Preface

It is a pleasure for us to present you with this Book of proceedings, consisting of the scientific contributions accepted for publication at the 6th Malmö Real Estate Research Conference, in Malmö 2017. The purpose of the conference is still the same: to gather scholars from different academic disciplines working on the real estate sector.

We would like to thank our session chairs and their assigned reviewers for their insightful and timely contributions.
Simon Siggelsten; for Design and Construction
Peter Palm; for Finance and Appraisal
Martin Grander; for Housing
Ola Jingryd & Sylwia Lindquist; for Real estate law and compared studies
Ju Liu & Karin Staffansson Pauli; for Innovation in real estate organization and management
Helena Bohman; for Urban and regional development

In all 27 papers were presented and 17 of them are published here as work in progress papers. Papers that we hope to see published in the near future.

We would like to thank Zahra Hamidi for the practical arrangements during the conference.

We are able to organize this conference thanks to generous funding from the professional training program for real estate brokers (in Swedish Uppdragsutbildningen till Fastighetsmäklare - FMU) and Katja Lundquist. This program started 2002 with the purpose to provide higher education for active real estate broker assistants with the need to upgrade their academic skills in order to become brokers.

Magnus Andersson
Conference chair
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Individual Metering and Charging of Heat in Energy Efficient Buildings

Introduction

The European commission puts pressure on its member countries with the EU-directive 2012/27/EU to implement individual metering and charging (IMC) of energy consumption in multi-apartment buildings. With IMC, each apartment is supposed to pay only for its own consumption and hence this should lead to an awareness of costs and to a reduced consumption. So far, only a few member countries have implemented IMC in a larger scale e.g. Germany and Denmark. Sweden has recently implemented a new law on energy measurement in buildings (SFS 2014:267) which was to take effect in June 1, 2016 for heat and hot water in new multi-apartment buildings. However, as in the EU-directive 2012/27/EU there is an exception in the law, which means that IMC should only be installed if it is technically feasible and cost-efficient. The Swedish government assigned Boverket (The Swedish national board of building and planning) to investigate whether it is or not.

In October 2014, Boverket delivered the verdict for IMC in new construction and renovated buildings in Sweden. Based on a comprehensive investigation Boverket suggests that IMC for neither heat nor hot water should be required in these cases (Boverket, 2014). In September 2015, Boverket delivered the second verdict, this time for existing buildings, with the same result as before (Boverket, 2015). Boverket assesses IMC of heat and hot water as non-cost-efficient, both in new construction, renovated buildings and existing buildings in Sweden. The Swedish government accepts Boverket’s assessment and they will not introduce a new regulation for IMC. However, Boverket are instructed to monitor if the conditions are changing (Government Office of Sweden, 2016).

In parallel with the discussion whether IMC of heat and hot water are cost-efficient or not, there is another discussion about fair heat costs allocation. When measuring the amount of heating energy delivered to an apartment, which is advocated by the European Parliament, the main issue is heat transfer between adjacent apartments (Siggelsten, 2015). Due to lack of insulation between adjacent apartments heat leaks from apartments with a higher indoor temperature to ones with a lower indoor temperature. This can lead to cases when apartments are gaining all or almost all of their heating needs from its neighbours, which can be perceived as unfair (Siggelsten, 2014). However, there is one important question to answer: What is the most accurate, allocating heat cost by the space area or by measuring the delivered amount of heating energy?

The European Commission DG ENERGY has commissioned empirica, a research and consulting firm in Bonn, Germany, to analyse best practice across Europe regarding individual metering for heating. Five workshops were held in total, in Sweden, Spain, Netherlands, Germany and Poland. In December 2016, empirica published a guideline with the purpose “to support Member State authorities and building owners in correctly and effectively implementing certain provisions of Articles 9-11 of Directive 2012/27/EU on energy efficiency (“EED”) concerning the consumption of thermal energy for heating, cooling and hot water in multi-apartment and multi-purpose buildings”.

The Purpose
The purpose of this study is to compare the accuracy of allocating heat cost by the space area with measuring the delivered amount of heat, in an energy efficient multi-apartment building with underfloor heating. The objective is to contribute with conclusions to the ongoing discussion about the IMC’s to be or not to be within the European Union, where the number of energy efficient multi-apartment buildings are increases rapidly.

Delimitation
The study is delimitated to only one building, which is an energy efficient multi-apartment buildings with underfloor heating located in southern Sweden. With a well-insulated building envelope the heat finds it difficult leaking through and therefore the proportion of heat leaking between adjacent apartments is greater in comparison with a building with poor insulated envelope. Underfloor heating is an additional factor that increases the amount of heat leaking between adjacent apartments.

Problematizing
Article 9 of Directive 2012/27/EU can surely be interpreted in different ways. The article calls for measuring the consumption of heat. However, are we supposed to measure the actual consumption of heat for an apartments or only the amount of heat delivered to an apartment? An individual meter is only measuring the amount of heating energy delivered to an apartment and an individual heat cost allocator are only measuring the amount of heating energy emitted from the radiators. Due to heat transfer between adjacent apartments, the actual consumption of heat can both be higher and lower depending on the temperature in the neighbour apartments. So, is it possible to measure the actual consumption of heat energy? Further, is the amount of heat leaking between adjacent apartments that significant? There is at least two ways to debate the latter question:

1. If you are measuring something, you should do it correctly within close tolerances.
2. You accept wider tolerances with the argument that it is better than not measuring at all.

How wide tolerance is acceptable when allocating heat costs in multi-apartment buildings, and can we accept a wider tolerance with the excuse that it is reducing the energy consumption?

Denmark is one of the few countries in the European Union that in an early stage adopted IMC. By year 1945 Denmark had 600 000 heat cost allocators installed (Boverket, 2015). Their rules and regulations for IMC were updated in 2014 and are now based on the Directive 2012/27/EU, considering cost efficiency and technical feasibility (Trafik- og Byggestyrelsen, 2015). The rules have been introduced to motivate a lower consumption, and according to their guidance for IMC, the average saving with IMC for the heat is about 10 per cent (ibid.). There is no advice against IMC when having underfloor heating in the guidance. However, there is an advice for using an allocation key (correction factors) based on the location of the apartment within the building, e.g. a reduction of the measured amount of heat if the apartment is located on a gable or on top an unheated parking garage.
In the guideline made by empirica (2016) there is an advice against IMC for the heat when having underfloor heating. In chapter 3.2 Technical feasibility, it is said:

There are some further special cases for which heat meters and heat cost allocators cannot be expected to deliver a reliable measurement of heat flow - such as where heat exchangers are built into the ceiling of one unit and also heat the floor of the unit above, or into building walls with similar effect. No reliable system is available to subdivide the heat flow into a flow upward and downward, so buildings with heating systems of this kind can be declared an exempted building class.

Previous studies

The fact that heat is leaking between adjacent apartments is the main issue if you are trying to divide the heating cost based on individual usage. Siggelsten (2014) showed on an example of the possibility for an apartment located in the middle of a building to gain almost all its heating need from the neighbours. However, the study also presented a method for estimating the size of the heat leaked. The method was tested on an existing multi-apartment building with 16 apartments and with a fairly high insulation standard. The principle of the model is to estimate the gap between the energy purchased and the energy needed to maintain a certain indoor temperature. The indoor temperature can be estimated by iteration, by knowing the thermal resistance between the apartments together with the building envelope. The method needs to be developed further, but it could be used for reducing the measurement error that occurs due to heat transfer between adjacent apartments.

A possible development of the above mentioned method is to use indoor temperature readings from heat cost allocators. Michnikowski (2017) describes how that can be done. A heat cost allocator has two temperature sensors. One is used to register the surface temperature of the radiator, and the other is used to register the temperature of the room. By using the logged temperatures, an average indoor temperature can be established for each apartment during a heating season. Further, with the indoor temperatures it is possible amend each individual apartment’s heat consumption.

It is not only the heat transfer between adjacent apartments that is an issue when measuring the heat individually in a multi-apartment building. In a study made by Siggelsten et.al. (2014) there was shown that the internal heat production, the location of the apartment within the building and the insulation standard of the building envelope were all significant factors affecting the accuracy with IMC of the heat. The significance of the location of the apartment in relation to the insulation standard, is also shown by Ling et.al (2015).

Ziemele et.al. (2015) conducted a study in a newly built apartment building in Riga with 168 apartments to investigate the possibility to achieve fair heat cost allocation. The specific building used in average 72 kWh per m² and year for space heating, and the study showed that the heat gain from uncovered heat riser pipes varied in the apartments between 4.1 percent and 22.5 percent. These heat gains are important and should be taken into account when applying heat allocators, especially in energy-efficient buildings.
Methodology

If you lower your indoor temperature the need of purchased heat lowers, not only due to the lowered indoor temperature but also due to a heat gain from your neighbours (if the neighbours have a higher indoor temperature than you, otherwise the heat loss to your neighbours will instead reduce). This means there is a lever effect when changing the indoor temperature in a multi-apartment building (Siggelsten, 2014). If you are lowering your temperature settings, but with a remained indoor temperature, it should mean that the reduced heat from your own radiators are being fully compensated by your neighbours.

The methodology for this study is to analyse the fluctuation of the delivered amount of heat to each apartment and comparing it to the entire building, which should provide an indication of the lever effect due to the heat transfers. Further, it should also give an indication of the accuracy of allocating heating costs based on measurements of the delivered amount of heat. In order to completely fulfil the purpose with this study, a specific scenario has also been initiated with the assumption that if you have a lower indoor temperature compare to your neighbours, you don’t want to pay for their use of extra heat:

If an apartment has an indoor temperature of 18 °C while all the other apartments in the same building have 22 °C, how would the heating costs be affected if it were based on the space area compared to the theoretical need of thermal energy?

All measurement data for this study are collected from an existing multi-apartment building located in Malmö, Sweden. The building was completed in 2012 and it contains 31 individual apartments, all with underfloor heating. It is a relatively energy efficient building with a heating energy performance of 40 kWh per year and square meter, included stairwells and basement. To obtain a result as distinct as possible with the conditions given, measurements data for January have only been used. In January there is a large difference between indoor and outdoor temperatures and only a small influence of solar radiation. Data from four different years have been used (2013 - 2016). Since internal heat production has a large impact on energy efficient buildings, measured data of domestic electrical energy for all individual apartments have also been collected.
In order to analyse the fluctuation of the delivered amount of heat to each apartment a comparison of the kilowatt-hours for each apartment between the four different years was made. To determine whether different readings depends on heat transfer between adjacent apartments or due to a changed indoor temperature, a comparison was made with the energy use for the entire building including both the stairwells and the basement. All measured data for the heating energy has been corrected for a normal year, based on their number of degree-days.

The accuracy with dividing the heat cost based on square meters was estimated by modelling all apartments in the energy calculation program VIP-Energy. The energy demand was calculated for each apartment both for 18 °C and for 22 °C in indoor temperatures during an average January in Malmö, Sweden. To obtain the heating cost for having 18 °C indoors while all other apartments have 22 °C, the energy demand for maintaining 18 °C \((E^{(18)})\) in the investigated apartment was added with the sum of heating energy \((E^{(22)})\) needed to maintain 22 °C indoors in all the other apartments, divided with the total area \((A)\) of all apartments and multiplied with the area for the investigated apartment (see equation 1.1). This was then repeated for all 31 apartments. These calculations should correspond to the theoretical need of thermal energy.

\[
E_1 = \frac{E_{1}^{(18)} + \sum_{2\to31} E_{2\to31}^{(22)}}{\sum_{A_{1\to31}} A_{1}} \quad A_{1} \quad \text{(Equation 1.1)}
\]
Results

Heat fluctuation

The measured supplied heating energy fluctuates greatly between the Januaries in the four different years in nearly all apartments, see Table 2.1. There is only a couple of apartment with a fairly steady supplied amount of heat. Apartment 7 is the steadiest one with a standard deviation of 1.21 kWh per m², which is equivalent to 55.7 kWh for the apartment’s total space area. Apartment 26 is the least steady one with a standard deviation of 8.08 kWh per m², which is equivalent to 569.6 kWh for the apartment’s total space area. All figures for the heat for January in each year are corrected for a normal year, based on their number of degree days. The averages as shown in Table 2.1 are all weighted means regarded to the space area.

Table 2.1 Measured heat together with domestic electricity in kWh/m² for January 2013-2016

<table>
<thead>
<tr>
<th>Apartment</th>
<th>Jan. 2013 (kWh/m²)</th>
<th>Jan. 2014 (kWh/m²)</th>
<th>Jan. 2015 (kWh/m²)</th>
<th>Jan. 2016 (kWh/m²)</th>
<th>Std. Dev. (kWh/m²)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td>12.4</td>
<td>16.6</td>
<td>24.9</td>
<td>5.37</td>
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<td>3.5</td>
<td>2.6</td>
<td>5.25</td>
</tr>
<tr>
<td>3</td>
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<td>19.0</td>
<td>14.8</td>
<td>13.1</td>
<td>2.60</td>
</tr>
<tr>
<td>4</td>
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<td>6.7</td>
<td>11.9</td>
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</tr>
<tr>
<td>5</td>
<td>14.3</td>
<td>12.8</td>
<td>14.6</td>
<td>11.2</td>
<td>1.56</td>
</tr>
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<td>10.2</td>
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<td>4.2</td>
<td>8.1</td>
<td>2.54</td>
</tr>
<tr>
<td>7</td>
<td>12.3</td>
<td>14.9</td>
<td>14.3</td>
<td>14.7</td>
<td>1.21</td>
</tr>
<tr>
<td>8</td>
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<td>4.8</td>
<td>17.8</td>
<td>7.38</td>
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<td>10</td>
<td>6.8</td>
<td>17.5</td>
<td>17.7</td>
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<td>4.9</td>
<td>0.8</td>
<td>7.52</td>
</tr>
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</tr>
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<td>7.1</td>
<td>3.3</td>
<td>19.2</td>
<td>7.22</td>
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<td>7.4</td>
<td>3.2</td>
<td>1.9</td>
<td>2.36</td>
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<tr>
<td>24</td>
<td>18.3</td>
<td>21.3</td>
<td>16.2</td>
<td>9.3</td>
<td>5.10</td>
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<td>25</td>
<td>3.5</td>
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<td>3.2</td>
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<tr>
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<td>19.2</td>
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<tr>
<td>27</td>
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<td>20.9</td>
<td>18.1</td>
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</tr>
<tr>
<td>Average</td>
<td>11.4</td>
<td>11.8</td>
<td>11.3</td>
<td>11.3</td>
<td>4.00</td>
</tr>
</tbody>
</table>
The figures in Table 2.1 can be compared with the fluctuation for the entire building, which is presented in Table 2.2. The fluctuation is significant smaller for the entire building compare to the individual apartments, and it is even smaller when domestic electricity is included. These figures in Table 2.2 for the heat are also corrected for a normal year.

<table>
<thead>
<tr>
<th>January in Year...</th>
<th>Heat (only)</th>
<th>Heat and domestic electricity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Entire building (kWh/m²)</td>
<td>All apartments (kWh/m²)</td>
</tr>
<tr>
<td>2013</td>
<td>11.55</td>
<td>8.5</td>
</tr>
<tr>
<td>2014</td>
<td>11.70</td>
<td>9.2</td>
</tr>
<tr>
<td>2015</td>
<td>11.32</td>
<td>8.3</td>
</tr>
<tr>
<td>2016</td>
<td>Not available</td>
<td>8.4</td>
</tr>
<tr>
<td>Std. dev.</td>
<td>0.19</td>
<td>0.39</td>
</tr>
</tbody>
</table>

Heat needed for each apartment

The following results are based on calculation made with VIP-Energy, and the input data are based on provided drawings and information about the building. Table 2.3 shows the theoretical need of purchased heat in kWh/m² for each apartment maintaining 18 °C respectively 22 °C during an average month of January (column 1 and 2). The calculations are not considering any heat transfers between adjacent apartments.

According to the calculations, the average need of purchased heat is 7.45 kWh/m² when having 22 °C indoors. This is what everyone would have to pay for if the heat was divided by the square meters. However, if one of the apartments reduces its indoor temperature to 18 °C it will have a small impact on the average. The size of the impact is determent of the size of the apartment in relation to the whole building. In this case there are only small changes, the average is pending between 7.30 kWh/m² and 7.41 kWh/m². Column 3 in table 2.3 shows the result from respectively average minus the own consumption for having 18 °C. This value equals to the extra heat you would have to pay if you were charged by the square meters instead of paying for your actual consumption. In four of the cases there is actually a negative result (apartments 1, 7, 28 and 31). Due to the large amount of exterior area for these four apartments, they are all benefitted from having the heat divided by the square meters, even in this case with a lower indoor temperature than their neighbours.
Table 2.3

<table>
<thead>
<tr>
<th>Apartment</th>
<th>kWh/m$^2$ at 18 °C</th>
<th>kWh/m$^2$ at 22 °C</th>
<th>Extra cost in kWh/m$^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7.7</td>
<td>10.2</td>
<td>-0.3</td>
</tr>
<tr>
<td>2</td>
<td>5.0</td>
<td>6.8</td>
<td>2.4</td>
</tr>
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<td>8.6</td>
<td>1.0</td>
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<td>7.9</td>
<td>1.5</td>
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Analysis

Part 1
Heat transfer between adjacent apartments makes IMC inaccurate due to the possibility to obtain heat which is paid by the neighbours. With a large amount of heat transferring between adjacent apartments, there should be a significant larger fluctuation of the measured heat in each individual apartment in comparison with the entire building. The building’s envelope is well insulated with the purpose to maintain the heat on the inside. The apartment dividing walls and slabs are made of concrete, which is a good heat conductor. This should result in a relatively homogeneous temperature among the apartments. However, an exception should be apartments with large amount of exterior surfaces e.g. if it is located at the top floor and/or at a gable.

If someone of some reason changes the temperature setting on the thermostats in their apartment then you could assume that the energy demand will change, not only for the actual apartment but also for the entire building. The same theory should also apply if the amount body heat gain changes. In this study, we do not actually know if someone has changed the temperature setting or if the amount of body heat gain changed. However, with 31 apartments and investigating four months over a time span of four years, it is not far-fetched to think so. If no one have changed any settings, then the result is astonishing considering the large fluctuation of measured heat in most of the apartments. It will not depend on solar radiation since there is not so much solar radiation in Sweden during January. The domestic electricity has also been taken into account in the result. However, the heating demand for the investigated building is substantially stable, as shown in table 2.2. Looking at the entire building including all apartments, basement and stairwells and including both heating and domestic electrical energy, the fluctuation is only 0.3 kWh/m² between the years 2013 to 2015. This should mean that changing the temperature setting will not result in much different energy need for the entire building. Instead a change of setting is most probably compensated with heat transfer to/from adjacent apartments. In each individual apartment the fluctuation is significantly larger. The average standard deviation of the fluctuation in all apartments is striking 4.0 kWh/m² between the years of 2013 to 2016. The difference in dispersion for the entire building compare to each apartment should be able to use as a fairly good assessment of the heat transfer an in turn an assessment of the accuracy with IMC.

Part 2
The accuracy with allocating heat cost based on space area is assessed by comparing the calculated heat needed for having for 22 °C in all the 31 apartments. The need for heat per square meter is wide spread between 4.6 kWh and 14.4 kWh, which can be seen as a poor accuracy when allocating heat costs based on square meters. However, the standard deviation of the fluctuation for all apartments is 2.34 kWh/m², which is lower than the 4.0 kWh/m² for the case with measured heat. This should mean that in this specific case, looking at the entire building, allocating heat cost by delivered amount of energy isn’t more accurate than allocating by space area. However, there is other circumstances that can make heat cost allocation by the square meters more inaccurate e.g. window airing and internal heat production.
Part 3
The other scenario in this study has a different angle. In this case, the assumption is that if you have a lower indoor temperature compared to your neighbours, you don’t want to pay for their use of extra heat. In one outer position of the result there is the apartments with a large amount of exterior area (e.g. apartment 28), and in the other outer position there is the apartments located in the middle of the building with small amount of exterior area (e.g. apartment 23). Due to its location within the building, apartment 28 has a large need of heat per square meters. The theoretical need for its heat is 11.1 kWh/m² when having 18 °C indoors during January (see table 2.3). This is actually 3.8 kWh/m² more than the average for all the other apartments having 22 °C. Due to their exposed position in the building, four apartments would benefit from being charged by the square meters compared to IMC. Even though all their neighbours have a four degrees higher indoor temperature.

In the other outer position, we have apartment 23 who only needs 3.2 kWh/m² to maintain 18 °C during the investigated period. When having 18 °C in apartment 23 and 22 °C in all other apartments, the average for the entire building is 7.39 kWh/m². This means an extra cost of 4.2 kWh/m² with the heat cost based on the square meters.

How realistic is this scenario with one apartment having 18 °C and all others having 22 °C? This study shows figures on the edge of the possible. It might happen that a single tenant wants a significant lower indoor temperature compared to its neighbours. However, due to the combination of heat transfer between adjacent apartments and a well-insulated building envelope, there is only a narrow range of possible temperature difference.

Part 4
Correction factors are being used in Denmark, with the purpose to compensate apartments for a higher need of heat due to their location in the building (Boverket, 2015; empirica, 2016). However, is it fair to use correction factors? This study shows on a large difference in heating need due to the location in the building, and therefore it is a highly adequate question. You could say it is fair, with the argue that only other things should affect the heat cost, e.g. indoor temperature, window airing, internal heat gain and solar radiation. However, saying it is fair makes “fair heat cost allocation” a new meaning due to the large difference in heating need. A guidance could be to use correction factors when installing IMC in an existing building, and not using correction factors in new buildings, according to Siggelsten and Olander (2013).
**Conclusions**

The main conclusion for this study is that you cannot use IMC as a general argument for achieving a fair heat cost allocation. Instead, you can discuss whether IMC is more or less inaccurate than an allocation based on square meters. The result from this study show that it is difficult to argue the one or the other. There is so many factors affecting the result. How well insulated is the building envelope? Is there any insulation between adjacent apartments? How large is the adjacent surface area compare to the living area? How much internal heat production is it? Etc.

This study was made at a well-insulated energy efficient building. A strength with the study is that the domestic electricity has been taken account to. The more energy efficient a building gets the more significant internal heat production gets. Even though a time span of four years (three years for the entire building), there is hardly no fluctuation of the purchased heat and domestic electricity looking at the entire building. However, looking at each apartment individually there is a large fluctuation of the purchased heat. The conclusion from this part of the study is that the heat transfer between the adjacent is striking significant in this investigated multi-apartment building.

Not surprisingly, apartments located with a large amount of exterior area benefits from having the heat cost based on the square meters, and apartments located in the middle of the building loses their chance for a reduced heat cost when lowering the indoor temperature. However, the same principle applies when using IMC together with correction factor. Furthermore, it could be difficult to implement IMC in an existing multi-apartment building without using corrections factors. Therefore, an adequate question is whether IMC of heat is suitable in existing buildings.

Finally, this study wants to address additionally three questions:

- What tolerances on the accuracy can we accept when allocating heat costs?
- Is it worth a wide tolerance for achieving an energy saving?
- Is the money spent on energy meters doing more good on other energy saving measures?
References


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PEIRE - A Holistic and Metatheoretical Approach for Indoor Environments

Kristian Stålne
Yujing Li

Abstract

PEIRE is a project with the aim of understanding the complex interaction between the building system and the tenants occupying it. The building system includes the indoor environment in terms of indoor air quality, temperature, noise and lighting, and building performance in terms of energy usage and ventilation. These can be studied by means of technical measurements. The tenants are studied according to environmental psychological assessments, surveys and interviews, to establish how they perceive the indoor environment, how they understand themselves as being a part of it and how they behave in relation to the indoor environment system.

In research on indoor environments, different aspects of the building system are typically studied separately under the more or less explicit assumption of being independent variables. In contrast, a guiding principle of the PEIRE project is that although the different aspects can be measured and studied separately they need to be understood in relation to and in interaction with the other aspects as whole and as a system.

There are different approaches to perform such analysis, for instance by analytically identifying cause and effect relationships between the different variables by means of causal loop diagrams, by statistical analysis from measurement results, or by reducing different variables’ effect in terms of a single governing aspect such as economic or health measures. In the PEIRE project a variety of such strategies will be evaluated and employed. However, although these approaches will provide valuable information they all require that the different aspects can be properly reduced in such way, which will be in conflicts with the qualitatively different nature of the research perspectives and methods from which the aspects are being studied. For instance, is it possible to quantify wellbeing and the complex experience of the indoor environment without losing too much information or induce a perspectival bias into the research where only quantitative results are considered as meaningful outcomes?

Thus, the holistic aim of the PEIRE project also requires a transdisciplinary approach where engineering, physiological and psychological perspectives can be regarded and coordinated without any perspective being reduced and assimilated into another single perspective. Therefore, another aim of the project is to develop one or several metatheoretical frameworks or strategies for organising and coordinating the different research theories and their respective perspectives. The indoor environment is a complex phenomenon that does not allow itself to be properly captured from one single perspective and scientific discipline. Therefore, the purpose of the metatheoretical framework is to organise the different perspectives so that a more complete and complex understanding of the indoor environment can be supported.
Introduction

The following article introduces a metatheoretical approach for indoor environment. The justification for this is that the research project consists of several scientific disciplines with methods spanning from technical to non-technical, and different scientific perspectives such as psychological, behavioural and physical. The following text describes a sketchy outline and embryo to such process.

Some initial considerations regarding metatheoretical frameworks

Before introducing elements of a meta-theoretical framework, the how, what and why of metatheories needs to be discussed. Here Edwards (2010) will serve as a starting point by asking what a metatheory is and what purpose it fulfills. Edwards, citing Paterson et al, states:

“Meta-theory is a critical exploration of the theoretical frameworks or lenses that have provided direction to research and to researchers, as well as the theory that has arisen from research in a particular field of study.

In this definition scientific metatheory building consciously and overtly takes other theory as its subject matter.”

Overton (2007) characterizes a metatheory as follows:

“Theories and methods refer directly to the empirical world, while metatheories refer to the theories and methods themselves”.

Thus, metatheories do not answer the same questions as theories, such as studying causality between different factors or describing reality. Rather, they aim to map theories with the respective questions these try to answer along with the assumptions that underlie them. This way, they can identify missing perspectives and accompanying new research questions or conflicts between different perspectives. Finally, an aim is to aid researchers from different backgrounds and to provide a scaffold and bridge between different perspectives and theoretical backgrounds in order to understand some conflicts and miscommunication that can occur, and also to get an overview that (hopefully) all can agree on.

So, what characterizes a good metatheory? Are there any criteria for such? The main purpose of a metatheory is that it should be aiding researchers, thus it should be useful in addressing the problems we face. It should also be based on intuitively sound and transparent assumptions itself. It is also positive if, or its respective components, has been applied in other areas and domains. Finally, it should be stated that there is no established method for how to design a good metatheory. Theories can be tested on how well they are supported by empirical data, but as a way of organizing theories, metatheories cannot be tested this way and thus there exist no final correct one. Instead the design should instead be viewed as an ongoing process.

One note to have in mind is the difficulty to find precise definitions that researchers from different fields can agree on. As Edwards (2010) puts it:

“Hence, this type of research requires a balance between demarcation efforts aimed at clearly defining a term and integrative intents that preserve that term’s inclusiveness and capacity to encompass other concepts. Kaplan (1964) refers to this as a balance between “semantic openness”, the inclusiveness of a concept, and “operational vagueness”, the inherent ambiguity of a concept. In discussing this issue of balancing definitional precision and semantic openness, Van de Ven points out that the demand for exactness can prematurely close off the development of ideas in theory building.”
Thus, we should not be too concerned with exact definitions that suits all, the more vague a concept is, the easier it is to include it in a model. For instance, terms such as indoor air quality and health will be used in a simplified manner, although definitions of those can be questioned and discussed. In order to overview such a vast and complex subject area certain simplifications are simply called for.

