sven Bienert

291 Does ‘clean’ pay off? Integrating heating technology in hedonic pricing models

Comprehensive research has dealt with the question whether property markets show price premiums for buildings that feature ‘green’ characteristics such as low energy consumption or a building certification. We expand existing research by raising and answering the question if housing properties that were explicitly advertised to feature ‘green’ heating technology based on renewable energies or ‘brown’ heating technology based on fossil energies or even obsolescent technology come with significant price differences in association with these technological differences. For this purpose, we perform large-sample geoadditive regression analyses on the basis of a private dataset, which originally contains more than 3 million raw observations from German residential properties of 2015. We indeed find significant impact on housing prices, which is specifically visible in the form of a ‘brown’ discount for properties that are powered by fossil-fueled energy systems. From our findings, we suggest that low-energy consumption levels may still lead to price discounts c.p. if it is caused by mainly building-related quality and system-related measures stay unperformed.

KEYWORDS: Housing Prices, Housing Market, Heating Technology, Energy Efficiency, Sustainability

Alain Coen, Patrick Lecomte, Dorra Abdelmoula

339 The Financial Performance of «Green» REITs Revisited

The aim of this paper is to compare the financial performance of «green» and «non-green» US REITs from January 2010 to February 2016 using risk-adjusted performance measures based on multi-factor models. First, we use performance measures (including the Generalized Treynor Ratio) able to capture the variety of systematic risk sources related to real estate. Second, we implement unbiased estimators to correct for the econometric bias induced by errors-in-variables (EIV) in asset pricing models. Third, to check the robustness of our results we apply the methodology of Getmansky, Lo and Makarov to deal with the problem of illiquidity. With these different adjustments, we analyze the relative performance of «green» US REITs. Our results shed a new light on risk-adjusted performance measures of REITs and report that «non-green» US REITs tend to perform better during this period.

KEYWORDS: REITs, Illiquidity, Portfolio greenness, Asset pricing models, REITs performance
84 Chasing student satisfaction in the delivery of property higher education

Purpose: Customer satisfaction has been a goal within the services marketing area for many years. There has been considerable debate over whether higher education students are customers. Funding sources for higher education (HE), regard student satisfaction as one of the measurable components of a university’s success in Australia. If it is accepted that HE students are indeed customers, then the marketing models that are applied to services marketing clients could also be applicable within the higher education arena.

Methodology Approach: The research methodology chosen for this paper is a combination of Interpretivism and Critical Incident Theory. The authors have used open interviewing and open ended questionnaires to encourage open dialogue between the researcher and those being questioned. A questionnaire was developed using Qualtrics, which was delivered to every property undergraduate student in Australia.

Findings: The current Australian HE student is contributing towards the cost of their tertiary education in a considerable way. For this reason and many others, modern HE students have different needs and expectations from students in the past and they are similar to any other service customer. Responses from the interviews and the questionnaire indicate a degree of dissatisfaction with issues around teaching quality and delivery, out-dated and inappropriate materials and the lack of practical application such as formal work experience, site visits and case studies.

Originality: This research seeks to evaluate higher education property student satisfaction and identify important factors that universities can concentrate on in their goal of improving the student experience.

KEYWORDS: higher education, student satisfaction models, service quality, student satisfaction
Developing the master project manager.

The education of project managers is mainly focussed on training in using prescriptive instruments such as PMBOK, PRINCE etc. (cf. Pant, 2007, Thomas et al., 2008, Ojiako et al. 2008, Thomas et al., 2008, Ramazani et al., 2014), while evidence is mounting that the increasing complexity of projects requires a different set of competences. In this situation, where scholars and practitioners are seeking for ways to manage complexity, we reflect on the possibility that a design based approach project management might provide the basis for advanced project management education that prepares project managers deal with complexity.

First we briefly review the literature on Design Thinking and particular on Design Thinking in Management. Next we explore the literature on Project Management Education. Finally we introduce the Project Design Cycle as a means to prepare project management students to deal with complexity. In particular we give an example on how this cycle can help to define (the problem of) the project and to facilitate learning from managers’ day to day-experience.

KEYWORDS: Project Management, Design Thinking, Education, Complexity
69 ERES Evolution and Development of Topical Areas

On the occasion of the present annual conference in Delft as well as the preceding 23 meetings, a wealth of contributions has been continually produced. ERES is aiming to deliver contributions to the health and quality of European real estate research. However, changes over time have gradually taken place. Already 2003 Alistair Adair took stock of the first ERES-decade and his survey both identified/quantified the following areas:

- Education and Research
- IT and Real Estate
- International Markets and Application of Technique
- Environment and Buildings
- CRE/Use and Occupation
- Planning, Development and Regeneration
- Valuation
- Housing Policy and Economics
- Market Analysis
- Finance and Investment

In the meanwhile, another decade has been completed and since 2012 the submission and handling of entries to the annual conference was handled via the confvienna tool as ERES experienced a significant degree of growth. Conference hosts are facing a growing number of submissions and are in need for a digital support to group/assemble these into meaningful sessions. This activity is preceded by the ongoing identification of topical areas. In the end, up to eight parallel tracks are offered, and this with a complimentary composition arrangement regarding the content. Nonetheless, any participant will be able to attend only a fraction of the whole offer. For this reason the ERES Digital Library was set-up and maintained, allowing to browse all previously recorded submissions.

This contribution will examine the submission data (over 2000 entries!) from the past six years. We will use text mining techniques to extract thematic areas and to cluster the submissions by these area. Over the years we expect to find changes in the weights of the areas. Beside the display of novel areas also trends will be illustrated, aiming to crystallize emerging research topics.

On top of this, the geographical distribution of the involved authorship will be elaborated upon. This submission will end up with an outlook regarding neglected areas and discuss challenges.

KEYWORDS: Trends in Real Estate, Research topics, Community building
74 Inclusion of Enterprises will improve Real Estate Education

Only 55% of students regard their chances to advance in their job positive after they entered work life. Asking students the same question while they are studying, the percentage is up to 73%. The survey Uniabsolventen sind enttäuscht vom Berufsleben realized by Sueddeutsche Zeitung shows the lack of competence noticed by the students.

On the other side, universities and universities of Applied Science deplore the declining number of registration from semester to semester. At University of Applied Science in Hesse not a single application for Real Estate Courses assumed for the summer-semester 2017 after only one application had arrived for the Winter-semester 2016/2017. The mentioned deficits in combination with skills shortage in real estate sectors (93% of the enterprises in this sector bemoan the skills shortage and phrase out job vacancies for Young Professionals) point out the need of cooperation between universities, enterprises and students.

