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Residential real estate market liquidity in Amsterdam

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PhD issue:

new talent in real estate research



New talent in real estate research

This issue of the Real Estate Research Quarterly is a very special one: it is not just a thematic issue, but it is also written in the English language. The reason is that it is based on the first real estate research PhD-day that was organized by VOGON in January 2018. On the 19th of that month around 20 PhD students gathered in the Amsterdam School of Real Estate. The PhD candidates came from all over the Netherlands: Delft University of Technology (TUD), Eindhoven University of Technology (TU/e), Maastricht University (MU), Vrije Universiteit Amsterdam (VU), University of Amsterdam (UvA), and University of Groningen (RUG). In addition, the meet-up caught the attention of professionals from the real estate sector. The program was moderated by Rianne Appel-Meulenbroek and organized by PhD candidates Dorinth van Dijk (UvA & De Nederlandsche Bank) and Benny Ng (TU/e).



PARTICIPANTS OF THE VOGON PHD-DAY, JANUARY 19TH 2018

Cor Worms (Chairman VOGON) kicked off by stating that the VOGON network of this real estate research association can greatly help up-and-coming researchers to find each other for the sake of sharing knowledge and collaboration. Soon after the words of Cor Worms, the panel discussion started with Peter van Gool (Professor Real Estate Economics at UvA/ASRE), Arno van der Vlist (Professor Real Estate at RUG), and Vincent Gruis (Professor Housing Management at TUD). Topics discussed included the career after graduation, collection of suitable data and development of educational skills. Then, six (pre-selected) PhD candidates pitched their research in five minutes with plentiful discussion afterwards. The range of topics was quite large, but the common denominator was real estate. This confirms once more that real estate is very much an interdisciplinary field.

This special issue is the outcome of a call for papers that was associated with this event. The idea was to collect papers that offered a good impression of the research of current PhD students active in the Netherlands. Since many of them do not speak Dutch, we decided to make an exception and publish this issue in the English language. The papers are as diverse as the pitches of the PhD day and show interesting results of academic curiosity in policy relevant real estate issues. Enjoy!

Jan Rouwendal, Voorzitter redactie Real Estate Research Quarterly
Dorinth van Dijk, PhD Researcher Real Estate Finance

Residential real estate market liquidity in Amsterdam

INTRODUCTION

Real estate is an inherent illiquid asset class compared to, for example, stocks and bonds. Especially during the Global Financial Crisis (GFC) the importance of (the lack of) market liquidity became clear. Prices fell tremendously, but maybe even more importantly, investors and households were not able to sell their assets as quickly as desired. For investors, lower liquidity of their investment portfolio means that it is more difficult to rebalance their portfolio. For households, lower liquidity implies that they are not able to move if desired, which has consequences for labor mobility as well.

Author: Dorinth van Dijk

In the financial economics literature, market liquidity is usually defined as the ease at which an asset can be traded (Brunnermeier & Pedersen, 2009). Ametefe et al. (2016) identify five dimensions of real estate market liquidity: tightness, depth, resilience, breadth, and immediacy. Market tightness refers to the costs related to taking a 'round-trip' (i.e. simultaneously buy and sell or sell and buy). Market depth measures the extent to which trading can occur without affecting prices. After a while, more trading will affect prices more, the magnitude by which this happens is called resilience. The breadth refers to the overall size of all trades. Finally, immediacy relates to the discount or premium related to selling or buying quickly.

This article estimates two different empirical liquidity measures for the residential real estate market in Amsterdam. One measure focuses on the first dimension of liquidity (market tightness) and one measure focuses on the fifth dimension (immediacy). The results further include a discussion on the commonality between these measures and the co-movement with prices. The results indicate that the two measures – based on different data – are very similar and both show a strong decrease in market liquidity during the GFC. In the recent years, market liquidity recovered to pre-crisis levels.

The next section starts with two views on the concept of real estate market. The econometric details and equations will not be discussed. For these I refer to the PhD thesis. The goal of this article is to present liquidity indices for Amsterdam, intuitively explain the models, and to provide some stylized empirical facts.

TWO MEASURES FOR MARKET ILLIQUIDITY

First measure:

Difference between reservation prices

The first measure develops a model to estimate reservation prices of buyers and sellers to obtain a measure for market tightness. In this model, reservation price dynamics are the root of price and liquidity changes in the market. The model builds on the empirical fact that liquidity and prices are highly pro-cyclical in real estate. The model is an extension of the model of Fisher et al. (2003) in a repeat-sales structural time series framework. This makes it possible to estimate reliable, robust investor supply and demand indices for granular markets. The difference between the central tendencies of these reservation prices can be used as a measure for market tightness. This measure can be viewed as an analogue to the bid-ask spread, which is commonly used as a market liquidity measure in the stock market.

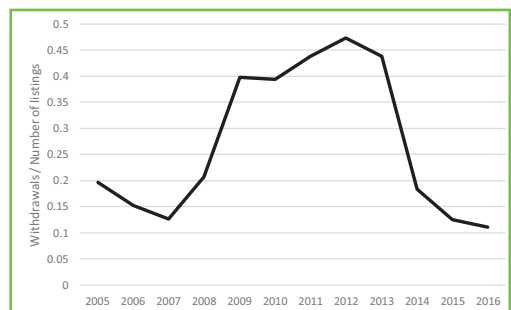
The model to estimate the reservation price indices of buyers and sellers is based on the three-step approach of Fisher et al. (2003), which in turn is based on the two-step Heckman selection model for censored regressions.¹ The *midpoint price* is the transaction price observed in real estate markets and is, by definition, in-between the buyers' and sellers' reservation prices. An important assumption of the model is that the transaction price is *exactly* in-between the buyers' and sellers' reservation price. By making this assumption, the midpoint price is known. Additionally, following Fisher et al. (2003), the reservation prices of buyers and sellers are assumed to be normally distributed. Moreover, the transaction volume can be readily observed from the data and is known. In turn, a reasonable model – consistent with pro-cyclical liquidity – for the buyers' and sellers' reservation prices can be backed out (for more details see Van Dijk, Geltner & Van de Minne, 2018).

The estimation procedure is as follows. In the first step, a probit regression is estimated to determine the probability of sale. Here, a property is 'tracked' over time: the dependent variable takes the value 1 if the property is sold and 0 if it is not sold. Included as right-hand-side variables in this probit regression are calendar time dummy variables that indicate the shift in the probability of sale in this period. After running the probit, the *inverse Mills ratio* is calculated which serves as an input for the second step: the estimation of the repeat sales model.² In this repeat sales model, the *difference* of the inverse Mills ratio is included (i.e. the difference between the value at the time of the second sale and the first sale). Finally, in the third step, the repeat sales index estimates are combined with the probit results and the residuals of the repeat sales regression. This step yields two reservation price indices: one for the sellers and one for the buyers. Tracking the difference between these indices over time indicates how market tightness evolves (a bigger difference indicates that buyers' and sellers' reservation prices are further apart, which implies a less liquid market).

Second measure: A (correct) TOM

The second measure focuses on the TOM (Time-on-the-Market). From an investors' perspective, a lower expected TOM is related to more immediacy (lower costs of selling quickly). Practitioners and policymakers frequently use the average TOM of sold properties as a market liquidity indicator. The average TOM can be misleading, mainly due to two reasons. Firstly, in calculating the average TOM, only properties that are sold are considered. However, a seller might choose to withdraw the property. If many sellers choose to do so, this is an indication of an illiquid market. If, for example, the probability of a withdrawal increases during some periods, the average TOM might give a wrong signal about liquidity. Empirically, the percentage of withdrawn houses differs over the cycle (Figure 1). Secondly, houses are heterogeneous assets. Some houses, usually more homogeneous properties like apartments, transact quicker. The constructed measure for market liquidity corrects for these features. Novel features of the presented method include that the liquidity indices can be created reliably up to the end of the sample (*until the most recent data comes in*) and that indices can be constructed in markets where transactions or withdrawals occur infrequently.

FIGURE 1 ► FRACTION OF HOUSES WITHDRAWN OVER THE CYCLE IN AMSTERDAM, 2005 - 2016



When a house is on the market, it can be either sold or withdrawn. The decision to sell or withdraw can therefore be characterized as competing risks. The TOM is modeled in a hazard framework. The hazard function is then defined as the probability

of a sale or withdrawal, conditional on survival up to that moment. The dependent variable is the time it takes for a house to be sold or withdrawn (TOM). By estimating the model in a competing risks framework, the probability of sale is estimated conditionally on the probability of withdrawal. If, for example, during a crisis the probability of withdrawal increase this will affect the probability of sale as well (usually the latter probability will become lower).

Besides conditioning on survival time, it is also desirable to condition on other covariates, in this case housing characteristics and the list price premium.³ This is usually done in a proportional hazard framework. Part of these covariates are, for example, calendar-time dummy variables that indicate in which period (i.e. annual, quarterly, or monthly dummies) a sale or withdrawal took place. These dummy-variables account for (time) fixed effects.

Intuitively, the coefficient on the dummy variable indicates a shift in the hazard rate. The size of the shift in the hazard rate indicates the magnitude of change in the probability of sale in this period. The dummy coefficients subsequently form an index of how the probability of sale has evolved of time. Note that these coefficients are conditioned on housing characteristics. In order for the methodology to work in thin markets, the calendar time-fixed effects are replaced by a stochastic structure.⁴ More specifically, these are modeled as a random walk. The intuition behind the random walk assumption is that the level of the liquidity in previous period contains information regarding the level of liquidity of today.

CONSTRUCTING EMPIRICAL LIQUIDITY MEASURES FOR AMSTERDAM

Data

Transactions data between 2005-Q1 and 2016-Q4 of the Dutch Association of Real Estate Brokers and Real Estate Experts (NVM) are used. The data contain the sale price, date of sale, date of listing, (original) list price, unique identifying property id, and several housing characteristics.

For the first measure, only the sale price, date of sale, and the unique property id are strictly necessary, as the model is an adapted repeat sales model. Hence the (fixed) housing characteristics are canceled out. However, some housing characteristics may be included in the first-step (the probit regression). In this case, the size (in m³), property type dummy variables (terraced, back-to-back, corner, semi-detached, detached, apartment), and building period dummy variables (<1905, 1905-1944, 1945-1990, >1990) are included. The results are robust to including additional property characteristics. The reason not to include too many characteristics is mainly a practical one. Since properties are 'tracked' over time, the probit takes roughly $N \cdot T$ observations, where N is the total (sold and not sold) number of properties and T the number of periods. When estimating quarterly indices for Amsterdam, the total amount of observations in the probit amounts to almost 3.8 million.⁵ When including more property characteristics, the estimation time will increase tremendously.

The main input for the second measure is the time the house is on the market (TOM) and whether the property is sold or withdrawn. For the second measure, somewhat more housing characteristics are included: size (in m³), property type dummy variables (terraced, back-to-back, corner, semi-detached, detached, ground level apartment, upper floor apartment, and other apartment), building period dummy variables (<1905, 1905-1944, 1945-1990, 1991-2000, >2000), garden dummy, parking dummy, land lease dummy, and list price premium. The *list price premium* is frequently used in TOM analysis in the real estate literature (Genesove & Mayer, 2001; Bokhari & Geltner, 2011; Clapp & Lu-Andrews, 2017), and is defined as the difference between the list price and estimated market value of the property at the time of entry. The market value is estimated with a hedonic model, which will not be discussed here and is available in the thesis or upon request. The thesis additionally includes a discussion on the effect of the list price premium on the indices. This discussion shows that the indices become less

cyclical when correcting for the premium, which reflects the fact that the list price premium is cyclical as well.

Results

The demand and supply reservation price indices for Amsterdam are shown in Figure 2. The lines represent indices that indicate the development of the respective reservation prices over time.⁶ Similar to the findings for US commercial real estate, demand seems to lead supply (Van Dijk, Geltner & Van De Minne, 2018). Visually, the turning points in the demand index seem to be happening earlier in the demand indices than in the supply indices. The Granger causality running from the returns of the demand index to those of the supply index is stronger than vice versa.⁷ This implies that the effect of demand on supply is stronger than the other way around.