Overview

The framework will at this point be built up my three main components, which are:

1. Scale
2. Perspectives
3. Worldviews (developmental)

Scale is about what we consider our study object to be, or rather, which we are setting as central of our concern; are we mainly studying the human aspect, the building or our impact on the environment (sustainability). Perspectives refers to assumption that guides the various scientific endeavors, if one wants to reduce the issue into single building blocks, look from a system perspective, or the inner aspects from a psychological or cultural perspective? Finally, worldview refers to mapping and describing different assumptions of the meaning-making of the residents, cultural background and also of the geo-political background we as researchers assume in our situation. This will guide our way of framing the problem and which kind of solutions we think are appropriate. My approach is towards worldview is typically developmental due to my background in the field of adult development.

Component 1 - Scale

The notion of scale was the first division of the “complete” system crystalized in the processes. The indoor environment phenomenon can be split it into three levels, ordered hierarchically or in levels. The levels are 1. the human being, 2. the building and its performance, and 3. the global environment. This can be illustrated with the following diagram.

![Diagram](image)

Figure 1. Three levels (or systems) of concern of the indoor environment.

The arrows indicate the possible connection between the levels. Starting from the top left, the human behaviour can be seen as part of the building system and as an actor and active component of the system. The most obvious example is that we are opening windows, which have a negative effect on the energy usage. Here behaviour is only the observable aspect of our being and that we also need to take into consideration underlying or inner aspects of perception, understanding and values of the residents.

The lower left arrow indicates the probably most obvious connection in our theme, which is the human being as a receiver of and exposed to indoor environment. Here we have the aspects of health, comfort and (work) performance in relation to the performance of the building as provider of
an indoor environment, in terms of indoor air quality, noise, lighting, temperature etc. The upper right arrow illustrates the connection between the building and the environment and more specifically the buildings’ impact on the planet and the environment, typically in terms of climate change due to increased energy usage of the building sector. Another aspect, besides energy usage and subsequent CO2 emission, is material flow. The aspect is exemplified in design concepts for sustainability such as the Cradle2cradle concept, although this also takes other aspects into consideration, such as celebrating cultural and biological diversity and using renewable energy sources.

The connection illustrated by the lower right arrow indicates the impact on the building from changes in environmental conditions. Typically due to a changed climate with increased temperatures and moisture, but also indirectly by resource scarcity in terms of certain building material or energy sources (C2C is fundamentally about the right hand side of the figure).

One point of making such distinction, is that it can highlight where we have put our main focus of concern and where our competences have been. It can be argued that the PEIRE project is strong on the left side, with several participants from an engineering background, where some also have had the connection to the exposed human. Human health, medical as well as psychological, has also been explored to some degree. The human behaviour side of the system has also been addressed by some of the project’s researchers with Jonas and Eja. And also the buildings’ impact on the environment and vice versa, on the other hand.

Further, the emphasis on scale and the distinction between the levels can make some assumptions about the desired outcome explicit; the issue of rationality. The three levels can be roughly associated with the three dimensions (or pillars) of sustainable development according to the Brundtland commission: ecological (planet), economic (building and human performance) and social (human health and wellbeing). In both cases it can be argued that economic aspect (or building performance) is a means to provide for social (and physiological) needs within the ecological (planetary) boundaries, i.e. the hard formulation. One conclusion from the encounters with the building industry is that they, not surprisingly, typically see the economic aspect as that which is to be maximized rather than human needs and ecological limits.

Component 2 - Perspectives and scientific assumptions

Next, the epistemology and perspectives associated to the different research disciplines is explored, which in turn can be connected to some metaphysical assumptions regarding the nature of reality and how we view what we think is meaningful to study and by means of which methods. Examples of different methods is the way lighting, temperature, moisture, air velocity etc, are measured and how they are perceived.

The existing framework that is outlined here is commonly referred to as a meta-theoretical framework, and more specifically as integral theory, and was introduced by Wilber (1996). There are other similar frameworks that are more established within academia, e.g. critical realism according to Roy Bhaskar and complex thought according to Edgar Morin, comparisons between these frameworks have been the object of some discussions recent years. However, Wilber’s integral framework will be taken as a point of departure here, partly since it has been applied in a variety of areas such as ecology, business, economics, leadership, education, politics, psychology, sustainability and health (Short, 2006). It can be defined by means of the following two distinctions:

- The inner world of perception, psychological and cultural experience and conceptualization, and the outer world of physical and tangible objects. The distinction inner/outer is more
accurate than objective/subjective since there are subjective aspects of the outer world, e.g. by our choice of study object or measurement, and objective aspects of the inner.

- A singular or individual, where objects are seen as separate and can be studied as such, and a pluralistic or collective perspective where objects or entities are fundamentally seen as being in a relationship with other entities or with a larger context, and should be studied in such relationship with each other.

From these two distinctions, four quadrants can be constructed that each represent a specific perspective according to Figure 2.

![Figure 2](image)

Figure 2. Four quadrants to understand different perspectives on healthy indoor environments.

It can be noted that this is a meta-theoretical framework where the objects that are to be organized are perspectives. Therefore, we don’t consider objects or phenomena to belong to a certain quadrant, rather, the quadrants represent perspectives or lenses through which we can view the respective objects or phenomena.

But what do we mean by perspective? In brief philosophical terms, a perspective can be seen as the relation between subject and object, between what is perceived and the perceiver. They contain assumptions about the nature of what we study and how we should study it. For instance, health was first considered to be a purely physiological concept, which seems to rest on an assumption that only materialistic phenomena were of interest for study. Psychological aspects was first seen as the domain of religion and the church (see e.g. Engel, 1977). With the introduction of the biopsychosocial model of health more aspects and perspectives, psychological and socio-cultural, were opened up, although it hasn’t been clearly established how these different aspects relate and interact.

Here follows a walk-through of the four perspectives presented in the quadrants:

Starting with the upper right quadrant we have a perspective of observable physical and physiological aspects that are assumed to be studied separately. In the context of healthy indoor environments this can entail studying the effect of exposure from one particle of from noise. The common method herein are by means of technical measurements as demonstrated in the third workshop.

In the upper left quadrant studies the perception and inner world of the individual person. This is typically studied in psychology where we take the individual as our study object and from that draw conclusions on how we think behave in a larger sample. Here non-technical measurements are employed, quantitatively or qualitatively, as demonstrated in the third workshop as well.
The lower left quadrant deals with the inner experiential world from a collective and cultural or sociological perspective. The underlying assumption here is that one needs to study the culture at large in order to understand the individual and that the latter is embedded in the former. Our culture and our relations define us, rather than the opposite.

Finally, the lower right quadrant deals with observable and physical entities that are studied as being in relation with each other. Also social structures, organizational form and socio-economic aspects of our society are studied. A typical approach from this perspective is systems theory, according to e.g. von Bertalanffy, where the main assumption is that the atomistic and reductionistic approach of the upper right quadrant is insufficient and that the interaction between all factors are essential to understand our object of study.

**Combining components 1 and 2**

The quadrants have been applied in several different contexts, which also includes ...

Now the two first components can be combined by applying 2 in 1, i.e. applying the quadrants to the different levels or problem areas as follows: a) buildings, b) human health and c) human behaviour. Luckily, there are examples where this has already been done, at least to some extent.

a) Integral sustainable design (DeKay, 2011). DeKay applies the quadrants, and most other aspects of integral theory towards sustainability and building design, see Figure 3. To be elaborated.

![Figure 3. Quadrants applied on building design by DeKay (2011).](image)

b) Beyond the biopsychosocial model (Short, 2006). The biopsychosocial model of health doesn’t primarily solve problems or show connections between causes and deceases/effect. Rather, it opens up perspectives on what we should study and take into consideration when we look for either causes to a health problem or health itself. Short shows on the relation between the biopsychosocial model of health and how it is consistent with the four quadrants of integral theory.
c) The HEI-model is short for the Human-environment interaction model. That shows some resemblance with the four quadrants. Such similarities will be elaborated on here.

Conclusion: When applying the four quadrants on first the human aspect and then building design it can be illustrated by means of nested quadrants, which would possibly be a novelty even in integral settings.

Component 3 – Worldviews, values and types of society

The third and final component of the framework describes the type of societies and the basic assumptions about how to organize on a structural level, what is considered to be rational and how one should treat each other. There are different approaches to this, value systems are often studied horizontally, e.g. as being of different types without any ordering, such as Common cause (Shalom Schwarz) and World Value Survey (WVS). Here a developmental one will be applied, which is commonly used in integral settings.

The value systems are described by means of the Spiral dynamics model with respective organizational ideals according to Scharmer and Kaufer, Laloux, Dawlabani. In terms of the four quadrants values are examined from a cultural perspective, lower left quadrant, and organizational forms from the structural, lower right. Values and worldviews, or meaning-making, can also be studied from an individual or psychological perspective, which is the case in most adult development theories.

Here follows a brief description of three of the different levels of cultural and structural development.

Traditional society and values (pre-modern, agrarian): Traditional values are characterized by conformity, conservatism, often with Christian and nationalistic views. There is a clear view of truth – normally dictated by an authority, sometimes fundamentalist – which gives a clear sense of purpose in life. There is an emphasis on clear borders between different cultures and between the two genders. Structures are hierarchical and static where you are typically born into a role and position.

Modern and industrial values: Modern values arose in Europe in tandem with the scientific and industrial revolution. They emphasize a scientific view of the world that argues for the rational individual. The modern value system typically emphasize a positive outlook towards the future and acknowledges the value of scientific progress and economic growth on a free market. Structures are typically hierarchically but it is possible to advance according to a meritocracy.

Postmodern values: As a reaction to the modern values there was a breakthrough of postmodern values in the 1960s with the environmental movement, the peace movement, feminism, the human rights movement, and multiculturalism. Although they may not be as coherent as the previous value systems, postmodern values are said to emphasize human relations and tolerance for different cultures, races, and sexual orientations. Structures and hierarchies are typically problematized and instead non-hierarchical networks are promoted.

Further, levels before as well as after the traditional and postmodern values, respectively, can be discussed but are here omitted. In these types of descriptions a common question is whether we should look the historical progress of value systems as desirable and good per se, which I would argue against. However, if the goal is to promote improved indoor health and wellbeing with lower environmental impact we should perhaps take such view into consideration. Here, I’d like to make the comment that just because I have a tendency to reveal hidden assumptions and preferences doesn’t necessarily imply that I’m against them. Development is often a god thing, but not
necessarily and certainly not per se. What I do like to emphasize, though, is to be transparent with the preferences and judgments that I make.

This is how we presented workshop 4:

“The aim of the workshop is to explore different developmental pathways to foster healthy indoor environments in a sustainable way. These pathways will represent different perspectives depending on specific geographic and cultural settings. They will contain a continuum from defining and understanding specific challenges to the implementation of solutions, but also reflect a view on human nature. Special focus will be placed on the challenges of adapting to current and future environmental change and how the building can play a role in creating a more sustainable society.

Two examples will be presented and discussed throughout the workshop:

- Low tech solutions for promotion of healthier indoor environments in a traditional society of the global South, and
- Use of internet, augment reality and gamification strategies to promote a healthy indoor climate and energy efficiency in a high-tech post-industrial society.”

Here follows some example of the issue of progress:

In his lecture, Ingemar Samuelsson made the point that old houses typically were very poor both in terms of isolation/energy performance and health. Often the development is in a healthy direction, although we find plenty of examples against. We can also compare our cultural circumstances with those presented in workshop four, Barry’s and Per Löfberg’s activities in the cooking stove business.

And even if we limit ourselves to a western culture, such as our own Swedish context, traditional, modern as well as post-modern solutions needs to be discussed. High-tech solutions such as those associated with the post-modern internet society can probably not be available to more than those with economic resources and values to find this meaningful investments. People with postmodern values, sometimes referred to as cultural creatives (not to be confused with “hipsters”), correspond to maximum 20-25 percent of the population in any western industrialized country.

Another case where traditional versus modern solutions are discussed is in the Focus article on the two PhD students that had totally opposite strategies in lowering their energy usage (http://www.fokus.se/2013/11/slaget-om-framtiden/), one going in the high-tech direction with own sun panels and the other in the (traditional) low-tech direction with lowering temperature and thus comfort.

Worldviews combined with quadrants
The most classic combination of worldviews and quadrants is according to the AQAL-model which is the metatheory that I have previously referred to (Wilber, 1996). It basically describe social and cultural development and transformation as taking place as an interplay between structural development (socio-techno-economic), shifts in cultural values, which can also be seen from a personal meaning-making, and finally by means of behavioral changes. One further demand for societal and cultural transformation recently proposed in this context is a revolution in energy system (Ståline & Horn, 2014).

Concluding remarks
The paper outlines some components of a metatheoretical approach that should be considered as work in progress, hence the sketchy presentation. Further work will address the need to establish analytical and statistical connection between the various aspects of the indoor phenomenon. At this
point, the main purpose of the framework is to make explicit some of the guiding assumptions of the different disciplines and to create a space in which the different disciplines, methods and perspectives can be organized and in which one can move between them.

References

References will be added in a later version of the paper.
Abstract

Purpose – The purpose of this study is to investigate the Granger causal link between bank lending and house prices.

Design/methodology/approach – Several econometric methods, including Granger causality tests based on a vector error-correction model, were applied to analyse monthly time series data in the Swedish context. The data includes apartment prices, villa prices, bank lending, mortgage rates, and consumer price index for the period September 2005 to October 2013.

Findings – The results show that bank lending and house prices are co-integrated. According to the Granger causality tests, bidirectional relationships exist between bank lending and each of apartment and villa prices, confirming the financial accelerator mechanism.

Originality/value – As far as the authors know, this study represents the first analysis of the causal link between bank lending and the housing market in terms of apartment and villa prices in the Swedish context.

Keywords: House prices, Prices of apartments, Prices of villas, Bank lending, Vector error-correction model, Granger causality tests

Paper type: Research paper
1. Introduction

Being criticized for careless lending, banks have become a major topic among politicians as well as researchers in recent years (Wilson et al., 2010; Stanley and Sharma, 2011). At the same time, many western countries have experienced a continual and rapid increase in house prices. Housing has therefore become another major topic among politicians and researchers (Walentin, 2014). The association between bank lending and housing prices is more or less obvious (Brissimis and Vlassopoulos, 2009), and more or less vital. For example, bank credit was one significant factor behind the housing bubble before the Asian financial crisis in 1997 (Collyns and Senhadji, 2002), and the US monetary policy incentivized banks to lend money to the household sector to finance mortgages, causing the global financial crisis of 2007–2009 (MacKenzie, 2009). The tight interaction between changes in money supply in terms of aggregated loans and house prices is also important in the policy-making process (Bernanke and Gertler, 1989; Ferrer et al., 2010; Anundsen et al., 2016; Basten and Koch, 2016).

Regarding households’ access to bank loans and the rapid increase in house prices, Sweden is among the countries under scrutiny. Swedish housing market prices have increased for the last two decades, and the Swedish housing market showed no significant signs of slowing down during the global financial crisis (Claussen, 2013). In fact, experts such as Nobel Laureates Robert Schiller and Paul Krugman, as well as organizations such as the International Monetary Fund and Sweden’s Financial Supervisory Authority have warned that there is a tendency for a housing bubble to appear in Sweden.

The expansionary lending policies of Swedish banks has had a significant effect on the house prices (Finansinspektionen, 2014; Riksgälden, 2015). Important changes in mortgage policy reduced the requirements for cash contributions and amortization, both of which made it easier for people to borrow money to enter the housing market (Riksgälden, 2015). In addition, tax deductions allowed households to borrow larger amounts than would otherwise have been possible. Young households with limited savings but with high expected future earnings and repayment capabilities could therefore compete with households already in the housing market in a completely new way.

Since the turn of the millennium, a sharp increase in indebtedness has been observed among Swedish households. This is explained by a significant mortgage growth, which exceeded the increase in households’ disposable income (Riksbanken, 2014; Riksgälden, 2015; Turk, 2015).
In recent years, mortgage rates have been unusually low in Sweden, meaning that the population has been borrowing more and more for their accommodation, and because more people are able to buy a home, house prices have risen (Finocchiaro et al., 2011). The mortgage market is therefore a significant parameter in the real price development of the housing market, as it expresses how much money a household can borrow to purchase a property.

The majority of the people in Sweden own their own houses, with over two-thirds of the population living in owner-occupied dwellings where the mortgage ratios are roughly 85% of the value of the property (Finansinspektionen, 2013). The houses can mostly be categorised as apartments and villas. Apartments dominate in larger cities and villas in smaller cities.

Factors like regulation, particularly the loan-to-value (LTV) and payment-to-income (PTI) ratio requirements, the economic context, and the tax system shape the direction and strength of the causal link between bank lending and house prices (Ganoulis and Giuliodori, 2009; Basten and Koch, 2016). The current study uses empirical data from Sweden, a country whose housing market conditions are characterized as relatively transparent, having public registers of individual data (Bellman and Öhman, 2016), and not previously being investigated in terms of the causal link between bank lending and house prices. The limited impact of the global financial crisis on its housing market also make Sweden a good empirical case.

The purpose of the current study is to investigate the Granger causal link between bank lending and house prices in terms of apartment and villa prices, using the Granger causality test based on a vector error-correction model (VECM). As far as the authors know, this study can be regarded as a first attempt to investigate the causal interaction between bank lending and apartment and villa prices. While previous studies have not compared the impact of bank lending on apartments and villas separately, the current study highlights this issue. The main finding is the bilateral causal linkage between bank mortgages on the one hand and apartment and villa prices on the other hand, confirming an association between booms in credit and housing markets.

The structure of the remainder of the paper is as follows. The next section presents the frame of reference, followed by the method section. After that, the empirical results are presented before a concluding discussion ends the paper.
2. Frame of reference

2.1. Conceptual framework

Theoretically, houses have been regarded as a dual commodity (Dusansky and Koc, 2007; Piazzesi et al., 2007). They are not only a consumption good but also an investment good. The dual characteristic of houses plays a significant role in the analysis of the linkage between bank lending and house prices, a linkage that has been the subject of theoretical investigations. The first proposal is that mortgage supply has a positive causal effect on house prices through mortgage volumes. The explanation is that when banks consider that house prices are continuously increasing and collateral is becoming more valuable, banks tend to supply more money on the strength of the more valuable collateral, i.e. the bank lending channel mechanism (e.g. Kiyotaki and Moore, 1997; Almeida et al., 2006; Mian and Sufi, 2011; Andrés and Arce, 2012).

There may also be a positive causal effect of house prices on the mortgage market through mortgage demand, i.e. the credit demand channel mechanism (e.g. Chaney et al., 2012; Loutskina and Strahan, 2015; Lin, 2016). This scenario will occur if house prices grow faster than households’ financial wealth (including savings and disposable income) and households therefore demand larger mortgages. Accordingly, households regard buying houses as an investment rather than merely as a consumption good.

In line with the theory of the financial accelerator mechanism, there is a mutual and spiral interaction between credit expansion and house prices (Kiyotaki and Moore, 1997; Bernanke et al., 1999; Berlinghieri, 2008; Anundsen and Jansen, 2013). The increased supply of bank loans encourages the demand for housing to purchase, and thereby house prices rise. In response to increased house prices, the pledged collateral for obtaining credit and the borrowing capacity will be higher.

2.2. Previous empirical studies

The linkage between bank lending and house prices has been empirically investigated in different socio-economic contexts. A number of these studies have focused on the linkage between bank lending and house prices at the individual country levels (e.g. Gimeno and Martínez-Carrascal, 2006; Ibrahim and Law, 2014) while others have focused on the international level (e.g. Goodhart and Hofmann, 2008). Below follows a review of recent empirical studies focusing on the interaction between bank lending and house prices.
At individual country levels, several European studies have been conducted. Gimeno and Martínez-Carrascal (2006) performed an investigation of the dynamic interaction between bank mortgage lending and house prices in Spain using a VECM model and Johansen tests. Their analysis of quarterly data covering the period from 1984Q1 to 2004 showed an interdependence between house prices and mortgage loans in the long run, and that house prices had a positive effect on the volume of aggregate mortgage loans. Also in the short run, there was a positive bilateral dynamic interplay between the variables. In a follow up study, Gimeno and Martínez-Carrascal (2010) applied VECM integrating vectors on Spanish quarterly data for the period 1984Q1 to 2009Q1. The empirical findings showed an interdependence between bank lending and house prices, with causality running from the former variable to the latter one when loans depart from their long-run levels. Brissimis and Vlassopoulos (2009) used multivariate co-integration techniques to investigate the links between bank mortgages and house prices in Greece. The analysis of the quarterly data covering the period from 1993Q4 to 2005Q2 indicated no causality from housing loans to house prices in the long run. However, in the short run there was evidence of contemporaneous bidirectional dependence. Moreover, a bidirectional link was also found between mortgage rate and house prices.

Fitzpatrick and McQuinn (2007) studied the relationship between mortgage credit and house prices in Ireland for the 1996–2002 period. Multivariate vector autoregression (VAR) and Johansen and Juselius models were used to analyse quarterly data. The results demonstrated a long-run mutually reinforcing relationship between mortgage credit and house prices. In another Irish study, McQuinn and O’Reilly (2008) investigated the association between house prices and individual borrowing from financial institutions based on a dynamic ordinary least square (DOLS) model. Their study of quarterly data from 1980Q1 to 2005Q4 provided empirical evidence for a long-run positive link between house prices and the amount of money individuals can borrow.

Oikarinen (2009) investigated the long-run relationship between real house prices and real income, loan-to-deposit ratios and real interest rates in the Finnish property market between 1975 and 2006. The results of the quarterly data, which were analysed using Johansen trace test statistics based on a VECM and Granger non-causality test methods, showed a bilateral interaction between housing loans and house prices. The association between these variables seemed to be stronger after the financial deregulation that took place in that late 1980s in
Finland. In another Nordic country, Anundsen and Jansen (2013) employed structural vector error-correction to analyse a time series consisting of quarterly data for the period 1986Q2 to 2008Q4. The Norwegian results demonstrated that higher house prices led to an increase in debt, which, in turn, put higher pressure on prices generally, supporting bidirectional causality between bank lending and house prices.

Regarding Asia, Gerlach and Peng (2005) implemented co-integration and error-correction models to analyse the association between bank lending and property prices in Hong Kong based on quarterly data from 1982Q1 to 2001Q4. The co-integration analysis showed that this association was weakly exogenous, with unidirectional causality running from property prices to bank loans. Liang and Cao (2007) examined the relationship between bank lending and property prices in China using an autoregressive distributed lag (ARDL) model to test quarterly data for the period 1999Q1 to 2006Q2. Two control variables, gross domestic product (GDP) and interest rates were included in the model as well. The results showed that there was unidirectional causality running from bank lending to house prices, and that the causality ran interactively through the error correction term from bank lending, GDP and interest rates to property prices.

Using simple co-integration and VAR models, Park et al. (2010) conducted a study regarding the short- and long-term interaction between bank lending and house prices in a high-price submarket in Korea during the 1999–2006 period as well as during the sub-periods before and after the introduction of lending restrictions in August 2005. The results showed that house prices were not affected by bank lending in the short run, while they were positively affected in the long run. Ibrahim and Law (2014) conducted Granger causality and co-integration tests on data to test the long-run behaviour of house prices in Malaysia and their dynamic interaction with bank credit, real output, and interest rates. They used quarterly data from 1999Q1 to 2011Q4 and the results suggested a long-run causality running from bank credits, real output, and interest rates to house prices.

At the international level, Collyns and Senhadji (2002) investigated the causal relationship between the amount lent and property prices in four East Asian countries (Hong Kong, South Korea, Singapore, and Thailand). The results indicated simultaneous movements in the growth of bank credit and the level of property prices. Hofmann (2003) studied the causal nexus between bank lending and property prices in twenty developed countries during the period from
1985Q1 to 2001Q4. Using both time series and panel data techniques, unidirectional long-run causality from property prices to bank lending was found. However, the results indicated bidirectional short-run causality between the variables. Goodhart and Hofmann (2008) studied the linkages between money, bank credit, house prices, and economic activity in 17 industrialised countries over more than three decades. Their analysis was based on a fixed-effects panel VAR that was estimated using quarterly data spanning the 1970–2006 period. The results confirmed a bidirectional association between house prices and credit on the one hand, and money supply on the other hand.

As shown by the literature review of the previous empirical studies, researchers have generally analysed the effect of aggregate variables such as money supply, inflation, economic growth, income, and unemployment on house prices. Although it has been recognised that bank lending is closely linked to house prices, there is no agreement regarding the direction of causation between bank lending and house prices. Collyns and Senhadji (2002), Gimeno and Martínez-Carrascal (2006), Fitzpatrick and McQuinn (2007), Oikarinen (2009), Goodhart and Hofmann (2008), and Anundsen and Jansen (2013) found a significant bilateral dynamic interaction between bank lending and house prices. Gimeno and Martínez-Carrascal (2010), and Ibrahim and Law (2014) documented a unidirectional causality running from bank lending to house prices, while Gerlach and Peng (2005) and McQuinn and O’Reilly (2008) reported a one-way causality from house prices to bank lending. Moreover, some of the investigations (Hofmann, 2003; Liang and Cao, 2007; Brissimis and Vlassopoulos, 2009; Park et al., 2010) showed mixed evidence regarding the direction of causality.

2.3. Null hypotheses

In line with these abovementioned studies, the causal link between bank lending and the housing markets can be explained by the bank lending channel and the credit demand channel mechanisms. While the former mechanism suggests a unidirectional causality running from bank lending to the housing market, the latter one suggests an opposite unidirectional effect. According to the financial accelerator mechanism, a third possibility is that bank lending and house prices affect each other.

It must be observed that Quan and Titman (1999) and Ibrahim (2010) suggest that the use of a bivariate analysis model may not be adequate, and that studies included in the present literature review (e.g. Liang and Cao, 2007; Brissimis and Vlassopoulos, 2009; Ibrahim and Law, 2014)
have used control variables as precaution. The current study uses two control variables: mortgage rate (MR) and consumer price indexes (CPI).

Based on assumptions regarding the Granger causality model, six null hypotheses are formulated. The two main hypotheses are numbered H1a and H1b. The remaining ones are additional hypotheses related to the two control variables.

H1a: There is no Granger causal relationship between bank lending and house prices in terms of apartment prices.

H1b: There is no Granger causal relationship between bank lending and house prices in terms of villa prices.

H2a: There is no Granger causal relationship between the mortgage rate (MR) and house prices in terms of apartment prices.

H2b: There is no Granger causal relationship between the mortgage rate (MR) and house prices in terms of villa prices.

H3a: There is no Granger causal relationship between the customer price index (CPI) and house prices in terms of apartment prices.

H3b: There is no Granger causal relationship between the customer price index (CPI) and house prices in terms of villa prices.

3. Data and model specification

3.1. Data
The current study is based on monthly time series data (from September 2005 to October 2013) collected from Swedish Property Broker Statistics (2015) and Statistics Sweden (2015b). The choice of the study period is motivated by data availability. The variables in the econometric models are the average Swedish prices for apartments and villas, respectively (in SEK per square meter, in real terms), the total bank loans to households (in SEK, real terms), monthly average MR (in real terms in percent), and monthly CPI (in nominal terms). All variables were
converted into their natural logarithmic form. Figure 1 demonstrates the development of the five variables over the study period.