It is necessary to team students, universities and enterprises not in the form of cooperative studies but in the form of incentives: Enterprises send representatives to universities to teach practical studies. This system abounds with advantages for each participant:

The enterprise’s representatives get an idea of the students in their classes and are able to appraise who of the students fit to the enterprise. The enterprises see the positive and negative aspects of the students, such as the behaviour during the courses, their motivation to achieve their goals and their ability to work in a team. The enterprise’s representatives can regard their future candidates. The students get an impression of their future working life: the enterprise representative’s will show the students the process of operating processes, teach them useful skills and raise their own motivation to improve the possibility to reach a job in the enterprise.

The universities receive the possibility to raise their number of absolvents who finish their studies in the regular period of study. Moreover the institutes set incentives to the students to enrol themselves for those universities that offer the special business package.

The incentive is not bound to financial aspects (for example apprenticeship pay) but to the chance of improvement for every participant: The enterprises reach the chance to gain good staff, the students receive the chance on good jobs. The system is easily a win-win-situation for everybody.

KEYWORDS: Improvement, University, Enterprise-support, skills shortage, incentive
201 Assessment of real estate training trends in the Eastern African Region

Since 2000 training in real estate in the Eastern African Region has undergone significant changes with institutions of higher learning embarking on review of their existing curriculum to reflect the emerging trends and challenges in real estate investment. This paper will review the various efforts undertaken in Eastern African Institutions of Higher learning and Universities offering professional degree programmes and courses in real estate. This assessment will be guided by examining the global world trends in trainings in real estate courses and especially the main focus of enhancing real estate knowledge and professional practice standards. The paper will highlight the professional standards promoted by various international real estate professional institutions in European, American and Canadian, British and commonwealth countries. The paper will also focus on the examination of the linkages between the training in real estate at higher institutions of learning and the concurrent desire to uphold professional standards in various real state practices and how the eastern African regional institutions can adopt the

new trends in real estate training and capacity building for real estate investment. In conclusion this paper will show that enhancing standards and international benchmarking of training in real estate will significantly enhance the real estate investment potential in the economies of most of the East African countries

KEYWORDS: real estate training, benchmarking, real estate investment, capacity building, professional standards
Project work is a fact of modern work environments. Especially given the increasingly complex nature of real estate projects, group interaction and communication is essential to develop innovative solutions for customers. Therefore, many researchers have hypothesized that mixed working groups yield better results than uniform groups.

Scientists of different social sciences have developed two opposing theories, how group diversity might impact the group’s performance: One group of researchers argues that work-group diversity may have a positive effect (information/decision making theory), while the opposing group argues that a negative effect is more likely (social categorization theory and similarity/attraction theory). The information/decision-making theory conjectures that within heterogeneous groups the variety of perspectives and the broader range of knowledge and skills fosters creativity and innovation as well as the quality of decision-making and consequently group performance (Cox und Blake, 1991; Jehn et. al., 1999).

This view is challenged by the proponents of the social categorization theory as well as by the similarity/attraction theory: These researchers argue that homogenous teams show a greater social cohesion, which enables better communication. Then, significant work-group diversity would lead to more conflict situations, lower job satisfaction and higher staff turnover, and this would lower group performance (Thurner, 1987; Williams and O'Reilly, 1998).

In this study we investigate the relationship between group diversity and group performance in real estate projects. As real estate projects are highly complex and distinct they usually require diverse qualifications and personal qualities from the relevant parties as well as good communication skills. The question, whether group diversities lead to better group performance is therefore highly relevant for the specific nature of real estate projects.

We test the impact of group diversity on overall group performance with a unique data set: We collected the results of 200 project works of real estate executive education students at the IREBS Real Estate Academy from 2010 until 2015. Several group-relevant factors are controlled for, including age, sex, educational and professional background of the team members as well as the group size and the academic performance of the team.

KEYWORDS: group outcome, project work, mixed teams, group composition
The European Master in Real Estate Valuation Em REV: a new methodology to meet flexible education with higher standards in Spain

Real estate education, and more specifically, real estate valuation in the Spanish university system is a pending task at bachelor level. For that reason, traditional majors such as architecture, economics and even engineering need a further development at master specialization level. In this paper we explain the genesis and implementation of the Em REV as a response to adapt traditional master studies to on line flexible methodology able to meet the requirements of part-time students which need to make compatible their working duties with scholar engagement. The Em REV is the natural evolution of one of the oldest Spanish programs in real estate valuation continuously organised by the Centre of Land Policy and Valuations since 1985, and adapts to the Spanish context the Minimum Educational Requirements of TEGoVA allowing in that way to meet the educational requirements to obtain the Recognised European Valuer accreditation by means of the Spanish Association of Real and Urban Valuers. In that way the Em REV meets the educational requirements of high competent valuers plenty adapted to international valuation standards and competences, which services as independent valuers are important in a rare context where valuation companies (Sociedades de Tasación) hold legal powers to carry out valuations for lending purposes.

KEYWORDS: on line master, TEGoVA, real estate education, Minimum Educational Requirements, AEVIU
272 Context dependence of project manager competence – implications for education

Several studies use importance as criterium for identifying competences for project managers. This kind of research overrates generally important competences like communication, using computers and solving problems. Furthermore most of the previous research usually omits to validate the researched list of competences, favoring easily suggested competences but risking missing critical competences.

The research reported defines critical competences as the competences a project manager needs to be better than project team members, e.g. political astuteness. Using a validated list of competences, based on management research and compared to previous competence research, this research reports on 10 focus groups with experienced project managers and a small comparison study on needed competences for junior project managers.

The effects of context on experienced project manager competences is great: even between comparable groups there are extreme differences. On the other hand differences between the aggregated results and the preferences for junior project managers are relatively small.

The implications for education are divers. The context dependency of competencies introduces several challenges in designing education. The similarity between junior and experienced competency profiles suggests that all critical competences should be developed before starting a career as project manager, dismissing life-long learning.

Ideas to provide solutions to these implications can be found in focusing on process competences, like defined in ISO 21500. This is confirmed by a small study and should be validated in a larger study.

Instead of presenting this paper as an academic paper, a more interactive form with discussion and input of participants is welcomed.

KEYWORDS: Competences, Project Management, Education
360 Cross-Cultural Competence in Real Estate Studies - The Benefits of International Student Competitions for Success in Management, Leadership, and Decision Making

The increasing internationalization of the real estate investment markets demands increasing sensitivity and openness of the executives. Interdisciplinary thinking and acting in an international environment becomes a critical success factor. For this reason, international communication and management competences must be integrated in real estate studies.