FIGURE 2 ► DEMAND AND SUPPLY RESERVATION PRICE INDICES FOR AMSTERDAM, 2005Q1-2016Q4

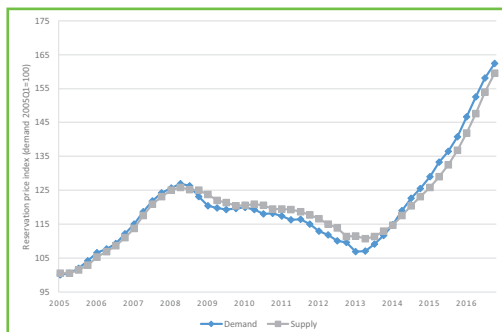
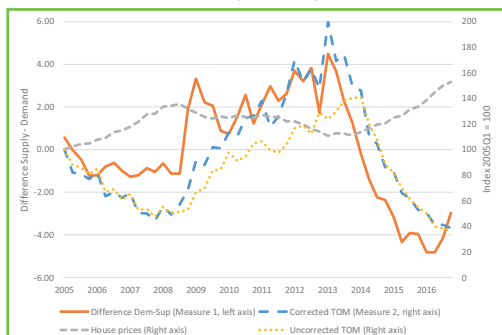


FIGURE 3 ► COMPARISON BETWEEN THE TWO MEASURES FOR LIQUIDITY AND HOUSE PRICES IN AMSTERDAM, 2005Q1-2016Q4



A measure for *illiquidity* can be obtained by calculating the difference between sellers' and buyers' reservation prices. The development of the difference between supply and demand reservation prices is shown in Figure 3. Note that this difference is based on the indices, so the level of the difference has no interpretation, only the evolution over time can be interpreted. If the difference between supply and demand becomes bigger (or more positive), the reservation prices of sellers and buyers are, on average, further apart. This implies that there will be, on average, less matches (transactions) and that the market is less liquid. If the difference becomes smaller (or more negative), the reservation prices are closer together, and the market is said to be more liquid. Notice that there is a significant increase in illiquidity in 2008-Q3, which is generally seen as the start of the GFC. Illiquidity, according to measure 1, remains low until 2013-Q1, after which it starts decreasing again.

The illiquidity indices based on the second measure, the 'Corrected TOM', are also presented in Figure 3. Note that a higher TOM indicates a less liquid market, and thus is expected to be high (low) in a bust (boom). The measure indicates that there is a general increase in illiquidity since 2008-Q2 until 2013-Q1. After 2013-Q1, the corrected TOM decreases steadily until 2016-Q4. Figure 3 further shows an 'Uncorrected TOM' index, which is simply an index based on the average TOM of sold properties. Hence, this index is not corrected for withdrawals and differences in quality. The average, uncorrected, TOM is frequently used by practitioners and policymakers as a market indicator. The index clearly picks up less cyclicity and lags behind the corrected TOM index. In other words, it is better to use a corrected TOM index to monitor the market situation. However, estimating a corrected TOM index requires more data and is more cumbersome to estimate compared to taking the average TOM of sold properties.⁸

Visually, the contemporaneous commonality between the two measures for illiquidity is striking. The correlation between the measures in levels is indeed very high: 0.79. In differences, the

correlation is somewhat lower, but still high: 0.58. The correlation between the first measure and the uncorrected TOM is much lower: 0.63 in levels and 0.10 in differences.

The turning points in the two measures occur in roughly the same quarter. The start of the GFC is visible one quarter earlier in the second measure (2008-Q2 vs 2008-Q3) and according to both measures, the recovery starts in 2013-Q1. The start of the GFC is visible somewhat later in the uncorrected TOM measure (2008-Q4). Especially the recovery starts later: in 2014-Q1.

Figure 3 additionally includes the house price index for Amsterdam from Statistics Netherlands (CBS). The peak before the GFC was in 2008-Q3 and the trough was in 2013-Q1. In general, when prices were decreasing during the GFC, both measures indicate a decrease in liquidity. Furthermore, the recovery in prices is accompanied by an increase in liquidity. The contemporaneous correlation between the first (second) measure and prices in levels is -0.39 (-0.46). This confirms the notion of pro-cyclical liquidity for the Amsterdam market. For more details on the relationship between prices and liquidity, see De Wit et al. (2013) and Van Dijk & Francke (2018).

CONCLUSION

In real estate, prices and liquidity famously move together. This article discusses two ways to empirically measure liquidity. The methods are estimated for the Amsterdam housing market. The relationship between the measures is surprisingly strong, given the fact that the measures use different information sets. The first measure uses prices, transaction dates, and housing characteristics whereas the second measure uses transaction dates, listing dates (or the TOM), withdrawals, and housing characteristics. In some sense, the result that the empirical measures are very similar is rather reassuring since both measures will result in a comparable conclusion regarding the market situation. Moreover, both measures show a commonality with the transaction price index for Amsterdam. This confirms the pro-cyclical behavior of prices and liquidity for the Amsterdam market.

ABOUT THE AUTHOR

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NOTES

- 1 Originally, the Heckman selection model corrects for the fact that the data on which a model is estimated is not random and may not be representative of the population. Intuitively, for this application, the correction is based on the fact that transaction volume is not the same over time. The model corrects for this and estimates indices as if transaction volume were constant.
- 2 The inverse Mills ratio is defined as the ratio of the estimated probability of sale to the estimated cumulative probability. By including this variable in the second step, a correction is made for the possible correlation between the decision to sell and the sales price equation.
- 3 The list price premium is defined as the premium of the list price relative to the expected sale price at the time of listing.
- 4 Amsterdam is a relatively large market, but the thesis also discusses results for smaller markets like Aalsmeer and Amstelveen.
- 5 After cleaning, the data contain roughly 80,000 properties (sold and unsold) * 48 quarters = 3.84 MLN.
- 6 The level of the buyers' and sellers' reservation prices is not estimated, only the difference over time. This is also the reason why the index of sellers' reservation prices can be higher than the index of buyers' reservation prices.
- 7 Granger causality investigates causality between time series to examine whether one series leads to other. Based on a VAR model in first differences with 2 lags, number of lags are chosen according to the AIC and HQIC information criteria. χ^2 Demand > Supply 38.9, χ^2 Supply > Demand 26.8, both are statistically significant at the 1% level.
- 8 The thesis additionally shows an index that is solely corrected for withdrawals (and not for quality), which is easier to estimate than the fully corrected index. Empirically, the results are very similar.

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Drivers and barriers to the delivery of integrated Façades-as-a-Service

ABSTRACT

The construction and renovation of the building envelope represents a significant fraction of a project's life-cycle costs. It also has a determinant effect on the potential reduction in energy use, as well as on the improvement of the building's indoor comfort. Nevertheless, the challenge of a low rate and depth in building energy renovations cannot be solved through technological innovation alone. Instead, the Façade Leasing research project proposes a systemic shift in economic and business incentives, towards the creation of a performance-based contracting model for integrated façades.

Façade Leasing explores an integral, cross-disciplinary model promoting accelerated strategic investment in energy-efficient building envelopes. A focus on performance delivery, rather than product sales, would in turn impulse ongoing innovation in products and management processes. It would also provide the foundations for Circular Economy strategies for the reuse and remanufacturing of building components, leading to a potential reduction in primary raw material consumption across the façade industry.

This study starts by describing the “Façade Leasing pilot project” developed and built at the TU Delft campus by a consortium of academic and industry partners. It then outlines the main drivers and barriers to the commercial application of the Façade-as-a-Service concept in the Dutch public, non-residential real estate sector, from the perspective of four key stakeholder groups: Demand drive, or the decision-making process of real estate developers, owners, and managers; Supplier readiness, or the necessary reorganization of products and processes along the supply-chain; Finance, or the distribution of financial resources bridging the gap between initial investment cost and long-term service fees; and Governance, or the necessary regulatory innovation required to separate ownership of building and façade.

The research shows that, while further research and validation work is needed to test these principles in a controlled, case-study setting, the potential for façade-as-a-service delivery is within reach under the current legal and economic environment.

Authors: J.F. Azcarate-Aguerre, T. Klein, A.C. den Heijer, R. Vrijhoef, H.D. Ploeger, & M. Prins

INTRODUCTION

The share of global environmental impact for which the construction sector is directly or indirectly responsible has been well documented and is regularly quoted (Eurostat, 2017; Smith, 2003). Diverse impact mitigation goals have been established by regulatory bodies around the world to incentivise improvements both in terms of construction process and in the quality and efficiency of the new and renovated building stock. Until recent years, this debate largely focused on the energy consumption of buildings during their operational phase, and the gradual improvement that could be achieved through the application of innovative – and often active – building technologies (Allouhi et al., 2015; Konstantinou & Prieto Hoces, 2018).

This incremental process, with a focus on energy optimisation, has led to a significant increase in the complexity of construction techniques. Research and development in building envelopes has seen particular progress, as such systems have a distinctly determinant role in the overall energy and indoor-climate performance of the building. Multi-layered systems for both opaque and transparent building envelopes have become the norm, and a growing number of façade-integrated building services are constantly expanding the functionality and relevance of the building envelope (Athienitis, Bambara, O'Neill, & Faille, 2011).

This combination of envelope and service functions can result in the building envelope accounting for as much as 40% of a new building's construction costs (Parker & Wood, 2013). In the case of deep building retrofitting projects, in which site, structure, and other building systems are reused, a façade with integrated building services can make up over 90% of a project's initial investment (Dall'O, Bruni, & Panza, 2013). This rise in complexity and cost, however, has not always been followed by a thorough understanding of the effect such systems have on the Total Cost of Ownership (TCO) - both financial and environmental - of the building throughout its service life. This knowledge gap often results in suboptimal decisions being taken

during a project's planning phase, where a focus on initial investment costs frequently prevents the adoption of more robust or energetically efficient systems. While technology advances to enable the construction of energy-neutral and even energy-positive buildings, the market-integration rate of such technologies tends to be slow, and often limited to a small group of elite projects (Mlecnik, Visscher, & Van Hal, 2010). The cause for this, this paper argues, lies in the economic and organisational processes underlying the system, rather than the availability or reliability of new, high-performance technologies.

A second challenge presented by a focus on energy performance is the effect this rising complexity has on the use and disposal of material resources. Emerging, low-carbon building technologies – from energy-generation and distribution systems to smart, user-responsive micro-grids – are quickly merging into what we would traditionally consider the Electrical and Electronic Equipment (EEE) sector. The demand on materials, in terms of both volume and diversity, is therefore growing exponentially (Vidal-Legaz et al., 2016): From the high-volume elements commonly used in construction, to the highly-specialised micro-volume elements needed to produce integrated circuits and other EEE components which are becoming increasingly embedded in our buildings (BIO Intelligence Service, 2013; Ecorys, 2014). While the construction industry has focused on an incremental improvement in terms of operational energy use, it has often overlooked the consequences of such decisions in terms of the embodied energy and CO₂ content of products and processes, the reliability of global supply-chains, or the eventual depletion of finite and highly valuable material resources.

The concept of a Circular Economy is a response to this material resource challenge, just as the energy efficiency movement has been a response to the environmental challenge presented by the use of mostly non-renewable energy-generation sources. One of the key principles of the Circular Economy is to involve companies and other industrial

organizations in the elaboration of new economic and business models for a more resilient use of resources. Energy-efficiency and other sustainable practices have often been seen as an additional short-term capital expense (i.e. a financial burden) for companies and their investors (Figge & Hahn, 2005). The Circular Economy concept, meanwhile, addresses this misperception by focusing on improving the overall strategic economic position of these companies, while safeguarding the long-term values of wider society (Webster, Blériot, & Johnson, 2013). A circular use of components and materials should lower manufacturing costs while reducing vulnerability to international raw material markets; a focus on service delivery rather than product sales should stabilize cash-flows across the value chain, protecting stakeholders from the volatility of, for example, real estate supply and demand cycles (Alix & Vallespir, 2010).