3.2. Model specification
The Granger causality adopted in the current study is based on the assumption that the dependent variable, house prices, is in each case regressed against the lagged values of itself and the values of the variable BL (total bank loans to households), and the two control variables MR and CPI. Accordingly, \( X \) causes \( Y \) if the lagged values of \( X \) explain the changes in \( Y \), while \( Y \) causes \( X \) if the lagged values of \( Y \) explain the changes in \( X \). Since the series included in the study are co-integrated, the long-run stationary component of the data should be incorporated into the VECM as follows.

\[
\Delta HP_t = \alpha_0 + \alpha_1 e_{t-1} + \sum_{i=1}^{n} \alpha_i \Delta HP_{t-i} + \sum_{i=1}^{n} \alpha_i \Delta BL_{t-i} + \sum_{i=1}^{n} \alpha_i \Delta MR_{t-i} + \sum_{i=1}^{n} \alpha_i \Delta CPI_{t-i} + \epsilon_t
\]

\[
\Delta BL_t = \beta_0 + \beta_1 \mu_{t-1} + \sum_{i=1}^{n} \beta_i \Delta BL_{t-i} + \sum_{i=1}^{n} \beta_i \Delta HP_{t-i} + \sum_{i=1}^{n} \beta_i \Delta MR_{t-i} + \sum_{i=1}^{n} \beta_i \Delta CPI_{t-i} + \nu_{t1}
\]

Because four covariates are involved in the models above, similar equations can be adapted for the two control variables, MR and CPI:

\[
\Delta MR_t = \gamma_0 + \gamma_1 \pi_{t-1} + \sum_{i=1}^{n} \gamma_i \Delta MR_{t-i} + \sum_{i=1}^{n} \gamma_i \Delta BL_{t-i} + \sum_{i=1}^{n} \gamma_i \Delta HP_{t-i} + \sum_{i=1}^{n} \gamma_i \Delta CPI_{t-i} + \nu_{t2}
\]

\[
\Delta CPI_t = \delta_0 + \delta_1 \tau_{t-1} + \sum_{i=1}^{n} \delta_i \Delta CPI_{t-i} + \sum_{i=1}^{n} \delta_i \Delta BL_{t-i} + \sum_{i=1}^{n} \delta_i \Delta HP_{t-i} + \sum_{i=1}^{n} \delta_i \Delta MR_{t-i} + \nu_{t3}
\]

where \( \alpha_0, \beta_0, \gamma_0, \) and \( \delta_0 \) are constants, \( e_{t-1}, \mu_{t-1}, \pi_{t-1}, \) and \( \tau_{t-1} \) refer to the error-correction terms, and \( \Delta \) refers to the first difference.
Additionally, $HP_t$ and $BL_t$ represent the natural logarithms of the two main variables (i.e. house prices in terms of apartments and villas, and bank lending, respectively). $MR_t$ and $CPI_t$ stand for the natural logarithms of the two control variables. The residuals $\varepsilon_t$, $\nu_1$, $\nu_2$, and $\nu_3$ are error terms. They are assumed to be normally distributed and white noise.

4. Empirical results

4.1. Descriptive statistics

Presented first is a summary of the descriptive statistics for the sampled monthly time series. Table I shows the sample means, medians, maximums, minimums, standard deviations, skewness, kurtosis, and the Jarque–Bera test results.

[Insert Table 1 about here]

Jarque–Bera tests were performed to examine whether or not the observations have a normal distribution. The results presented in Table I indicates that the null hypothesis for the observations are normally distributed and cannot be rejected at the 5 percent significance level. The $p$-values for PA (0.439), PV (0.097), and MR (0.383) are all above the significance level. However, the variables BL (0.029) and CPI (0.029) are shown to be non-normal. Furthermore, the standard deviations of the prices of apartments and villas are high, suggesting that the volatility of the time series is relatively high.

4.2. Phillips–Perron tests

A Phillips–Perron (PP) test was applied because of the importance of the stationary properties, and to assess the unit roots and integration orders of the time series included in the study. Table II presents the results of the PP test for the order of integration of each variable.

[Insert Table II about here]

One of the main criteria for the use of a Granger causality model is that the variables included in the model are stationary. As shown by the results of the PP test reported in Table II, the null hypothesis of the series having unit roots and could be rejected for one dependent variable (PA) and one independent variable (CPI) at level. However, the null hypothesis is rejected for the
first difference, suggesting that these variables are integrated at the first order, or \( I(1) \). Accordingly, the first differences of the variables are used in the Granger causality models.

4.3. Lag order selection

Before applying the co-integration test and its VECM, the optimal lag length of the VAR was tested at the 5 percent significance level. Various information criteria were calculated for various lag lengths, and a summary of the results of the lag order selection criteria is reported in Table III.

[Insert Table III about here]

Three of the five VAR lag order selection criteria tests, the sequential modified LR test statistic (LR), the final prediction error (FPE), and the Akaike information criterion (AIC) demonstrated that the optimal lag length is ten for the apartment time series. Likewise, the LR, FPE, and AIC confirm that the optimal lag length is 10 for the villa time series. Thus, the results of the majority of the tests indicate that a lag length of 1 to 10 is the most applicable one for apartments and villas. Although not demonstrated by the two remaining VAR lag order selection criteria tests, i.e. the Schwarz information criterion (SC) and the Hannan-Quinn information criterion (HQ), the suggestions of the majority of the tests were followed in the current study.

4.4. The co-integration analysis

Since all the time series are found to be integrated of order one (i.e., \( I(1) \)), the Johansen co-integration test was used to identify the long-run relationships between the given variables, using both the trace and the maximum eigenvalue tests under the null hypothesis of being no co-integrating vector. If two non-stationary variables are integrated, the VECM model in first differences is applicable for investigating the long-run effects of a common trend. Otherwise, VAR is a better choice. The results of the Johansen co-integration test are presented in Table IV.

[Insert Table IV about here]

Based on the results reported in Table IV, the null hypothesis of no co-integrating vectors can be rejected. The \( \lambda_{\text{trace}} \) statistics for apartments (83.54190) and villas (126.9286) exceed the 5 percent critical values, and the maximum eigenvalue tests are below the 10 percent critical
value, and this confirms that the null hypothesis can be rejected. Accordingly, the results of the Johansen co-integration tests show that all the series are co-integrated in the long run, i.e. \( r = 0 \) is significant in Table IV for apartments as well as villas (\( p = 0.000 \)).

4.5. **The vector error-correction model**

The results of the vector error-correction model (VECM) are summarised in Table V. The first, second, sixth and seventh lagged prices of apartments have a negative and significant effect on current apartment prices at the 5 percent level. Moreover, the association between the second lagged bank lending and current apartment prices is positive at the 10 percent significance level, while the opposite direction is found between the seventh lagged bank lending and current apartment prices at the 1 percent level. The coefficients of the first lagged MR are significantly negative, while the signs of the third and sixth lagged MR are positive at the 5 percent levels. Finally, all the lagged CPI values, except the first, fifth, and sixth ones, are significantly negatively related to current apartment prices at the 10 percent level.

[Insert Table V about here]

The results further indicate that the coefficients for all lagged villa prices, except the tenth one, are significantly positive at the 1 percent level. The coefficient of the first lagged bank lending is negative at the 5 percent significance level, indicating a negative shock to current villa prices, while the coefficients of the fourth, fifth and sixth lagged bank lending are positive at the same significance level. Lastly, the fifth lagged MR has a negative sign at the 5 percent level, and all the lagged CPI, except the fourth and the tenth ones, have positive signs at the 5 percent level.

4.6. **Results of the Granger causality tests**

Table VI presents the results of the Granger causality analyses for bank lending and each of apartment and villa prices, based on the VECM with ten lags. The control variables MR and CPI are included in the model. The results of the first Granger causality test for monthly data indicate a bidirectional causality relationship between bank lending and apartment prices at the 1 percent significance level. The results also provide evidence supportive of bidirectional causality between each of MR and CPI and apartment prices, at the 10 percent level.

[Insert Table VI about here]
The results of the second Granger causality test suggest bidirectional causality between bank lending and villa prices at the 1 percent level. Unidirectional causality between each of MR and CPI and villa prices is reported.

As shown by Table VI, the models are tested for the heteroscedasticity, normality and serial autocorrelation of the residuals. The findings suggest that the assumptions of the models as to homoscedasticity and normality (except for the residuals for the villa price variable) are met at the 5 or 10 percent significance levels. The large $p$-values imply that the chi-squared statistics for the majority of lags are large enough to reject the null hypothesis of no autocorrelation for any of the given critical values at the 5 percent level. Accordingly, the study does not find any evidence of an autocorrelation problem for the residuals except for the first and second lags for apartment prices and the first and third lags for villa prices. The diagnostics of the equations tend to indicate that the equations are more or less well specified.

### 4.7. Variance decomposition results

The variance decomposition exhibits the proportion of the movement in a particular time series due to its own earlier shocks vis-à-vis shocks arising from other variables. After estimating the VECM, the impact of a shock in a particular variable is traced through the system of equations to determine the effect on all of the variables, including future values of the shocked variable. The technique breaks down the variance of the forecast errors for each variable following a shock to a particular variable. In this way, it is possible to identify which variables are strongly affected and which are not.

The variations in house prices caused by shocks initiated from the dependent variable itself and from the independent variables were measured by variance decomposition estimation. As shown by Table VII, earlier shocks arising from house prices themselves account for the greatest variation in future prices. For apartments, the average percent is 65 and for villas, the average percent is 60. Moreover, the results indicate that while bank lending accounts for around 2 percent of the variation in apartment prices, MR and CPI explain around 25 and 8 percent, respectively. Regarding villa prices, bank lending accounts for around 4 percent of the variation while MR and CPI explain around 8 and 28 percent, respectively.

[Insert Table VII about here]
4.8. **Hypothesis test results**

The results for the link between the main variables in the current study are not in line with the null hypotheses H1a and H1b presented in section 2. The results demonstrate a bidirectional causality relationship between bank lending and house prices. In other words, the combination of the bank lending channel and the credit demand channel mechanisms create spiralling movements between bank lending and house prices in the Swedish context. This finding is similar to findings from various socio-economic contexts (Collyns and Senhadji, 2002; Gimeno and Martínez-Carrascal, 2006; Fitzpatrick and McQuinn, 2007; Oikarinen, 2009; Goodhart and Hofmann, 2008; Anundsen and Jansen, 2013). Moreover, the bidirectional relationship between MR and apartments prices and the unidirectional relationship between MR and villa prices is in contrast to H2a and H2b, but in line with the results of Brissimis and Vlassopoulos (2009) regarding apartments. Moreover, the bidirectional relationship between CPI and apartments prices and the unidirectional relationship between CPI and villa prices is in contrast to H3a and H3b.

5. **Concluding discussion**

This study investigates the Granger causal association between bank lending and house prices by applying a VECM-based Granger causality approach to analyse Swedish data consisting of time series over the 2005–2013 period. Two control variables, mortgage rate (MR) and customer price index (CPI), were included in the models.

As confirmed by the results of the Johansen co-integration tests, a long-run interaction between bank lending and house prices was observed. These findings support the existence of both bank lending and the credit demand channels in the Swedish property market and support the financial accelerator mechanism (Bernanke and Gertler, 1989). In addition, the study highlights the impact of bank lending on apartments and villas separately, something that previous studies have neglected. Based on the estimated results, the current study provides empirical evidence that the nature of the bidirectional causality link between bank lending and house prices is similar in the markets for apartments and villas, respectively.

The results regarding the relationship between MR and CPI, respectively, and apartment and villa prices, respectively, are somewhat mixed. While the relationships between the two former variables and apartment prices are bidirectional, the results indicate unidirectional associations running from villa prices to MR and CPI, respectively. Based on these results, fluctuations in
any of the housing and mortgage markets can have an influence on the others, possibly affecting household consumption and thereby the economy as a whole.

The findings of the current study regarding the bidirectional nature of the causality between bank lending and house prices in terms of apartment and villa prices are likely to be beneficial for banks and policy makers, and for investors. First, monetary policy is important for the stability of the housing market, as this has an impact on credit expansion and house prices (Bernanke and Gertler 1989; Ferrer et al., 2010; Anundsen et al., 2016; Basten and Koch, 2016). Second, banks can improve their lending strategies to households and thereby reduce their credit risk (cf. Collyns and Senhadji, 2002; MacKenzie, 2009). The findings regarding the dynamic bidirectional causal relationship between bank lending and house prices may be important also for investors who are attempting to create an optimal portfolio based on inter-market performance forecasting (Muellbauer et al., 2016).

Like any research, the current study is subject to certain limitations. A first limitation is that the data sample used in the study is not comprehensive. It merely covers apartments and villas transferred through a broker (Swedish Property Broker Statistics, 2015). Moreover, the sample includes only monthly time series from September 2005 to October 2013 for reasons relating to the availability of data. These limitations can be a point of departure for suggestions for further research. In particular, additional tests on data of different frequencies, such as yearly and/or quarterly, may be used in future studies on this topic. As the housing market is geographically heterogeneous, the link between bank lending and the housing market may look different in different countries, and also in different parts of a country (cf. Park et al., 2010). The latter issue could be considered when planning for future studies. Because of the availability of data, only two control variables were included in the models applied in the current study. Future studies may benefit from using more variables.
References


Figure 1. The natural logarithms of prices of apartments (LPA), prices of villas (LPV), Bank lending (LBL), MR (LMR), and CPI (LCPI) in Sweden for the 2005–2013 period.
Table I. Descriptive statistics (monthly data from September 2005 to October 2013)

<table>
<thead>
<tr>
<th></th>
<th>PA</th>
<th>PV</th>
<th>BL</th>
<th>MR</th>
<th>CPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>21467.64</td>
<td>15872.65</td>
<td>1787781</td>
<td>3.737551</td>
<td>301.1870</td>
</tr>
<tr>
<td>Median</td>
<td>21294.74</td>
<td>16054.57</td>
<td>1815786</td>
<td>3.720000</td>
<td>302.0100</td>
</tr>
<tr>
<td>Minimum</td>
<td>14815.08</td>
<td>11898.70</td>
<td>2318550</td>
<td>2.500000</td>
<td>279.5900</td>
</tr>
<tr>
<td>Maximum</td>
<td>29130.95</td>
<td>18693.62</td>
<td>1147192</td>
<td>5.380000</td>
<td>315.4900</td>
</tr>
<tr>
<td>Std. dev.</td>
<td>3178.079</td>
<td>1610.410</td>
<td>350036.0</td>
<td>0.714426</td>
<td>11.03120</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.283423</td>
<td>–0.323415</td>
<td>–0.216192</td>
<td>0.255981</td>
<td>–0.351915</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>2.714130</td>
<td>2.149666</td>
<td>1.758520</td>
<td>2.544341</td>
<td>1.890449</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>1.645728</td>
<td>4.660948</td>
<td>7.056933</td>
<td>1.918064</td>
<td>7.049799</td>
</tr>
<tr>
<td>p-value</td>
<td>0.439172</td>
<td>0.097250</td>
<td>0.029350</td>
<td>0.383264</td>
<td>0.029455</td>
</tr>
<tr>
<td>N</td>
<td>98</td>
<td>98</td>
<td>98</td>
<td>98</td>
<td>98</td>
</tr>
</tbody>
</table>

Notes: PA = Price, apartments (SEK per square metre, real terms), PV = Price, villas (SEK per square metre, real terms), BL = Total bank loans to household (SEK, real terms), MR = Monthly average mortgage rates (real terms), and CPI = Consumer Price Index (nominal terms).
Table II. Results of Phillips-Perron (PP) tests

<table>
<thead>
<tr>
<th>PP tests</th>
<th>Intercept (level)</th>
<th>Trend and intercept (level)</th>
<th>Intercept (first differences)</th>
<th>Trend and intercept (first differences)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>-2.5655</td>
<td>-34.119</td>
<td>-7.2338</td>
<td>-35.740</td>
</tr>
<tr>
<td></td>
<td>(0.104)</td>
<td>(0.000)***</td>
<td>(0.000)***</td>
<td>(0.000)***</td>
</tr>
<tr>
<td>PV</td>
<td>-4.4013</td>
<td>-6.3556</td>
<td>-31.649</td>
<td>-31.578</td>
</tr>
<tr>
<td></td>
<td>(0.001)***</td>
<td>(0.000)***</td>
<td>(0.000)***</td>
<td>(0.000)***</td>
</tr>
<tr>
<td>BL</td>
<td>-4.8265</td>
<td>0.2489</td>
<td>-6.2461</td>
<td>-7.7966</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.9981</td>
<td>(0.000)***</td>
<td>(0.000)***</td>
</tr>
<tr>
<td>MR</td>
<td>-12.014</td>
<td>-1.6062</td>
<td>-4.1039</td>
<td>-8.3535</td>
</tr>
<tr>
<td></td>
<td>(0.000)***</td>
<td>(0.786)</td>
<td>(0.015)***</td>
<td>(0.000)***</td>
</tr>
<tr>
<td>CPI</td>
<td>-1.3704</td>
<td>-1.7109</td>
<td>-8.7838</td>
<td>-8.8328</td>
</tr>
<tr>
<td></td>
<td>(0.594)</td>
<td>(0.739)</td>
<td>(0.000)***</td>
<td>(0.000)***</td>
</tr>
</tbody>
</table>

Notes: * p < 0.1, ** p < 0.05, *** p < 0.01. PA = Price, apartments (SEK per square metre, real terms), PV = Price, villas (SEK per square metre, real terms), BL = Total bank loans to household (SEK, real terms), MR = Monthly average mortgage rates (real terms), and CPI = Consumer Price Index (nominal terms).
Table III. VAR lag order selection criteria for the apartment and the villa time series

| Lag | LogL | LR   | FPE   | AIC   | SC   | HQ   | Lag | LogL | LR   | FPE   | AIC   | SC   | HQ   |
|-----|------|------|-------|-------|------|------|-----|------|------|-------|-------|------|------|------|
| 0   | 512.2015 | NA   | -11.3276 | -11.21015 | -11.2739 |
| 2   | 1206.263 | 154.8966 | -26.59689 | -25.50343* | -26.16859 |
| 3   | 1231.474 | 42.97234 | -26.80622 | -25.34234 | -26.21646 |
| 6   | 1298.141 | 27.16656 | -27.23049 | -24.41533 | -26.09633 |
| 7   | 1336.609 | 51.58182 | -27.74112 | -24.75554 | -26.42550 |
| 8   | 1377.778 | 51.46116 | -28.31314 | -24.59713 | -26.81609* |

Notes: * indicates lag order selected by the criterion, natural logarithm of lagged variable, LR = Sequential modified LR test statistic, FPE = Final prediction error, AIC = Akaike information criterion, SC = Schwarz information criterion, and HQ = Hannan-Quinn information criterion.
Table IV. Johansen co-integration results: a four-variable, seven-lag system for apartment time series and villa time series, respectively

<table>
<thead>
<tr>
<th></th>
<th>Apartment</th>
<th>Villa</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\lambda_{\text{trace}}$ statistic</td>
<td>5% critical value</td>
</tr>
<tr>
<td>$r = 0$</td>
<td>83.54190</td>
<td>47.85613</td>
</tr>
<tr>
<td>$r = 1$</td>
<td>34.33179</td>
<td>29.79707</td>
</tr>
<tr>
<td>$r = 2$</td>
<td>14.17362</td>
<td>15.49471</td>
</tr>
<tr>
<td>$r = 3$</td>
<td>0.164821</td>
<td>3.841466</td>
</tr>
</tbody>
</table>

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. 
Table V. The results of Vector Error Correction Model estimates (VECM)

<table>
<thead>
<tr>
<th>Apartment</th>
<th>PA Sig.</th>
<th>BL Sig.</th>
<th>MR Sig.</th>
<th>CPI Sig.</th>
<th>Vila PV Sig.</th>
<th>Lag1 BL</th>
<th>Lag1 MR</th>
<th>Lag1 CPI</th>
<th>Lag1 PV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lag1</td>
<td>-0.656641</td>
<td>0.0000***</td>
<td>-2.855897</td>
<td>0.0597</td>
<td>-0.913281</td>
<td>0.0267***</td>
<td>-0.489680</td>
<td>0.8849</td>
<td>2.923706</td>
</tr>
<tr>
<td>Lag2</td>
<td>-0.405840</td>
<td>0.0054***</td>
<td>10.31473</td>
<td>0.0620*</td>
<td>0.298765</td>
<td>0.5200</td>
<td>-6.269359</td>
<td>0.0581*</td>
<td>2.794309</td>
</tr>
<tr>
<td>Lag3</td>
<td>-0.276731</td>
<td>0.1236</td>
<td>-1.887411</td>
<td>0.7076</td>
<td>1.218220</td>
<td>0.0225**</td>
<td>-5.356680</td>
<td>0.0546*</td>
<td>2.600020</td>
</tr>
<tr>
<td>Lag4</td>
<td>-0.240222</td>
<td>0.2002</td>
<td>8.538388</td>
<td>0.1043</td>
<td>-0.514347</td>
<td>0.3580</td>
<td>-6.610009</td>
<td>0.0130*</td>
<td>2.485708</td>
</tr>
<tr>
<td>Lag5</td>
<td>0.063465</td>
<td>0.7151</td>
<td>5.489440</td>
<td>0.2575</td>
<td>-0.714573</td>
<td>0.2015</td>
<td>0.170781</td>
<td>0.9480</td>
<td>2.346375</td>
</tr>
<tr>
<td>Lag6</td>
<td>-0.691558</td>
<td>0.0001***</td>
<td>4.204547</td>
<td>0.4188</td>
<td>1.408810</td>
<td>0.0209**</td>
<td>-2.456775</td>
<td>0.3704</td>
<td>1.584750</td>
</tr>
<tr>
<td>Lag7</td>
<td>-0.392690</td>
<td>0.0361**</td>
<td>-15.89464</td>
<td>0.0014***</td>
<td>0.760576</td>
<td>0.1550</td>
<td>-7.270060</td>
<td>0.0113**</td>
<td>1.183950</td>
</tr>
<tr>
<td>Lag8</td>
<td>-0.065594</td>
<td>0.8897</td>
<td>3.812009</td>
<td>0.4570</td>
<td>-0.164448</td>
<td>0.7762</td>
<td>-5.859353</td>
<td>0.0356**</td>
<td>1.014643</td>
</tr>
<tr>
<td>Lag9</td>
<td>-0.051212</td>
<td>0.7393</td>
<td>5.101978</td>
<td>0.1501</td>
<td>0.194520</td>
<td>0.7094</td>
<td>-4.517088</td>
<td>0.0899*</td>
<td>0.656864</td>
</tr>
<tr>
<td>Lag10</td>
<td>-0.149661</td>
<td>0.2521</td>
<td>-2.305432</td>
<td>0.5162</td>
<td>-0.379962</td>
<td>0.3450</td>
<td>-7.919351</td>
<td>0.0014***</td>
<td>0.250506</td>
</tr>
</tbody>
</table>

Notes: * p < 0.1, ** p < 0.05, *** p < 0.01. PA = Price, apartments (SEK per square metre, real terms). PV = Price, villas (SEK per square metre, real terms). BL = Total bank loans to household (SEK, real terms). MR = Monthly average mortgage rates (real terms), and CPI = consumer Price Index (nominal terms).
### Table VI. Results of Granger causality tests based on VECM for apartments and villas

<table>
<thead>
<tr>
<th>Apartment</th>
<th>Causality direction</th>
<th>Chi² (p-value)</th>
<th>Df</th>
<th>Description</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>(BL, PA)</td>
<td>BL ------ causality direction ----&gt; PA</td>
<td>29.31 (0.001) ***</td>
<td>10</td>
<td>Bidirectional</td>
<td>98</td>
</tr>
<tr>
<td>(PA, BL)</td>
<td>PA ------ causality direction ----&gt; BL</td>
<td>70.00 (0.000) ***</td>
<td>10</td>
<td>(feedback)</td>
<td>98</td>
</tr>
<tr>
<td>(MR, PA)</td>
<td>MR ------ causality direction ----&gt; PA</td>
<td>16.91 (0.076) *</td>
<td>10</td>
<td>Bidirectional</td>
<td>98</td>
</tr>
<tr>
<td>(PA, MR)</td>
<td>PA ------ causality direction ----&gt; MR</td>
<td>30.63 (0.000) ***</td>
<td>10</td>
<td>(feedback)</td>
<td>98</td>
</tr>
<tr>
<td>(CPI, PA)</td>
<td>CPI ------ causality direction ----&gt; PA</td>
<td>32.31 (0.000) ***</td>
<td>10</td>
<td>Bidirectional</td>
<td>98</td>
</tr>
<tr>
<td>(PA, CPI)</td>
<td>PA ------ causality direction ----&gt; CPI</td>
<td>18.29 (0.050) *</td>
<td>10</td>
<td>(feedback)</td>
<td>98</td>
</tr>
</tbody>
</table>

Heteroscedasticity test: (Chi²: 827.3029, P: 0.4222)

J-B normality test: (Chi²: 8.09, P: 0.0613)

Residual serial correlation tests: (lag1: P, 0.0290; lag2: P, 0.0375; lag3: P, 0.4567; lag4: P, 0.6999; lag5: P, 0.2972; lag6: P, 0.8653; lag7: P, 0.3785; lag8: P, 0.9056; lag9: P, 0.9759; lag10: P, 0.1312)

Notes:* p < 0.1, ** p < 0.05, *** p < 0.01, PA = Price, apartments (SEK per square metre, real terms), PV = Price, villas (SEK per square metre, real terms), BL = Total bank loans to household (SEK, real terms), MR = Monthly average mortgage rates (real terms), and CPI = Consumer Price Index (nominal terms).

<table>
<thead>
<tr>
<th>Villa</th>
<th>Causality direction</th>
<th>Chi² (p-value)</th>
<th>Df</th>
<th>Description</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>(BL, PV)</td>
<td>BL ------ causality direction ----&gt; PV</td>
<td>77.04 (0.000) ***</td>
<td>10</td>
<td>Bidirectional</td>
<td>98</td>
</tr>
<tr>
<td>(PV, BL)</td>
<td>PV ------ causality direction ----&gt; BL</td>
<td>32.83 (0.000) ***</td>
<td>10</td>
<td>(feedback)</td>
<td>98</td>
</tr>
<tr>
<td>(MR, PV)</td>
<td>MR ------ causality direction ----&gt; PV</td>
<td>29.66 (0.001) ***</td>
<td>10</td>
<td>Unidirectional</td>
<td>98</td>
</tr>
<tr>
<td>(PV, MR)</td>
<td>PV ------ causality direction ----&gt; MR</td>
<td>9.72 (0.4653)</td>
<td>10</td>
<td></td>
<td>98</td>
</tr>
<tr>
<td>(CPI, PV)</td>
<td>CPI ------ causality direction ----&gt; PV</td>
<td>76.38 (0.000) ***</td>
<td>10</td>
<td>Unidirectional</td>
<td>98</td>
</tr>
<tr>
<td>(PV, CPI)</td>
<td>PA ------ causality direction ----&gt; CPI</td>
<td>13.15 (0.215)</td>
<td>10</td>
<td></td>
<td>98</td>
</tr>
</tbody>
</table>

Heteroscedasticity test: (Chi²: 828.9956, P: 0.4060)

J-B normality test: (Chi²: 52.62853, P: 0.0000)

Residual serial correlation tests: (lag1: P, 0.0038; lag2: P, 0.2151; lag3: P, 0.0084; lag4: P, 0.2422; lag5: P, 0.4286; lag6: P, 0.1615; lag7: P, 0.2147; lag8: P, 0.4750; lag9: P, 0.2710; lag10: P, 0.6638).