The objective is to provide students as future leaders with intercultural knowledge and skills. This will enable them to make informed decisions and economic analyzes from an international perspective with regard to the execution of a project development, the investment in existing properties, refurbishment concepts or divestment strategies.

This paper deals with the question of how international student competitions can help in this context. At such events, students from several universities from different cultures and countries work together in multicultural teams to find solutions for a customer-oriented task.

The first part of the paper presents and evaluates various models and concepts of student competitions. In the second part, a non-compulsory module is shown as an example for a successful implementation in the real-estate study programs of the Nürtingen-Geislingen University. The third part provides an outlook on how these models can be further developed.

Yawei Chen, Tom Daamen, Erwin Heurkens, Fred Hobma, Wouter Jan Verheul

308 Interdisciplinary learning in real estate education: the case of the urban redevelopment game

Fundamental changes in economy, demography, technology, climate and society create tremendous challenges for practitioners involved in the shaping the built environment. Politicians, planners, real estate professionals, engineers, architects and others need to anticipate diverse transitions and increasing uncertainty associated with urban development processes. Many of the problems faced in cities today do not neatly follow the disciplinary boundaries of our academies or professions. To solve these so-called wicked problem, professionals often require diversified knowledge to understand the different dimensions of urban problems and their potential solutions. However, traditional education programs on real estate and urban development are usually developed from a specific disciplinary viewpoint and intent to train students to specialise in one discipline. They often pay limited attention to help students develop skills and the capacity to integrate and synthesize knowledge and identify appropriate courses of action. Interdisciplinary education programmes are proposed to be an appropriate solution that makes connections and integrate knowledge across fields of expertise and handle managerial uncertainty.

This research examines how interdisciplinary education is organised within programme the Urban Redevelopment Game course as part of the Management in the Built Environment master curriculum (Faculty of Architecture, Delft University of Technology). The research aims to answer: To what extent does the urban redevelopment game course enable students to have an interdisciplinary learning experience? Based on course evaluations and discussions it was found that the course: attempts to imitate the reality and complexity of urban development processes; emphasise the experience of negotiations bringing awareness of various actor interests and disciplines involved; and connects theory with practice by applying theoretical concepts to an empirical study location. Through the form of role simulation, students not only acquire in-depth knowledge, but also receive mentorship to integrate and synthesize knowledge from different discipline.

What is also interesting to highlight the use of competition between teams and in roles greatly enhances students’ motivation and efforts. It is argued that the didactical lessons learned from this course on interdisciplinary learning might be of interest for real estate education courses and further improvements.

KEYWORDS: Interdisciplinary learning, real estate education, urban development game, role simulation, TU Delft
Over the past twenty years the market for real estate graduates has undergone a significant shift in core skill requirements reflecting the changes which have taken place in the real estate sector itself. In particular the real estate services sector - which globally is the most significant employer of real estate graduates - has repositioned itself as a mainstream professional business service sector with a greater emphasis on business skills. As part of this process of change more emphasis has been placed on the need to develop business and professional values in the contemporary real estate graduate. While national professional bodies in the real estate sector have stressed the importance of developing professional ethics in the real estate curriculum for some time the changes in the sector especially the evolution of global delivery platforms in real estate services has necessitated the development of wider graduate value sets which transcend national boundaries and country specific cultural norms. In particular these include business ethics and integrity, corporate social responsibility, sustainability, values intrinsic to developing leadership skills and values relevant to understanding issues related to diversity and inclusion. This paper examines how such value sets can be developed in the classroom by embedding them both explicitly and implicitly in both the real estate curriculum and in extra-curricular activities. A case study of the MSc programme in Real Estate at the Henley Business School, University of Reading is presented. This programme is currently the largest programme of its type in Europe. The paper concludes with a critical assessment of the key findings of the case study as a means of developing a template for embedding business and professional values which can be applied in a wide variety of real estate programmes.

KEYWORDS: Real Estate Education; Business Values, Professional Values
The challenges facing project managers and real estate practitioners are increasingly characterised by their high degree of complexity, involving unexpected, uncertain, unstable or unique situations. Sustainable projects increase this complexity due to the need to integrate an even wider range of criteria and stakeholders. It is therefore necessary that students are trained to deal with these problems. For many years these skills are taught through The Management Game. Groups of students are assigned complex problems which require a multi-disciplinary design approach. The Game has evolved through time, and is now taught in different forms at both BSc and Master’s levels. The intention is to provide students with an opportunity to apply design thinking and managerial knowledge to contemporary complex urban problems, and to learn from their own experience in dealing with them. This paper re-establishes theoretical foundations for the game in contemporary theories of design, reflection and learning. A conceptual framework is developed to explicate the design process. The 5 contributing elements are distinguished:

- generic elements in the design process,
- concepts of reflection-in-action,
- design-thinking
- managing as designing
- policy gaming

The management game not only bridges design and built environment management education, but also exemplifies the advantage teaching built environment management in an architectural context. Students learn to develop solutions for the contemporary complex challenges facing obsolescent and unsustainable urban areas, for which a proper understandings of building design and the market are essential. The education of managers of building projects should focus in increasing the effectiveness of individual actors within the broader social context. This focus on personal awareness, design, performance and reflection makes the approach ideal for the education of students and professionals. By focusing on the higher level actions we avoid losing ourselves in chasing the ever changing body of management tools and techniques which will face anyone in the field, and concentrate on those cognitive and social skills that will be required for making sustainability in building projects possible.

The Management Game is a highly valued element in our curriculum. By making this design approach more explicit, and providing a contemporary theoretical framework, we intend to make the course more valuable to the academic community at large.

KEYWORDS: Real estate education, Design-thinking, Policy gaming, Design school, Reflection-in-action
Stephen Roulac

400 The real estate disciplines’ introductory principles textbooks resist Schumpeter and change

It is broadly recognized that real estate has been subjected to a veritable tsunami of change forces dramatically impacting:
- Property use: Air BnB
- Retail shopping – Amazon
- Workspaces – WeWork and other co-working models
- Capital access – FinTech innovations and crowd funding
- Urbanization – prospectively accelerated by autonomous vehicles and proliferating high-rise construction

These changes are not necessarily reflected in the focus of research topics investigated by the property research community. Mainstream real estate textbooks are even more innocent of these forces. Consequently, the academy is not well serving students studying property.