A number of authors have established a relation between the resource management theory behind the Circular Economy and the realignment of business incentives that can be achieved through the implementation of Product-Service Systems (PSS) (Mont, 2002; Stahel, 2016; Tukker, 2015). In line with other performance-based, pay-per-use models recently initiated in the construction sector, such as lighting and carpeting, the Façade Leasing project proposes the development of a PSS model for integrated building envelopes. The principle behind PSS models is to shift transaction value away from physical products, and instead assign this value to the performance results provided by these products to the target client and/or end-user (Baines & Lightfoot, 2013; Tukker, 2004). As a fixed and functionally critical system, however, the façade is subject to highly specific requirements – from the technical to the regulatory – which result in a new level of complexity in its transition towards performance-based contracting practices. The objective of this paper is hence to identify the knowledge gaps behind this complexity, the stakeholders these knowledge gaps are relevant for, and the incentives these actors might have to pursue a transition.

THE EWI PILOT PROJECT AT TU DELFT

In late 2016 construction was completed on the “EWI Façade Leasing pilot project” at the TU Delft campus in Delft, The Netherlands (Figure 1). This mockup façade renovation project consisted in the replacement of four unitary curtain wall panels at the building of the Electrical Engineering, Mathematics and Computer Sciences faculty (commonly known by its Dutch acronym, EWI). This iconic building, built during the 1960’s, has in recent years suffered a series of building service failures, and is increasingly criticized by users and operators for both its inflexible spatial layout as well as its inadequate indoor comfort. The building has been therefore deemed the ideal target for a façade renovation prototype, particularly one showcasing the potential benefits of decentralized, façade-integrated building services. Its curtain wall façade, technically innovative for its time, consists of a ventilated, double-skin system, with an exterior single-glazed, metal-framed layer and an interior wooden-framed layer. The building layout, a long central corridor with adjacent offices and meeting rooms on both sides, provides the room depth and façade-to-floor ratio necessary for decentralised building services to perform effectively.

The purpose of the pilot project was twofold: On the one hand, it was intended to act as a technical demonstrator of the technological range and readiness of new, decentralized, façade-integrated technologies. Such technologies, not all of which were physically installed in the prototype due to financial or time constraints, include systems such as BiPV energy generation and storage, diverse interior, in-glass, and exterior sun-shading systems, ventilation and air-handling devices, automated operable windows, LED media façade elements, and self-supporting green façade systems. The pilot project, therefore, intended to showcase the wide range of façade-integrated services currently available on the market, and their capacity to deliver most, if not all, of the indoor comfort regulation services necessary for certain building typologies.

On the other hand the pilot project acted as a central case-study promoting further discussion

FIGURE 1 ► PHOTOGRAPH OF THE COMPLETED “FAÇADE LEASING PILOT PROJECT” AT TU DELFT’S EWI FACULTY BUILDING.



Photograph credits: Marcel Bilow (2016)

within a wide-ranging consortium regarding the business and supply-chain modelling implications of a transition from façade product delivery to integral indoor comfort service provision. The consortium – made up of real estate investors and operators, façade fabricators, system suppliers, and industry branch organisations – as well as the design and engineering process followed to execute the project, have been described in the paper “A business-oriented roadmap towards the implementation of circular integrated façades” (Azcarate Aguerre, Klein, & den Heijer, 2016).

The planning, execution, and evaluation phases of the pilot project highlighted many of the systemic circumstances which currently lead to a slow energy renovation rate, and to suboptimal decision-making and missed opportunities in the technical depth of such renovations.

METHODOLOGY

While the EWI pilot project confirmed the commercial attractiveness of Circular Economy and PSS principles to a diversity of industry parties on both sides of the value chain, it opened new questions regarding the practical implementation of a performance-based business model for integrated façades. Further research has therefore been oriented towards understanding the current procurement and knowledge-sharing mechanism dictating projects’ planning and execution phases, as well as exploring the impact a service-based façade contracting method could have towards improving technical decisions in new buildings and building envelope retrofitting projects. The research has been based on a series of interviews, working sessions, and public presentations, in which the research team actively engaged experts across the most relevant stakeholder groups within the construction and real estate sectors in the

Netherlands. The stakeholders have been asked to identify and elaborate on the main drivers and barriers they would expect in the implementation of a Façades-as-a-Service model.

Data gathered through this field exercise has then been compared and complimented with literature references and case-studies. These references have been largely collected from other economic sectors, such as the automotive and industrial design industries, with more experience in the application and financing of PSS business models.

Finally, a schematic business and value model has been created for the possible organisation of a façade-as-a-service contracting process. This model has then been evaluated by representatives of the different stakeholder groups, and a summary of cross-organisational drivers and barriers has been reached.

STAKEHOLDER ANALYSIS

Following the methodology previously described, the objective of this analysis has been to map the current priorities and concerns of key players within the construction value chain. This map has then been used to develop a schematic plan to maximize potential collaboration between long-term client needs and key supplier and fabricator skills under a performance-based contract. While the “Façade Leasing Pilot Project” focused on the technological aspects of the Façades-as-a-Service concept, this stakeholder analysis led to specific suggestions – according to diverse fields of expertise – on its managerial aspects, and how this business model could be successfully implemented in a realistic setting.

Real estate owners and operators

The demand side of the built environment is represented by organizations that either own and/or use buildings (and land). When there is an intervention or transaction, they become clients that pay for products and/or services. As owners of buildings, clients will focus on residual value, life cycle costs, and return on investment. As users of these buildings, clients will concentrate on how

their organisational performance is affected by the building.

Exploring new business models to match innovative supplier solutions with changing client demands gets more interesting when the owner and user perspectives are combined in a single client. Only then the strategic, functional, financial, and physical values need to be considered by one stakeholder (den Heijer, 2011). For this reason the research team focused on a specific client profile: the owner-user (or owner-occupier) of buildings. Dutch universities are examples of organisations that combine ownership and use of their buildings. The uncertainty in demand and the required flexibility in the functionality of buildings also plead for more flexible façade solutions, of which façades with integrated decentralized systems could be an example. TU Delft, as one of these organisations, served as a test case - and living lab - to identify “demand drive”.

The most fundamental factor determining the success of a new business model is the client's willingness to invest in its added value proposition. In economics “willingness to pay” is connected to “value.” Since value is hard to operationalise - if it combines strategic, financial, functional, and physical aspects - the extra payment is equally difficult to calculate. However, the incentives to invest in a product-service combination, rather than a product, can be made explicit.

As owners of buildings clients are becoming increasingly socially responsible, environmentally conscious, and willing to invest in resource-efficient solutions that contribute to a more Circular Economy. Of course, financial incentives still play a role that is larger for commercial organisations and smaller for organisations that are funded with public money, like universities. Residual value, or the value of reused component and materials, and lower energy costs are demand drivers: they influence decision-making by owners of buildings.

As a user of buildings, a client is increasingly aware of the shorter functional lifetime of building systems

and the high costs of either new investments or decreasing productivity (den Heijer, Arkesteijn, de Jong, & de Bruyne, 2016). Anything that jeopardizes the performance of the organisation could have considerably higher costs and risks than implementing more flexible solutions or more flexible processes to provide a service. Clients are therefore receptive towards the concept of paying for a performance and service while not having to put in the effort, and hire the staff necessary, to support it. They also acknowledge that this is simpler for well-defined performances, like “enough light for the activities in the room” than for “keeping us comfortably productive”. The more complex the primary processes, the more complex it is to establish performance indicators against which correct performance can be measured and hence productivity guaranteed.

The potential negative impact of a suboptimal decision, during the building envelope planning and construction phase, could be disproportionately high at a business operational level. While a building envelope with integrated services can, as mentioned, represent as much as 40% of a new building project's initial cost, this total initial cost is deemed to represent only about 40% of an average project's TCO (Ive, 2006). Furthermore, the building's TCO generally represents only about 12% to 15% of a business' operational expenses over the project's service-life (e.g. 30 years), while the other 85% to 88% consists of non-building-related human and material resources needed to run the business (Hughes, Ancell, Gruneberg, & Hirst, 2004). Savings in initial investment, for example by procuring a lower-performance façade, can therefore have exponential negative consequences for the business' bottom-line. These consequences would be the result of higher operational costs – for example due to a higher building energy consumption – and to a potentially even larger extent due to a drop-in staff productivity as a consequence of indoor discomfort (Loftness, Hartkopf, & Gurtekin, 2003; Terrapin Bright Green, 2012).

From both the owner and user perspective the long-term relationship with suppliers is

important for safeguarding shared responsibility for sustainability goals, by being able to adapt to new standards, change components, or upgrade existing systems to innovative solutions during the functional lifetime of the building. Trading uncertainty for certainty, even at the cost of a higher financial fee, can be preferable.

Façade fabricators and system suppliers

Traditionally in the façade supply chain the contractor is the integrator. Suppliers as well as designers play a minor role, particularly in the Netherlands. Besides, the role of the client and demand specifications are dominant, with over-specified tenders focused on technical solutions rather than outcome (Uyarra, Edler, Garcia-Estevéz, Georgiou, & Yeow, 2014). Contractors and thus suppliers tend to follow demand rather than developing and supplying integrated products.

In the near future, the role of contractors is expected to decrease. This offers the opportunity for groups of suppliers to potentially take over the role of system integrators of sub-assemblies including the façade. In such a scenario the business model for coalitions of suppliers would be to develop circular products and develop leasing, upgrading, or take-back services for those products. This is dependent on financial and legal implications for coalitions of suppliers and whether they will be able to cope with and co-organize those responsibilities within the group of firms. In fact the supply chain of suppliers would then act as a single ‘quasi-firm’ (Eccles, 1981) or ‘extended enterprise’ (Boardman & Clegg, 2001). The ‘quasi-firm’ points towards the notion of coalitions of firms behaving as one firm. This raises the issue of core competences of firms making up an ‘extended enterprise’ in a resource-based view (Prahalad & Hamel, 2000).

The extended enterprise implies a higher level of integration between firms. In order to achieve higher levels of supply chain integration, there is a need to strengthen inter-firm relationships, achieve mutual benefits and build trust (Dainty, Millett, & Briscoe, 2001). Then the extended enterprise will be able to be the single point of contact with the

client, façade manufacturer, and service provider. In most supply chains one of the firms would be the 'system integrator' who will lead and integrate the whole supply system. Generally this is the largest firm in the supply chain, taking most of the financial risk. The integration of the supply system is not only driven by economic arguments but also includes organisational and social aspects between firms and teams of people involved (Bridge, 2005).

Financial organisations

Regardless of scale, project financing in the real estate sector has traditionally been secured by the market value of the real estate property which is being financed. This value, while sensitive to volatile trends such as the behaviour of the real estate market, can in most cases be effectively calculated based on a long industry track-record taking into account factors such as location, quality, function, year of construction, operational risks, among many others (Pagourtzi, Assimakopoulos, Hatzichristos, & French, 2003).

The loss of basic functionality, for example if the building envelope is missing or inoperative, can have dramatic consequences on the project's financing model, as a building without an operative façade is not occupiable. It therefore loses its quality as a complete asset which can be directly sold on the market. This loss of value due to functional incompleteness is the main concern behind property law (as will be discussed in the following section).

A fully Circular construction supply chain is likely to result in a building which is no longer a single integration of components and materials which fulfil a rentable function, but instead would become a collection of ongoing service-contracts connecting a large number of suppliers and service providers. Ownership of diverse building systems would be held by a number of parties, meaning no functionally solid and fully transferable real estate property could be defined.

Looking at the specific case of the building's façade being used as an asset to secure a loan by the

façade manufacturer, it is deemed to be an unlikely proposition. The façade, if removed from the building, has minimal intrinsic value. Reselling the façade elements in the market would most likely result in high disassembly, transportation, storage, and remanufacturing costs, which would render the whole exercise economically unfeasible. The value of raw materials, even under the most optimistic forecasts, is not likely to become high enough to justify the process by simply reusing these materials as raw industrial input. Since the physical asset (the façade) holds no significant residual value, an asset-based loan is not an option.