Notes:* p < 0.1, ** p < 0.05, *** p < 0.01, PA = Price, apartments (SEK per square metre, real terms), PV = Price, villas (SEK per square metre, real terms), BL = the total bank loans to household (SEK, real terms), MR = monthly average mortgage rates (real terms), and CPI = Consumer Price Index (nominal terms).
Table VII. Results of estimates of variance decomposition for a seven-month period

<table>
<thead>
<tr>
<th>Period</th>
<th>PA</th>
<th>BL</th>
<th>MR</th>
<th>CPI</th>
<th>Period</th>
<th>PV</th>
<th>BL</th>
<th>MR</th>
<th>CPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>91.0978</td>
<td>1.0511</td>
<td>6.6293</td>
<td>1.2218</td>
<td>2</td>
<td>95.0924</td>
<td>3.8753</td>
<td>0.3199</td>
<td>0.7124</td>
</tr>
<tr>
<td>3</td>
<td>81.4811</td>
<td>0.9345</td>
<td>12.0741</td>
<td>5.5103</td>
<td>3</td>
<td>86.9982</td>
<td>3.5772</td>
<td>2.5600</td>
<td>6.8645</td>
</tr>
<tr>
<td>4</td>
<td>76.2550</td>
<td>0.8533</td>
<td>13.3855</td>
<td>9.5062</td>
<td>4</td>
<td>66.2214</td>
<td>2.7166</td>
<td>4.8473</td>
<td>26.2148</td>
</tr>
<tr>
<td>5</td>
<td>60.4347</td>
<td>1.3632</td>
<td>27.7270</td>
<td>10.4752</td>
<td>5</td>
<td>50.7895</td>
<td>2.0832</td>
<td>6.9213</td>
<td>40.2060</td>
</tr>
<tr>
<td>6</td>
<td>52.5390</td>
<td>2.3411</td>
<td>35.8746</td>
<td>9.2453</td>
<td>6</td>
<td>44.6385</td>
<td>3.1537</td>
<td>13.4548</td>
<td>38.7530</td>
</tr>
<tr>
<td>7</td>
<td>52.0668</td>
<td>2.2809</td>
<td>36.9298</td>
<td>8.7226</td>
<td>7</td>
<td>44.3423</td>
<td>3.5424</td>
<td>13.6751</td>
<td>38.4402</td>
</tr>
<tr>
<td>8</td>
<td>49.8240</td>
<td>3.6826</td>
<td>34.7577</td>
<td>11.7356</td>
<td>8</td>
<td>39.2144</td>
<td>5.8644</td>
<td>12.6867</td>
<td>42.2345</td>
</tr>
<tr>
<td>9</td>
<td>47.6125</td>
<td>4.3853</td>
<td>36.5481</td>
<td>11.4542</td>
<td>9</td>
<td>37.8171</td>
<td>5.6636</td>
<td>13.2275</td>
<td>43.2917</td>
</tr>
<tr>
<td>10</td>
<td>43.1063</td>
<td>4.4427</td>
<td>40.8344</td>
<td>11.6166</td>
<td>10</td>
<td>35.8970</td>
<td>5.6083</td>
<td>17.0929</td>
<td>41.4018</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>65.4417</td>
<td>2.1335</td>
<td>24.4760</td>
<td>Average</td>
<td>60.1011</td>
<td>3.6085</td>
<td>8.4785</td>
<td>27.8119</td>
</tr>
</tbody>
</table>

Notes: PA = Price, apartments (SEK per square metre, real terms), PV = Price, villas (SEK per square metre, real terms), BL = Total bank loans to household (SEK, real terms), MR = Monthly average mortgage rates (real terms), and CPI = Consumer Price Index (nominal terms).
Professional valuer perception of client pressure: a study of two North-European countries

Lina Bellman

Work in progress – an early draft

Abstract

Purpose – Independence is essential when a clients need an objective valuation of a commercial property. This study describes and analyses client pressure on property valuers in the light of their memberships of professional bodies when valuing commercial properties. A point of departure is Levy and Schuck’s (1999; 2005) theoretical model of factors affecting professional valuers.

Design/methodology/approach – A questionnaire was finalised after completion of a pilot study, and was sent to all property valuers with general authorisation in Finland and Sweden in 2015/2016. A third of the AKAs in Finland (55 of 157) and more than half of the APAs in Sweden (73 of 145) participated in the study.

Findings – Analyses of preliminary results show that the property valuers in general do not perceive pressure from clients, even though they perceive that clients to some degree questioning their estimated market values. The valuers are also influenced by property information from clients.

Originality/value – This comparative Nordic study on client pressure is conducted in a highly transparent environment, and uses data from professional valuers.

Keywords Authorized valuers, Client pressure, Commercial properties, Uncertainty

Paper type Research paper
1. Introduction

Property valuations are needed for many reasons because of the inherent information asymmetry at the property market. Professional property valuers are, therefore, often engaged to estimate a more or less objective value judgement of a property, and the valuers’ independence is essential to the profession. The role of an independent property valuer is, however, problematic because the clients have control over instructions and information, the fee, and potential future engagements. Clients may have the possibility to influence and bias property valuers work (Levy and Schuck, 1999). In the same vein, Nwuba et al. (2015) report that client pressure is a major concern in property valuation, and Amidu and Aluko (2007) conclude that recent behavioural property research suggests that client pressure is an important source of valuation bias.

Studies in behavioural property research (e.g. Diaz and Hansz, 2007; Achu, 2013), have investigated different types of client pressure on valuers and the appraisal process. According to Crosby et al. (2015) these studies have, covered instructions from the client, information gathering, assessment, and reporting. The studies have examined perceived client pressure depending of different types of clients (Smolen and Hambleton 1997), client pressure because of the need of achieving a certain appraised value for lending purposes (Hansz 2004), and client pressure to adjust the value because of new information (Kinnard et al. 1997). Client pressure has especially been studied according to mortgage valuations in different contexts, such as in the U.K. (e.g. Gallimore and Wolverton, 2000; Smolen and Hambleton, 1997; Wolverton and Gallimore, 1999), the U.S. (e.g. Kinnard et al., 1997), and Nigeria (e.g. Amidu et al., 2008; Nwuba et al., 2015).

Previous research has also examined market feedback (Hansz and Diaz 2001), and clients pressure regarding the whole appraisal process (Levy and Schuck, 1999; 2005). Levy and Schuck’s (1999) New Zealand study concluded that there is a wide range of opportunities for clients to influence in the appraisal process. They further suggest that the means of influence depends on the type of client and the purpose with the appraisal. Crosby et al. (2015:4) calls for studies of different clients and different purposes related to client pressure:

While this existing body of research provides indications of the possible drivers and appraiser responses to pressure from clients, it is relatively undeveloped compared to the work on auditor independence. There remains considerable scope for research on how detrimental client influence varies with the purpose of the appraisal, client, appraiser and asset and market conditions.

When comparing property valuers and auditors, Öhman (2015) argue in the same vein as Crosby et al. (2015), and suggests more studies of property valuers and client pressure, regarding commercial properties.
As mentioned, several studies of client pressure on property valuers have been conducted in the context of Nigeria (e.g. Amidu and Aluko, 2007; Amidu et al., 2008; Nwumba et al., 2015), a country which can be described as having a low degree of transparency. Considering that valuers in more transparent markets normally perceive a lesser degree of uncertainty (French & Gabrielli, 2004), it would be of interest to also study highly transparent markets. Finland and Sweden were ranked second and third, respectively, in the Transparency International Corruption Perception Index for the year 2015. Nigeria was ranked 136 out of the 167 countries included in the index (https://www.transparency.org/cpi2015).

The purpose of this paper is to describe and analyse client pressure on professional property valuers in the light of their memberships of professional bodies when valuing commercial properties in two highly transparent markets. The study aims to map property valuers clients and these clients purposes with the appraisals, and also the valuers attitudes towards the clients in relation to perceived client pressure.

The remainder of this paper is organized as follows. The next section describes the institutional background. Section 3 starts with a description of results from earlier studies and develops the theoretical framework used in the study. Section 4 describes the sample, data, and statistical techniques used. In section 5, the empirical results are presented and analysed, and the paper ends with a concluding discussion in section 6, which also includes limitations of the study and suggestions for further research.

2. The context of the authorized property valuers

Authorization of Finnish commercial property valuers (AKAs) has existed since 1995 when the Finnish Association for Authorized Real Estate Valuation was established (Kallio et al., 2013), and authorization of Swedish commercial property valuers (APAs) has existed since 1993 by the non-political and non-profit organization Samhällsbyggarna (Bellman and Lind, 2015; Bellman and Öhman, 2016). The AKA profession are supervised by the Property Valuation Board of Finland Chamber of Commerce, while the APA:s is supervised by the organization Samhällsbyggarna.

To obtain authorization in each country, the valuer must fulfil some requirements of independence, education, knowledge and practice.

In Finland the requirements are:

i) theoretical requirement, i.e. at least 180 university credits in areas required for valuation activities,

ii) practice requirement, i.e. a minimum of three – five years of experience in the valuation field,
iii) passing an expertise requirement – ensured by an examination which requires experience and deep knowledge in the field, and
iv) independence requirement, i.e. a property valuer’s employment and business should remain independent and autonomous in relation to the valuation clients.

In Sweden those requirements exist of:

i) theoretical requirement, i.e. at least 210 university credits in areas fundamental to commercial property valuation whose distribution follows the organization’s guidelines
ii) practice requirement, i.e. a minimum of three years of well-documented practical experience of full-time valuation under the supervision of experienced valuers;
iii) timeliness requirement, i.e. current knowledge of the market, which is reviewed every three years; and
iv) independence requirement, i.e. a property valuer’s employment and business should remain independent and autonomous in relation to the valuation clients.

The Finnish association and the Swedish association is affiliated with the International Valuers’ Standards Committee (IVSC). Besides that the AKA and the APA are committed to respect the Property Valuation Board’s rules, instructions and regulations, and the Good Property Valuation Convention in each country they should also respect the International Valuation Standard (IVS). There is also an independent Board of Appeal, making decisions regarding authorization and disciplinary issues. If property valuers violate any of the requirements mentioned above, they may receive a reminder, a warning, or have their authorization withdrawn.

Either AKA or APA operate under government supervision as established professions (cf. Bellman and Öhman, 2016). However, the majority of the AKA:s is also property valuers approved by Finland Chamber of Commerce (KHK). According to Finnish law there is mandatory to use a KHK-valuer in some specific situations.

Moreover, many APAs are reported annually to Swedish Annual Property Index (c.f. Bellman and Öhman, 2016; McParland et al., 2002). IPD does not publish index for the property investment market in Finland. Finland have instead the KTI Index, which is compatible with property indices published by IPD. (www.kti.fi)
3. Frame of reference

3.1 Uncertainty

Because of the inherent information asymmetry at the property market, – perpendicular when more than one actor is involved and some type of information exchange is present – there is a need for external property valuations. Professional property valuers is therefore often engaged to estimate a more or less objective value judgement of the property, which hopefully decreases the information asymmetry between different actors, property owners versus property owners, property owners versus credit givers etc.

Market conditions can affect the perceived uncertainty. Lack of market evidence that can be used in the valuation can increase valuers perceived uncertainty, while high availability of information normally decrease the uncertainty (French and Gabrielli, 2005).

Factors affecting uncertainty in valuations (to be continued)

- The degree of estimations
- Time at disposal
- Amount of information at hand
- Property market prices

- The client’s expectations
- Firm/Company values/culture
- APAs experience
- Educational background of the APA

3.2 Client pressure

Levy and Schuck (1999) made an interview study with practicing New Zealand valuers, of clients’ means and opportunities to influence valuations. Means can be related to various kinds of power. The clients control of the payment and fees and future engagements can be related to reward and coercive power. The clients knowledge of the valuation process and the market is in the area of expert and expertise power. The clients control over information that is relevant for the valuers and need for the valuation assignment can be seen as information power.

While reward and coercive power, expert and expertise power, and information power can be seen as means to influence, the clients must have opportunities to effect the valuers to act accordingly. Opportunities in the valuation lies, for example, in the clients instructions to the valuers (which can include a wide range of suggestions such as the purpose with the valuation
or the preferred method to use). Opportunities also includes valuers relying on information provided by clients, or clients consideration of the valuation outcome (such as questioning the estimated market value) related to the payment of the assignment. Consequently, clients have means and opportunities to influence and bias property valuers’ work.

Clients supply of information such as property object specific information, can according to this reasoning of client pressure include that clients withholding information and/or supplying misinformation (Levy and Schuck, 2005). However, this type of information influence does not solely being negative. Crosby et al., (2010) argue that “client influence on appraisal outcomes may result from concern with quality assurance. In this respect, clients may assist the appraiser by providing information about the asset or the market about which the appraiser may be unaware.” According to Bellman and Öhman (2016), the information flow from the client, not least the property owner, to the appraiser could be seen as problematic. Information related to the valuation focus at the property object level seems to affect the property valuation, supporting previous studies (Amidu et al., 2008; Kinnard et al., 1997; Levy and Schuck, 1999, 2005; Nwuba et al., 2015).

Figure 1 illustrates opportunities of the client to use client pressure in valuations in terms of instructions, information, and by considerations and payment (cf. Levy and Schuck, 1999).

![Figure 1 Illustration of client opportunities to influence the valuation, (parts taken from a model of Levy and Schuck, 1999:383).](image)

Levy and Schuck (1999) also conducted external factors affecting client influence, which they divided in four categories of characteristics. This four categories are described below.

**Client characteristics**

Valuations are required for many purpose, from the property owners in front of property transfer i.e. buying or selling. However, French and Gabrielli (2005) states, that valuations are not executed primal in advance of a property transfer, but in the absence of the same. Valuations are executed because the need to support a commercial loan or in front of judging periodic performance. Property owner can therefore require valuations in front of annual accounts valuations, or as collateral in front of mortgaging. Moreover, as French and Gabrielli (2005) states, institutional actors does also need valuations for a number of purposes, such as creditors in front of grant credit (Crosby et al., 2010; French, 2004; Pagourtzi et al., 2003).
Moreover, different index such as IPD needs property valuations, because of the nature of the index as a periodic performance measurement.

Previous research has shown that type of client have an impact on clients trying to influence the valuer. For example, client size have some importance regarding client pressure. Even though there is a distinction between client revenue size and client frequency. Kinnard et al. (1997) U.S study showed a relationship between client size (by percentage of appraisal revenues) and the valuers’ likelihood of revising their valuation. Moreover, their findings did also show that the property valuers were not aware of this bias. Smolen and Hambleton (1997) found that a “decrease in number of assignments” was the most mentioned client pressure to give their preferred value. Moreover, Amidu and Aluko, (2007) identified that Nigerian property valuers, ranked client size, as the third most significant clients’ influencing factor to bias valuations.

**Valuation characteristics**

As mentioned previously, type of client can influence the appraisal. Based on the purpose of the valuation, clients can have different incentives to influence the valuer. All of the respondents in the study of Levy and Schuk (1999) mentioned that type of client could impact on reported values. As example, bankers were pessimistic and tried to pressure the value down, while developers as were optimists and tried to pressure the value up in order to use the valuation to get financing. Fund managers with asset-based compensation often request conservative valuations in times when they have positive return, to be able to show yearly regular return of the property portfolio.

Different clients ordering collateral valuation such as property owners in front of mortgaging or creditgivers in front of granting credit. Previous studies (e.g. Kinnard et al., 1997; Smolen and Hambleton, 1997) have shown that commercial valuers felt client pressure behaviour, especially from commercial banks, mortgage brokers and bankers.

Crosby et al.’s (2015) study of individual property assets in the U.K. tested ownership effects of performance data, by using data of IPD in the end of 2007. They found that the appraisals reflected different needs of clients i.e. different types of funds, by that certain period. The results are consistent with their previous study (Crosby et al., 2010), were they instead of individual data used aggregated data from the same period.

**Valuer and valuation firm characteristics (to be continued)**

The findings of Chen and Yu’s (2009) comparative study of Taiwanese valuers’ and Singapore valuers’ attitudes of client influence showed three major characteristics that increase valuers confidence to resist client influence: information availability, local knowledge, and experience. They further concluded that those characteristics was primary related to the individual valuers and not the valuation firm. This distinction between the valuer and the valuers firm was also found by Amidu and Aluko (2007). Teir findings did not find any significant relationship between the size of the firm, amount of experience and education of property valuers. They
further identified clients’ influencing factors such as the integrity of valuer (or valuation firms), the valuation outcome to the client and client size in the study.

- Educational background
- Own experience
- Firm values/culture
- Time at disposal
- The degree of estimations

External characteristics (to be continued)

- Regulatory framework/standards
- Circumstances of the property market
- Amount of information at hand
- Property market prices

3.3 A Modell of clients, client pressure and perceived uncertainty

When incorporating uncertainty in the theoretical frame of client pressure (opportunities and external characteristics) by Levy and Shuck (1999) a model of six parts with related sub issues, see Figure 2.

![Figure 2 Model of perceived uncertainty, client pressure and four characteristics](image)

4. Method

4.1 Population and sample
All authorized property valuers with general authorization in Finland and Sweden were invited to participate in a web survey. The number of valuers in Finland and Sweden at the time of the study was 157 and 145, respectively. The composition of the total population in
terms of background variables (i.e. gender, years as authorized valuers, and place of work) is based on member lists of the Property Valuation Board of Finland Chamber of Commerce and Samhällsbyggarna in Sweden.

Table 1 shows the number of Finnish AKA:s in the profession (157) and in the sample (55) regarding gender, years as AKA:s and place of work. As can be seen, the number of male and female respondents, and the place of work is relatively similar when comparing the population and the sample.

Table 1 Summary of descriptive statistics of the Finnish population (157) and the 55 respondents’ gender, years as AKA:s, and place of work

<table>
<thead>
<tr>
<th>Background variables</th>
<th>Gender</th>
<th>Years as AKA</th>
<th>Place of work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Frequency, total population</td>
<td></td>
<td>124</td>
<td>33</td>
</tr>
<tr>
<td>Frequency, respondents</td>
<td></td>
<td>47</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 2 shows that the APA population in Sweden (145) is similar to the sample (73) regarding gender as well as years as APA:s and place of work. Compared to the population it is slightly more experienced valuers, and slightly less valuers from the capital city who have responded to the questionnaire.

Table 2 Summary of descriptive statistics of the Swedish population (145) and the 73 respondents’ gender, years as APA:s, and place of work

<table>
<thead>
<tr>
<th>Background variables</th>
<th>Gender</th>
<th>Years as APA</th>
<th>Place of work</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Frequency, total population</td>
<td></td>
<td>112</td>
<td>33</td>
</tr>
<tr>
<td>Frequency, respondents</td>
<td></td>
<td>60</td>
<td>13</td>
</tr>
</tbody>
</table>

Table 3 summaries descriptive statistics for the Finnish and Swedish respondents regarding various background variables. Male respondents dominate in both countries, and similarities exist also regarding RICS-certification and place of work. The Swedish respondents are somewhat more experienced in terms of age and years as APA:s than their Finnish colleges. Three out of four Swedish respondents have an university exam in Cadastral and/or Real Estate and Construction Management. In Finland the corresponding number is two out of four. The Swedish respondents are also, on average, working in larger organisations.
Table 3 Summary of descriptive statistics for the 55 Finnish and 73 Swedish respondents’ gender, years as authorized, age, place of work, RICS-certification, university exam, and number of employees of the respondent business

<table>
<thead>
<tr>
<th>Background variables</th>
<th>Finnish AKA (55)</th>
<th>Swedish APA (73)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>47</td>
<td>60</td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Years as authorized</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>21</td>
<td>19</td>
</tr>
<tr>
<td>6-10</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>11-15</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>16-20</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>21+</td>
<td>2</td>
<td>22</td>
</tr>
<tr>
<td>Place of work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital city</td>
<td>22</td>
<td>28</td>
</tr>
<tr>
<td>Other places</td>
<td>33</td>
<td>45</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-30</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>31-40</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>41-50</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>51-60</td>
<td>18</td>
<td>25</td>
</tr>
<tr>
<td>60+</td>
<td>9</td>
<td>19</td>
</tr>
<tr>
<td>RICS-certification</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>10</td>
<td>20</td>
</tr>
<tr>
<td>No</td>
<td>45</td>
<td>53</td>
</tr>
<tr>
<td>University exam</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cadastral / Real Estate and Construction Management</td>
<td>27</td>
<td>57</td>
</tr>
<tr>
<td>Other exam</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>5</td>
</tr>
<tr>
<td>Number of employees in the AKA:s/APA:s organisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>6-50</td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>51+</td>
<td>14</td>
<td>37</td>
</tr>
</tbody>
</table>

4.2 Research design
The study was conducted using a questionnaire to collect data. In order to receive responses from a large number of respondents a questionnaire was developed. The questionnaire included five parts a) a cover letter including information of the study and information about respondent confidentiality, b) background questions (see Table 3), c) questions regarding perceived uncertainty, d) questions regarding client pressure, e) questions regarding characteristics of the client, f) questions regarding valuation characteristics g) questions regarding valuer and valuation firm characteristics, and h) questions regarding external characteristics. Parts of the questionnaire (c-h) are included in the Appendix. Related to each sub issue in Figure 3 the questions asked in the questionnaire are mentioned.
4.3 Data collection, and data analysis (to be continued)

Before the main study, a pilot study was conducted with a internal property valuer and a property professor. The pilot study used respondents that was not authorized property valuers, this to not interfere with the relatively small population of authorized property valuers in the two countries (cf. Bellman and Öhman, 2016). The purpose of the pilot study was to ensure that the questions in the questionnaire would be perceived as relevant by the respondents in the main study.

The data for the present study were gathered in March to April 2016 for the Finish respondents and in December 2015 for the Swedish respondents. The survey questionnaire was distributed by the web. 128 usable responses were received. The response rates (35 percent in Finland and 50 percent in Sweden) were received after four reminders.

The Swedish and Finnish respondents were asked to indicate their perceptions of the questions regarding type of client and purpose, client pressure, and perceived uncertainty, using a seven-point Likert scale. To a low degree was indicated by 1, and to a high degree was indicated by 7.

A descriptive analysis was made of the whole sample of the Finnish and Swedish respondents’ average responses on the survey questions. This was to compare the two groups’ similarities and differences, to clarify if both samples could be analysed together or stay divided at the country level. The later was completed with a significance test i.e. a Man-Whitney test.

Further, a exploratory factor analysis, i.e. a varimax rotated principal component analysis was conducted. This to explore the connections between factors behind client pressure and perceived uncertainty. Moreover, the respondents background variables such as age, experience, and educational background were tested in order to reveal similarities and differences.
5. Empirical result and analysis (to be continued)

5.1 Perceived uncertainty

Table 4 shows that Finnish AKA:s and Swedish APA:s perceive a moderate uncertainty when valuing commercial properties in general (mean 4.29 and 4.08, respectively). Expectations of the client (mean 2.69 and 2.32, respectively) is not highly affecting the respondents perceived uncertainty. The standard deviations are moderate.

Table 4 Perceived degree of uncertainty in general, and by expectation of the client when valuing commercial properties, 55 Finnish AKAs and 73 Swedish APAs

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>m</th>
<th>Sd</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general, perceived uncertainty</td>
<td>Fin</td>
<td>2</td>
<td>6</td>
<td>10</td>
<td>11</td>
<td>11</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Swe</td>
<td>4</td>
<td>9</td>
<td>10</td>
<td>21</td>
<td>17</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Expectations of the client</td>
<td>Fin</td>
<td>13</td>
<td>16</td>
<td>11</td>
<td>7</td>
<td>6</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Swe</td>
<td>18</td>
<td>29</td>
<td>15</td>
<td>7</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

5.2 Client pressure

Table 5 shows that the respondents from the two countries do not perceive, or perceive to a low degree pressure from clients in general (mean 2.22 and 2.05, respectively). Property information from clients is perceived as having a high impact (mean 5.85 and 5.55, respectively). In Finland the perceptions are homogenous, indicated by the low standard deviation. Clients’ instruction to the valuer is perceived as having a moderate impact at the valuer when valuing a commercial property (mean 3.55 and 3.68, respectively). Finally, the respondents perceive that clients is questioning the valuers estimated market value to a relatively low degree.

Table 5 Perceived degree of pressure from clients in general, by instruction from client, by property information from client, and by clients questioning the estimated market value, 55 Finnish AKAs and 73 Swedish APAs

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>m</th>
<th>Sd</th>
</tr>
</thead>
<tbody>
<tr>
<td>In general, perceived pressure</td>
<td>Fin</td>
<td>22</td>
<td>17</td>
<td>4</td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Swe</td>
<td>30</td>
<td>27</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Instruction from client</td>
<td>Fin</td>
<td>9</td>
<td>11</td>
<td>10</td>
<td>5</td>
<td>10</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Swe</td>
<td>9</td>
<td>16</td>
<td>8</td>
<td>13</td>
<td>16</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>
5.3 Client characteristics

Table 6 shows clients’ characteristics indicating the clients’ importance to the valuer. Type of client, size of client, and frequent client, is perceived as having a relatively low impact at the valuers when valuing commercial properties, according to the respondents.

Table 6 Client characteristics in terms of degree of type of client, frequent client, and size of client affecting AKAs and APAs when valuing a commercial property

<table>
<thead>
<tr>
<th>Frequency</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>m</th>
<th>Sd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of client</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fin</td>
<td>15</td>
<td>9</td>
<td>9</td>
<td>6</td>
<td>10</td>
<td>6</td>
<td>-</td>
<td>3.09</td>
<td>1.767</td>
</tr>
<tr>
<td></td>
<td>(27.3%)</td>
<td>(16.4%)</td>
<td>(16.4%)</td>
<td>(10.9%)</td>
<td>(18%)</td>
<td>(11%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swe</td>
<td>24</td>
<td>18</td>
<td>7</td>
<td>14</td>
<td>8</td>
<td>2</td>
<td>-</td>
<td>2.59</td>
<td>1.517</td>
</tr>
<tr>
<td></td>
<td>(33%)</td>
<td>(25%)</td>
<td>(10%)</td>
<td>(19%)</td>
<td>(11%)</td>
<td>(3%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of client</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fin</td>
<td>16</td>
<td>11</td>
<td>8</td>
<td>9</td>
<td>9</td>
<td>2</td>
<td>-</td>
<td>2.82</td>
<td>1.588</td>
</tr>
<tr>
<td></td>
<td>(29%)</td>
<td>(20%)</td>
<td>(14.5%)</td>
<td>(16.4%)</td>
<td>(16.4%)</td>
<td>(3.6%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swe</td>
<td>35</td>
<td>14</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>1</td>
<td>-</td>
<td>2.22</td>
<td>1.484</td>
</tr>
<tr>
<td></td>
<td>(48%)</td>
<td>(19%)</td>
<td>(10%)</td>
<td>(11%)</td>
<td>(11%)</td>
<td>(1%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequent client</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fin</td>
<td>11</td>
<td>7</td>
<td>12</td>
<td>8</td>
<td>14</td>
<td>2</td>
<td>1</td>
<td>3.31</td>
<td>1.632</td>
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<td></td>
<td>(20%)</td>
<td>(12.7%)</td>
<td>(21.8%)</td>
<td>(14.5%)</td>
<td>(25.5%)</td>
<td>(3.6%)</td>
<td>(1.8%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swe</td>
<td>25</td>
<td>18</td>
<td>9</td>
<td>13</td>
<td>5</td>
<td>3</td>
<td>-</td>
<td>2.51</td>
<td>1.492</td>
</tr>
<tr>
<td></td>
<td>(34%)</td>
<td>(25%)</td>
<td>(12%)</td>
<td>(18%)</td>
<td>(7%)</td>
<td>(4%)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.4 Valuation characteristics

Table 7 shows the typical client for both Finnish and Swedish respondents at an aggregated level. The most frequent client is the property owner in front of property transfer (mean 4.89 and 5.37, respectively) and of mortgaging (mean 4.45 and 5.56, respectively). For Swedish respondents are banks common clients in font of granting credit (mean 5.37), but not as common for the Finnish respondents (mean 3.85). Property owners in front of annual accounts valuation are also more common for Swedish respondents (mean 4.81) than for Finnish respondents (mean 3.84). Indexes such as KTI and IPD are more seldom clients especially in Finland.