This paper explores implications of change influence the concerns of property scholars and the contents of property curriculums. The study emphasis is on textbooks for introductory real estate principles. This research updates and extends prior research published in Journal of Real Estate Literature two decades ago (Foundation of the Knowledge Structure: Review of Real Estate Principles Texts,) and a decade ago (Shifting Foundations of the Real Estate Knowledge Structure).

While the majority of real estate textbooks evaluated in the 1994 review were no longer in the market a decade later, significantly, the books that survived were more traditional. The survivors had become more non-traditional, placing greater emphasis on topics other than law and brokerage. Books not in the market in 1994, were even more traditional. Strikingly, economics was less emphasized in 2004 than a decade earlier. While the economy represented real-time empirical validation of Schumpeter’s classic principle of creative destruction, the same conclusion does not apply to the real estate principles textbooks.

This paper provides a contemporary 2017 perspective on what is covered in introductory real estate principles textbooks, compares and contrasts that coverage to contemporary discovery research, and considers how topic emphasis has changed.

At a time when the economy is more complex and factors that influence future performance of property goods and services are greater rather than fewer, many studying real estate principles are likely to find that their textbooks are less than adequate. Those pursuing real estate careers, whose initial knowledge foundation is built upon deficient, rather than superior professional services, shall be more likely to miscalculate in their decision-making and in making capital commitment.

KEYWORDS: Education, Innovation, Textbooks
62 Exploring the Future Workplace. Results of the Futures Forum Study.

The paper will describe the set-up and results of the ‘Futures Forum’ study. Through different methodological approaches the future of work and its implications for the future workplace were explored. What will our workplace look like in 2025? And how best to support this work, in alignment, by all the different organisational support services (HR, IT, FM and RE)?

Different stakeholders were involved through different methods. First a global literature study summed up some of the contemporary views on future directions and future studies. Focus groups were held with office end users and young employees. A Delphi study was applied to a multi-disciplinary expert group. And finally results were further developed in a ‘pre-design’ workshop. The study was supported by a consortium of private and public partners.

Fast digitalisation of work will have substantial repercussions for work processes and work environments. New types of work and of organizing work are appearing and need to be accommodated. Work organisation will be more dynamic, and communication will be key. This dynamic environment brings a demand for an agile response of the support services in the organisation and a work environment that can accommodate changes easily. The main findings centre around 8 themes for the future workplace: changes in work, move towards digitalisation, adaptive potential of organisations, liberation of old structures, attracting and retaining employees, self-employment and self-marketing, and future employee needs. Due to the dimensions of the research topic, a broad thematic perspective was applied, so a further in-depth exploration might be valuable. The stakeholders that were involved in the data collection were mostly contacted through research partners, which might narrow research findings.

In a last step of the study, a ‘pre-design’ workshop, a first translation was made towards practical design oriented decisions. Insights into the future developments in the workplace will have to be approached in the real-life workplace. Conclusions can be further detailed and determined as a strategic agenda for all support services in the organisation.

Many ‘future studies’ have taken place in the past, and they all apply a different research scope. This study aimed specifically at large office owning organisations in the Netherlands, and on the implications for the future workplace that are to be addressed in a communal way by the organisations’ support services.

KEYWORDS: Future studies, Digitalisation, Future of work, Work support infrastructure, Workplace of the future
New ways of working challenge workplace management: increasing mobility and crossing of organizational boundaries require re-evaluation of both workplace design and service delivery. However, the processes and structures of workplace management are still traditional and managers, together with outsourced service providers, often fail to serve the needs of mobile employees.

The above-mentioned changes stimulate discussions about the development of workplaces. While the topic has been approached from many angles, like spatial transformation (e.g. Rytkönen 2016), organizational relationship (e.g. Ross and Myerson 2006), privacy (e.g. DEGW 2001) or sharing levels (Brinko et al, 2014), literature with business perspective seems to be scarce. Termaat et al. (2014) and Cole et al. (2014) attempted to categorize workplaces from a business viewpoint within single organisation boundaries. Here, we continue with the business angle by exploring how workplace is commercialized through servitization and various business models. To answer this, we try to identify the elements that are added to the business offerings in workplace services.

This paper follows multiple case study methodology. The data is gathered as a part of a larger project and it includes: observations of various workplace settings, interviews with mobile workers and service providers. We take business model design approach in order to study business offerings. We validate our findings by exploring other industries to discover any analogies in business models.

The results of this study indicate that workplace has been transitioning from physical space being the central proposal for workplace towards an offering where physical space becomes only a component. Other elements such as services and experience are increasing in significance in total workplace offering.

This study might contribute to service providers who want not only be agile but also flexible in their service provision. Academically, the research increases the business perspective to workplace management studies, which tend to be either technical or psychological.

KEYWORDS: Workplace development, Mobile work, Services, Servitization, Business models
140 Towards a holistic assessment of employees’ acceptance of innovative workplace designs

Purpose: The existing literature on the Activity Based Working (ABW) office concept and its acceptance is lacking a method to holistically evaluate it as an innovation. The purpose of this paper is to provide a model for evaluating employees’ acceptance of an innovation, specifically, an ABW office.

Design/Methodology/approach: Research concerning Activity Based Working (ABW) offices tends to inconsistently evaluate individuals’ acceptance of it as an innovation. Studies within the ABW field tend to rely on large-scale employees’ satisfaction survey. Although these provide important results, these are often too broad and do not sufficiently explain why employees may be struggling to accept the ABW concept. This study draws on the innovation adoption, technology acceptance and existing ABW literature to provide a holistic model for evaluating employees’ ABW acceptance.

Findings: A theoretical framework developed from the innovation adoption and technology acceptance literature is presented. This suggests that employees’ ABW acceptance is a conflated assessment of three dimensions: affective responses, behavioural responses and cognitive responses. Even though these may be interrelated, all three dimensions have to be assessed.

Practical implications: The model presented here can serve as a useful assessment of employees’ acceptance of an innovation, specifically, ABW acceptance. This is critical because organisations are achieving mixed outcomes from the ABW but the research community are unclear why.

Originality/Value: This paper fulfils a need for a holistic and consistent way of assessing individual acceptance of an innovation or ABW.