Innovative cash-flow-based project financing mechanisms, such as those being used in the wind energy sector, could provide a solution to this financing barrier. If energy improvement performance can be reliably backed by a documented body of energy-renovation projects, the income and productivity resulting from the renovation could act as guarantee, securing the necessary cash-flow to cover the loan repayment. Such is the mechanism behind the growing Energy Service Performance Contracting (ESPC) model (Sorrell, 2007). Since track-record history and risk assessment methods are yet to be developed for the financing of façade renovation projects, large and financially solid client organisations - such as publicly-supported universities - could provide the ideal circumstances for a commercial pilot project. Their operational stability and above-average credit rating would act as further guarantee of service fee payment.

Governance

Circular Economic practices based on the delivery of performance services departs radically from the traditional ownership model on which property law has been based since Roman times. Construction projects have been traditionally considered as functionally complete entities. A developer will procure a plot of land and the human and material resources necessary to erect a building. The building will then be sold either as a whole or subdivided into functional units such as apartments or offices.

Even if a diversity of transaction models exists, full ownership of a complete, functional space unit measured in terms of square meters between structural walls, has been the legal construct by which real estate value is calculated. Financial and Legal aspects of a Circular Economy model for construction are therefore closely tied.

To move the Façade-as-a-Service concept forward, perhaps the most important distinction to start with is that between legal ownership and economic property. While the latter is not a notion in the Civil Code, it is particularly relevant in fiscal law.

Legal ownership is a generally understood concept, it represents “an enforceable claim or title to an asset or property and is recognized as such by law” (BusinessDictionary.com, 2018). The owner of the land will normally be also owner of the buildings constructed on it (the buildings being fixtures) as well as of the building’s constituent parts such as slabs, walls, roof, doors and windows. Economic ownership allows a user to obtain full enjoyment of the object, including bearing financial risk for it, while not being its legal owner. Long-term leasing of real estate property such as land or built objects is another example of such a structure (Ploeger, Prins, Straub, & van den Brink, 2017).

In principle, immovable property is not an absolute right, but may be determined through the establishment of building lease contracts, keeping ownership on the side of the manufacturer or a third party, such as a lessor. Lack of precedence doing this specifically for façades means that no guarantee of its success can be given without a pilot case in which the appropriate contracts can be structured and tested against property and fiscal law. Previous contracts elaborated for elevators and solar panels owned by third parties show that it can be done in theory, but it depends on how much the façade, or some of its components, can be argued to be independent of the building’s core functions.

THE FAÇADE-AS-A-SERVICE MODEL

The stakeholder analysis presented above has resulted in the elaboration of a schematic model (Figure 2) for the contracting of performance-based façades-as-a-service. This model takes into account the core competences of the diverse stakeholders, the ongoing relations between parties, as well as sources of long-term social and corporate costs and values beyond the directly financial. The model makes a distinction between tangible products and the intangible services delivered by such products. It also proposes a stepped transition in which, at first, only the service

FIGURE 2 ► FAÇADE-AS-A-SERVICE SCHEMATIC MODEL OF STAKEHOLDER RELATIONS, ACTIVITIES AND FORMS OF VALUE CREATION IN A SERVICE-BASED FAÇADE CONTRACTING MODEL.

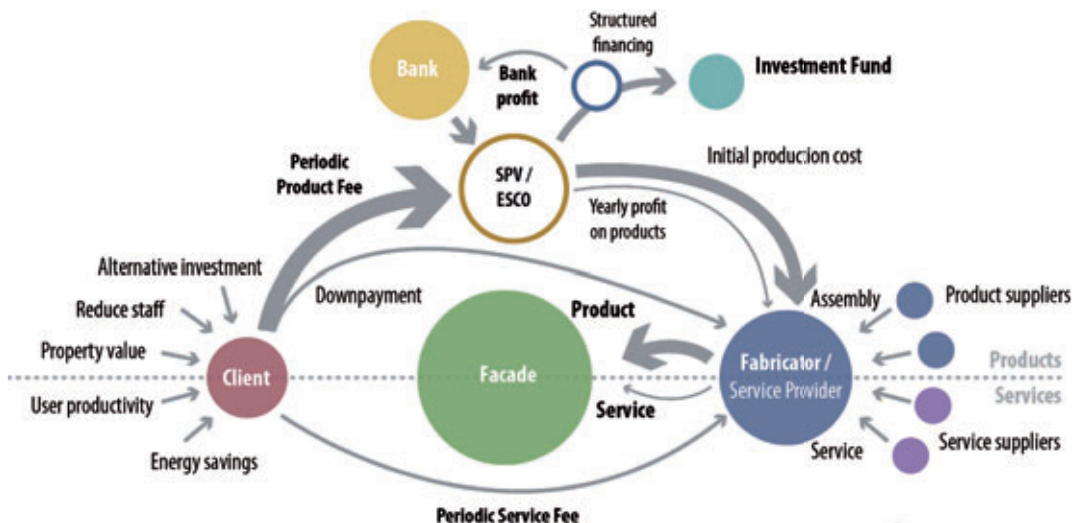


TABLE 1 ► SELECTED DRIVERS AND BARRIERS TO THE IMPLEMENTATION OF A FAÇADE-AS-A-SERVICE CONTRACTING MODEL, ACCORDING TO MAIN STAKEHOLDER GROUPS.

	Drivers	Barriers
Client	Outsource non-core processes (e.g., façade maintenance schedules and indoor comfort performance monitoring).	Partial third-party ownership of organisation's real estate.
	Accelerate rate and depth of portfolio retrofitting.	Possibly high risk-premium while track-record is created.
	Stabilise cash-flow, lower upfront capital requirements.	Cash-flow based financing limited to relatively large clients.
	Improve functional flexibility of portfolio.	Contract setup and management costs.
Service provider	Access to new service-based markets.	R&D investment on system and service integration.
	Stabilise cash-flow, reduce impact of real estate cycles.	Lower upfront profit.
	Higher profit margin for services. Incentivise innovation and quality.	Development of new processes required (staff and training).
	Enhance raw material security.	Financial model sensitive to global material / commodities market trends.
	Gather valuable data on the use, performance, and failure of products. Contributing to updated engineering and manufacturing practices.	Data collection and privacy issues.

provider needs to engage in PSS activities, while second-tier suppliers and sub-suppliers continue to provide product-based offerings. Such a gradual supply-chain reorganisation process is deemed to be a more likely proposition than a radical, cross-industry shift.

The Façade-as-a-Service model has been evaluated by representatives from the diverse stakeholder groups. A summary of the main drivers and barriers identified by these actors has been elaborated and is presented in Table I.

CONCLUSIONS

The cutting-edge in façade-integrated technologies is often overlooked due to the knowledge-transfer process between the technical experts responsible for the project development and construction, and the management experts responsible for the investment in, and operation of, the building (Klein, 2013). A focus on lower initial investment cost still widely dominates the sector and defines

most procurement processes. Such focus favours products and systems which are often simpler, lower-performing, or subject to require a higher maintenance effort. Such decisions could result in a higher TCO – in terms of both financial and environmental impact – than the use of more robust, higher-performance alternatives which also entail a higher initial investment.

The assumption of this project, and indeed of PSS theory in general, is that the alignment of long-term interests between suppliers of products and consumers or users of such products could lead to a more efficient management of global resources. Both ends of the construction value chain could co-create a new value segment by sharing the burden of managing a building's life-cycle according to their core skills and competences. Ownership of materials and responsibility for the effective and updated function of components would be retained by parties with experience in the manufacturing and development of technology,

reducing the need for duplicated knowledge. This could meanwhile expand the economy of scale potential of suppliers beyond the production phase and into the ongoing operational, service-delivery phase.

A comprehensive methodology to compare linear and circular contracting processes in terms of their Total Cost of Ownership is still necessary. The TCO needs to be balanced against the total value of ownership (TVO) when managing a portfolio of buildings. This long-term value balance is not easy to assess, especially for non-profit organisations. But even the TCO is not easy to measure: allocation of capital costs, maintenance costs, and energy costs to specific spaces and users is quite difficult within large organisations or for large buildings. The owner and user of buildings can find incentives to implement a new business model: safeguarding user productivity during the lifetime of the building, reducing internal management staff, saving energy expenses, having liquidity for (or higher return from) alternative investments, and increasing the residual value of their property as it reaches its end-of-service.

Large amounts of data from diverse stakeholders must be analysed and organised to create a map of direct and indirect costs and savings resulting from the reorganisation of the supply-chain. In the past fifteen years, universities have worked hard to improve databases, compare ratios, and generate management information to support campus decisions (den Heijer et al., 2016). Determining value and costs has become easier, but still requires thorough scenario and risk analysis for new business models. As has been proposed by other authors, public procurement offers a low-risk, long-term environment which can catalyse early adoption of innovation in technologies and processes (Edler & Yeow, 2016). To support this, practice-oriented research such as the one hereby presented provides intermediation between stakeholders with diverse, and often traditionally conflicting, commercial interests.

More effective decision-making tools could support long-term, multi-stakeholder planning, and unlock more sustainable contracting models for the construction industry, resulting in a lower consumption of energy and material resources. The business model and stakeholder analysis described in this paper show that, in principle, all stakeholder groups identify potential value creation in the pursuit of this Circular Economic-inspired model. It also shows that the key assumptions behind more sustainable industry practices within a CE and PSS frameworks can be achieved in such a specific and practical example as that of Façades-as-a-Service.

Significant shifts have to be done in certain areas: for example the transition from asset-based to cash-flow based financing of real estate described in the Financial section; as well as distributed ownership models based on fiscal economic ownership practices and creative application of apartment law, as described in the Governance section. However such shifts are not, in principle, radically innovative, and can build upon contracting and procurement models for which pertinent precedents exist.

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The impact of monument status on office rents

ABSTRACT

This paper is one of the first to investigate the presence of a monument premium for commercial real estate. We study a sample of offices located in monuments that were offered for rent and match them with offices without that status in the proximity. We find convincing evidence for a large premium, but only outside the Randstad area. The matching is crucial. Controlling for the age of the buildings and the treatment of service costs does not change our findings.

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INTRODUCTION

Historic buildings are an important historic urban amenity. Such amenities contribute to an attractive living environment as can be verified by comparing the vivid centers of many older European cities that attract many tourists and the CBDs of many U.S. cities that are predominantly concentrations of employment (Brueckner, Thisse, & Zenou, 1999).

The desire to conserve older buildings is the main reason for listing them as monuments. The fact that they are regarded by many as attractive does not necessarily safeguard them from demolition as other uses of the land on which they sit may be regarded as even more profitable. Although this may suggest that listing has a negative impact on the value of real estate, empirical studies have often found that there is a premium associated with it. The probable explanation is that for many monuments the restrictions imposed by the protected status are not binding and that the monument status signals the valuable aspects of the building that explains the listing. The latter effect may be reinforced by eligibility for subsidies or favorable tax treatment that may be associated with monument status.

The evidence that the net effect of these opposing forces is positive is based almost exclusively on the housing market. There is almost no evidence

for commercial real estate. Like for residential real estate, offices listed as monuments – which can be mansions that are no longer used for residential purposes – can have high architectural or historical quality. This can make them attractive for particular firm types, such as notaries or lawyers. However, the restrictions imposed by the monument status can be more binding for commercial real estate than they are for housing. For instance the utility that the owner-occupier derives from the cultural heritage embodied in a property may boost her willingness to pay for it, while employees doing their job only experience hindrance from inconvenient room sizes, old fashioned heating technology, lack of parking space nearby, et cetera. It is therefore an interesting question if the results found for residential real estate also hold true for offices.

To answer it, we collected data on office rents in the Netherlands. More specifically, we gathered information about monuments that were offered for renting. To be able to make the appropriate comparison with other offices we added information about non-monuments located geographically close by. This gives us a data base in which we can match monuments with other offices, while controlling for local variables that affect their value.