Table 7 Valuation characteristics, degree of authorized property valuers type of client and clients purposes when valuing commercial properties, 55 Finnish AKAs and 73 Swedish APAs

| Frequency | | | | | | | | | |

13
5.5 Valuer and valuation firm characteristics

Information and own knowledge is essential when valuing commercial properties. Table 8 shows that the respondents perceive that their own experience (mean 5.58 and 5.55, respectively) is the primary source of uncertainty in appraisals. Moreover, the degree of estimations, i.e. how much the respondents use standard values instead of own judgments, and educational background are relatively essential. Time at disposal, and company values, is not highly affecting the uncertainty.

Table 8 Valuer and valuation firm characteristics, degree of valuer and valuation firm factors affecting the uncertainty when valuing a commercial property, 55 Finnish AKAs and 73 Swedish APAs

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<th>1</th>
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<tr>
<td>Educational background</td>
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<td>11</td>
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<td>12</td>
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<tr>
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<td>7</td>
<td>15</td>
<td>21</td>
<td>14</td>
<td>8</td>
<td>4.62</td>
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<td>3</td>
<td>3.38</td>
<td>1.881</td>
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<td>14</td>
<td>10</td>
<td>12</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>2.85</td>
<td>1.753</td>
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<tr>
<td>Time at disposal</td>
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<tr>
<td>Finnish</td>
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<td>10</td>
<td>13</td>
<td>11</td>
<td>14</td>
<td>5</td>
<td>1</td>
<td>3.84</td>
<td>1.385</td>
</tr>
</tbody>
</table>

Only a handful of Swedish respondents (four) and Finnish respondents (eight) reported additional clients such as layers, government, municipalities and development companies.
5.6 External Characteristics

Table 9 shows that factors affecting property valuers in the appraisal are primary circumstances of the property market (mean 5.87 and 6.47, respectively), regulatory framework/standards. Moreover, the respondents perceive that amount of information and property market prices is relatively essential sources of uncertainty in appraisals.

**Table 9 External characteristics: degree of factors affecting valuers or valuers perceived uncertainty when valuing a commercial property, 55 Finnish AKAs and 73 Swedish APAs**

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
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</thead>
<tbody>
<tr>
<td>Regulatory framework/standards</td>
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<tr>
<td>Fin</td>
<td>(5.5%)</td>
<td>(5.5%)</td>
<td>(3.6%)</td>
<td>(12.7%)</td>
<td>(9.1%)</td>
<td>(29.1%)</td>
<td>(34.5%)</td>
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<tr>
<td>Swe</td>
<td>(1%)</td>
<td>(4%)</td>
<td>(5%)</td>
<td>(11%)</td>
<td>(14%)</td>
<td>(26%)</td>
<td>(38%)</td>
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<tr>
<td>Circumstances of the property market</td>
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<tr>
<td>Fin</td>
<td>(3.6%)</td>
<td>(1.8%)</td>
<td>(1.8%)</td>
<td>(9.1%)</td>
<td>(7.3%)</td>
<td>(32.7%)</td>
<td>(43.6%)</td>
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<tr>
<td>Swe</td>
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<td>(3%)</td>
<td>(3%)</td>
<td>(5%)</td>
<td>(12%)</td>
<td>(75%)</td>
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<td>Amount of information</td>
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<tr>
<td>Fin</td>
<td>(2%)</td>
<td>(9%)</td>
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<td>(22%)</td>
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<td>Swe</td>
<td>(4%)</td>
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<td>(16%)</td>
<td>(40%)</td>
<td>(18%)</td>
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<tr>
<td>Property market prices</td>
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<tr>
<td>Fin</td>
<td>(7%)</td>
<td>(9%)</td>
<td>(20%)</td>
<td>(20%)</td>
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<tr>
<td>Swe</td>
<td>(4%)</td>
<td>(10%)</td>
<td>(14%)</td>
<td>(18%)</td>
<td>(21%)</td>
<td>(18%)</td>
<td>(16%)</td>
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</tbody>
</table>

6. Conclusions (to be continued)

Analysis of the preliminary descriptive results shows that access to information and the property valuers own knowledge is essential when valuing commercial properties, and is the primary source of uncertainty in appraisals.

The property valuers does in general not perceive pressure from clients. When looking closer at different phases in the valuation reveals that the valuers perceive a higher influence of the clients in the beginning of the valuation assignment (by instruction and information from clients) than in the end (questioning the valuers estimated market) related to the payment of the assignment. The findings shows that property information from clients affects valuers. The
information power clients by nature have is also the primary opportunity for them to influence the valuation (cf. Bellman and Öhman, 2016). The valuers also perceive some influence of the clients in the instructions but not in the same degree.

At an overall level, the respondents do not perceive characteristics of the client such as type of client, size of client, and frequent client as affecting the valuation. According to previous research are valuation characteristics such as the purpose of a valuation a source to client pressure (Levy and Schuck, 1999, 2005). The results shows that the property owner in front of property transfer and of mortgaging is the Finnish and Swedish property valuers’ most common client. In Sweden banks are also common clients.

There is a distinction between valuer and valuation firm characteristics according to perceived uncertainty in the valuation. The findings suggests that it is the own individuals knowledge i.e. education, experience and valuation judgements that have the most impact on the valuation and not the firm characteristics. Even though it is external characteristics such as the property market circumstances that influence property valuers in the valuation to a high degree. Information availability is a large source of uncertainty in appraisals, according to the respondents. This preliminary results is in line with previous research (Chen and Yu, 2009), and an increase of information availability, individual valuers knowledge, and experience perceives as increasing valuers confidence to resist client influence.
References


Appendix
Questionnaire (part c-h)

With one exception, *, the item scales below were anchored at very low degree (1) and very high degree (7).

c) Perceived uncertainty

Q1. In general, to which degree do you perceive uncertainty when valuing a commercial property?*

Q2. To which degree do the expectations of the clients affect the uncertainty?
* The item scale were anchored at very seldom (1) and very often (7).

d) Client pressure

Q3. In general, to which degree do you perceive pressure from clients?

Q4. To which degree do instruction from client affect you when valuing a commercial property?

Q5. To which degree do property information from client affect you when valuing a commercial property?

Q6. To which degree do clients questioning your appraisal (the estimated market value)?

e) Characteristics of the client

Q7. To which degree do type of client affect you when valuing a commercial property?

Q8. To which degree do size of client affect you when valuing a commercial property?

Q9. To which degree do frequent client affect you when valuing a commercial property?

f) Valuation Characteristics

Q10. To which degree are you engaged in the type of client below when valuing commercial properties?
   a) Property owner in front of property transfer
   b) Property owner in front of annual accounts valuation
   c) Property owner in front of mortgaging
   d) Bank/credit giver in front of lending/ granting credit
   e) IPD/KTI in front of property index
g) Valuer and Valuation Firm Characteristics

Q11. To which degree do your educational background affect the uncertainty when valuing a commercial property?

Q12. To which degree do your own experience affect the uncertainty when valuing a commercial property?

Q13. To which degree do values/culture of your firm affect the uncertainty when valuing a commercial property? (By this is meant the company’s culture, work practice, own guidelines, method, material, and what standard should be used, etc.)

Q 14. To which degree do the time at disposal affect the uncertainty when valuing a commercial property?

Q 15. To which degree do the degree of estimations affect the uncertainty when valuing a commercial property? (Information that is difficult to measure and verify is often assessed using estimates in the form of templates, i.e. How much you use standard values instead of own judgments)

h) External Characteristics

Q16. To which degree do regulatory framework/standards affect you when valuing a commercial property?

Q17. To which degree do circumstances of the property markets affect you when valuing a commercial property?

Q18. To which degree do the amount of information at hand affect the uncertainty when valuing a commercial property?

Q19. To which degree do the property market prices factors below affect the uncertainty when valuing a commercial property?
Social housing and path dependence. The deviant case of Sweden
Bo Bengtsson

Paper for the 6th Malmö Real Estate Research Conference 18-19 May 2017

Abstract
In Sweden, “social housing”, in the meaning of means-tested housing directed at individuals and households with limited economic resources, has not been part of the national housing regime since the 1940s, when the current “universal” system of housing provision was introduced. Moreover, regardless of social housing being an important element of other European housing systems, the very idea has been more or less taboo (and “social housing” a dirty word) in the Swedish housing debate. Recently, however, in a situation of increasing housing shortage, social housing has been launched as a possible solution, e.g. in a report on immigrant housing from the National Board of Housing, Building and Planning.

The paper discusses the prospects of a Swedish model of social housing. As previous research has shown, housing provision is characterized by strong path dependence that makes housing regimes sluggish and difficult to change. In the paper a number of institutional and discursive obstacles are presented and analysed in order to assess the prospects of an introduction of a system of social housing in Sweden.

Comment to the reader
This paper is in Swedish and has already been published, as a chapter of a recent book. My intention for the workshop was to reframe the Swedish chapter into a text in English directed to an international audience. However, I realise I will not have time to do so before the deadline. So unfortunately you will have to settle with this Swedish version for now.

My presentation at the workshop will be in English. Looking forward to seeing you there!

Should you wish to quote or refer to my text please use this reference:

Socialbostäder och stigberoende. Varför har vi inte ”social housing” i Sverige?

Bo Bengtsson

I en insiktsfull och ögonöppnande artikel från 2008 med titeln ”’Social housing’ som bostads- politikens spöke” (Sahlin 2008) diskutar Ingrid Sahlin utvecklingen av svensk bostadspolitik i relation till det då nyutkommna betänkandet EU, allmännytta och hyrorna (SOU 2008:38) från den så kallade Kochska utredningen om EU:s konkurrenslagstiftnings betydelse för de allmännyttiga bostadsföretagen. I sin artikel pekar Sahlin på hur de allmännyttiga företagen alltmer kommit att värderas i lönsamhetstermer samtidigt som deras ansvar för människor som har svårt att hävda sig på bostadsmarknaden satts på undantag. Trots detta finns i bostadsdebatten en utbredt skräck för ”social housing”. Sahlin säger sig själv föredra ett modifiet system med bruksvärdeshyror, generösa bostadsbidrag och en oberoende bostadsförmedling med möjlighet att ge förtur framför socialbostäder, men avslutar kärnfult:

Men om den svenska allmännyttan i enlighet med utredarens förslag helt övergår till att bli en vinstmaskin förbjuden att axla några sociala uppdrag alls, och därmed i praktiken upplöses eller om den fortsätter att fungera som hittills, så att hemlösa och medellösa avvisas – av princip eller för att de inte hävdar sig i konkurrensen om hyresbostäderna – då framstår ”social housing”, även av traditionellt snitt, som en betydligt mer human lösning. (Sahlin 2008)

Som Sahlin påpekar uttrycker redan alliansregeringens tilläggsdirektiv till den Kochska utredningen den utbredda svenska skepsisen mot socialbostäder. Där formuleras explicit att utredaren inte fick föreslå någon modell för allmännyttan som skulle innebära att ”… bostadsföretagen utvecklas i riktning mot att främst eller enbart tillhandahålla bostäder för särskilda grupper efter särskild prövning, t.ex. enligt vissa inkomstkriterier” (Dir. 2007:73, s. 1).


Lite beroende på hur man definierar begreppet ”social housing” (se nästa avsnitt) tycks Sverige vara unikt i Europa genom att inte ha något institutionaliserat system för behovsprövade socialbostäder. Däremot förekommer i växande utsträckning informella och indirekta åtgärder för att tillhandahålla bostäder vid sidan av marknaden, framför allt genom så kallade sociala kontrakt där kommunen går in som garant och förstahandshyresgäst (Sahlin 1996; se Bover-

Vad är socialt i bostadsförsörjningen? En begreppsdiskussion
Få begrepp är så mångtydiga i bostadspolitiken som ”social”. Den svenska bostadspolitiken betecknades länge som social, och den klassiska utredning vars arbete låg till grund för 1940-talets reformer – som sjuttio år senare alltjämt präglar bostadsförsörjningen och –diskursen – hade exempelvis benämningen Bostadssociala utredningen. Och att ”bostaden är en social rättighet” (eller bör vara det) har ofta upprepats både i debatten och som portalformulering i bostadspolitiska dokument.


Detta kapitel handlar dock inte om social bostadspolitik i allmänhet utan om socialbostäder, och här är definitionsfrågan något enklare – om än inte helt okomplicerad. Även om de flesta tycks vara överens om vad ”social housing” är i allmänna drag finns ingen enighet om hur det bör definieras mer exakt, vare sig juridiskt eller bland akademiker (se Granath Hansson & Lundgren 2016 för en aktuell översikt). Någon etablerad svensk översättning finns inte heller
utan ofta används den engelska termen – och då inte sällan med en tydligt negativ laddning. I detta kapitel översätter jag ”social housing” med ”socialbostäder”, väl medveten om att ”bo-
städer” är snävare än ”housing”.

I en utmärkt nyutkommen europeisk översikt från Boverket översätts ”social housing” med ”den sociala bostadssektorn” som definieras som ”den del av bostadsmarknaden i ett visst land som anses ha ett särskilt ansvar för hushåll med begränsade resurser”. Samtidigt framhålls problemen med att formulera en entydig definition eftersom skillnaderna i tillämpning är betydande mellan olika länder. Tre karakteristika lyfts fram som ofta – men inte alltid – utmärker den sociala sektorn: (1) att bostäderna är offentligt subventionerade i syfte att hålla nere boendekostnaderna; (2) att de fördelas enligt särskilda regler till hushåll med begränsade inkomster; samt (3) att de förvaltas av aktörer med ett allmännyttigt syfte (Boverket 2016, s. 10–11). Detta kan jämföras med Granath Hansson och Lundgren som föreslår att ”social housing” definieras som ”ett system som tillhandahåller långsiktigt boende till en bestämd grupp hushåll med begränsade finansiella resurser, med hjälp av subventioner och ett distributionssystem” [min översättning] (Granath Hansson & Lundgren 2016, s. 11).

Eftersom jag uppfattar att den negativa inställningen till socialbostäder i Sverige hänger samman med behovsprövningen vill jag gärna inkludera denna i själva definitionen. Däremot menar jag (liksom Granath Hansson och Lundgren) att socialbostäder inte självklart förutsätter någon viss förvaltningsform eller (till skillnad från dessa författare) offentliga subventioner. Vad som ses som subventioner eller inte är en stor utsträckning en politisk fråga, något som vi lärt oss av diskussionen kring EU och allmännyttan. Alldeles oavsett detta skulle man i princip kunna tänka sig ett socialboende utan subventioner om man accepterar lägre standardnivåer än i det övriga beståndet.

Genom att kombinera element från Boverkets och Granath Hansson och Lundgrens förslag definierar jag för detta kapitel socialbostäder (och den sociala bostadssektorn) som ett system för att långsiktigt förse hushåll med begränsade resurser med bostäder genom någon form av behovsprövning. Långsiktighet bör ingå i definitionen för att utesluta rent temporära bostadslösningar. Jag uppfattar att denna definition väl motsvarar det ”social housing” som har så negativ klang i svensk bostadsdebatt. Genom att inkludera behovsprövningen undviker jag också att den svenska allmännyttan kommer att omfattas av definitionen.

Något ska också sägas om begreppet affordable housing (på svenska ”prisrimliga”, ”överkomliga” eller ”åtkomliga” bostäder; Boverket 2016) som ibland används som en mindre laddad synonym till ”social housing”. Även om detta begrepp givits en formell definition i Storbritannien används det i övrigt synnerligen allmänt. ”Affordable housing” har hittills haft en underordnad roll i den svenska debatten, och är inte så negativt laddat som ”social housing”, och jag lämnar det därför i det följande.

Ett viktigt inslag i Boverkets begreppsdiskussion – och framför allt en central lärdom av rapportens pedagogiska genomgång och jämförande analys av systemen för socialbostäder i Nederländerna, Österrike, Danmark, England, Frankrike och Tyskland – är de stora skillnaderna mellan länderna. De nationella system som ansetts uppfylla EU:s så kallade SGEI-krav för tjänster av allmän ekonomiskt intresse skiljer sig väsentligt beträffande sektorns omfattning, målgrupp och fördelning, hyressättning, finansiering och subventionering. I alla de diskuterade systemen ingår dock någon form av behovsprövning, även om denna inte alltid baseras på politiskt bestämda inkomstnivåer. I de fall där inkomstnivå förekommer ligger dessa ibland på en så hög nivå att en majoritet av befolkningen uppfyller det inkomstrelaterade
kravet. Detta gäller både Österrike och Frankrike (Boverket 2016; mångfalden beträffande nationella system sammanfattas i tabellen på s. 6). En tidigare översikt publicerad av Göteborgs stad (Göteborgs stad 2012) ger för övrigt en liknande bild av stora skillnader mellan system som i den svenska debatten ofta dras över en kam (jfr också Forsell 2014).


**Den svenska bostadsregimen och stigberoendet**

Det svenska systemet för bostadsförsörjning kan sammanfattas i följande tre punkter (Bengtsson 2013):

1. En generellt inriktad bostadspolitik utan individuell behovsprövning, baserad i första hand på kommunalt kontrollerade ”allmännyttiga” bostadsföretag.
2. En integrerad hyresmarknad, med tydliga länkar mellan privat och allmännyttig hyresrätt.
3. Ett korporatistiskt system för hyresförhandlingar baserat på en stark och centralistisk hyresgäströrelse.
Denna bostadspolitiska regim har växt fram och institutionaliserats sedan 1940-talet och gäller i stora drag än i dag. Den sattes dock i gungning under regeringen Bildts systemskiftespolitik i början av 1990-talet och fick sig sedan ytterligare en törn då Fastighetsägarna anmälde svenska staten till EU-kommissionen för brott mot EU:s konkurrenslagstiftning, vilket i för-längningen ledde till Nya allbolagen som föreskriver att allmännyttan ska drivas affärsmässigt.


Enligt min uppfattning bör bostadssubventioner inte ses som ett definierande element i den svenska bostadsregimen. Även om olika typer av subventioner varit ett viktigt inslag i politiken under olika perioder har de ofta betraktats som tillfälliga parenteser, och miljonprogrammet genomfördes till exempel i princip utan subventioner. Då räntebidrag infördes som ett permanent inslag från 1975 sågs det framför allt som ett sätt att åstadkomma neutralitet mellan upplåtelseformerna utan att ta bort småhusägarnas avdragsrätt.

Även om socialbostäder enligt min definition inte nödvändigtvis förutsätter subventioner kan inställningen till offentligt stöd till boendet ändå ha betydelse som förutsättning för inrättandet av ett sådant system. I dag tycks dock även bostadssubventioner betraktas som problematiska av många politiker och debattörer, något som inte minst framgår av diskussionen kring förslaget om statliga investeringsbidrag till byggande av billiga hyreslägenheter i kommuner med bostadsbrist (Ds 2015:35; jfr Bengtsson 2016a).

(1) Att bostadsbeståndets långa livslängd, tillsammans med bostadens sociala betydelse försvårar förändringar.

(2) Att bostäders organisations- och upplåtelseformer har karaktären av marknadsregleringar som definierar den bytes- och besittningssätt som är grundläggande i en marknadsekonomi.

(3) Att den långfristiga finansieringen betyder att banker och andra långivar har ett starkt intresse avfasta och förutsägbara spearegler.

(4) Att bostadspolitiken förverkligas via marknaden, varför institutionella förändringar inte bara behöver stöd av politiker och väljare, utan även måste accepteras av konsumenter och producenter på marknaden.


Den svenska bostadsregimen, med sin generella fördelningslogik, sin integrerade hyresmarknad och sitt korporatistiska förhandlingssystem, som grundlades på 1940-talet och byggdes upp under de följande tre decennierna, har visat sin stigberoende svårföränderlighet över mer än ett halvsekel nu. Systemet har framställt som tillräckligt effektivt och legitimt, och det har varit uppbakat av aktörer med tillräcklig makt, för att överleva betydande ekonomiska och politiska påfrestningar. Som nämnts kom regimen i gungning genom regeringen Bildts systemskiftespolitik och i förteplet till den pågående implementeringen av Nya allbolagen (se Bengtsson 2006/2013 för en utförligare analys). Det är alltjämt osäkert vad som till slut kommer att hända med den svenska bostadsregimen, men här ska vi i stället diskutera hur den gällande regimen påverkar förutsättningarna för att utveckla ett system av socialbostäder.

**Stigberoendet och socialbostäderna**

I detta och följande avsnitt genomför jag vad som skulle kunna betecknas som en omvänt stigberoendeanalyvs. Att analysera stigberoende innebär att relatera institutionella förhållanden i dagens situation (eller vid någon annan tidpunkt B) till händelser tidigare i historien (vid tidpunkt A) och pröva vilka mekanismer som motverkat alternativa utvecklingsvägar mellan A och B (metodologin för detta behandlas i Bengtsson & Ruonavaara 2017). Ansatsen har ibland, något missvisande, beskrivits som att ”skriva historien baklänges”. I det följande tankeexperimentet är uppgiften den omvända: Att med utgångspunkt från rådande institutioner diskutera vilka hinder och mekanismer som skulle kunna påverka förutsättningarna för en tänkt politisk reform – i detta fall införande av socialbostäder i Sverige.
Första steget i en sådan analys är att precisera den tänkta reformen. Som vi sett existerar många olika nationella system för socialbostäder och det förefaller inte fruktbart att förä diskussionen med utgångspunkt från vart och ett av dessa. Detta gäller särskilt som de olika systemen i sig ger uttryck för stigberoendet i respektive lands bostads- politiska regim. I stället utgår jag från min breda definition av socialbostäder ovan och precisera inte ytterligare det tänkta system som skulle införas.

Den följande diskussionen utgår därmed från ett system med fyra egenskaper. Enligt definitionen ska det vara inriktat på hushåll med begränsade resurser, det ska avse långsiktigt boende, och det ska innehålla någon form av behovsprövning. (Av detta följer möjligt också för det färre att den sociala bostadsektorn kommer att utgöra ena delen i en dualistisk hyresmarknad där den andra delen fördelas med marknadshyror.) Vilka hinder för att introducera ett sådant system kan vi se i dagens svenska bostadsregim? Jag lyfter i det följande fram fyra institutionella hinder och fem diskursiva eller idémässiga.

De *institutionella hinder* rör sig om allmännyttans generella inriktning; det kollektiva systemet för hyresförhandlingar (inklusive bruksvärdessystemet); frånvaron av regelverk och administrativa rutiner för fördelning av socialbostäder; samt frånvaron av ett system för marknadshyressättning. De *diskursiva hinder* – som är mer abstrakta men för den skull inte nödvändigtvis lättare att ändra på – är den generella normen om att undvika särfrågor för sämre ställda (”endast det bästa är gott nog åt folket”); idén om neutralitet mellan upplåtelseformerna; den politiska föreställningen att subventioner är problematiska; rådande skepsis till marknadshyror; samt – på en annan nivå – den politiska uppfattningen att organisationerna bör ha ett inflytande på svensk hyrespolitik. Även om dessa institutionella och diskursiva förutsättningar hänger samman på olika sätt försöker jag i det följande kommentera dem en efter en.

Då det gäller allmännyttans generella inriktning har vi redan konstaterat att företagen genomgått stora förändringar under de senaste tjugo åren, med avveckling av de statliga bostadslänen och räntebidragen, och därmed krav på ökat eget kapital, samt därefter de aktuella kraven på affärsämneskap. Detta tillsammans har lett till dels ökade inkomstkvarter på de hyresgäster som erbjuds bostad, dels ett ökat inslag av så kallade socialkontrakt med kommunens socialtjänst som garant. Denna kombination av höjda ekonomiska trösklar för att erhålla en allmännyttig bostad och residualisering via socialkontrakt har av Martin Grander betecknats som ”a new public housing” (Grander 2015a). Fortfarande gäller dock principen att även höginkomsttagare ska kunna bo i allmännytan, och att införa formell behovsprövning skulle innebära en omvälvande institutionell förändring för en allmännyta som nyligen ålagts att vara affärsämnesk.


Det kollektiva systemet för hyresförhandlingar är liksom allmännyttans generella inriktning helt grundläggande för den svenska bostadsregimen. Ett förhandlings- och bruksvärdessystem som det svenska är definitionsmässigt något annat än en marknadsstyrd sektor med individuell hyressättning. Det torde också vara svårt att på ett fruktbart sätt kombinera med ad-
ministrativt bestämda hyror i en sektor för socialbostäder. En dualistisk hyresmarknad skulle innebära en betydande utmaning för organisationerna och särskilt för hyresgäströrelsen som uppnått sin unikt starka ställning i symbios med framväxten och institutionaliseringen av allmännytan och det svenska hyresförhandlingssystemet (se Bengtsson 2006/2013).

Frånvaron av regelverk och administrativa rutiner för fördelning av socialbostäder är ett tredje hinder, åtminstone på kort sikt. Att utforma ett sådant system är en stor politisk och administrativ utmaning, där man inte heller, utom i detaljer, har möjlighet att importera lösningar från andra länder med andra system. Inte heller kan vi dra nytta av tidigare svenska erfarenheter; den senaste svenska modellen för behovsprövning var 1930-talets barnrikehus, som avvecklades med den nya bostadspolitiken efter kriget.

Den första uppgiften blir att nå politisk konsensus om hur ett system för socialbostäder ska utformas i fråga om inkomsttak, standardnivåer, hyressättning, kösystem, kontroll och annat. Därefter gäller det att utforma en administrativ apparat för att förvalta systemet på ett sätt som är effektivt och rättvist, så långt möjligt motverkar fusk och motverkar misstankar om fusk. Detta är absolut nödvändigt om systemet ska vinna legitimitet hos allmänheten och de skattebetalare som ska finansiera systemet (se Bengtsson & Rothstein 1997 för en diskussion om generell och selektiv politik och förutsättningarna för ”villkorat samtycke”).


Det är ändå svårt att föreställa sig en situation där organisationerna, och särskilt Hyresgästföreningen, skulle ge upp sitt försvar för förhandlingssystemet. Detta kan kanske förvåna den som följer mediedebatten, där ekonomer och ledarskribenter med jämna mellanrum dömer ut bruksvärdesystemet eller ”hyresregleringen”. De politiska partierna från höger till vänster har dock hitills varit högst tvetskamma att till i grunden förändra hyressättningssystemet (Jfr Bengtsson 2016b). I stället har förändringar i riktning mot ökad marknadsanpassning genomförts inom ramen för förhandlingssystemet, exempelvis genom möjligheten till så kallade presumtionshyror i nyproduktionen.

Men varför skulle statsmakterna ta så stor hänsyn till vad organisationerna säger? Den frågan för oss över till den sista diskursiva förutsättningen, nämligen den rådande politiska uppfastnningen att organisationerna bör ha ett inflytande på svensk hyrespolitik. Att svensk hyrespolitik alltjämt omfattas av en sådan ”korporatistisk” ordning blev tydligt i det politiska dödläge som uppstod efter Kochska utredningen, ett dödläge som inte bröts förrän SABO och Hyres-


**Finns det någon väg till socialbostäder – bort från stigen?**

Finns det någon väg till socialbostäder i Sverige inom överskådlig framtid? Frågan har ju till sist kommit upp på dagordningen, främst till följd av de akuta problemen med bosättning av asylsökande och flyktingar. EU-anpassningen av hyrespolitiken och Nya allbolagen kan också ha öppnat ett fönster mot socialbostäder, även om allmännyttans fortsatta utveckling ännu är osäker. I detta avsnitt utgår jag från tre olika scenarier för allmännyttnas och hyresmarknaden och diskuterar vilka förutsättningar de skulle ge för en utveckling mot socialbostäder (scenarierna presenteras mer utförligt i Bengtsson 2015).


till allmännyttan handlar bara om hur företagen ska drivas företagsekonomiskt för att uppfylla regelverket.