Keywords: Employee acceptance, innovative workplaces, Activity Based Working, Corporate Real Estate Strategies, Psychological-based responses

Paper type: Conceptual paper

KEYWORDS: Employee Acceptance, Innovative Workplaces, Activity Based Working, Corporate Real Estate Strategies, Psychological-based responses
Environmental satisfaction in multi-tenant office buildings: A holistic approach

In the current office market office providers are obligated to meet as many wishes of the (future) end-users of their buildings as possible in order to keep their buildings from becoming vacant. In order to do so it is necessary to gain more insight in these wishes. The aim of this study was therefore to examine a holistic model for effects of many aspects of the current work environment and of the employees that use it (demographics, personality, and work characteristics) on user satisfaction, mediated by end-user needs. Besides the holistic approach, the context of multi-tenant offices to gather data was also innovative.

Data was collected via a survey amongst 272 end-users of 18 office buildings in the Netherlands. A path model was constructed based on current literature and tested with the data using LISREL. Results showed the significance of testing a holistic model, as not all bivariate relations found in literature remained significant. Mainly the type of workspace, storage/clean desk policy and climate comfort of the currently offered work environment determined environmental satisfaction, together with personality characteristics of the respondent. The needs for privacy and for control & expression also played a mediating role. Surprisingly, demographic and work characteristics showed very little effect. Future studies should incorporate a holistic approach and preferably use large and diverse samples.

KEYWORDS: environmental satisfaction, multi-tenant offices, holistic path model, user needs, personality
Employees’ satisfaction in jobs is one crucial factor for successful corporation. They have higher level of loyal and are less likely to leave their jobs. This study focused on workplace environmental perception at green office buildings toward environmental factors including perceived indoor air quality, thermal, visual and acoustic.

Completed data were collected from 286 employee working at green office building in Bangkok. Questionnaire were direct distributed at Park Venture, AIA Capital Center and Sathorn Square and via Google Docs during February 7 – 20, 2016. Results derived from exploratory factor analysis and multiple regression analyse showed significant positive relation between perceived indoor air, thermal, acoustic and visual and job satisfaction.

Working in good environmental conditions or in certified green office buildings affect employee job satisfaction. Company owners who are concerned with employees’ job satisfaction pay more attention to the perception in indoor air, thermal, acoustic and visual. These environmental factors to contribute to employees’ satisfaction. Investors for new office building or major renovations should choose green designs that are suitable for working condition. Better green office buildings should also attract office rates. Better human capital management shall lead to better compete abilities in the marketplace.

KEYWORDS: Job Satisfaction, Green Office Building, Environmental Factors
Noise is one of the top causes of dissatisfaction and loss of productivity in the workplace. This paper / report will take a fresh inspiring approach on how to resolve the noise (negative) issue becoming a sound (positive) subject.

Sound waves are known to induce a range of physical, physiological and psychological effects in humans. It is also widely accepted that unwanted sound – noise – affects people’s health and wellbeing, mental state and performance in many ways.

The psychological impact of noise is the main cause of concern in office environments. In offices, noise can result in annoyance, heightened stress levels and reduced performance. Traditionally, control of noise in buildings falls into the domain of acousticians – experts concerned with the properties of sound. Although it is widely recognized that acoustics is an interdisciplinary science, many architectural acousticians have a physics or engineering background and their approach to mitigating noise is mostly, but not entirely, focused on physical solutions.

But the demands of 21st-century workplaces call for a more rounded approach, with experts working together to offer a combined psychological, physiological and physical solution to acoustic problems. This report therefore offers a fresh outlook to resolving noise distraction in the workplace based on a psychoacoustic, people-centered approach, focusing on perception, attitudes, mood, personality and behavior. The report is predominantly based on a literature review, with more emphasis on psychophysical research papers than pure acoustic ones.

The report is aimed at people who are interested in resolving noise issues in workplaces, particularly offices, including: acousticians, architects and interior designers, facilities managers, property developers, occupants and heads of business. It begins with a review of the theoretical aspects of noise, relating to acoustics, psychoacoustics and psychology, then discusses how this knowledge can be used to create people-centered work environments based around four key factors: task and work activity; context and attitude; perceived control and predictability; and personality and mood.

Based on our research findings we have developed a toolkit to help us create better acoustic working environments and understanding in the design / facility management phase.

KEYWORDS: Psychoacoustic, Personality, Noise, People Centered working environment, Performance
187 Whence difference in workplace preferences? Regional, industrial or organizational culture

Purpose: It is widely believed that physical workplace is the artefact of organisational culture. However, organisational life is governed by a multiplicity of identities and workplace design would not be an exception. Regional culture and industrial culture may influence employees’ workspace preference and the outcome of workspace design too. The purpose of this paper is to provide a better insight into the dynamic interaction between the three different types of culture in the management and design of workspace through case studies in China.

Methodologies: Questionnaire survey was conducted in 8 offices of 4 companies: two multinational manufacturers and two domestic IT firms. All companies have offices in both Guangzhou and Shanghai, two cities with totally different regional cultures in China. Most desirable workspace features and regional and organisational cultural characteristics deriving from the survey were compared basing on cities, industries and companies.

Finding of the research: The research discovered that the influence of organisational culture and regional culture varies from office to office, even for the same company. Data from some offices shows strong influence of both organisational culture and regional culture on employees’ workspace preferences, but data from others shows influence coming from only one side or even no influence. Employees of IT firms tend to be less influenced by organisational culture and regional culture. Also, weaker correlation between workspace satisfaction and cognitive productivities was found in the study of IT firms.

Limitation: Only four corporations in two industries were compared while other corporation and industries may perhaps reveal even greater cultural diversity.

Values of the study: The findings reported in this paper reveal the dynamic interaction between cultures in different levels. They can provide insights into improved workspace briefing, design and management basing on industrial difference for multinational organisations.

KEYWORDS: Workplace preference, Organisational culture, Industrial culture, Regional culture
305 Promises and lures of open creative space for innovative teams

Like activity-based workspaces, innovative spaces are deemed to be efficient and flexible, but they are most often called upon to support collaborative and creative team work instead of individual whom sometime will work in a team. Our research objective is to further explore the links between the project team and its space to identify advantages as well as drawbacks and to determine if the company benefits from the adoption of open creative space with diverse collaborative areas. A case study of one world class company with several teams and diverse spaces is in progress.

Our results suggest that communication and coordination are well served by open creative spaces without negative impact on employees autonomy but intimacy is jeopardized which, paired with background noise that never stop, can lead to stress at work. This research shows that several elements of open spaces are felt in the same way by a team or by department employees. But a team requires proximity that is essential to the exchange of information and coordination among the members while the lateral and hierarchical relationships are slightly redefined.