The paper proceeds as follows. Section 2 discusses the literature about pricing differences between monumental buildings or buildings with a historicizing architecture and non-monumental office buildings in general. In Section 3, the data and methodology are introduced. Section 4 reports the results and section 5 concludes.

LITERATURE

In what was perhaps one of the first attempts to measure the economic value of architectural quality, Hough & Kratz (1983) studied the willingness to pay of tenants to be in office buildings with recognized aesthetic excellence. They found a premium for new buildings with these characteristics, but not for old ones. As noted above, the later literature switched attention to residential real estate. For instance, Asabere, Hachey, & Grubaugh (1989) found that premium prices are associated with 'older architectural styles' like colonial, federal, garrison and Victorian. In a second exceptional contribution studying commercial real estate, Fuerst, McAllister & Murray (2011) showed that commercial offices designed by 'signature architects' achieve rental premiums. Moreover, Ahlfeldt & Mastro (2012) showed that houses designed by Frank Lloyd Wright increase the value of other housing in their proximity, thereby demonstrating the presence of external benefits associated with building design.

Since monuments are often selected on the basis of aesthetic (as well as historical) quality, this is suggestive of the presence of a premium for monument. This is indeed confirmed by a series of studies including Coulson & Lahr, (2005); Coulson & Leichenko, (2001); Lazrak, Nijkamp, Rietveld, & Rouwendal, (2014); Noonan & Krupka (2011). Buitelaar & Schilder (2017) showed that new housing with characteristics that imitate older housing can also command a price premium. Although it is regularly acknowledged in these studies that listing can have negative as well as positive effects on property values, attention focuses on measuring the net effect which turns out to be usually positive for the housing market to which they all refer.

The present study focuses on the willingness to pay of tenants for the net effect of monuments status of office space. This is an internal benefit, but it is important to acknowledge that cultural heritage may also provide external benefits as is confirmed by many of the works cited above. Indeed Koster & Rouwendal (2017) show that the external benefits associated with investment in cultural heritage are substantial and probably outweigh the subsidies involved. The subsidies they consider do not concern housing and there is reason to expect that the cultural heritage embodied in the office monuments studied in this paper generate similar external effects that may justify the subsidies relevant to them.

DATA

The data we used were collected from online rent platforms¹. The focus was on buildings with a monument status that were offered for rent in the period beginning at the third quarter of 2016 and ending in the third quarter of 2017. We only considered buildings listed² in the National Register of Monuments of the Cultural Heritage Agency of the Netherlands as monuments. For every monument the rent platforms were checked on availability for rent, using enhanced address data. The enhancement consisted of structuring and controlling the addresses and descriptions about the location of the monument with the BAG³.

The platforms only provide information on asking prices.⁴ In this period 217 office spaces in monumental buildings are compared with 195 non-monumental buildings nearby. For each monument, we searched for nearby offices at a maximum distance of 750 meters ('as the crow flies'). To illustrate, a monumental former warehouse in the centre of Alkmaar was matched to a newly built office at a distance of 200 meters, which appears to provide a reasonable alternative location for the company currently using the monument. The average distance between monument and matched office in the sample is 472 meters, where a monument can be matched with one or more non-monumental objects. In many cases more than one match was found for

FIGURE III-1 ► SPREAD OF MATCHES OF MONUMENTAL OBJECTS WITH NON-MONUMENTS AND DISTANCE.

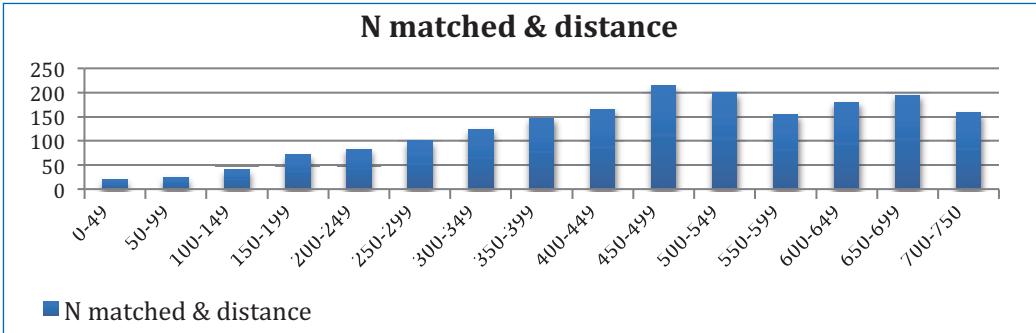
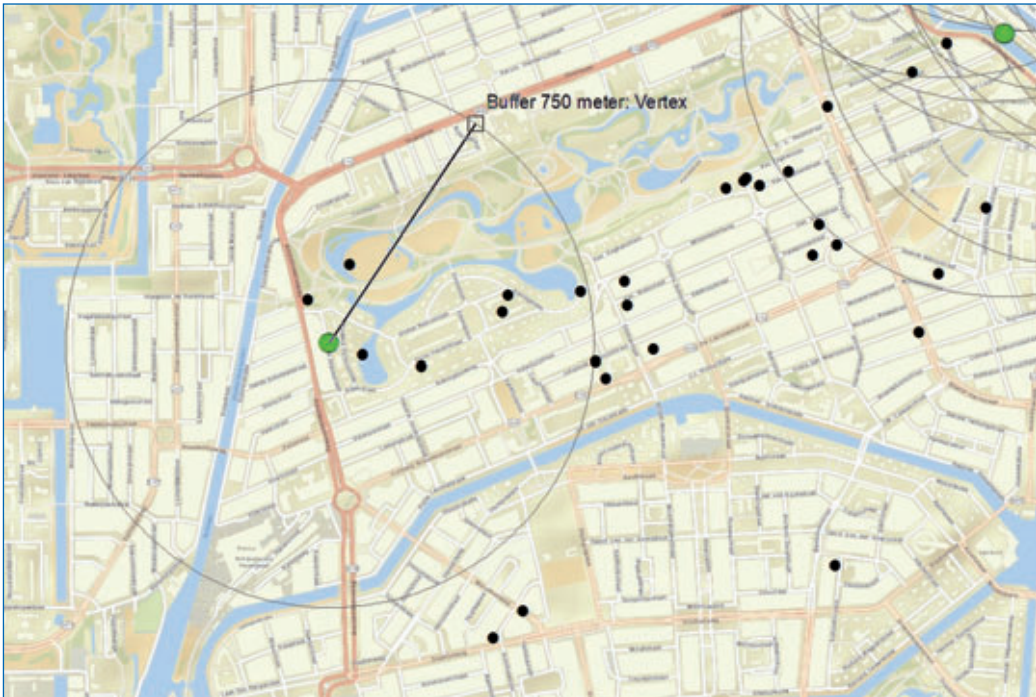


FIGURE III-2 ► LOCATION OFFICE SPACE IN MONUMENT (GREEN) AND NON-MONUMENTAL OFFICES (BLACK).



a monument. All such matches were included in the database. When no match could be found for monument, it was not included. Figure III-3 provides an illustration.

Information on office characteristics was often limited. At a minimum the address and the floor area was required. Where possible we noted the period of construction and information on service costs (who pays them and what is their value).

It will be clear from the description above that the dataset was constructed in such a way it eliminates the impact of site-specific locational factors, which are often difficult to observe by matching the monuments with the selected nearby objects. Formally, we use fixed effects at a fine geographical level. Apart from the matching based on distance, we also use 4 and 5 position postcode areas as the geographical units to which the fixed effects refer. The 4 and 5 position postcode areas are not circles

FIGURE III-3 ► EXAMPLE OF POSTCODE 4 AREA'S.



(see example 4 position postcode areas, figure III-3, but they usually include buildings at more than 750 meters distance. The 5 position postcode areas cover a few streets or parts of streets. The major disadvantage of the postcode areas is that their borders can separate offices that are very close to each other. An advantage can be that their borders often take into account natural or man-made barriers like waterways, railways and motorways which can separate areas that are substantial different in character, the small geographical distance notwithstanding.

The database we use contains information about 2,040 matches between monumental and non-monumental objects. Using the rent price information of office spaces in 207 monumental buildings. The average annual rent per sqm is just above €200 and is almost equal for monuments and other offices. More than 80% of the observation are from the three western provinces Noord-Holland, Zuid-Holland and Utrecht, which are the core economic region of the country.

Within this area the four big cities Amsterdam, Rotterdam, The Hague and Utrecht are the most important focal points of economic activity, with Amsterdam the most important. Almost three quarters of our observations refer to the four largest cities and almost two thirds to Amsterdam. Although most monuments are located in the western part of the country and many of them in the big cities with Amsterdam having the largest share, our data appear to be biased towards the Randstad area, although it should be noted that no data are available on the geographical distribution of monuments that are used as offices.

The lower part of Table I refers to service costs, which are generally regarded as an important variable that is closely related to rent, as such costs can be included as well as excluded from it. In our data, service costs are included only in the rents of approximately 2% of our observations. Service costs are known for half of the observations in the sample and amount to 10% of the net rent.⁵

TABLE 1 ► DESCRIPTIVES

Variable	# obs	Average	St. dev.	Min	Max
Monument	2,040	0.101	0.302	0	1
Rent/sqm	2,040	205.37	80.76	20.82	520
Core	2,040	0.821	0.383	0	1
Big4	2,040	0.749	0.434	0	1
Amsterdam	2,040	0.658	0.474	0	1
Service cost included	2,040	0.019	0.135	0	1
Unknown if service costs are included	2,040	0.225	0.418	0	1
Service costs per sqm	1,055	28,89	18,49	0.66	186.67

RESULTS

We use the natural log of the annual rent per sqm as the dependent. In the basic model only the monument status and the natural log of the number of sqm are used as explanatory variables. Table 2 presents the results. Model (1) does not have fixed effects and no monument premium is found. The other models use fixed effects to match monuments with objects that are close by. This has the effect of controlling for all (unobserved) factors that affect all objects belonging to a given group in the same way. Introduction of fixed effects at a detailed geographical level is therefore a powerful way to control for location factors. As discussed above, we can introduce fixed effects in three different ways. In model (2) fixed effects are present at PC4 level and we find a large and significant premium for monuments. Using PC5 fixed effects changes the results: the monument premium is

now insignificant and even the coefficient for floor area is only significant at 10%. Finally, when circular areas are used as basis for the fixed effects, we find a strongly significant monument premium of approximately 15%.

It seems possible that the monument premium differs over space. Been, Ellen, Gedal, Glaeser, & McCabe (2016) have recently found that preserved neighbourhoods on Manhattan commanded a positive premium in the less expensive areas and a negative one in the most expensive parts where pressure on the land is highest and the restrictions associated with monument status are binding hardest. To investigate this issue for the Netherlands, we interact a dummy for the three core provinces Noord-Holland, Zuid-Holland and Utrecht with the monument dummy.

TABLE 2 ► BASELINE SPECIFICATION

	(1)	(2)	(3)	(4)
Monument	0.035 (0.072)	0.101 (0.080)	0.302 (0.125)	0 (0.030)
Ln (Floor)	-0.185** (0.085)	-0.203*** (0.074)	-0.118* (0.064)	-0.203*** (0.014)
Fixed Effects	No	PC4	PC5	Circle
R ²	0.14	0.53	0.84	0.45
#obs	2,040	2,040	2,040	2,040

Standard errors are clustered at the level of the fixed effects (and PC4 for model (1)). There are 77 PC4 clusters, 247 PC5 clusters and 216 circular clusters. ***=significant at 1%, **=significant at 5%, * significant at 10%.