I *systemskiftesscenariot* slutligen förändras den svenska bostadsregimen i grunden, oavsett om detta sker genom inhemska politiska beslut, till följd av olösa konflikter mellan parterna eller efter påtryckningar från EU. I detta scenario avbryts försöken att få bruksvärdesystemet att framstå som förenligt med EU:s konkurrenslagstiftning – och resultatet blir sannolikt ren marknadshyror. I den lokala bostadsförsörjningen innebär systemskiftesscenariot att implementeringen av lagstiftningen inte leder till någon hållbar jämvikt i kommunerna, utan systemet byter samman genom lokala politiska konflikter, eventuellt också till följd av nya lagstiftning och/eller ingripande från EU. I förlängningen skulle allmännyttiga bostäder de facto komma att fördelas på ren marknadshyror och deras hyror sättas utan kollektiva förhandlingar.


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Det mesta tyder i dag på att utvecklingen av allmännyttan i än högre grad än hittills kommer att se olika ut i olika kommuner, av politiska och ekonomiska skäl men också till följd av skillnader i rolluppfattningar och prioriteringar hos kommunpolitiker och företagsledningar. Att döma av de studier som gjorts är ett agerande enligt motståndsscenariot både möjligt och rimligt, dvs. att allmännyttan fortsätter att ta ett större bostadsocialt ansvar än privata hyresvärdar (Grander 2015b; Westerdahl 2015). Men det finns inget hinder heller mot att kommuner och företag väljer att agera i enlighet med anpassningscenariot. Systemskiftesscenariot framstår som mindre sannolikt under överskådlig framtid.


Systemskiftesscenariot är det alternativ som gör ett politiskt införande av socialbostäder mest sannolikt. Kriser är ofta vad som krävs för att bryta stigberoende, och redan kravet på anpass-
ning till EU:s konkurrenslagstiftning kan ses som (början till) en kris för den svenska bostadsregimen. I en sådan krissituation skulle sannolikt några av de hinder som diskuterades i föregående avsnitt vara politiskt lättare att undanröja.

Slutord

Jag har i kapitlet pekat på fyra institutionella och fem diskursiva hinder för socialbostäder i Sverige. För att ett sådant system ska bli verklighet krävs av allt att döma inte bara fortsatt kris på bostadsmarknaden och en allmän föreställning om rådande institutioners otillräcklighet, utan även en brett förankrad politisk handlingsplan för genomförandet av en reform. Först då skulle socialbostäder kunna förvandlas från ett undflyende spöke till en politisk realitet. Om detta i sin tur skulle ge Sverige en bättre fungerande hyressektor är en annan fråga.

Referenser


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A new Norwegian Bachelor Programme in Real Estate sets out to create a comprehensive understanding of the real estate value chain

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Summary
The planned Bachelor Programme in Real Estate takes the real estate owner’s perspective, and leads the student through the main phases and steps of real estate-related activities. Value creation or value preservation throughout all phases should be one of the dominant goals of an owner, which inspired us to name our core model – upon which we structure our study programme – the “real estate value chain”.

The real estate value chain takes formerly developed models of our own institution as a starting point, lending new inspiration from the principles of Michael Porter’s value chain model, and combining this with both RIBA’s “Plan of Work” and Bygg21’s “Neste steg”, to finally adapt these concepts to the workflow and environment of the Norwegian real estate industry.

As a result, the elaborated “real estate value chain”-model starts with the early phases of real estate development (i.e. first and foremost strategic definition and clarification of the potential use of land and the needs of the market as well as early stage conceptual choices), continues through the phase of planning for, and construction of a project to the operating stage and “ends” with the real estate owner’s choice between further development/alteration, sale or liquidation, which in turn forms a new starting point for the next value chain for the real estate project itself.

With the owner’s perspective in mind, the student learns about various choices, opportunities and risk factors linked to creating, preserving or undermining the change of real estate value from one to another phase of the value chain. Furthermore, the student gets insight into various roles, responsibilities, tasks and interests that the owner, users, advisors, planners, contractors, public authorities and society have throughout the real estate value chain, and an understanding of the necessary professional know-how (technical, juridical, commercial, financial and societal) and leadership required to manage this process.

Regarding the owner’s perspective, the student will gain structured knowledge of the central characteristics of diverse types of perspectives of real estate owners, as well as the consequences of these strands (business goals) for priorities in the execution of real estate development and management.

As far as we know, this holistic conceptual approach to a study programme is new in Europe, and we are looking forward to developing it further in cooperation with other academic institutions.

Concept 1: Our own former model of the value chain
Skolen for eiendomsfag is an offspring of Senter for eiendomsfag, an Oslo-based organisation that has been one of the leading (thus non-accredited) educational institutions for real estate-related topics in Norway for the past 20 years.

1 Royal Institute of Chartered Surveyors in Great Britain
2 Bygg21 is a cooperation between the building and real estate industries and government authorities in Norway.
Alongside the ongoing professionalisation of the real estate industry, the owners of Senter for eiendomsfag have identified an increasing demand for academic education in this field, and thus set up Skolen for eiendomsfag as well as applied for academic accreditation of the Bachelor programme in Real estate presented in this paper.

Based on the long experience in teaching and working together with real estate professionals, Senter for eiendomsfag has developed a circular model for real estate activities as depicted below:

The model differentiates between five main steps in the development process, which are closely connected and should be seen as a circle (cradle to cradle), while at the same time giving the real estate owner the opportunity to both acquire and dispose of real estate between each step, depending on his strategic goal, time horizon, and value creation potential in each step.

Skolen for eiendomsfag has taken this model as a starting point, and developed it further, combining it with other conceptual approaches around both value creation and process management as described below.

**Concept 2: Michael Porter’s Value Chain**

Porter defines a value chain as a set of activities that an organization carries out to create value for its customers. He proposed a general-purpose (“generic”) value chain that companies can use to examine all of their activities, and see how they are connected. The way in which value chain activities are performed determines costs and affects profits, so this tool can help understand the sources of value for an organization.

Rather than looking at departments or accounting cost types, Porter's Value Chain focuses on systems, and how inputs are changed into the outputs purchased by consumers while adding value to those outputs. Using this viewpoint, Porter described a chain of activities common to all businesses, and he divided them into primary and support activities, as shown below.

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The chain of activities gives the final output more added value than the sum of added values of all activities.

A firm’s value chain forms a part of a larger stream of activities, which Porter calls a value system. A value system, or an industry value chain, includes the suppliers that provide the inputs necessary to the firm along with their value chains. After the firm creates products, these products pass through the value chains of distributors (which also have their own value chains), all the way to the customers. All parts of these chains are included in the value system.

In the context of the real estate industry, and especially real estate development, we see that the value system comprises a complex set of value chains of the involved participants, forming a kind of comprehensive value chain of the real estate developer, which we will use as the basis for our new model.

A real estate owner will in most cases have a leading and coordinating role for many contractors throughout the process, which all have their own business model with the corresponding value chain. Companies in this system can cover either an isolated element or a broader range of activities. In some cases, one company might cover virtually all activities in all phases of the real estate value chain, such as in the case of development companies which are integrated into large construction companies, which both own, plan, construct, and occasionally also manage the buildings through the operational stage.

**Concept 3: RIBA’s Plan of Work**

Several initiatives have been taken globally in order to describe the process of planning and constructing a building, and we have chosen two models which seem most relevant to us in the light of our work and geographic and cultural location: RIBA’s Plan of Work and Bygg21’s stage norm “Neste Steg”.

The RIBA (“Royal Institute of British Architects”) Plan of Work 2013 is a reference document for all those involved in the briefing, design, construction and post-occupancy process of buildings. It comprises eight work stages, each with clear boundaries, and details the tasks and outputs required at each stage, which may vary or overlap to suit specific project requirements.
RIBA’s Plan of Work is widely used in Great Britain and larger international projects where major British engineering firms often play a leading role in the planning process. The model, as we see it, though has its main focus on the phase of planning and execution of a construction process.

Concept 4: Bygg21’s Stage Norm “Neste Steg”

Bygg21 («Building21») is a cooperation between the building and real estate industries and the Norwegian authorities. The purpose of this cooperation is to realize the building and real estate industries’ potential for increased productivity and sustainability.

Like in many other countries, the Norwegian building and real estate industries are fragmented, with many different companies cooperating in each project. Each market player works on its own, and based on its own prerequisites. The improvement of these industries’ productivity is thus hindered by a lack of or poor cooperation between these market players. An increased level of industrialization and the corresponding increase of complexity and amount of information in building projects also leads to a raised demand for precise information delivery within and between the different stages of a planning and construction process.

Most participants in the construction process use one or the other standardized subdivision of the phases of a building project⁴. The problem is that these frameworks differ from each other, resulting in an unprecise use of terms and unprecise information delivery between the participants, which in turn result in misunderstandings.

Bygg21 has therefore prepared a joint framework for building projects in Norway, called “Neste Steg” (“Next Step”). This framework takes the stages from RIBA’s plan of work and slightly adapts them to the specifics of the building and real estate industries in Norway.

“Neste Steg” is a framework which describes the core processes throughout certain stages – with the emphasis on the construction process. Eight steps are structured, starting with the

⁴ See detailed analysis in Ole Jonny Klakegg’s concept paper for Bygg21 (2015).
elaboration of the business plan and the clarification of the user’s needs, and ending with the possible demolition of the building. The model serves as a common reference point for splitting up the process in order to create an effective joint language for the two industries. Between each step, important decisions have to be taken, and correct information has to be handed over to the next step in the building process.

The model also adds the involved parties in each step as another dimension, ranging from the owner of the building to the planning team and the construction companies, the public authorities, and – last but not least – users and other stakeholders, including neighbours.

“Neste Steg” can be used as a model for the execution of a construction project, or as a joint reference between the involved parties in such a project. The model and its language can be applied when various participants in the building process discuss tasks, roles and responsibilities during execution. This makes it easier to define which competence each of the participants must contribute at what time in each step, thus saving time and money, and basing the execution of the work on commonly agreed standards.

However, “Neste Steg” mainly covers the planning and production, use (the operating stage) and liquidation phases, and – while including various participants’ perspectives – is not focused around the owner’s perspective, who will in most cases be the dominant player when it comes to strategic choices and decisions in the early phases.

Our Newly Developed Model: the Real Estate Value Chain as a Basis for Skolen for eiendomsfag’s Bachelor Programme in Real Estate

The Bachelor in Real Estate at Skolen for eiendomsfag5 bases its Bachelor programme on its own previous model of the value chain in combination with Bygg21’s “Neste Steg” (and thereby indirectly on RIBA’s plan of work) and some clarifications inspired by Porter’s value chain model, in order to create a more elaborated model which could allow a holistic study programme which embraces all potential phases of a real estate project. It stresses the importance of understanding how various choices in each phase will determine the value of real estate both in the respective phase and especially in the subsequent phases. Taking the real estate owner’s perspective on real estate, the study programme leads the student through the main working steps related to each phase of the value chain.

Dimension 1 of the elaborated model: the real estate value chain

The first dimension of the new model is the real estate value chain with its phases and steps in handling real estate:

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5 “University College with accredited study programmes in the field of Real Estate” – accreditation of the study programme and the university college as such by the relevant Norwegian authorities pending.
<table>
<thead>
<tr>
<th>Real Estate Value Chain</th>
<th>Strategic definition and clarification of potential land use and of user’s needs – early-stage real estate development</th>
<th>Planning and production - technical development activity</th>
<th>Use</th>
<th>Liquidation or further dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steps in handling real estate</td>
<td>Desired use and development goal, acquisition (if necessary)</td>
<td>Clarification of technical, commercial / market-related, financial and regulatory / juridical possibilities and risks</td>
<td>Investment decision and choice of organisational and financial model</td>
<td>Building programme and concept development</td>
</tr>
</tbody>
</table>
Our new value chain model is divided into four phases:

1. Early stage real estate development with the clarification of the potential in the use of land and potentially existing buildings on the land, as well as the need of the market and the users. This also includes the definition of the business goal and strategy of the real estate owner.
2. Planning and production/construction, i.e. the technical and physical part of the development activity
3. Use, including real estate management, operation and maintenance
4. Liquidation (sale, demolition) or further development (replacement, refurbishment, expansion).

The first two phases are subdivided each into three handling steps in order to illustrate the main activities and decisions which are necessary to complete the stage.

This part of the model will give the student a guideline for the necessary steps which need to be considered when working with real estate.

**Dimension 2 of the elaborated model: roles and responsibilities**

The second dimension of the model takes a look on the various roles and responsibilities of the participants involved in real estate, with a focus on the various perspectives which different owners might have on the project.

<table>
<thead>
<tr>
<th>Roles and perspectives</th>
<th>Study perspective: real estate owner</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>- public</td>
</tr>
<tr>
<td></td>
<td>- private</td>
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<tr>
<td></td>
<td>- NGO</td>
</tr>
<tr>
<td>Insight and knowledge about:</td>
<td>- user</td>
</tr>
<tr>
<td></td>
<td>- external contractors</td>
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<td></td>
<td>- authorities</td>
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</tbody>
</table>

Owners of real estate might have different motivations (business strategies) for their ownership:

- financial investment (short or long-term-perspective)
- commercial letting, securing continuous cash flow
- creating facilities for the use of the owner himself
- contributing to the city development / development of the area.

This set of motivations of the owner will result in different priorities for his engagement in the various phases of the real estate value chain, and on which activities and working steps the owner will concentrate his efforts.

The student will learn that a real estate professional needs to make clear which business idea / perspective / motivation the owner has for his involvement in real estate, as this influences which phases, steps and priorities are important to him. Furthermore, it implies which strategic, tactical and operational goals should be set for each operation throughout the value chain, and how these goals should be communicated distinctly with all involved participants. It does not make sense to have a “hidden agenda” in such projects as this will lead to false allocations of resources and priorities.
Dimension 3 of the elaborated model: professional and leadership knowledge and competence

The model's third dimension comprises both the professional knowledge and the leadership/management competence that a real estate player must have in order to be able to successfully manage real estate:

The Bachelor programme’s goal is to give the student a general education in the main professional skills which are necessary to handle real estate: technical, juridical, commercial/economic, and financial skills, as well as knowledge about the societal structures and processes. We are aware of the fact that this is a quite ambitious endeavour and that we cannot impart in-depth knowledge on all of these subjects on a bachelor level, but the idea is to show the student what he needs to take into account when managing real estate. This will also give the student an overview about possible areas for both his future professional engagement and further studies on a master level.

Assembling the three dimensions: the comprehensive and interdisciplinary approach to higher education in real estate

For setting all three dimensions mentioned above in context, we have developed the following figure:
Skolen for eiendomsfag – comprehensive and interdisciplinary approach to education

<table>
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</table>

This model combines both the value chain and corresponding working steps in handling real estate (blue area in the figure above) with roles, responsibilities and perspectives of the involved participants in the process (read area), and professional knowledge, skills and competence (green area).

The comprehensive and interdisciplinary view on the process leads to a quite extensive curriculum for the student, resulting in the following learning outcome for the student:

**KNOWLEDGE:** The candidate...

- will have structured knowledge of the varying perspectives from which real estate can be considered, including knowledge of the central characteristics of diverse types of ownership roles of real estate, as well as the consequences of these perspectives for priorities in the execution of real estate management.
- will have knowledge of the local, national and international frameworks and contexts for management of real estate. In addition, the candidate will have knowledge of the emergence of the professional field of real estate in Norway, as well as knowledge of international trends which may lead to changes in the discipline.
- will have broad knowledge of the central roles and primary tasks, phases and stages in the management of real estate. The candidate will have acquired knowledge of the real estate value chain and life cycle of a building, as well as diverse methodologies and specific tools for use in their own professional role.
- will be familiar with international aspects and terminologies within the different fields of real estate as well as relevant research and development work in the discipline.
- will be able to update his/her own knowledge in the field of real estate.
- will have knowledge of the relevant theoretical background and challenges within the disciplines of either\(^6\) (1) real estate development or (2) administrative and technical real estate management. In addition, the candidate will have broad knowledge of the principles, methodologies and processes in other disciplines related to the real estate value chain.

**SKILLS:** The candidate...

- will be able to apply his/her knowledge, including results from R&D, methodologies, tools and terminologies, independently to practical and theoretical challenges within multiple phases of the real estate value chain and the stages of work in the management of real estate, as well as check quality and ensure effective work in the transitions between phases and stages, make reasoned decisions and present these decisions.
- will be able to reflect on his/her own professional practice and adapt this under guidance.
- will be able to locate, assess and refer to information and subject specific material relating to real estate and communicate this to all parties in the given context, both in terms of individual real estate objects and real estate markets in general.
- will be able to execute tactical professional practice, contribute strategically and commission operationally, including the follow up of areas which are central for professional practice: market follow-up, economic, technical and legal areas with specific focus on administrative and technical real estate management.

**GENERAL COMPETENCE:** The candidate...

- will have insight into the various aspects of real estate, real estate markets, the internal and external market players, the different disciplines which must come together in the management of real estate, the relationships between - and consequences of - varying ownership perspectives, management of real estate in the differing phases of the real estate value chain, various professional roles, as well as models, theories and terminology, requirements, expectations and professional ethical challenges.

\(^6\) The student can choose between two specialisations in the third year of the Bachelor programme: (1) real estate development and (2) administrative and technical real estate management.
will be able to plan and carry out varied tasks and projects within administrative, economic, financial, legal and relational real estate management, and be able to see how these tasks can be carried out in such a way as to contribute to the conservation or generation of value.

will be able to convey, through various forms of expression, essential subject specific material relating to value conserving and value generating real estate management; both theories, challenges, and solutions.

will be able to share opinions and experience between the strategic, tactical and operative levels, as well as between the different professional fields within real estate. This is in order to contribute to the development of good practice.

will be familiar with new thinking and innovation processes in real estate management, and in the societal and user contexts which influence decisions related to value conservation or value generation in real estate, including new regulatory requirements, industry norms, methodologies and market requirements.

Once again, we are aware of the ambitious nature of such a comprehensive study programme, but are at the same time convinced that it is extremely important to establish a basis for this comprehensive thinking early in a real estate professional’s education. The discipline of real estate is cross-curricular, encompassing technical, administrative, legal, financial, economic, leadership and societal disciplines. Based on the general understanding of the whole process, the candidate can choose both further specialized education on master and doctorate levels, or the specific profession that seems best suited for him or her upon finishing the bachelor degree.

Summing up, the Bachelor in Real Estate is an industry-focused study programme with emphasis on the perspective of the real estate owner. The programme consists of 14 compulsory modules totalling 120 ECTS combined with 30 ECTS which are obtained as specialization courses within two alternative fields (real estate development or real estate management) and a bachelor thesis totalling 30 ECTS in the chosen field of specialization. It combines academic and applied competences, knowledge and skills in the management of real estate in the private, public and third sectors.

A Special Focus on Leadership Aspects: Managing Real Estate Activities as a Multidisciplinary Challenge

Traditionally, persons dealing with real estate on a daily basis have no higher education or have not acquired an academic background either in economics or engineering. Today’s complexity in regard to the requirements of the surroundings (the context) leads us to a situation in which the persons working in the field of real estate need to have a multidisciplinary background in order to succeed. We are talking about technical, administrative, legal, financial, economic, leadership and societal knowledge.

The requirement for this multidisciplinary knowledge does not only apply to persons with a higher managing role, but to persons at all levels in an organisation, i.e. those who work at a strategical, tactical as well as operational level. Real estate has to be managed actively. Managing a real estate project or a portfolio of real estate projects comprises an understanding that real estate is not a static object. It is an object undergoing constant change, either in a positive or a negative direction along technical, legal and economic dimensions.

Technically, properties will be constantly changing, either through decline or through re-development. The closest an owner comes to keeping the status quo of real estate, is to carry out continuous maintenance. But even such maintenance will include change of materials – which in itself represents a change – even though the function not is undergoing any changes.

Legally, real estate (either undeveloped or developed) is also in motion. Not steadily, but occasionally. Land use plans decided by the local, regional or central government, will influence how real estate can be used or further developed. Real estate boundaries might change by
action of private law, and the ownership of the land might change hands. New legal requirements might be imposed on real estate as times go on, e.g. in relation to new legislation in the field of environmental issues, esthetical dimensions and with regard to real estate’s role in the development of the town or city.

In economic terms, real estate should neither be regarded as static. Its value will change in accordance with how real estate is managed, maintained or neglected, as well as a result of the market forces and the regulations and requirements set by the authorities.

When it comes to the financial aspect, there is a potential to find various ways to structure the financial set-up linked to real estate. The relation between debt and equity capital, as well as the terms linked to both of them, will vary through times due to capital market changes or the owner’s own management. The financial set-up is thus another factor in motion.

Last, but not least, we want to mention one more aspect that will underline that real estate should not be regarded as a static object, but as a dynamic one. Relationship-oriented property management may influence the fate of real estate. This relationship-oriented management could comprise a dynamic relation between the owner and the tenants, the relationship between the authorities and the owner of real estate, and the relationship between real estate and its physical surroundings. In order for real estate to be prepared for the future, it is essential that the owner both gets impulses from tenants and the developments in the surroundings (or the need for such), as well as adapts to public or formal requirements.

The multidisciplinary aspects of managing real estate require an education which prepares the students for this fascinating complexity – thus the holistic design of our new bachelor programme!
Gender knowledge in a regional innovation system (RIS) – why does it matter?

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Introduction

This paper contributes to the ongoing discussion on how the field of facility management is changing and the role a Regional Innovation System can take to support this change.

Facilities management has evolved from property and construction into a new industry sector during late 1980s and 1990s (Varcoe, 2000). Facility management is defined by the International Facility Management Association as a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, process and technology. According to Meng (2015) five changes have taken or will take place in the industry. The top five changes are: influence of technology; change in legislation; increase in outsourcing; growth of the facility management profession and discipline; and involvement of private sector in public sector projects. A central topic is sustainability and energy performance and waste management are recognized as two important areas for sustainable practice in facility management (ibid.). Both those areas are related to financial sustainability and environmental sustainability. Meng (2015) further states that facility management used to be the practice of coordinating lighting, heating and maintenance at workplaces but is now moving from being operational oriented to becoming more strategic oriented.

Meng (2015) argues that facility management organizations and practitioners have increasingly recognized the importance of innovation if companies in this field should succeed. That is to say, it is of importance that firms get involved in the design of products and processes; this will imply that the role of facility management will change from having the role of post-occupancy and reactive management to pre-occupancy and proactive management.
The Swedish Agency for Innovation Systems, VINNOVA, was inaugurated in January 2001 and works with the following tasks (Jacob, 2006): (1) annually advising the government on innovation policy; (2) performing in-house research and commissioning research on innovation; (3) designing and implementing policy programmes that are stimulating innovation. Vinnväxt is their program supporting Regional Innovation Systems (RIS); the programme started in 2001 and is defined by VINNOVA as a competition for regions. The aim of the programme is to support and develop sustainable growth in functional regions that are or have the potential to be internationally competitive in a ten year period. The founding should support research- and innovation milieus, having a focus on a specific growth area. Becoming a Vinnväxt-region demands that there is a close collaboration between actors representing companies, policy and academia, further the Vinnväxt-region, in this case Urban Magma should, at least, contribute with as much founding as VINNOVA would do, i.e. up to 10 million Swedish Crowns per year. The aim of the Vinnväxt-region is to develop a strategic idea with growth potential, based on the region’s conditions. The empirical context of this paper is a RIS called Urban Magma, located in the south of Sweden.

Urban Magma works with sustainability by focusing on how urban cities and their actors, i.e. different types of companies involved in facility management, how they in an innovative and environmental friendly way could can handle water and sewage systems, heating, cooling and waste management. The goal is to find effective systems for developing products and services that solve environmental challenges. In this specific context the municipalities are important customers of the future sustainable innovations developed in the RIS. In the process the regional (and to some extent national) actors work with the institutions, policies, and factors to make innovations come true, which in the long run will ensure social and environmental sustainability.

VINNOVA demands that gender and equality is taken into account; since start VINNOVA has had a focus on gender and equality. They argue that innovations, as well as systems of innovations need to include actors from public sector and everyday life needs to be put in focus. A focus on everyday life might change how new technology is developed, but it also implies a focus on organizational innovations and not only on technological innovations. Considering applicability implies that new and different actors need to be included; actors that might not have been considered before. When considering applicability the user is suddenly put in focus and the user is everyone, that is to say both men and women.
In this paper we conclude that Urban Magma as a regional innovation system has taken the role to support innovations related to facility management; the purpose of the paper is to explore the participants’ perceptions on gender in Urban Magma.

The structure of the paper is as follows, we first discuss gender and innovation, followed by a discussion on doing gender. Thereafter, the method we have applied is presented followed by our empirical findings that we integrate in a discussion. In our discussion we relate to theoretical concepts and discussions that we find relevant and that we argue can explain our empirical findings. This implies that we are using an abductive approach (Alvesson and Sköldberg, 2000) where theoretical and empirical work is conducted interchangeably. When learning about the major change going on in facility management (Meng, 2015) we realized that the empirical case of Urban Magma is a good example that illustrates well how practitioners, actors working with Urban Magma, and policy – in this case VINNOVA – try to meet the demand that is stressed by Meng (2015). Urban Magma is working with system innovations, that is to say – the involved partners are aiming at, through system innovations, improving facility management systems like water and sewage systems, heating, cooling, and waste management. That is to say, by combining the different areas new systems can be developed that are more sustainable from an environmental perspective.

Gender and innovation

Researchers working with the area of innovation and gender argue that concepts like innovation and innovators are gendered, that is to say they build on notions that promote men and certain forms of masculinity as the norm (cf. Blake and Hanson, 2005; Nyberg, 2009; Lindberg, 2010). Previous studies confirm that there is a strong association between masculinity, science and engineering, and innovation and that these processes are intertwined (Wajcman, 2010; Dautzenberg, 2012; Marlow & McAdam, 2012).

Alsos et al. (2013) argue that one of the reasons for the lack of studies taking a gender perspective to innovation is the apparent invisibility of people in innovation studies. When people are not visible in the discourse, gender easily becomes invisible.

There are different explanations to why this is the case; one is the strong believe in the linear model of innovation. The logic of the linear model is that innovations build on basic scientific research, or
applied research that is commercialized – there is a chronological order (Godin, 2006). This implies that patents and money spent on research and development becomes proxies for innovation. There are a group of researchers who argue that the linear model only holds for a minority of innovations (cf. Kline, 1985; Kline and Rosenberg, 1986; and Rothwell, 1992). Those authors argue that innovation might be a commercial need, in those cases the customer, the user is a source of innovation (von Hippel, 1988). System innovations, when combining parts from different areas become an innovation, are difficult to discuss in terms of a linear model. It is also difficult to not consider the user. It is reasonable to believe that system innovations rather could be explained according to a network model of innovation, when different actors work together to come up with new innovations. This approach to innovation implies that people are considered.

Doing gender in organizations

The doing gender perspective (West and Zimmerman, 1987) focuses on understanding of gender as routine accomplishment embedded in everyday interaction. Doing gender is now a widely-used concept for theorizing and researching gender in organizational studies. By looking at doing gender, the focus shifts away from treating women and men as self-evident categories in academic research, towards seeing gender as a social practice (Nentwich and Kelan 2014).

We are active co-creators of gender relations and the meaning of gender through participation in different arenas such as work organizations or different networks. Femininity and masculinity are seen as not fixed and in a constant flux. Connell (1985, 1987) distinguishes between the culturally dominant forms of masculinity or hegemonic masculinity and subordinated or marginalized forms. Hegemonic masculinity is constructed in relation to femininities, and in relation to subordinated masculinities. By hegemonic Connell (ibid) means the dominant cultural ideal of masculinity, which need not correspond exactly with the actual practices or personalities of the majority of men.