Building managers needs to understand the perceived message that the individual receives from his organization through the design and allocation of spaces devoted to him and his team: freedom of action, empowerment to innovate or alienation to an environment that he does not control and which reduces him to a means of production until he leaves exhausted? The relationships between the feeling evoked by ambient conditions and their impacts on the individual, his tasks, his colleagues and his team is stronger than we could think. The temperature, the lighting as well as the variety of meeting rooms and their equipment’s form a complex whole of which we do not yet know all the impacts on the worker and the teams. Indeed, the diversity of spaces and their equipment fits perfectly into the teams’ activities, resulting in a positive synergy in terms of coordination, communication and creativity. Creative spaces deserve their name when it comes to teamwork.

KEYWORDS: workplace creativity, open space, team-based workspace, innovation, corporate property management
An organisation’s realised strategy forms in two distinct ways: through ‘deliberate’ strategy making where senior managers set objectives and develop plans using formal planning processes and ‘emergent’ strategy making where a pattern of action becomes evident over time in the absence of intention about it. Emergent strategy is associated with innovative and adaptive capabilities and is observed to a greater extent in organisations competing in more volatile external environments. Strategy-as-Practice (SAP) understands strategy as a socially accomplished activity and its research has a focus on the day-to-day interactions of strategy makers, however, SAP research has been critiqued for bias towards social interactions that are deliberately strategic at the expense of work on emergent strategy making which is fundamentally defined as unconscious, undeclared, tacit and unspoken. By contrast, research in architecture has shown that spatial configuration has a powerful affect on unplanned social interaction.

This paper draws on these two disparate literatures to explore the possibility of a relationship between emergent strategy making and the spatial configuration of the workplace. Quantitative methods were used to explore the extent of this relationship: observation analysis was used in one case firm to gain a fine-grained understanding of social interactions in different spaces and in order to enable a rigorous assessment of organisational spatial configurations the technique of ‘Space Syntax’ was used. This enabled the analysis of the relationship between an organisational profile of spatial configuration and non-deliberately strategic interaction in a single, in-depth, case study and for establishing the spatial configurations of three other companies. These three cases enabled the understanding of how opportunities for emergent strategy making might vary across the four organisations based on their spatial configurations.

The results suggest a strong relationship exists between workplace spatial configuration and the opportunities for emergent strategy making in an organisation, which when compared across four organisations imply very different opportunities in each. The paper concludes by suggesting that emergent strategy needs to be thought of as a material, spatial phenomenon and not just a conceptual one and with the personal reflections of the author as a seasoned executive of thirty years on the potential relevance of this research to practice.

KEYWORDS: Workplace Spatial configuration, Emergent Strategy Making
This paper highlights the importance of considering user satisfaction in office renovation. User-focused design approach in nearly zero energy office (nZEO) renovation is a way to increase user satisfaction and the value of office quality while meeting energy efficiency goal. The purpose of this paper is to investigate considerable measurement factors affecting user satisfaction. It is also to help better understating about user/occupants’ preferences. Measurement factors are studied through literature reviews in relation to user satisfaction of workspaces. The approach aims to give a guide for analysis and evaluation of user satisfaction and to strengthen their importance in an office renovation. The findings present that main measurement factors to increase user satisfaction are not only associated with indoor environmental quality but also with psychological issues such as a feasibility of collaboration, social contact, etc. Additionally, the relationship between measurement factors and hierarchy of user requirements are described.

KEYWORDS: Work environment, User values, Occupants well-being, User satisfaction, Office renovation
178 Food for thought - Knowledge workers’ use of space

Knowledge work is usually less tangible than manual work. This study investigates four categories of knowledge workers use of space at a Norwegian institution for research and higher education.

The four categories of knowledge workers are advisors and case officers (administrators), and lecturers and researchers (faculty). Most advisors are outcome oriented and highly competent in process driven work, and may work across a number of different fields or organizational units. Case officers are usually task oriented and highly skilled in one subject. Lecturers are both task and outcome oriented, particularly concerning their professional hobby horses, the number of students passing their exams and student evaluations of their teaching. Most researchers are outcome oriented, particularly concerning development of ideas, funding, research partners, and publications in highly ranked scientific journals. How do these four categories of knowledge workers use space and workstations at this particular workplace?

This paper is based on a mixed methods approach. A survey with 947 respondents (850 with cell offices and 97 with workstations in flexible offices/landscapes) during then spring 2016 gave a good overview of the respondents’ use of offices, workstations and common areas at this Norwegian institution for research and higher education. This paper presents a follow-up study of findings in the 2016 survey.

This paper investigates the use of two floors in buildings with flexible offices/landscapes and two floors in buildings with cell offices. One floor in the buildings with flexible offices are used by administrators (mostly advisors), the other floor is used by faculty (mostly researchers). In the buildings with cell offices, one floor is used by administrators (mostly case officers but also some advisors), the other floor is used by faculty (mostly lecturers and some researchers).

The data collection is firstly based on measurement of the areas in question. Secondly, monitoring of the data traffic (activity) during the week (where and when the data traffic takes place). Thirdly, through observations, to study what kind of facilities there are at the different areas and when the four categories of employees are present, and what kind of work they do. Finally, semi structured interviews with a sample of individuals in the four categories of employees, and one focus group interview with each of the four categories of employees.

KEYWORDS: Knowledge workers, Norway, Space, Workplace, Workstation
Activity-Based Working (ABW) is supported by work environments that combine hot-desking with a variety of settings, designed for different types of activities. While the advantages of these work environments in terms of space and cost efficiency are undisputed, their effectiveness with respect to job performance and satisfaction is still under debate. Empirical findings have shown that satisfaction with ABW environments often falls short of expectations, with frequent complaints about concentration, privacy, and the loss of an assigned workstation. Optimising satisfaction with the work environment is important for organisations, since it has been found to influence job satisfaction, commitment, intent to leave, and absenteeism. Hence, the purpose of the current research project is to analyse antecedents of dissatisfaction with ABW environments.

Our first study, based on survey data (N = 3,189), showed that workers’ switching behaviour was related to their satisfaction with the ABW environment. The small minority that switched multiple times during the day, was significantly more satisfied. Switching behaviours was associated with several job characteristics, psychosocial factors, and practical aspects. In our second study, based on a different set of survey data (N = 581), we identified several job characteristics (i.e., job autonomy, social interaction, internal mobility) and personal characteristics (i.e., need for privacy, length of service, age) that influence satisfaction with ABW environments. Our third study, based on experience sampling and survey data (N = 92; 1,356 measurements), showed that discrepancies between intended and actual use of activity settings (i.e., performing concentration-requiring activities in open plan areas) substantially lowered satisfaction. This was particularly true for workers high in need for privacy.