TABLE 3 ► RANDSTAD EFFECTS

	(1)	(2)	(3)	(4)
Monument	0.372*** (0.072)	0.295** (0.058)	0.372*** (0.072)	0.302*** (0.070)
Monument*Core	-0.281*** (0.078)		-0.266*** (0.090)	-0.258*** (0.082)
Monument*Big4		-0.225* (0.064)		
Monument*Amst			-0.024 (0.064)	-0.002 (0.060)
Ln(Floor)	-0.204*** (0.014)	-0.204*** (0.014)	-0.204*** (0.014)	-0.210*** (0.013)
Service cost included				0.281*** (0.064)
Unknown if service cost is included				-0.084*** (0.023)
Service cost when not included				0.002*** (0.0004)
Service cost missing				0.137*** (0.021)
Constr year cohort	No	No	No	Yes
Fixed Effects	Circle	Circle	Circle	Circle
R ²	0.46	0.46	0.46	0.51
#obs	2,040	2,040	2,040	2,040

Standard errors are clustered at the level of the fixed effects (and PC4 for model (1)). There are 77 PC4 clusters, 247 PC5 clusters and 216 circular clusters. ***=significant at 1%, **=significant at 5%, * significant at 10%.

The result is that for all four specifications used we find a much larger positive coefficient for the monument dummy and a negative coefficient of the same order of magnitude for its interaction with the core area. Except for the specification without fixed effects, the coefficients for the monument dummy and its interaction are significant at 5% or less. This suggests that monuments are strongly appreciated by firms but only outside the Randstad area, which is the economic core region of the Netherlands. We report the results of the regression using circular fixed effects as model (1) in Table 3.

To see if the monument premium is only muted in the large cities, we use in (2) the interaction with a dummy indicating that the monument is located in one of the four largest cities of the Netherlands: Amsterdam, Rotterdam, The Hague. Now we

find somewhat smaller effects for the monument dummy and its interaction, which suggests that the largest places are not so different from the rest of the western part of the Netherlands. Again, the equation using fixed effects based on circles is similar to those using fixed effects based on postcode areas.

To see if Amsterdam is special, we have also interacted a dummy for Amsterdam with that indicating monument status and used this interaction simultaneously with that for the three western provinces. Model (3) in Table 3 shows the results when fixed effects are based on circles. The result that Amsterdam does not significantly differ from the other parts of the Randstad is confirmed by the other specifications.

Although we have not much information about office characteristics, there is some that we can use. It is well known that reported or asked rents do not always tell the whole story about the cost of using real estate. In practice it can make a huge difference whether service costs are included or not. We have only information about this aspect for part of our sample. We have therefore introduced a dummy for service cost included in the asking rent jointly with a dummy indicating that this information is missing. We also know the value of the service costs for part of our sample and have included it in case the rent excluded these costs. Following the same logic as before, we introduced a dummy for unknown service costs in case they were excluded from the rent. Estimation results are reported as model (4) in Table 3. The estimated coefficients for monument status and its interactions hardly change. Nevertheless, the service costs variables are all very significant, which confirms the impression that they play an important role in the market. For instance, our results suggest that asking rents are some 30% higher if service costs are included.⁶

Finally, we have also included a number (11) of dummy variables referring to construction periods. This is in fact the only characteristic – apart from floor space – that is known for all objects in the sample. We find in most cases, this case included, strongly significant coefficients, although the results for the monument variables do not change. These dummies are also included in model (4) of Table 3.

CONCLUSION

In this paper the rents of offices situated in historical buildings are compared with those of non-monumental buildings in the proximity. We find a significant positive pricing effect in favor of monumental buildings of 15% when controlling for location through fixed effects defined on circles around monuments with a radius of 750m. Closer examination reveals that this effect does only occur outside the Randstad, the economic core region of the Netherlands, and that it is stronger there: around 30%. The premium appears to be absent everywhere in the Randstad, not just in the largest four cities. Amsterdam does not differ from the

other parts of the Randstad.

These findings are important because they indicate that the effort local and national Dutch governmental organisations put in to consolidating these buildings, often in collaboration with project developers, leads to a group of monumental objects which potentially can generate a structurally higher net rent. The higher rent can be interpreted as reflecting part of the social value associated with the refurbishment, which is often partly financed by subsidies or tax relief.

The absence of a monument premium in the Randstad area is a surprising finding. We related it to Been et al. (2016) who argue that historical districts in Manhattan only show a premium in areas where pressure on land use is relatively low. In the economic core area the negative impact of the restrictions associated with preserved status are larger than the positive vintage and related effects. This reasoning could also be relevant for the Randstad area. Alternatively, it may be the case that the larger and diversified local markets for real estate in the Randstad areas offer modern office buildings that are qualitatively similar to monuments that are not so often present outside this region.

ABOUT THE AUTHORS

Drs. Jan-Hylke de Jong is founder of research agency Fenicks BV, this company collects national information about the state of maintenance, use and vacancy of our monument portfolio. Jan-Hylke de Jong graduated in Spatial Planning at the University of Groningen on a thesis about real estate near infrastructure nodes.

Prof. dr. Jan Rouwendal graduated in spatial economics at Erasmus University Rotterdam (1983) and received his PhD at VU University Amsterdam in 1988 on a thesis about discrete choice models and housing market analysis. He is currently full professor at this university. He is also affiliated as a research fellow to the Amsterdam School of Real Estate & Tinbergen Institute.

NOTES

- 1 For instance www.fundainbusiness.nl. Sometimes information from different sites providing complementary information about an object could be used.
- 2 Monuments designated by provinces and municipalities are not included in this research.
- 3 In The Netherlands a total of 16.335.579 building are registered in the Basisadministratie Adressen en Gebouwen (source BAG: 01-02-2018). Of this total group of buildings it is estimated that about 85.000 objects, consisting of voluminous monuments, are registered in the National Register of Monuments of the Cultural Heritage Agency of the Netherlands (Cultural Heritage Agency 2018). The proportion of National monuments is therefore $85.000/16.335.579 = 0,52\%$.
- 4 We thus have to assume that the difference between asking price and transaction price is not systematically different for monuments and other offices.
- 5 We would have liked to introduce other control variables, but the data set has clear limitations in this respect.
- 6 The coefficient for 'service cost included' equals 0.281, implying that such rents are $\exp(0.281) = 1.32$ times as high as those with service cost excluded and all else equal.

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Lending restrictions for mortgage loans in Ireland and the Netherlands

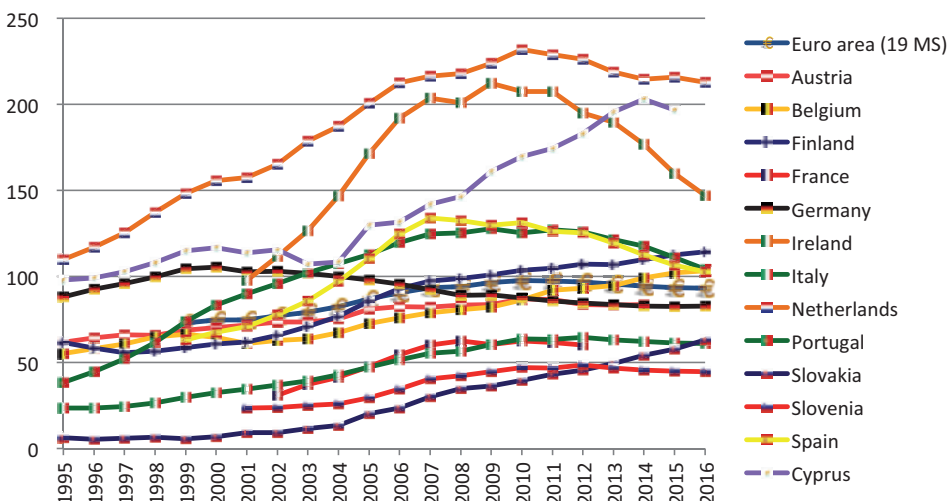
Roughly 10 years ago the financial crisis started, with credit-financed housing booms and increasing leverage of households and banks at its heart. In my PhD thesis,¹ I analysed the instruments which have been created or reformed in reaction to the crisis in order to restrict lending and borrowing. A core question in my thesis is whether these instruments can be effective in restricting household debt levels, given their legal design. Debt-service-to-income (DSTI), loan-to-income (LTI) and loan-to-value (LTV) limits in the Netherlands and Ireland are among the instruments which I analysed. This article shows that there are considerable differences in the design of these limits in these countries, which matter for their effectiveness. In both countries, there are still gaps that can undermine the effectiveness of the rules. This may weaken the protection against booms and busts. The differences in design also affect how much own responsibility lenders retain.

Author: Arien van 't Hof

In the years before the crisis, household debt levels in almost all EU countries strongly increased, especially in the Netherlands and Ireland (figure 1). This was possible because – among other things – many banks lowered their lending standards under competitive pressure, and because they could pass on risks through securitisation. In various countries, households were willing to

borrow more due to over-optimism about rising housing prices and underestimation of risks. Mian and Sufi (2015) explain how debt amplifies a boom by increasing the buying power of those who are over-optimistic about the value of houses. Meanwhile, high debt levels make households vulnerable for declining income or rising interest rates. Frequently, a bursting housing bubble results

FIGURE 1 ► GROSS DEBT TO INCOME HOUSEHOLDS (IN %)



Source: Eurostat

in surging non-performing loans (NPLs), reduced economic growth, and financial instability. After house prices started falling in the Netherlands (ultimately -20%) and Ireland (ultimately -50%), both countries indeed experienced several years with negative economic growth. Meanwhile, NPLs on mortgages in the Netherlands remained low, but in Ireland they exceeded 15% since 2012 (till at least 2017).

To avoid these problems from happening again and to protect consumers, Dutch and Irish authorities introduced rules to restrict lending to households in the past years, together with other reforms, including reduced or phased out mortgage interest deduction. These rules include DSTI, LTI and LTV limits. The first two are mainly meant for ensuring that households have sufficient repayment capacity, also if they face adverse shocks. A LTV limit reduces the risk of residual debt for households, and restricts the loss given default for lenders, if they have to sell the property after a default. The limits also reduce room to loosen lending standards during a boom, and thus help to curb credit growth.

The creation of these lending restrictions assumes that restricting own responsibilities of borrowers and lenders is necessary for protecting consumers and the stability of the financial system. Behavioural economic research has indeed confirmed that people might make irrational decisions, because they may underestimate risks, favour the short-term over the long-term, and act in herd-fashion (Ramsay, 2012). Lenders might also take too much risks due to euphoria about rising house prices, competitive pressure, or possibilities to pass on risks. Ever-increasing optimism about rising house prices may especially occur where housing supply is inelastic (Glaeser et al., 2008).

However, are the rules able to effectively influence household debt levels? Based on my PhD thesis, this article discusses some of the preconditions which rules – including borrower-based limits – have to fulfil in order to be able to be effective in attaining this goal. It shows how the different

choices of Dutch and Irish authorities affect the effectiveness of DSTI, LTI and LTV limits, as well as the degree of responsibility of borrowers and lenders themselves. The different choices make the Dutch and Irish rules interesting to study. Moreover, this perspective complements discussions about the calibration of these limits, as well as quantitative empirical research into the effectiveness of macroprudential policy, which usually abstracts from the legal nuances of the instruments.

PRECONDITIONS FOR EFFECTIVENESS

For being effective, rules must fulfil certain preconditions. Among other things, they must be determinate and complete. Determinacy means that law ‘can be intelligibly identified and applied to the underlying facts.’ (Orakhelashvili, 2008, p. 22). If rules are (1) vague, (2) ambiguous, or (3) too general, lenders may be unaware of what is expected from them or can purposely abuse the indeterminacy to act against the spirit of the rules. Vagueness entails that borderline cases are present, for which it is unclear whether rules apply or not (Poscher, 2012). This may be the result of imprecise language or difficulties with delineating or classifying the subject-matter of the rules. Sometimes, causes of indeterminacy coincide, such as with open-ended norms, which usually are both general – i.e. underspecified – and vague. Reading rules in accordance with their plain meaning, in light of their context and aims, should suffice to understand them. Completeness means that the rules cover the subject-matter which they regulate entirely (Orakhelashvili, 2008). This requires that (1) their scope includes all relevant types of debt, borrowers, and lenders, (2) gaps due to inconsistency or silence about relevant issues are absent, and (3) exceptions are subject to clear and protective conditions. Otherwise, gaps and loopholes can trigger circumvention and may render rules partly ineffective.