Acker (1990, 1992) claimed that gender could be embedded in organizational forms and relations. Gendering in organizations can occur on different analytical levels. Firstly, gender is constructed in organizations because of the gender-differentiated division of work, which is based upon institutional lines of division between the labor market, family, and the state. Secondly, gender is constructed in organizations through the use of symbols and images, and language and ideology. This construction both reflects and places into stark contrast the actual division of labour between men and women. Thirdly, concrete relations and patterns of
interaction between women and men contribute to giving gender importance in organizations. Fourthly, these processes, contribute to the creation of the individual’s identity within an organization. This, in turn, constructs the gender division and the structure.

**Method**

The study builds partly on interactive research; one of the authors has followed the initiative for a three year period. As a complement qualitative semi-structured telephone interviews have been conducted with 10 representatives from the steering committee and the project group. Based on the empirical material we analyze the participants’ perceptions on gender in Urban Magma.

We have carefully analyzed what the respondents said and how they said it when answering questions related to gender and Urban Magma. We take the organizational context of each respondent into account; that is to say, the organization she or he is employed in.

We interviewed 5 men and 5 women, the interviews were recorded and transcribed.

**Table I** Respondents, five women and five men in the Urban Magma steering committee and project group

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Sex</th>
<th>Age</th>
<th>Education</th>
<th>Present position</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>F</td>
<td>1970</td>
<td>Bachelor in political science</td>
<td>Director of planning in a municipality</td>
</tr>
<tr>
<td>B</td>
<td>F</td>
<td>1968</td>
<td>Master of science in landscaping</td>
<td>Samhällsstrategi I kommun</td>
</tr>
<tr>
<td>C</td>
<td>F</td>
<td>1970</td>
<td>Master of science in mechanical engineering</td>
<td>Sales manager in a private company</td>
</tr>
<tr>
<td>D</td>
<td>F</td>
<td>1972</td>
<td>Master of science in civil engineering</td>
<td>Project manager in a municipality</td>
</tr>
<tr>
<td>E</td>
<td>F</td>
<td>1973</td>
<td>PhD in chemistry</td>
<td>Responsible for research and development in a municipal corporation</td>
</tr>
<tr>
<td>F</td>
<td>M</td>
<td>1967</td>
<td>Bachelor in economic geography</td>
<td>CEO in a cluster</td>
</tr>
</tbody>
</table>
Discussion

The discussion is structured according to the following sub-themes: a gender-free sphere, male-gendered technological systems, diversity - the role model, the meetings with the Urban Magma group, and ambiguous power relations creates uncertainty. Those sub-themes where identified in our analysis and they help us to answer the purpose of the paper, which is, to explore the participants’ perceptions on gender in Urban Magma.

A gender-free sphere

Respondents acknowledged in their answers that they have not considered gender related to Urban Magma. Our empirical analysis shows that, in general, the 10 respondents had reflected very little on gender related to Urban Magma; simply speaking it was an issue that was overlooked. By using a “doing gender perspective” (West and Zimmerman, 1987; Acker, 1990; 1996; 2006; Martin, 2003; Kvande, 2007) we can conclude that Urban Magma has been materialized and described as gender neutral – implying that the masculine norm dominates.

“*I think it's useful to lift this interview, even if you do not get so many answers from me, maybe it's probably enough. The fact that I can not even answer the questions. It is a starting point. I really think that's useful*.” (Respondent A- woman)

“I feel un-accustomed to answer these questions. I feel unfamiliar to discuss them even if I am not unfamiliar with the subject, so it was interesting. I felt unprepared for it.” (Respondent J-man)
There is an essentialist view about gender in the group. They consider themselves also lack the tools to work with the questions. Power perspective is important to take into consideration, that is, who has the power over the technical supply system.

“As far as our technology areas are concerned, and if you look at all the companies in the urban delivery systems, are traditional many of the heads of management and CEOs men”.
(Respondent E- woman)

When analyzing this, our understanding is that women and men have, in this process, consciously or unconsciously overlooked gender and created a sphere not taking gender into account; by doing so they have probably simplified life - especially in a time when it is expected and often taken for granted that gender is naturally embedded as a perspective in organizations everyday life.

Male-gendered technological systems

When taking a closer look at Urban Magma it is obvious that there has been a strong focus on the technological systems. Technology has been a very dominant part of Urban Magma; tubes, lines and waste sorting have been understood from technological and physical perspectives and the physical buildings and cities have been in focus. The fact that people are using the systems has been overlooked. This is of course very convenient, as dealing with technological and physical things is far easier than dealing with humans.

“We can see that there are more women in the public sector and in planning, for example in waterworks, energy companies, project managers for large municipal construction projects. It is important to focus on the whole. Men tend to be a bit more technical in their explanations. Like this product you should have because it has this technology. Women often see a little more, we need this kind of solution.” (Respondent F- man)

“How and where does gender play a role in the technical system? I do not know. I have not reflected about that.” (Respondent E- woman)

“Gender is important in the part of the solution closest to the user or customer. This is where you notice the difference.” (Respondent H- man)
The answers the respondents are giving can partly be explained by the hegemonic discourse on innovation, that is to say, innovations are seen and understood as technological innovations and often understood as linear.

Respondent F above, express an essentialist view on gender, expressing that women (because they are women) see and consider things men do not see and consider. For empiricist feminists this could be an accepted explanation as they treat gender - sex - as a variable, with a focus on differences and similarities between men and women; which is expressed in the quote above.

We would, however, argue that Urban Magma and facility management as a field and area has been gendered and it relies on masculine norms and values, i.e. the technology and the physical are in focus rather than understanding the whole process including the user. An interpretative analysis would consider how gender is constructed through negotiations and practices; and explain that masculine norms and values have been institutionalized. Gender – masculinity - has been produced and reproduced through gendering processes, i.e. processes when actors in interaction have been and are doing gender (West & Zimmermann, 1987).

Calls are made for research that does not only use gender as an explanatory variable but instead examines “how gender is accomplished”, i.e. focusing less on gender as a variable and more on the process of doing gender (Ahl, 2006: 612; Achtenhagen & Tillmar, 2013). This perspective opens up for seeing gender as constructed and represented in processes, organizations, discourses and policy, and not being exclusively tied to individuals with particular sexes; this is important when theoretically examining gender in relation to innovation but it is as important in practice to manage with innovations.

Diversity- the role model?

In my business are we working with "diversity"- and we talk a lot about women as managers, since there is not as many women managers in relation to the amount of women employed in the company. Gender can be absolutely anything, but often it is that you talk a lot about the idea of working with gender issues and equality and diversity, but the practical work seem to disappear. **Respondent C**- woman
Yes, we discuss diversity when we have strategic discussions. But we have not made any explicit actions. **Respondent F-man**

Overall, I think diversity is more important than gender issues. **Respondent J-man**

The meetings with the Urban Magma group

From the interviews we also learned that some participants had noticed a gender hierarchy in the meetings, i.e. men talked more and when women were talking they were interrupted. Further, that women acted as secretaries.

"When you express yourself as a woman in the first few times during the meetings, the men often have been skeptical. It takes a while before you get heard and are respected and that you get to speak and also that you get enough time to talk. **Respondent B-woman**

The male leaders speak very much. They do not think so, but they take a lot of time. When a woman gets the word, one has quite often said that now is the time and now we can not talk so much, and preferably before the woman almost got the word. **Respondent B**

Then I noticed something that I actually thought had disappeared by now, I think it's a bit old, people who had some ruler techniques and sit and pillow their phone while it was a discussion, or turn your back or watch into another place, etc. Saying that gender issues was not so important. It is interesting that it may still come up, when talking about gender issues, I think these discussions are important. I thought it was a very exciting discussion. **Respondent F-man**

Men talk more often about action and results than women. They want to see a result, they want something to happen, it's important that we get started activities that provide something. I think that's a certain difference. **Respondent C-woman**
Concluding remarks

Gender in innovation has remained invisible due to the fact that most studies on innovation are about products, processes or organizations, and not about people. Yet, the extant research focusing on innovation from a gender perspective has clearly demonstrated innovation to be a highly gendered field. Following Wajcman (2010) we also argue that innovation is both a source and a consequence of gender relations.

Among the important questions that should be addressed are: who has power in organisations, who are listened to and whose ideas are brought forward?

Due to the strong association of innovation and technology with masculinity (Wajcman, 2010), the issue of gender is often presented as the problem of women’s underperformance (Lindholm Dahlstrand & Politis, 2013; Marlow & McAdam, 2013) – women are seen as less innovative than men - and we do not expect or seek contradictory evidence. Innovation activity is especially studied in high-technology and manufacturing industries since these industries are considered to represent the fields where innovation occurs. We continuously need to question the ‘natural’ connections between innovation and technology, and to investigate innovation activity in service industries, public sector activities and in other sectors.
Abstract

In this paper I explore the possibilities of using an ANT inspired approach to study sustainability focused accounting in the real estate sector. I suggest that a case study is conducted using methods from symmetrical ethnology (Czarniawska 2017) to collect material about sustainability work, from which the role of accounting can the analysed is a useful way of gaining both practical and theoretical insights. Real estate is suggested as a useful site of study due, among other things, to its localised nature that allows a researcher to easily follow an entire accounting process. There are also many technical, calculative and social sustainability issues in real estate that could be accounted for and therefore can be easily studied with an ANT inspired approach. The ANT approach is meant to symmetrically explore issues such as these, and since real estate work is composed of many types of actors, an non-anthropocentric approach with performative definitions, such as ANT is the best way to study these complex practices. I propose that such a study could add to our knowledge of sustainability work in the real estate industry as well as about sustainability accounting and management accounting as a practice. I also argue that the affordances and constraints of the ANT approach are well suited for organisational studies in a real estate setting.
1 Introduction

This paper is lifted from the introduction and methods chapters of my thesis. Which is a monograph that is in production. I have at this time done most of the field work but not yet finished coding and analysis.

Sustainability, or sustainable development seems to be everywhere today. Exactly where the term sustainable development was coined is up for debate however it seems to have gained a common usage after the Bruntland report in 1987 (United Nations World Commission on Environment and Development 1987), which put the growing but separate environmental and social development movements together and argued that we need all three for our species long term survival. Sustainable development was defined as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’. Since then all facets of politics and business have to increasingly engage with issues that are related to sustainability.

It cannot be denied that there are many environmental and social issues that put both the human and other species’ existence in jeopardy. Some scholars have even suggested that we are moving into a new geological epoch, the *anthropocene* (Hamilton, Gemenne and Bonneuil 2015), where humans now are the main driver of the climate, but also many other things, such as the amount of species; nuclear and organic waste; and the nitrogen cycle (Hamilton, Gemenne and Bonneuil 2015, ch. 1).

The accounting profession and academia are a part of society and business and have therefore also been engaged in these issues. They have studied and debated how business and accounting can affect sustainable development. The academic debate has shifted as the reporting standards for sustainable development issues developed. The academic debate has shifted from discussing the potential of sustainability accounting to a critique of current reporting standards and practices.

Accounting is, as an academic subject, divided into management and financial accounting. Financial accounting deals with creating reports for those outside the organisation and the standards that govern those reports. Management accounting deals with internal issues, such as forecasting, budgeting and calculations for internal use. Sustainability accounting has emerged as a field of its own with elements of both financial and management accounting. There are standards of sorts for sustainability reporting, such as the Global reporting initiative (GRI), even though they are not mandatory in most places. When it comes to accounting as a practice, something that is done in organisations out there, these boundaries between different accounting disciplines break down (Skærbæk and Tryggestad 2010). Accounting, in practice, is according to Frandsen (2009) a device for transporting values in space and time and to create powerful arguments that are difficult to refute. Revellino and Mouritsen (2015) use an engine metaphor for accounting in practice where accounting helps shape as well as evaluate practices. These evaluations are then used to shape new practices and then evaluate them too, it is cyclical, hence engine metaphor.

The demand for sustainability reports and general sustainability work has created new positions within companies, such as that of sustainability officer, or coordinator. They need to produce reports and these reports need to fulfil some role. This role is not yet set or institutionalised in the same way as for financial accounts, where there is an idea of who the primary stakeholder is (Young 2006). All this new work differs from the work done traditionally in accounting, yet the resulting reports are considered to be useful for stakeholders’ decision making in both cases. Traditional financial accounting has a long
history and is a taken for granted practice in modern organisations (Burchell et al. 1980). Accounting for sustainability is comparatively new and might not yet be taken for granted and might not yet have found a role in the everyday practices in organisations. Everyone, from top executives to politicians seem to agree that society needs to change in order to become sustainable, so that future generations can have the same standard of living that we have today. Instead of a routine practice that has been taught for generations, sustainability ‘accountants’ have to navigate new terrain continuously.

The preparer of a sustainability report has many more potential stakeholders to take into account than those that prepare financial statements. Not to mention the uncertainty of that accounting for sustainability can effect a sustainable society or if it is something that is done instead of doing real sustainability work, as Gray (2010) suggests. This would mean that the work of preparing sustainability reports could even have a negative effect on the sustainability of our civilization.

As sustainable development as a concept has gained prominence it has grown as an accounting subject. The different concepts of sustainable development, economic, social and environmental, have been a part of the accounting discussion for some time now. Especially the concept of social accounting has existed since the 1970s (Owen 2008). Today, sustainability accounting flies under the name of social and environmental accounting (SEA). SEA research has moved from, in the 90s, a speculative or even normative debate on what role accounting can, or should, play in sustainability (Birkin 1996; Hines 1991). When SEA became a reality in organisations the focus of the studies shifted to a more critical perspective. These critical studies proclaim that SEA accounting practices do at best nothing for sustainability, and at worst help legitimise current unsustainable practices. Gray (2010). There are many flaws with these critical studies; mainly that they assume at the outset that there are many macro-actors, or forces, at work in sustainability accounting. These types of actors, when used as pre existing explanations, rob the actors in the field of their own agency and ability to define themselves (Latour 2007). It is the researcher that knows what is really going on, and who has to tell his informants what forces really drive them (Latour 2004). A symmetrical ethnology approach, on the other hand, recognises that actors in the field have a different type of knowledge of their practices that an outsider cannot have. An outsider can, however, gain knowledge about the practices in the field (Czarniawska 2017).

Underlying the critical focus of sustainability accounting studies is an assumption that it is possible to do an accurate sustainability account; one that says if an organisation’s work is sustainable or not. However, sustainability reports have developed into accounts that are used for something else. They are used to describe certain things that the organisations do rather than if they are sustainable or not; or if they contribute or detract from humanity’s needs both now and in the future. And the reason for this is a managerialist co-option of sustainability accounting.

Consequently, through repetition, “sustainability” comes to be synonymous with other notions such as “social responsibility” or “environmental management” and, and most especially, becomes a term that offers no threat to corporate attitudes and activity […]. This has the effect of presenting a suite of increasingly pervasive narratives/accounts of sustainability comprising some relatively benign, win–win cocktail of economic achievement, managerial excellence, environmental probity and social responsibility. This tantalising recipe shows every sign of populating business and management discourse – and probably political discourse – largely unchallenged. (Gray 2010, pp. 49)
What is missing from these normative and critical discussions is the local practices of everyday sustainability work. How is the radical sustainable change that we need co-opted and transformed to this benign win-win situation, if it is done so at all. A priori explanations, such as the macro forces of capitalism, managerialism and so on are not satisfactory in themselves (Latour 2004). We need to have a description where these global forces have been localised (Latour 2007, pp. 173).

In order to move this critical paradigm from the a priori forces of managerialism, capitalism and so on we need to study how these forces operate in everyday local situations. If we do not then our critique can be easily dismissed as irrelevant, inapplicable or even simply fabricated and unrealistic, by those in field who do sustainability work who can then proceed to ignore it.

The guiding question for my thesis is the following:

What is the role, if any, of accounting in everyday sustainability work?

The purpose is to describe what accounting does in everyday sustainability work and therefore to help bring about a greater understanding of both the emergent practice of sustainability reporting and how accounting is used in everyday work in organisational practice.

Accounting, in practice studies, is usually described as a practice, or device, for translating referents into a form that allows them to travel in space and time and be used for calculations (Frandsen 2009; Miller 1997). Accounting brings the referents to other places where action can be performed as if the referent was there or the actor performing the action was at the referent (Robson 1992). Referents can move in time too, accounting can bring the past and the future into the present and make them available for calculations. Accounting is as an actor that can be mobilised to bring referents together from different places and times and turn them into a format that can be used for calculation.

Accounting in this sense is a more versatile device than its use producing financial accounts would imply. Quattrone (2004) has shown how it could be used for accounting for sins. Accounting could be mobilised to account for referents that are related to an organisations environmental and social impact. To know what role accounting has in practice would give us some insights into how accounting affects environmental and social reporting and would offer a new perspective on the discussion of how social and sustainability accounting will affect the role of accounting in modern business discourse.

By having an description of the creation of sustainability accounts, that has been done without presumptions of who or what is involved, we can move towards a new phase of sustainability accounting research where we no longer have the assumption that businesses operate with a simple goal that they know of and willingly strive for. We can see where the current paradigm needs to take the complexities of creating accounts into account and where a simplified model could work. We can also we can move on from just looking at the resulting reports and assuming that what the methodology behind their creation is and towards a more grounded understanding of what organisations think sustainability is and how they work with it. These organisations do not live in a ‘hyper-reality’ (Milne and Gray 2013, pp. 19) but in a very real, material, reality where self-reflexive actors go about making sense of sustainability and sustainability reports.
2 A practical real estate case

There are several possible ways to do this study. However, as this study’s aim is to explore a sustainability work and accounting among those without an accounting education and who might therefore not be able to identify accounting when they do it. For this reason it seems prudent to study a case of sustainability work. The choice of case is important here, there are many factors that can and will affect the quality of the outcome of my study. And also the methods and ontological assumptions that I use at the outset will affect the outcome.

The purpose of this study is to document and describe the role, if any, of accounting in a sustainability context. This requires a research method that describes and documents the context from where accounting’s role can to be identified and documented. A thick enough description (Geertz 1994) of the practice of a sustainability officer should contain enough information to analyse the role of accounting in sustainability work.

Sustainability work can be studied as a situated site of practice. Symmetrical ethnology (Czarniawska 2017) is a method that is developed to study sites of practice in modern organisations. To study sustainability work I have chosen to shadow (Czarniawska 2007) a sustainability coordinator. Shadowing differs from participant observation in that the researcher follows the people or object being studied rather than performing the same work they do. I have chosen a sustainability coordinator as I felt that it was the only way I could document sustainability work in practice without having to make my own definition of sustainability work. I have instead assumed that what the sustainability coordinator does is some sort of sustainability work in practice from which the role of accounting in performing this work can be assessed.

This requires me to study in an organisation that has a sustainability coordinator. Ideally the organisation should be small enough to provide enough context for a thick description of a situated practice without the context being overwhelming. It would also be beneficial if it was small enough that the coordinator can access the operational, on the ground, work that is being done, so that I can see it too.

The real estate, or property, context seems like an ideal location for this study for several reasons. It has physical referents that can be studied symmetrically (Latour 1993; Callon 1986), there are many heterogeneous networks (Law and Hassard 1999) involved, from the buildings themselves to windows, electricity and water meters, waste bins, certification systems, parking spaces and so on. All of which need to be taken into account as possible actors/actants (Latour 2007) in a symmetrical fashion.

There are also current sustainability issues in real estate, economic, social and environmental. Real estate is local and its shape and use has effects on the local environment in all of these aspects. Real estate is also affected by and affects global sustainability issues such as the climate due to among other things that real estate requires energy for heating, cooling and electricity.

The creation of a thick description requires that the researcher places him or herself in the context that is to be documented (Geertz 1994). To document a practice this means doing observations or shadowing (Czarniawska 2014) those that perform the practice. For studying the role of accounting in sustainability work I needed to place myself in a practice where there is sustainability work going on. I decided that I wanted to shadow the person who was responsible for sustainability in the organisation that was closest to where the organisation’s regular operations took place, this meant that I would see the parts of the regular operations that the sustainability officer also saw. And would therefore be able to
document how the sustainability officer accounted for those operations. I spent over a year shadowing the sustainability officer of a subsidiary of a Swedish property company. These observations underlie the bulk of the resulting description, they have been supplemented with interviews with other people both inside and outside the company, documents and other artefacts collected from the field and of publicly published documents from the company or others that they interacted with in some way.

The observations mainly recorded using a notebook that was transferred into a field diary as soon as possible after the observation. I was generally not allowed to record sound in the field, or it was impractical to ask permission as there were lots of people at meetings and I didn’t want to affect my informant’s relations with others by recording them. I found that I could most often sit and take notes in a small notebook without my informants or their guests taking much offence. I attributed this to that there are often people from technical schools doing internships for their masters thesis in the field and the people there were used to them. Transferring my fieldnotes to the diary took about as long as the time it took to observe the transcribed event. Meetings took longer to transfer than observations of desk work where I could also collect documents or other artefacts that were the result fo the work. The field diary was a digital document in plain text, this meant that it could be opened and edited without special software, even from my phone.

My shadowing practice was informed by posthumanist assumptions, this meant that I did not at the outset assume that humans alone possessed the ability to act and be subjects. Instead action is seen as something that is performed, not something that a certain actor possesses and can use. The study uses other symmetric assumptions such as not assuming who is involved in the process from the outset (Callon 1986).

It practice, I have done this by creating as thick a description as is possible and included the roles of both human and non-human actors. The resulting description should be polyphonic (Clifford 1983), the voices of the human and non-human actors should come though in the text along with the voice of the researcher. This is especially important in real estate, where there are many actors, not all of them human.

The methods literature in ethnography calls for the researcher to be more or less distant from his or her informants. Not physically of course, but as a tool to produce reflexive insights on what the natives take for granted in their everyday practices. If one comes to a culture that is totally strange then having this distance is less problematic than if one studies one’s own culture. Studying one’s own culture ethnographically can require some strategies to estrange the practices that one observes in order to make them seem distant and strange and allow the researcher to see what is taken for granted in that particular culture or organisation.

When it comes to accounting and sustainability practices this type of symmetric study can bring about knowledge of accounting in a sustainability context by not a priori assuming that accounting plays a role in sustainability practices. By studying a sustainability practice instead of an accounting one it is possible to observe what role accounting has without assuming that it has a role, as one might do if one studied an explicitly accounting practice. Defining a sustainability practice could be problematic, however, many companies today have a manager or even a department that specifically works with sustainability. Studying what role accounting has in the sustainability manager’s or department’s work could provide knowledge about the role of accounting for sustainability.
3 Conclusions

Most of the literature on accounting and sustainability is normative or critical and there is a gap between the critique in the studies and everyday sustainability practices. I propose that using ANT and symmetrical ethnology to fill this gap with a study where I shadow the sustainability coordinator of a real estate company. ANT has performative definitions, meaning that the definitions of things like sustainability have to come from the field and not be specified at the outset. In the case of sustainability this is useful as there are many definitions in the literature that are also implemented in practice and having an pre-existing definition might reduce this study to yet another normative study, where I would see if the field’s definition of sustainability matches the pre-existing definition or not. A performative notion will instead allow me to bring the notion from the field into the literature and analyse it. I propose to create a thick description of sustainability work in all its complexity and its multiplicity of actors, from which the role of accounting can be assessed.

I hope that this will move beyond the normative paradigm in sustainability accounting research and towards something more grounded in actual sustainability practices.
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Housing policy in European perspective: the direction

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The political ambition and goal in Sweden since the late 1920s and early 1930s, when the state took responsibility for housing construction, has been that everyone has the right to a good home (housing). According to Lind and Lundström (2007) it means that it should be minor differences in housing standards compared to differences in living standards in general. It is politically acceptable that a household cannot afford a car, but no one should have to be homeless (ibid.). It cannot be forgotten however, that this is still an ambition, a kind of social right, but not the right in the eyes of the law. Yet, a decent place to live is considered to be one of the basic human rights. OECD Better Life Index expressed it as “living in satisfactory housing conditions is one of the most important aspects of people's lives. Housing is essential to meet basic needs, such as shelter, but it is not just a question of four walls and a roof. Housing should offer a place to sleep and rest where people feel safe and have privacy and personal space; somewhere they can raise a family. All of these elements help make a house a home.” So, the question is always whether people can afford adequate housing.

Thus, what is a notion (an idea) of the welfare state development in Europe? According to Lind and Lundström (2007), the general trend in Europe is that the direct, policy-driven interventions in the housing market is declining and at the same time there is a transition from general measures, focusing instead on those households whose situation is deemed unacceptable. Lind and Lundström express it as greater confidence is attached at wide market oriented solutions, where it is about pushing the market solution a piece in a certain direction in order to get a more acceptable situation. There is also an interesting study of Nordic housing policy, Nordic housing regimes (see Bengtsson et al. 2013). The question in the study is asked "why so different" since remarkably differences between national housing policies and systems for housing supply can be found, and also with references to tenure and other institutions at a time when the external political and economic conditions change in a similar direction.

One may wonder then if there are any similarities and touchpoints between the countries that are for example geographically close to each other or, for example, with similar legal systems, and based on view that the countries housing policies are often faced with the same challenges. One could think also of what is characteristic of the modern housing policy in Europe. Among the Nordic countries, it is noted that the modern housing policy has been "social" in the simple sense that it has been aimed at ensuring poorer households a good accommodation, although the institutional arrangements for achieving this differ fundamentally between countries. Studies of the five Nordic countries show that the organizational forms used for housing policy implementation has so many differences that it can be spoken of five principally different systems for housing, five different housing regimes (see Bengtsson et al. 2013).

Housing policy in Sweden is realized through the market, which means that the government's role in housing supply in the modern welfare societies is not to provide housing for citizens, but instead providing correctives to the market so that the market meets the housing needs in a way that is perceived as fair (Bengtsson 1995). Although it can be argued that the tenancy in Sweden is still something to be assigned, considering the municipal housing queue. Housing policy is then focused on using legislative and economic instruments affecting the rules for
market participants. How do these rules look like based on a few European examples? Ownership is considered the greatest form of tenure in Europe, although not in all European countries, such as for example Germany. This can then be considered in the selection of countries for the study.

So, how have states affected housing supply to ensure that all households, including those worse off, to be able to meet their housing needs in the market? What are the various tenures forms? It is the possession form and organizational forms that defines the relationship between the owners and users in the housing market and thus also establishes the occupants formal position in relation to their residence - as owners, co-owners or just users. Tenure defines both the individual household formal possession of their homes as well as the rules that apply between market players.

Ultimately, everything is about a deeper understanding of how a well-functioning housing market can be achieved, a utopian thought, perhaps, but still striving in that direction. The study is timely, based on both a discussion on mobility in the housing market, and as a result of it, even young people and first-time buyer’s situation on the housing market, that is current not only in Sweden. The variation between countries with different models and principles means that there is a great knowledge to be gained from outside and to be created (different countries welfare experience and tradition), thus thorough description of the characteristics of the different tenure forms in selected countries in order to analyse the relationship between the tenure forms, housing access and mobility in the housing market may be justified.

The interesting is however how housing policy is aimed, for example, at the greater part of the housing market or at vulnerable groups? As it is expressed in the report Habitat for Humanity Poland (see Salamon & Muziol-Weclawowiec (ed.) 2015), housing policy determines not only where and under what conditions people live, but also significantly influences the most important decisions of a human being, for example, the establishment of family, professional mobility or decisions on emigration. In reference to the Nordic countries and Bengtsson et al. (2013) study the classification in housing policy is described as "general", i.e. directed toward the greater part of the housing market, and "selective", focused on particularly vulnerable groups of households and a considerable amount of individual needs assessment.