These findings support the basic idea underlying the ABW concept, i.e. that a variety of settings may support a variety of activities. However, the needs that should be fulfilled by the work environment in order to optimise satisfaction are not fully determined by activities; major needs also stem from personal characteristics. In order to move from activity-based towards needs-based work environments, both Task-Environment fit and Person-Environment fit needs to be optimised. As task-related needs may conflict with person-related needs, this holds a complicated challenge for both researchers and practitioners.

KEYWORDS: work environment, task-environment fit, activity-based working, workplace, person-environment fit
Practitioners and researchers are of constant quest for a more accurate understanding of the places ability to support functionality and building performance to be able to create places that support the functions intended by the purpose of a place. Interorganizational product development, focus on ideation phase, is one of the most intriguing areas due to its vital importance of company competitiveness. The role of trust and the quality of the place are continuous interaction. The importance of trust in ideation phase and the characteristics of a place to support ideation phase are studied with the aspiration to gain more understanding about the relationship between trust and place.

The goal of this paper is to provide an overview of the importance of trust in ideation phase of an intraorganizational product development project and study, what kind of physical and virtual spaces support that phase. More precisely the aim is to study trust in connection with participants willingness and ability to do his or her responsibilities in that phase, the willingness and ability to listen and resolve conflicting objectives, willingness to support all the participants, so that the project is successful in accordance with the objectives of all parties and the ability to detect and take into account the essential objectives in terms of the overall goals. How to describe the relationship between the importance of trust and requirements for the place in ideation phase of an intraorganizational product development project?

Methods, face-to-face interview for 10 participants was conducted and the answers analyzed with content analysis.

The conclusion of this study is that a space supporting idea generation on interorganizational product development process, should support creative, visual and energetic teamwork, whether the platform is physical or virtual. A place supporting ideation phase was described to be informal and open, shared between team members. It should have elements that support democracy among the team members. It should support the communication and formation of shared language, values and goal. Trust for team members having good will towards each other, affect based trust, was considered more important as the cognition based trust. In ideation phase there was an emphasis towards trust supporting team work and space supporting team interaction.

The practical implications can be drawn to guide managers in campus development and developpers of innovation

KEYWORDS: trust, interaction, knowledge co-creation, interorganizational product development, Big Room
13 Benchmarking of workplace performance

In order to add value to the organisation, the work environment has to provide value for money by a positive trade-off between the benefits – support of the organisational objectives, facilitating the primary processes, and contributing to organisational performance – and the costs, time and risks connected with achieving these benefits. Performance of workplaces is usually measured by cost related metrics such as investment costs, running costs, maintenance costs or the Total Cost of Occupancy, per workplace, per square meter or per f.t.e. These metrics are mainly connected to efficiency i.e. how to optimally use scarce and expensive resources. However, these metrics do not represent two other important aspects of usability: effectiveness and experience. This paper explores how the benefits and costs of workplace change and new workplace concepts can be taken into account in value adding corporate and public real estate management and facilities management. Based on literature review, interviews with practitioners and international collaboration with experts from various countries, the paper discusses 12 value parameters, including four people oriented values (satisfaction, image, culture, and health and safety), four business processes related values (productivity, adaptability, innovation and creativity, and risk), two economic parameters (costs, and value of assets), and two social indicators (sustainability, and Corporate Social Responsibility). A key issue is how to measure these values, which is not easy at all. Measuring goes beyond collecting ‘dollar metrics’ because not all indicators can be easily expressed in monetary units. The paper will present how other ways of measuring can help to monitor workplace performance as well. Furthermore it discusses how to benchmark workplace performance. The paper ends with a plea for a more integrated business case approach that goes beyond spreadsheet-based decision-making. It concludes that applying both quantitative and qualitative performance indicators and including both hard and soft factors is needed to find an appropriate balance between the costs and benefits of real estate interventions and to adequately cope with the interests and needs of different stakeholders and society.

KEYWORDS: workplace, Key performance Indicators, performance, added value, benchmarking
Effective workplaces - A multi-level study

Current studies on the effects of work environments on employees can be criticised with regard to three aspects: (1) they are often based on single buildings or organisations and therefore not generalizable. (2) the influences of work design and the social environment are often not separated from the influences of the work environment. (3) the focus lies either on physical or perceived parameters – the two perspectives are usually not put into relation with each other.

In order to contribute to a more comprehensive understanding of the effect of workplace factors on office users, data from 39 buildings have been collected. A total of 1373 users of these office buildings participated in a survey. Multi-level models show that building-level variables are not generally informative in relation to office user-level outcomes such as satisfaction, well-being or job performance. Rather, employees’ perceptions of their office environments explain variance in self-reported outcomes. Perceptions of the office environment explain additional variance in relation to work design. The multi-level models further indicate that different aspects of the office environment contribute to variance explained in different outcomes. Important predictors for job satisfaction are workspace quality, distractions, and control over the environments. Health status is influenced by social density and distractions. Finally, job performance and work engagement are affected by workspace quality, distractions, and workplace appropriateness.

The results therefore imply that leveraging office design and management workplace / facilities managers can promote satisfaction, health, job performance, and work engagement. Thus, the results from the two studies have several implications for business managers, workspace designers, and workplace / facilities managers.

KEYWORDS: workplace management, multi-level modeling, satisfaction, well-being, work engagement
In recent years, companies have made effort to adjust their offices to be more flexible and to support the activities and needs of their employees. The aim of these concepts is to increase employee satisfaction, leading to higher productivity, and at the same time save expenses due to flexible use of the workspace. In the literature there is no consensus on which aspects of the office work environment are most likely to stimulate an optimal productivity apart from the fact that the behavioral environment cannot be seen separately from the physical environment.

Moreover, there is hardly any literature on workplace nudging, meaning an adjustment of the physical work environment aimed at steering behavior of people in a certain desired direction. Many buildings of governmental institutions in The Netherlands use this strategy and have created a so called hub, a centrally located flexible workspace in which employees can work and have meetings with coworkers or customers. The aim of this study is to measure and predict the relationships between workspace characteristics and work engagement and performance of employees in hubs in governmental office buildings.

A conceptual model was developed based on literature research. To test this model data was collected using a survey among 236 employees at hubs in 4 different governmental institutions in 2016. Questions were asked about the visit and activities performed in the hub, assessment of the characteristics, satisfaction with work related needs, work engagement, performance and socio-demographics.