Yet, often there is a tension between creating rules which are both determinate and complete. An encompassing and straightforward rule can be both, but might be blunt and not aligned to actual risks. This problem can be tackled with a

complex and detailed rule. However, this may in turn increase the risk of a gap, especially if new developments change the regulated market, and the rule are not entirely appropriate anymore. These gaps increase the risk of creative compliance. This means that lenders engage in box-ticking and formal compliance with the rules, but act against their purpose. Instead, principles can be fine-tuned to actual risks and can capture new developments, because they point towards an aim or direction. However, they lack the determinacy of rules. This leaves more responsibility for lenders, but also requires that they act in the best interest of a borrower and of the society. Indeterminacy may also be used to act against the purpose of the rules.

Assessing whether rules are determinate and complete requires doctrinal and comparative legal research, thus text analysis. Comparative legal research includes mapping differences and similarities between legal systems. Hermeneutic methods used in this research are literal, teleological and systemic interpretation. The latter two stand for interpretation based on the purpose and legal context of the rules. Through interpreting and comparing these borrower-based limits, it can be determined to what extent the various elements of determinacy and completeness are fulfilled.

IRELAND: MACROPRUDENTIAL LENDING RESTRICTIONS

Ireland experienced a strong housing boom and bust, leading to high levels of arrears, widespread negative equity, and a sharp decline of GDP. Subsequently, various sets of rules have been adopted with a view of preventing the negative consequences of high debt levels. From a macroprudential perspective, the Central Bank of Ireland (CBI) enacted LTV and LTI limits in February 2015 by means of Statutory Instrument 47/2015.ⁱⁱ Their primary aim is to improve the resilience of banks and households to shocks. Their secondary objective is to reduce pro-cyclical dynamics between mortgage lending and housing prices through limiting possibilities for loosening lending standards during booms (Central Bank of Ireland, 2014).

The LTI limit is 3.5 and applies to housing loans supplied for primary dwellings. Income is borrower's total gross annual income, before tax and other deductions. It is not further delineated what counts as income. Compared to the Dutch detailed definition of income, this may give lenders some room to interpret this widely. The LTI limit is accompanied with so-called allowances or proportionate margins: each year, every lender may provide 20% of the monetary amount of newly supplied loans to first-time buyers with a LTI limit higher than 3.5. In other words, up to 20% of new loans for first-time buyers may be non-compliant with the LTI limit. For non-first-time buyers this percentage is 10%. Despite the allowances, on average a lender must still comply with the LTI limit. The LTI cap is not differentiated for various incomes, which makes it blunt. However, lenders also have to respect the more fine-tuned consumer protection rules (see below).

The LTV limit for owner-occupied residential property is 90% for first-time buyers and 80% for non-first-time buyers (it is 70% for buy-to-let mortgages). The LTV limit for first-time buyers is higher to meet worries that they could not buy a house. The allowances are 5% for first-time buyers and 20% for non-first-time buyers. For calculating the LTV limit, lenders may use the market value of the house. As this value is subject to boom and bust dynamics, borrowers (and lenders) are not protected against short-term, speculative elements which may enter the valuation. Due to the crisis, house prices in Ireland have fallen more than 50%, and at the end of 2017 prices were still more than 20% below the pre-crisis peak. In contrast, short-term, speculative elements must be disregarded in a valuation based on the mortgage lending value (as some member states require to use instead of the market value, when calculating LTV ratios for covered bonds or capital requirements).ⁱⁱⁱ Both the LTI and LTV limits do not apply to switcher mortgages. For the LTV limit, there is an exception for borrowers with negative equity, i.e. where the amount of the existing housing debt exceeds the value of the house.^{iv}

The CBI tried to limit the room for circumvention of the caps, and hence to ensure their completeness. Firstly, all regulated financial service providers are subject to the rules.^v So, the scope is much broader than banks. Almost all relevant lenders are in scope, except for local authorities that provide mortgage loans to households which are unable to obtain a loan from a bank or building society. However, this concerns only 1% of total lending. Secondly, barring a few specific exemptions (which are generally subject to clear conditions), the LTI and LTV limits apply to all loans being or to be secured on a residential property in Ireland.

Despite their wide scope, the LTI and LTV limits can be evaded due to the absence of a debt-to-income limit or a requirement to take other loans into account. Therefore, consumers may resort to more expensive and riskier unsecured loans. To reduce possibilities to by-pass the limits, the Central Bank of Ireland established that 'a lender shall not engage in a practice, enter into an arrangement or transaction, execute a document or structure or restructure a loan for the purpose or having the effect (...) of avoiding the obligations under' the regulation which establishes the LTV and LTI limits, whether avoiding the rules is the sole or primary intention or effect or not.^{vi} This rule can prevent that a lender offers unsecured loans besides the maximum allowed secured housing loans. Yet, it cannot avoid that another lender extends an unsecured loan, since that lender is not subject to this rule. It would have been possible for the CBI to close this loophole by requiring lenders to take other loans into account, as the Consumer Protection Code 2012 (see below) obliges lenders to collect this information.^{vii}

IRELAND: LENDING RESTRICTIONS FOR PROTECTING CONSUMERS

In 2016, the EU rules on the assessing a consumer's creditworthiness, as included in the Mortgage Credit Directive (MCD), are transposed in Irish law, almost *verbatim*.^{viii} The MCD requires lenders to assess the creditworthiness of a consumer before providing a loan. This assessment must be thorough and take appropriate account of all

relevant factors. The information on which the assessment is based, must include the consumer's income and expenses and other relevant financial and economic circumstances. However, an explicit requirement to take existing debt into account has not been included in the final text of the MCD, although it was part of a draft version.

A lender is allowed to provide credit if 'the creditworthiness assessment indicates that the consumer's obligations resulting from the credit agreement are likely to be met in the manner required under that agreement.'^{ix} Repayment capability is considered the key factor; the creditworthiness assessment 'shall not rely predominantly' on the fact that the LTV ratio is below 100%, or the house value will rise.^x The duty to deny credit has been introduced, because the European Commission (2011a,b) was worried that consumers will make wrong decisions, out of "short-termism". It also feared careless lending, because lenders may competitive pressure on underwriting standards and can transfer the risks to other parties. This obligation restricts the own responsibilities of borrowers and lenders. Nevertheless, phrases as 'are likely to be met' and 'shall not rely predominantly' are imprecise and inherently vague, which diminishes the determinacy of the rules and their restrictive effects.

In addition, Irish lenders have to respect the Consumer Protection Code (CPC) 2012, which includes an affordability and suitability check. The CPC 2012 is adopted by the CBI, based upon its power to draw up codes of practice.^{xi} The High Court characterises codes of conducts adopted by the CBI as 'not entirely a species of "soft" law, i.e., purely precatory statements not susceptible of legal enforcement'.^{xii} The CBI can indeed enforce the CPC 2012 with the same administrative sanctions for enforcing hard law. The CPC 2012 prescribes lenders to gather and record sufficient information from the consumer, before offering, recommending, arranging or providing a loan, and to take this into account in the affordability assessment.^{xiii} This information should

contain details about the consumer's personal circumstances – including employment status, dependents (such as children), and known future changes – and financial situation – including income, debts and financial commitments. So, the CPC 2012 is not silent about the relevant factors which lenders should consider. The CPC 2012 contains provisions to ensure that consumers could bear an interest rate increase. If loans don't have a fixed-rate period of at least five years, a lender must assess whether a consumer is able to repay the loan if the interest rate will increase with 2 percentage points.^{xiv}

The CPC 2012 does not impose quantitative borrowing limits, nor a duty to deny credit in case of a negative outcome of the assessment. Nevertheless, if credit is not covered by the MCD, the lender 'must take account of the result of the affordability assessment when deciding whether a personal consumer is likely to be able to repay the debt for that amount and duration in the manner required under the credit agreement.'^{xv} The CPC 2012 does not indicate how lenders should take this into account. So, while the LTI limit is relatively blunt, the MCD and CPC 2012 require Irish lenders to take the specific circumstances of each household into account, including debts and dependents. However, these consumer protection norms are less determinate than the LTI limit. Indeed, apparently, the CBI did not consider its own rules of the CPC 2012 sufficient for guaranteeing the resilience of households; otherwise, it would not have to introduce a macroprudential LTI limit a few years later.

NETHERLANDS: MACROPRUDENTIAL REGULATION AND CONSUMER PROTECTION

In the Netherlands, regulatory lending restrictions for mortgage credit are in force since 1 January 2013, in the form of DSTI and LTV limits. The LTV limit is 100% since 1 January 2018, while the DSTI limits vary between 10.5-43.5% in 2018, depending on the income of the borrower and the interest rate on the loan (every year, the Minister of Finance adopts the DSTI limits). These limits are part of the *Tijdelijke regeling hypotheckair krediet*

(Trhk, Temporary regulation of mortgage credit), which is based on art. 115 *Besluit Gedragstoezicht financiële ondernemingen Wft* (Bgfo, Decree on Conduct of Business Supervision of Financial Undertakings under the Wft). In turn, this provision is based on art. 4:34 *Wet op het financieel toezicht* (Wft, Act on Financial Supervision), which aims to protect consumers from overindebtedness.^{xvi} Art. 4:34 Wft prohibits lenders to enter into a credit agreement or to increase the total amount of credit if this would be irresponsible in the light of overextension of credit. The regulatory LTV and DSTI caps have also been introduced for the sake of financial stability.^{xvii} The Trhk comes on top of (i) own criteria which lenders have to develop for preventing an overextension of credit to consumers (art. 115(1) and (4) Bgfo), and (ii) a code of conduct for mortgage loans, a form of self-regulation by the banking sector.^{xviii} Prior to 2013, this code of conduct already included DSTI and (since 2011) LTV limits.^{xix} Art. 4:34 Wft and the rules based on it, function also as the Dutch implementation of the consumer protection rules on the creditworthiness assessment of the MCD. Hence, there are no separate macroprudential and consumer protection rules, like in Ireland.

The rules within the Trhk are both too a large extent determinate and complete. This is mainly a consequence of the fact that this ministerial decree contains many specific and technical rules, which minimises the room to act against the purpose of the rules by using gaps. Three notable features of these rules are:

1. The DSTI limits are calculated by taking half of the difference between the actual expenditures of Dutch households, as measured by a continuous budget survey of the Dutch statistical agency, and the required minimum livelihood expenses, as determined by Nibud.^{xx} As the DSTI limits vary per income, they are less blunt than the Irish LTI limit. Vulnerable households with low income can be sufficiently protected, while households with a higher income are allowed to spend more on their mortgage. However, the rules take a two-person household as prototype. In this respect, the level of protection may be inaccurate for

other types of households. The rules require more than mechanical application.

2. There are detailed rules on calculating actual DSTI percentages. For example, for calculating the borrower capacity for households which take out a mortgage loan with a fixed-rate period of less than ten years, lenders have to use an interest rate set by the conduct of business supervisor, the AFM (Authority for the Financial Markets). This rate is currently set at 5%, which prevents that households could not cope with a sudden interest rate rise. Also, in principle, only the current fixed and durable income of a consumer may be taken into account.^{xxi} The Explanatory Memorandum contains a list of types of income, which counts as such. So, income is precisely defined, adding the completeness of the rules. Yet, two future sources of income may be included as well: (1) future available income from disposable capital, if it can be reasonably expected and (2) an expected future structural increase of income within a reasonably term. This can be up to several years, according to the explanatory memorandum.^{xxii} Taking account future sources of income facilitates consumption-smoothing, but may also lead to procyclical lending. The relatively vague wording of this rule leaves responsibility for borrowers and lender to act prudently.
3. Mortgage lenders are required to take other loans of consumers into account in the calculation, by either adding it to the actual financing costs or deducting them from the DSTI limit.^{xxiii} This reduces the room for circumvention, as it limits the possibility to substitute consumer credit for mortgage credit. The existence of a credit registry enables lenders to check most of the relevant information. However, some debts, such student loans, are not recorded in the credit registry.

The Trhk allows using the market value of the house when calculating the LTV limit, like the Irish rules do. The Dutch rules allow borrowing up to a LTV ratio of 100%. Therefore, it may be a bigger concern than in Ireland that the use of the market value does not offer protection against short-term, speculative

valuation effects. Note that also in the Netherlands house prices have fallen after the crisis, on average with more than 20%.

The Trhk contains a range of possible exceptions for the DSTI and LTV limits. Most of them are related to specific situations, subject to precise conditions which prevents the risk of loopholes. Apart from that, exceeding the LTV limit is allowed when a borrower's actual DSTI percentage is substantially lower than the DSTI limit – which is not further specified, and thus partly vague.^{xxiv} The rationale is that borrowers with relatively low debt-service costs should be able to repay their debt without problems, which reduces the risks of exceeding the LTV cap. Moreover, it is allowed to exceed the DSTI limit, if a lender can motivate and substantiate by means of documents and calculations that providing credit is justified, even though the limit is exceeded.^{xxv} Then, the lender must verify whether reasons underlying the deviation are durable.^{xxvi} These conditions – which in fact create a comply-or-explain mechanism – are safeguards against overextending credit to consumers against the purpose of the rules. These conditions are also necessary, as the AFM observed in the past that lenders assumed, without substantiation, that the income of a borrower would rise.

The scope of the DSTI and LTV limits is encompassing. They apply to credit which is secured on residential property. Barring a few exceptions, the rules of the Wft, on which the caps are based, apply to all credit supplied to consumers in the Netherlands in the pursuit of a profession or business. However, if Dutch consumers take out unsecured loans besides a mortgage, the Trhk does not apply to the unsecured loan itself (note that existing unsecured debt has to be taken into account when calculating the DSTI ratio, as mentioned above). Then, members of the NVB and the VFN, the unions for banks and non-bank credit providers, are subject to codes of conduct.^{xxvii} However, these codes of conduct apply beyond the membership of the NVB and VFN. Courts namely accepted the stance of the AFM that these codes of conduct serve as a minimal interpretation

of the open norm art. 4:34 Wft and considered this sufficiently clear and determinate.^{xxviii} So, the AFM checks whether own criteria of lenders who are not member of the NVB or the VFN, offer the same degree of protection as these codes of conduct.

According to these two codes of conduct, unsecured credit meant for purchasing a house may only be supplied if the norms of the code of conduct for mortgage loans are respected. Unfortunately, these norms are not fully aligned with the rules of the Trhk. For instance, they allow a LTV ratio of 106% since 2011, which is not changed afterwards. This creates a loophole to supply unsecured credit besides a mortgage. If the unsecured loan is taken out later than the mortgage, the requirement of the Trhk to take other debt into account cannot prevent borrowing above 100% of the value of the house. Moreover, for providing unsecured credit for *remodelling* an own house neither the Trhk, nor the norms of the code of conduct for mortgage credit apply.^{xxix} Only the lighter norms of the NVB and VFN codes of conduct on consumer credit apply.

CONCLUSIONS

Are the rules in Ireland and the Netherlands able to effectively influence household debt levels? If so and if calibrated at the right level, they may contribute to preventing an overheating housing market by limiting a loosening of lending standards and excessive credit growth. In many ways, the rules are well-designed to do this. Most aspects of the Dutch and Irish borrower-based limits are determinate. However, some vaguely worded rules – such as the Dutch exception for taking future income into account – may bend during periods of optimism about rising house prices, or under competitive pressure. This exception can even function procyclical. Also, Irish consumer protection law implementing the MCD contains some inherently vague phrases.

The lending restrictions in both countries are not entirely complete, as there are gaps remaining. The legal analysis shows that both countries have set the scope of the rules as wide as possible, which

is necessary to avoid circumvention. However, in itself this is not enough to preclude circumvention, as it is essential to oblige lenders to take unsecured credit or total debt levels into account. In Ireland, this is not mandatory. In the Netherlands, unsecured borrowing besides the mortgage cannot completely be avoided, because the codes of conduct are not fully aligned with the Trhk. It is the responsibility of the organisations which drafted these codes of conduct, to ensure that they are aligned with the Trhk. Moreover, both countries allow the use of the market value of a house for calculating the LTV ratio. This is understandable from a practical viewpoint but reduces protection against the effects of booms on the valuation of the house. This would not be the case with valuations based on the mortgage lending value, as some countries oblige in other contexts. The risks of high valued houses are larger if the LTV ratio is 100%, like in the Netherlands.

The conditions attached to the use of exceptions are more protective in the Netherlands than in Ireland, adding to the completeness of the rules. In both countries tailor-made solutions to accommodate credit supply to the needs of individual borrowers, are possible. In Ireland, exceeding the limits is allowed, subject to a proportionate margin. In the Netherlands, DSTI limits are binding for individual borrowers, but they can be exceeded, if it can be justified that credit can be provided responsibly. As this requires explicit justification, borrowers are better protected. Moreover, the Dutch differentiated DSTI limits offer more protection to vulnerable, low-income households than the undifferentiated Irish LTI limit. In Ireland, this protection is offered by consumer protection rules, which are less determinant than quantitative limits.

Yet, the detailed Dutch rules may convey the erroneous impression that it suffices for lenders to adhere to the Trhk. With the broad-brushed Irish rules, it is clearer that lenders also have their own responsibility to evaluate whether lending is justified, especially because the lenders also have to meet separate rules on assessing creditworthiness.

However, also in the Netherlands it is not enough to simply stay within the rules. Lenders still have the responsibility to develop own criteria for preventing an overextension of credit (art. 115 Bgfo). So, even if extending credit would not entail a violation of the Trhk, Dutch lenders should consider whether lending is prudent considering an overextension of credit. Also, when making use of exceptions, lenders should ask themselves whether they act in the spirit of the rules. This is even more important as rules are not differentiated enough to account for all risks, for instance because only one household type is used in the calculations.

Ireland introduced the duty to deny credit in 2016, with the implementation of the MCD. So, this paradigm shift – which acknowledges findings from behavioural economics and accordingly created new responsibilities for lenders – occurred later

than in the Netherlands.^{xxx} In the Netherlands, this obligation already existed prior to the transposition of the MCD. Still, the legislative history of the predecessors of art. 4:34 Wft, in previous acts, shows that there was never the intention to remove the borrower's own responsibility (cf. Broekhuizen and Labeur, 2006). Also a borrower should not simply stay within the rules, if only because the rules are not entirely determinate and complete.

ABOUT THE AUTHOR

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NOTES

- i This article reflects findings of my PhD thesis "The Regulation of Household Debt Levels in the EU and Three of its Members States: Evaluating the Legal Preconditions for Effectiveness", and findings of Van 't Hof (2017).
- ii S.I. 47/2015, Central Bank (Supervision and Enforcement) Act 2013 (Section 48) (Housing Loan Requirements) Regulations 2015, available at <http://www.irishstatutebook.ie/eli/2015/si/47/made/en/print>. This S.I. has been amended by S.I. 568/2016, *Central Bank (Supervision and Enforcement) Act 2013 (Section 48) (Housing Loan Requirements) (Amendment) Regulations 2016*, available at <http://www.irishstatutebook.ie/eli/2016/si/568/made/en/print>, and by S.I. No. 559/2017, Central Bank (Supervision and Enforcement) Act 2013 (Section 48) (Housing Loan Requirements) (Amendment) Regulations 2017, available at <http://www.irishstatutebook.ie/eli/2017/si/559/made/en/print>.
- iii In Germany, this is the prescribed method for calculating the LTV ratio for covered bonds: see §14 and 16 *Pfandbriefgesetz*, and the *Beleihungswertermittlungsverordnung*.
- iv Regulation 6(5) in combination with regulation 2(1) of S.I. 47/2015. The exemption applies too if the loan is advanced to more than one person and only one of them has negative equity (regulation 2(3) of S.I. 47/2015).
- v Regulation 2(1) of S.I. 47/2015.
- vi Regulation 3(2) of S.I. 47/2015.
- vii Now a credit registry has been set up, which is partly operational since March 2018, it is easier to impose and also to enforce this requirement.
- viii For the creditworthiness assessment, see art. 18-20 of Directive 2014/17 of the European Parliament and of the Council of 4 February 2014, OJ 2014, L60/34. These three articles are transposed into Irish law by means of regulations 19-21 of S.I. 142/2016, European Union (Consumer Mortgage Credit Agreements) Regulations 2016, available at <http://www.irishstatutebook.ie/eli/2016/si/142/made/en/print>
- ix Regulation 19(5) S.I. 142/2016.
- x Regulation 19(3) S.I. 142/2016.
- xi The CPC 2012 is available at <https://www.centralbank.ie/regulation/consumer-protection/consumer-protection-codes-regulations>. The CBI can draw up codes of practice based on, inter alia, section 117(1) Central Bank Act 1989, available at <http://www.irishstatutebook.ie/eli/1989/act/16/enacted/en/index.html>, and based on 8H(1)(f) Consumer Protection Act 1995 as inserted in the Consumer Credit Act by means of the Central Bank and Financial Services

Authority of Ireland Act 2003, available at <http://www.irishstatutebook.ie/eli/2003/act/12/enacted/en/html>.

- xii *Irish Life and Permanent v. Financial Services Ombudsman* [2012] IEHC 367, para. 55.
- xiii See in particular chapter 5 of the CPC 2012.
- xiv See provisions 5.9-5.14 CPC 2012.
- xv Provision 5.13 CPC 2012, and the addendum of July 2016 to the CPC 2012.
- xvi The Trhk is available at <http://wetten.overheid.nl/BWBR0032503>, the Bgfo at <http://wetten.overheid.nl/BWBR0020421>, and the Wft at <http://wetten.overheid.nl/BWBR0020368>.
- xvii See <https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/kamerstukken/2012/05/25/visie-toekomstbestendigheid-hypotheekrenteaftrek-reactie-motie-kuiper-c-s/visie-toekomstbestendigheid-hypotheekrenteaftrek-reactie-motie-kuiper-c-s.pdf>.
- xviii The code of conduct for mortgage loans is available at <https://www.nvb.nl/publicaties/gedragscodes/1936/gedragscode-hypothecaire-financieringen.html>.
- xix In addition, the conditions and norms of the Dutch mortgage guarantee scheme, the NHG, included DSTI limits as of 1995.
- xx For an explanation of the methods used by Nibud (*Nationaal Instituut voor Budgetvoorlichting* (National Institute for Family Finance)), the institute which proposes these ratios: Nibud (2017), chapter 2.
- xxi Art. 2(1) Trhk.
- xxii Art. 2(3) Trhk and Explanatory Memorandum to the Trhk, available at <https://zoek.officielebekendmakingen.nl/stcrt-2012-26433.html>.
- xxiii Art. 3(1) Trhk.
- xxiv Art. 5(5)(d) Trhk.
- xxv Art. 4(1)(a)-(b) Trhk.
- xxvi Art. 4(1)(c)-(d) Trhk.
- xxvii The VFN code of conduct, applicable since January 2014, as well as an explanation to it, can be found via <http://www.vfn.nl/nl/normen-en-gedragscodes/gedragscodes>. The NVB code of conduct, applicable since 2012, as well as the actual minimum standards, can be found via <https://www.nvb.nl/publicaties-standpunten/publicaties/1743/gedragscode-en-normen-consumptief-krediet.html>.
- xxviii See e.g. CBB 28 November 2013, NL:CBB:2013:260, JOR 2014/41, para. 5.5.
- xxix Art. 1 and the explanation of the VFN code of conduct.
- xxx Yet, the CPC 2012 already includes a suitability assessment, meaning that a lender must assess whether the credit matches the consumer's needs, objectives and risk profile. This obligation also assumes a vulnerable instead of a rational consumer.

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