A path model was estimated including all proposed direct and indirect relationships simultaneously. A model generating approach was used to construct the final model, for which the goodness-of-fit was adequate and all parameter estimates for the relationships in the model statistically significant.

The model estimated confirms the theoretical model, however, some more detailed relationships are found. All variables from the physical environment have an effect on the behavioral environment. The behavioral environment directly influences work related need satisfaction and indirectly work engagement. The more employees have their work related needs satisfied, the higher their work engagement is. At the same time, there is a positive effect between work engagement and performance. The results can be used to inform real estate and facility managers on how to improve the workplace nudges in governmental buildings.

KEYWORDS: office work environment, work performance, workplace nudging, path model, work engagement
Annette Kämpf-Dern, Jennifer Konkol

239 Performance-oriented office work environments in Germany – Concept testing in a real life change project

The overall research, presented in multiple parts, discusses success factors as well as potential pitfalls regarding the contents and processes of designing and implementing modern office work environments in Germany. A holistic concept to effectively evaluate workspace change projects has been developed in part 1. This evaluation concept covered two areas: The major dimensions of workspace design including involved actors and performance parameters, and the processes of implementation the change management aspects. The interaction of these areas was also considered.

Part 2 of the research, which is presented here, applies, tests and modifies the evaluation approach for workspace change projects suggested in part 1. For that, a comprehensive case study of a German financial services organization is used. The case study spans the time frame from preparing the change, the move into the new office environment, and 14 months thereafter. It uses a mixed methods approach with document research, several series of mostly half structured interviews, weekly web surveys and corresponding project team meetings. A comprehensive final survey covers the contents as well as the change management processes of the workspace project. The results of the evaluation are presented and discussed in a workshop including the project team and user representatives. With the integration of this information, the concept and the evaluation approach are adapted, resulting in a framework that can be used as a guideline to performance-oriented design, implementation, and evaluation of new work environments.

KEYWORDS: Activity-Based Work, Future Work Space, Change Management, Success Factors, Performance
Peter Raisbeck, Kwok Priscilla

372 Disruption and diversity: The co-working space as a conversational ecosystem.

The emergence of co-working spaces as a global phenomena suggests that the traditional office landscape organised around functional units and management hierarchies is no longer relevant. For small start-up firms the co-working space is a place where so-called disruption can be both fostered and accommodated. The co-working space is seen as a place where smaller firms can accelerate their growth in order to challenge larger incumbents. Proponents of co-working spaces argue that these spaces better enable the sharing of resources, knowledge and facilitate the generation of diverse ideas. This study firstly uses an institutional logics approach to survey the emergence of 10 co-working spaces in one city Melbourne, Australia. The different business model’s and spatial landscape of each provider will be described. It will be seen that, despite a claim of diversity, most co-working spaces cater to small firms and start-ups with a focus on the technology sector. Rapid ethnographic methods are used to understand how ideas are generated and shared in two of these technology sector co-working spaces. It will be seen how an ecosystem of conversations is central to the co-working space’s community culture. In developing this model of ecosystem conversations, the research concludes that resource rich co-working spaces do not necessarily help to foster an ecosystem that generates disruptive ideas. Moreover, the research concludes how these co-working ecosystems would benefit from the introduction of diversity at different organisational layers.

KEYWORDS: co-working, workplace design , workplace ethnography

Ion Anghel, Costin Ciora

115 Impact of green office buildings on productivity. A literature review

The knowledge economy created the demand for the new type of working space. The office buildings replaced the former factories and currently the number of green building have increased significantly. Many studies have pointed out the impact of green buildings on productivity, and this paper’s main purpose is to integrate the growing body of literature. Moreover, the changing working methods like working from home will continue to have an effect on this sector. We discussed this in the paper together with perspectives on future working and office development.

KEYWORDS: green buildings, productivity, performance, investments
Throughout time, cities have been places where different types of social and cultural changes evolve. In terms of learning urban places for meeting, interacting and connected learning with people from diverse backgrounds, cultures and areas of expertise are highly significant in the knowledge economy of our 21st century. Additionally, the future of work and place is a shift towards an urban scale (Laing 2013). Coworking spaces are an example of the novel use of urban spaces that at best can support the revitalisation of city districts. Coworking spaces are places where self-employed persons engaged in creative and information-intensive fields can rent or use a shared workspace together with others who share the same values.

The goal of this research is to understand how the library can response to the requirements of connected learning and coworking. The transformation of libraries from the brick-and-mortar public library to the digital library include also the enhancement of libraries as environments for coworking and informal social learning. Libraries can response to a nomadic way of working by supporting individual users with a choice of places and settings in which interactive and solo work can happen.

This research presents the best practices of libraries as hubs that attract and support interest-driven and socially embedded learning and coworking experiences. It is providing perspectives to the actual definition of a library, which states that library is a collection of resources in a variety of formats that is (1) organized by information professionals or other experts who (2) provide convenient physical, digital, bibliographic, or intellectual access and (3) offer targeted services and programs (4) with the mission of educating, informing, or entertaining a variety of audiences (5) and the goal of stimulating individual learning and advancing society as a whole. We propose that the human resources of connected learners and co-workers might be one of the very important element of the library of future.

The paper reports findings from observations as well as interviews with users and managers of different types of local, community-led libraries from Finland and The Netherlands. The findings reveal social, spatial and technological interventions that these spaces apply to nourish a culture of connected learning and coworking. The discussion suggests a set a framework to profile transformation of future libraries. The framework provides

KEYWORDS: Learning, Coworking, Library, Urban development, Profile
88 User preferences for coworking space characteristics

Over the past decades, the usage of mobile technology increased and the attitude towards work changed, which made it possible to work anywhere at any time. However, workers are still looking for work environments that stimulate the work/life balance, networking and collaboration possibilities. This had led to the growing popularity of coworking spaces.

Still little is known about the specific preferences of users of these coworking spaces. The aim of this research is therefore to analyze user preferences for coworking space characteristics.

Stated choice data was collected by means of a questionnaire with 9 choice sets that was completed by 219 respondents of 16 coworking spaces in the Netherlands. In addition, respondents were asked about socio-demographic characteristics, work-related characteristics and their motivations to work at a coworking space. A mixed logit model was used to analyze the user preferences.

Results provide owners or managers of coworking spaces with more insight about the preferences of users of coworking spaces. They could adapt to these preferences by offering coworking spaces with diverse workspaces, facilities and services.

KEYWORDS: Coworking spaces, user preferences, stated choice method, mixed logit model
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