Braga and Palviani (2013) classify instead European social housing model in terms of universalistic and targeted, where universalistic models consider housing to be a primary public responsibility and thus to hold the objective of providing the whole population with decent quality housing at an affordable price, while targeted models consider the market to be in charge of allocating housing resources to individuals, and therefore the objective is to satisfy only the excess of housing demand not satisfied by the market. Targeted models can in turn be divided into generalist or residual; generalist when housing is allocated according to the income level, and residual, when housing is allocated according to a set of vulnerability indicators (ibid.). How is it then facilitated, for example, for young people to enter the housing market? How should one relate to first-time buyers and their entry into the housing market? (Everything from financing to government grants, subsidies etc.). Thus, the aim of the study is to gain a deeper understanding of the European housing policy and the direction it takes.

The study is going to be based on a literature review on chosen countries as well as the relevant laws and regulations in those countries. The choice of countries is not decided yet but some suggestions are: Poland, Germany, (Czech Republic, Austria, UK, France, Portugal). It
is not decided yet if the chosen countries should have very different systems or if the countries should have similar backgrounds but despite this, different systems, or if the chosen should have undergone major changes in housing policy.

The choice of countries can to some extend be based on the map illustrating global jurisdictions (law families) (see Fig 1):

![Map Illustrating Global Jurisdictions](image)

Although law jurisdictions are not in any way ruling in this case and there is no necessary a link to the housing policy systems, they can provide background for the legislative part of housing policy.

An interesting model to look at is also the model illustrating social housing models according to allocation criteria and size, found in the report requested by the European Parliament’s Committee on Employment and Social Affairs (see Braga & Palvarini (2013), a model based on CECODHAS reports:}

![Social Housing Models](image)
Braga and Palvarini (2013) grouped European countries according their social housing models. There is an inverse correlation between targeting level and dimension: more targeted housing systems have a relatively small dimension, whereas less targeted housing systems have a relatively large dimension. The universalist models are characterised by a large share of social housing stock, the majority of the generalist are large or medium size, while residual models are small or very small.

It must be mention, however, that Braga and Palvarini are clear about there is no common definition of social housing at the EU level. This can cause confusion and complicate classification. Affordable housing term has a broader meaning than social housing term but not rarely affordable housing and social housing are used synonymously in connection with translation. As, for example, in Sweden, municipal housing does not correspond to social housing, as the Table 1 could suggest.

The interesting to note is the in 2007 the Swedish government (after being questioned by the Commission) abolished the public service compensation for the Municipal Housing Companies in order to maintain the universalistic model without violating EU laws on competition (see Braga & Palvarini 2013).

The table below shows the share of different tenure forms in some of the countries considering in the study (see Table 2).

**Table 2. Tenure form in different countries.**

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of home ownership</th>
<th>Indirect ownership</th>
<th>Tenancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>46%</td>
<td>18-20% tenant-ownership</td>
<td>33% tenancy incl. 1% co-tenancy</td>
</tr>
<tr>
<td>Germany</td>
<td>40% own their home, of which 53% in the form of owner-occupied apartment</td>
<td>5-6% housing cooperative</td>
<td>55% lives in rental units (49% in private and 6% in public)</td>
</tr>
</tbody>
</table>

### Austria

- Housing co-operatives and limited-profit housing companies – 18% of the total housing stock and 33% of the total multi-family housing stock (rental units – 31% of the total rental housing stock and owner-occupied units – 46% of the total owner-occupation housing stock)

### Poland

- 75.4% own home (incl. owner-occupied apartments)
- 16.2% cooperative housing (Polish tenant-ownership)
- 0.8 private rent
- 7.6 social rent

| Note: Figures are approximate. |

**Poland**

According to Habitat for Humanity Poland, housing policy in Poland is one of the most marginalized social policies. Construction and housing policy after 1989 is not a priority. The lack of a long-term and consistent housing development strategy, the treatment of housing as a market commodity only, the lack of real governmental help in the development and promotion of social housing, and finally the legislative and institutional constraints has placed Poland in one of the last places among European countries concerning satisfaction of housing needs of their citizens.

Poland has an average of 360 dwellings per 1000 population (2013), which is the lowest in Europe (…).

According to Pittini, Ghekière, Dijol, Kiss och Goudis (ed.) (2015) report, estimates concerning the latest trends in housing construction have identified a deficit of about 500 000 units, a significant decrease from over one million units in 2011. Estimates differ partly due to the existence of a ‘grey’ unofficial rental market. Although the stock in cooperative ownership and housing owned by social building associations is being systematically reduced by transfer to private individual ownership, according to the state policy promoting primarily private individual ownership, the possibilities of conversion of cooperative rights into proper ownership have not led to elimination of cooperatives. Municipal housing is considered to be significant as well, with low rents compared to average rents in private sector (ibid.).

Pittini et al. (2015) point out that the housing overburden rate is below the EU average and there are still significant social and cooperative housing stock compared to other CEE countries which is positive. However, there is housing shortage, severe housing deprivation rate is high at 10.1 compared to 5.2 EU average and there is a risk of default for housing loans, particularly those contracted in foreign currency – a substantial amount of housing loans in Poland have been contracted in foreign currencies, mainly in Swiss francs, as the
Swiss Franc exchange rate increased rapidly in January 2015, and is estimated to have impacted one million Poles (ibid.).

Classification
According to the Bengtsson et al. (2013) and Braga and Palviani (2013) models, housing policy in Poland can be classified as selective or targeted and generalist, with medium size dimension. However it is a share of the affordable housing sector in the housing market, where social housing is included but only as a part of it (see Habitat for Humanity Poland).

Ownership type
In 2015, according to the Central Statistical Office of Poland (GUS), the housing stock in Poland (by ownership type) was as follow: approximately 76.7 percent private ownership (57.4 percent houses and 19.3 percent dwellings in condominiums); 15.4 percent was provided by housing cooperatives; 6.2 percent by municipalities (communal dwellings); 0.6 percent by companies (factories); 0.6 percent by affordable/social housing associations (TBS) and the rest 0.2 percent owned by the State Treasury.

Size and density
The average size of an apartment in Poland (December 2015) is 73.6 m² (0.2 m² more than year before), where indicator in the city is 64.4 m² while in the countryside 92.7 m². The averages usable area per person (2015) is 27.0 m² (city 26.4, countryside 27.9), which means increase by 0.3 m² in comparison with the previous year. The disparity between urban and rural areas apply also to population density of dwellings. Dwellings in rural areas are more populated than in urban areas. In urban areas there were 2.43 people on average, and in the countryside 3.32, with the whole country average at 2.72. Another indicator of the density of housing population is the average number of people per room. This indicator for Poland was 0.71 persons per 1 room, while in the country it was higher and amounted to 0.77 and in the city 0.68 persons per 1 room.

Sales and conversions
For many years, it has been observed the direction of changes in the housing stock in favour (for the benefit) of dwellings owned by natural persons, which follows from the sale processes of housing to individuals, return to their former owners or heirs, as well as the change of purpose of the dwelling for service purpose and the combination of small flats to larger. The stock in cooperative ownership and housing owned by social building associations is being systematically reduced by transfer to private individual ownership. Still a significant percentage of dwellings are housing stock of housing cooperatives (occupied on the basis of cooperative ownership and tenant's right to housing).

In the years 2014 - 2015 the process of sale or return of the dwellings of former owners (purchase of dwellings by natural persons) continued. This process included flats located in multi-apartment buildings and housing in buildings that were sold entirely to individual individuals. In the analyzed period, about 175 thousand apartments were sold. Of the nearly 175 thousand sold apartments, the most sold apartments - 35.6% came from the resources of other entities, 30.9% from the housing cooperatives and 25.7% from the municipal resources, while the apartments sold from the State Treasury accounted for 1.4%. Among the apartments sold between 2014 and 2015, the majority (approximately 93%) were apartments located in multi-apartment buildings. Among dwellings sold to private individuals by housing cooperatives, flats in multi-dwelling buildings accounted for 99.9% of total sold resources. In the case of the State Treasury this share amounted to 95.7%, and municipality (gmina) -
93.7%. The smallest share of dwellings in multi-apartment buildings was flats sold by other entities, i.e. 88.2%.

**Housing allowances**

In 2004, 4.4 million housing allowances were paid. Compared to the previous year, there was a slight decrease (7.5%). The total amount of withdrawals amounted to about 894 million PLN and was lower by 7.9% as compared to 2014. Similarly to the previous year, the highest number of housing allowances was paid to residents of communal premises, i.e. 39.8% of the number and 41.1% of the value of expenditure paid, and cooperatives, i.e. 27.8% of the number and 25.6% of the value of allowances. The users of dwellings in affordable/social housing companies (TBS) were the least addicts, i.e. 2.0% of the number and 2.5% of the value of allowances, and other entities, i.e. 6.4% of the number and 6.9% of the value of the supplements paid.

**Mortgage loans**

**House prices**

**Policy developments**

2009 liquidation of the National Housing Fund
the public Bank Gospodarstwa Krajowego
“Housing for Young People” programme (“Mieszkanie dla młodych”) implementing period 2014-2018
Housing for the poorest and those in special needs, introduced in 2007

**References**


1 Inledning

I ett komplext samhälle finns många olika intressen som rättsordningen ska tillgodose och balansera i förhållande till varandra, vilket inte minst gäller för lagstiftning som reglerar markanvändning och nytjandet av naturresurser. Var tyngdpunkten ligger mellan den enskildes intressen och det allmänna beror på de politiska värderingar som ligger till grund för den aktuella lagstiftningen och över tid förändras synen på vilka värden som ska väga tyngre i avvägningarna. Under de senaste decennierna har det konstitutionella skyddet för äganderätten till fast egendom stärkts genom 2 kap. 15 § regeringsformen (RF), artikel 1 i tilläggsprotokoll 1 Europakonventionen för de mänskliga rättigheterna (EKMR) och senast genom artikel 17 i EU:s stadga om de grundläggande rättigheterna (2010/C 83/02). Den frågeställning som ska diskuteras i artikeln är hur fastighetsbildningslagen, (1970:988), (FBL) och den speciella fastighetsrätten i

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1 Malin Brännström och Ulf Vannebäck är båda doktorander och adjunkter vid Juridiska institutionen, Umeå universitet.

2 Sundell, 2007, s. 98–99.
övrigt förhåller sig till det konstitutionella egendomsskyddet med tanke på den utveckling som skett.

Mark- och miljööverdomstolen (MÖD) avgjorde 2017 ett mål där just förhållandet mellan skyddet för rättigheter och FBL var i fokus. I artikeln får målet tjäna som illustration av de svårigheter som finns i rättstillämpningen när rättighetsfrågor ska behandlas i den speciella fastighetsrätten. Målet är överklagat, men Högsta domstolen (HD) har ännu inte beslutat om prövningstillstånd ska beviljas.3

2 FBL och rättighetsskyddets stärkta position

FBL infördes år 1970 och ett syfte som skulle uppnås med lagstiftningen var att lantmäterimyndigheten på ett effektivt och rationellt sätt skulle kunna fatta beslut om fastighetsbildning för att uppnå vissa jordbruks- och skogsbrukspolitiska mål.4 Det innebar exempelvis att mark kunde överföras mellan fastigheter om det motiverades av att fastigheterna skulle bli lämpligare för sitt ändamål. Det rörde sig således om ingripande åtgärder i förhållande till den enskilde fastighetsägaren.

När FBL infördes var det konstitutionella skyddet för enskildas rättigheter svagt utvecklat. Innan RF infördes år 1974 fanns inte något rättighetsskydd i den svenska konstitutionen.5 I RF infördes visserligen en rättighetskatalog, men rättigheterna fick inte någon framträdande plats och reglerna var tämligen magra sett med dagens ögon.6 Under lång tid ansågs kapitel 2 i RF främst som en instruktion för lagstiftaren att ta fasta på i samband med att nya regler infördes.

3 MÖD:s mål F 9782-15, Dom 2017-03-06. Målet har i HD målnummer T 1523-17.
5 16 § 1809 års RF innebar dock en viss begränsning av konungens makt.
FBL byggde på synsättet att enskildas rättigheter inte skulle försvåra åtgärder som låg i det allmänna intresse. Man kan till och med påstå att 1970-talets reformer inom samhällsplanerings- och naturvårdslagstiftningen kunde bli effektiva just genom att lagstiftaren tog mindre hänsyn än tidigare till äganderätten och andra rättigheter.

Det konstitutionella rättighetsskyddet har därefter successivt fått en ökad betydelse även inom det svenska rättsystemet. Inkorporeringen av EKMR och Sveriges inträdde i EU har inneburit att rättighetsbestämmelserna har fått en förändrad funktion, vilket medfört ett starkare skydd för den enskilde. En annan faktor som påverkat utvecklingen är vissa förändringar i grundlagen år 2010. Uppenbarhetsrekvisitet i 11 kap 14 § RF togs då bort, vilket innebär att domstolarna i högre utsträckning än tidigare kan pröva om lagstiftning överensstämmer med grundlag och välja att inte tillämpa den. I förarbetena till grundlagsändringen framhölls även att grundlagsregler om enskildas rättigheter ska få fullt genomslag i rättstillämpningen. Ytterligare ett förhållande som förändrat rättigheternas funktion är att det genom rättspraxis har kopplats ett ansvar för staten att utge ekonomisk kompensation till enskilda om rättigheterna inte respekteras.

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8 Bengtsson, Bertil, ”Speciell fastighetsrätt – Miljöbalken”, Iustus, Uppsala 2015.
9 Bull, Thomas, ”Regeringsformens renässans”, i Allmänt och enskilt – offentlig rätt i omvandling: Festskrift till Lena Marcusson, Iustus Förlag AB, Uppsala 2013, s. 72 och Åhman, 2015, s. 41.
I linje med rättighetsskyddets framflyttade position och även som ett resultat av en långvarig svensk debatt kring rättighetsfrågor har även regleringen av skyddet för egendom i RF successivt förstärkts. Av särskilt intresse här är den förändring som skedde i dåvarande 2 kap 18 § RF år 1995. Utöver att egendomsskyddet vidgades till att omfatta inte bara expropriation utan även rådighetsinskränkningar, infördes ett krav på att det skulle föreligga ett angeläget allmänt intresse för att inskränkningar i äganderätten skulle kunna göras.13

I förarbeten diskuterades en precisering av det allmänna intresse som EKMR nämner och slutligen beslutades att RF skulle innehålla det skärpande begreppet angeläget. Någon mer djupgående precisering av vad som avsågs med begreppet gjordes inte. Det som nämnades var ”sådana ingrepp som är motiverade med hänsyn till naturvårds- och miljöintressen men även till totalförsvarsintressen och ingrepp för att tillgodose samhällets behov av mark för bostäder och gator och andra kommunikationsleder m.m.” Den närmare preciseringen av vad som avsågs med begreppet angeläget allmänt intresse skulle enligt propositionen göras från fall till fall i enlighet med vad som kunde anses vara acceptabelt i ett demokratiskt samhälle. Någon förändring av rättsläget avsågs inte med förändringen.14

Rådighetsinskränkningar måste ha stöd i lag och det finns en mängd lagar som måste stämma överens med RF:s egendomsskydd. Fri- och rättighetskommittén, som hade att utreda grundlagsförändringarna 1995, konstaterade i sitt delbetänkande att flera lagar inom den speciella fastighetsrätten var väl anpassade till kravet i egendomsskyddet och att inga förändringar skulle vara nödvändiga i dessa lagar.15 Denna bedömning omfattade även FBL.

13 Prop. 1993/94:117, Inkorporering av Europakonventionen och andra fri- och rättighetsfrågor, s. 8-10.
14 Prop. 1993/94:117, s. 16.
15 SOU 1993:40, Fri- och rättighetsfrågor – Regeringsformen, s. 90.

3 Är FBL och förenligt med egendomsskyddet idag?

Frågan om FBL:s förenlighet med det konstitutionella egendomsskyddet har som nämnts ovan nyligen aktualiserats i ett avgörande från MÖD.\(^{16}\) MÖD var inte eniga i sitt beslut utan två av ledamöterna skrev sig skiljaktiga. De olika bedömningarna i domen synliggör den osäkerhet som råder om förhållandet mellan FBL och egendomsskyddet. Vi menar därför att det finns starka skäl för att målet bör prövas av högsta instans då det är av vikt för ledningen av rätstillämpningen.

I målet hade lantmäterimyndigheten, på ansökan från A, genom fastighetsreglering, fört över 210 kvm från B:s fastighet X till A:s fastighet Y. De skäl A anförde för åtgärden var huvudsakligen att utvidgningen av fastighet Y skulle förbättra trafiksituationen och att parkering av bilar skulle bli mer ändamålsenlig. Lantmäteriet fattade beslut om marköverföringen enligt ansökan. Beslutet ändrades sedan av Mark- och miljödomstolen. I lantmäteriets beslut syns inga hänvisningar till egendomsskyddet vare sig i de delar som återger parternas yrkanden eller i själva beslutet. När Mark- och miljödomstolen behandlade målet utgick B i mycket av sin argumentation från egendomsskyddet och menade att detta hindrade åtgärden eftersom kravet på angeläget allmänt intresse inte var

\(^{16}\) Mål F 9782-15, Dom 2017-03-06.
uppfyllt. Mark- och miljödomstolen behandlade inte frågan om egendomsskydd eftersom den kom fram till att kravet på förbättring i 5 kap 5 § FBL inte var uppfyllt.


Som det får förstås menar MÖD att den princip som gäller, med stöd av 2013 års fall, är att det är möjligt att pröva frågan om egendomsskydd separerat från prövningen mot kraven i FBL. Möjliga menar domstolen på ett generellt plan, såsom vi argumenterar för i våra slutsatser, att frågan om en åtgärd är förenlig med skyddet för egendom alltid ska prövas i det enskilda fallet oavsett om åtgärden, enligt tillämplig svensk lag, är möjlig.

Majoriteten pekade därefter på att det i FBL inte finns någon uttrycklig reglering av allmänintresset och att FBL bygger på principen att fastighetsbildning är att se som en enskild angelägenhet. I första hand menade MÖD att ett tvångsförfogande borde bedömas genom en tolkning av FBL:s regler. MÖD hänvisade till båtnadsprövningen i 5 kap 4 § FBL men menade att avvägningen mellan olägenhet och nytta var svår eftersom egendomsskyddet i grunden borde ses som absolut i förhållande till annat än allmänna intressen. Därefter gjorde MÖD en proportionalitetsprövning genom 5 kap 6 § FBL där det föreskrivs att en fastighetsreglering ska utföras på det sätt som medför minsta olägenhet för det fall olika alternativ finns. MÖD menade att denna reglering är i linje med det som får anses följa av egendomsskyddet men att den inte ger
möjlighet att pröva om det finns ett angeläget allmänt intresse som motiverar åtgärden. Inte heller i 5 kap 8 § FBL menade MÖD att det finns tillräckligt utrymme för att väga in egendomsskyddet.

Sammantaget menade MÖD att FBL inte möjliggör en fullständig prövning av förhållandet mellan den sökta tvångsåtgärden och det krav på allmänt intresse som ställs upp i egendomsskyddet. Prövningen av den frågan måste istället, enligt MÖD, göras separat.

Majoriteten i MÖD fann med hänvisning till förarbeten till 2 kap 15 § RF att det kan finnas ett bakomliggande allmänt intresse även om fastighetsregleringen sker till förmån för ett enskilt intresse. Det allmänna intresset kan dock inte, enligt MÖD:s uppfattning, anses vara inneboende i FBL:s bestämmelser syftande till att skapa ändamålsenliga fastigheter utan intressena måste vara mer konkreta på det sätt som anges i förarbeten till 2 kap 15 § RF. De i målet anförda skälen till marköverföringen, det vill säga att förbättra trafiksituation och parkeringsmöjligheter inom fastigheten, menade MÖD inte kunde anses utgöra ett sådant allmänt intresse som motiverade den sökta tvångsåtgärden. MÖD menade därmed att den sökta åtgärden kom i konflikt med egendomsskyddet och inte kunde tillåtas.

Detta pekar, enligt vår uppfattning, på betydelsen av att i det enskilda fallet pröva om det verkligen föreligger ett angeläget allmänt intresse som kan motivera åtgärden. Man kan inte ta detta för givet bara genom utformningen av FBL:s bestämmelser.

De skiljaktiga i MÖD menade att en väl fungerande fastighetsindelning utgör ett angeläget allmänt intresse och att reglerna kring när fastighetsbildning kan ske enligt FBL därmed sammanfaller med reglerna om egendomsskyddet. De regler som de skiljaktiga, med hänvisning till NJA 1996 s. 110, menade värnade egendomsskyddet i FBL var 3 kap 1 §, 5 kap 4 §, 5 kap 5 § och 5 kap 8 §. De skiljaktiga kom fram till att den sökta fastighetsregleringen uppfyllde villkoren i
FBL, vilket innebar att den inte stred mot egendomsskyddet. Fastighetsregleringen kunde därmed tillåtas.

De skiljaktiga höll därmed fast vid de ursprungliga förarbetsuttalandena och det rättsfall som kom relativt snart därefter. De menade att eftersom den sökta åtgärden uppfyller villkoren i FBL följer att den inte strider mot egendomsskyddet i RF. Enligt vår uppfattning, som vi utvecklar nedan, tar de skiljaktiga i sin bedömning inte hänsyn till utvecklingen på rättighetsområdet under de senaste 20 åren.

4 Slutsatser

Det beskrivna avgörandet i MÖD aktualiserar frågan om FBL:s överensstämmelse med det konstitutionella egendomsskyddet. Vi menar att det finns mycket som talar för att FBL:s utformning inte i tillräckligt grad beaktar egendomsskyddet eftersom bestämmelserna tillkommit under en period då de kollektiva intressena ansågs väga tungt i förhållande till de enskilda intressena. Därför anser vi, liksom majoriteten i MÖD att en prövning av en åtgärds förenlighet med egendomsskyddet måste göras i varje enskilt årende. Det innebär att tillämparen måste vara mycket uppmärksam på att i varje enskilt ärende pröva om det föreligger ett allmänt intresse som motiverar åtgärden och genomföra en proportionalitetsbedömning av vilka konsekvenser åtgärden får för berörda fastighetsägare och andra rättighetshavare.

MÖD hänvisade i sitt avgörande till NJA 2013 s. 350 där minerallagen var i fokus. HD gjorde i 2013-års fall en jämförelse mellan minerallagen och expropriationslagen (1972:719) och kom då fram till att minerallagen saknade bestämmelser om allmän intresseavvägning och om krav på att åtgärden ska ha större betydelse. HD nöjde sig därför inte med att pröva om reglerna i minerallagen var uppfyllda utan gjorde även där en separat bedömning av åtgärdens förenlighet med egendomsskyddet. Även minerallagen var en av de
lagar som Fri- och rättighetskommittén menade var anpassade till RF:s egendomsskydd.\textsuperscript{17} HD valde trots det att pröva de aktuella åtgärdernas förenlighet med egendomsskyddet separat. Även när det gäller minerallagen menar vi därför att tidigare utgångspunkter, att de aktuella lagarna är anpassade till egendomsskyddet, inte längre gäller utan att egendomsskyddet måste prövas i varje enskilt ärende.

Vi menar att det är tydligt att skyddet för rättigheter tagit en utveckling som gör att skyddet för enskilda i de aktuella lagarna inom den speciella fastighetsrätten inte längre kan sägas vara tillräckligt. I de fall rättighetsfrågor aktualiseras på området bör därför den som har att besluta i ärendet vara extra uppmärksam och inte utgå ifrån att den lag som tillämpas i tillräcklig grad tar hänsyn till rättigheterna. Det kan till och med finnas skäl för lagstiften att utreda om det sätt rättighetsfrågorna regleras inom den speciella fastighetsrätten behöver en ordentlig genomarbetning.

\textsuperscript{17} SOU 1993:40 s. 62-63.
Förhöjda ersättningsnivåer vid expropriation
Konsekvenser och problem vid förvärv av mark för infrastruktur

Marc Landeman

Inledning

Förevarande text ska ses som en exemplifiering av vissa problem och frågeställningar som eventuellt kommer beröras i en kommande avhandling. Texten är alltså inte på något sätt uttömmande för det som det kommande avhandlingsarbetet kommer beröra utan snarare några tankar och funderingar som hittills kommit upp under arbetets gång.

Kort bakgrund till området


Tvångsvisa ianspråktaganden av fastigheter sker dock ytterst sällan; i regel sker frivilliga överenskommelser mellan fastighetsägaren och den aktör som behöver markområdet. De formella reglerna kring expropriation och ersättning har i den meningen enbart en marginell betydelse. Indirekt har dock reglerna en stor påverkan framförallt på de ersättningar som blir resultatet av de frivilliga överenskommelser som görs när aktören skulle kunna använda expropriation eller liknande tvångsförvärv istället för en frivillig överenskommelse. Lagens ersättningsregler utgör för dessa situationer ramverket för vilken ersättningsnivå som slutligen uppnås vid förhandlingar mellan aktören och fastighetsägaren.

Huvudprincipen i ersättningslagstiftningen har under lång tid varit att ersättning ska betalas med markens marknadsvärde (eller marknadsvärdenäkning), dvs. den summa pengar som fastighetsägaren hade erhållit om denne istället säljt fastigheten på den öppna marknaden utan ett överliggande hot om tvångsavhändande. Ersättning enbart efter marknadsvärde har dock ifrågasatts från vissa håll då den ersättningsformen riskerar att underkompensera fastighetsägaren. Detta eftersom en fastighetsägare ofta värderar sin fastighet till ett högre värde än det som erhålls vid en försäljning på marknaden, bl.a. pga. att det för ägaren finns affektionsvärden och andra indivi-

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1 Doktorand inom speciell fastighetsrätt vid Malmö högskola samt Uppsala universitet.
2 Se härom SOU 2015:109, särskilt kap. 12.4. för närmare belysning av expropriationslagens ersättningsregler som ett ramverk för frivilliga förhandlingar.
3 Se härom t.ex. SOU 2016:3.
4 Se t.ex. Norell (2007 s. 297 ff.)
duella värden, som oftast inte ger något utslag på fastighetens marknadsvärde.5 Bl.a. Werin (1978 s. 81 ff.) benämner i dessa sammanhang ägarens egna värdering av sin fastighet som ett reservationspris. Reservationspriset kan något förenklat förklaras som att så länge fastighetsägaren värderar sin fastighet till ett högre värde än marknaden kommer ägaren att ”reservera” fastigheten för sig själv. Dvs. fastigheten kommer inte bjudas ut till försäljning på den öppna marknaden så länge som fastighetsägarens reservationspris är högre än det sannolikt erhållna värdet vid en frivillig försäljning. Utifrån detta resonemang drar bl.a. Werin slutsatsen att det finns en risk att fastighetsägaren underkompenseras om ersättning enbart utgår för marknadsvärdet vid tvångsvisa i anspråktaganden av fastigheter.

År 2010 infördes en ny bestämmelse i ersättningsreglerna som stadgar att ett påslag om 25 % ska göras på markens (fastighetens) marknadsvärde eller marknadsvärdenominskning. Det är alltså fråga om en förhöjd ersättningsnivå jämfört med tidigare då enbart marknadsvärdet ersattes vid tvångsvisa ingrepp.6 Motivet till en förhöjd ersättningsnivå var att dåvarande regering ville stärka äganderätten för fastighetsägare när tvångsvisa ingrepp sker och att viss hänsyn ska tas till att fastigheten har ett högre värde för ägaren än enbart marknadsvärdet.7 Dvs. lagstiftaren vill med påslagsregeln att den erhållna ersättningen ska ligga närmare fastighetsägarens egna reservationspris än vad som blir fallet när enbart marknadsvärdet ersätts.

Påslagsregeln infördes i expropriationslagens ersättningsregler. Till dessa bestämmelser hänvisar många andra speciallagstiftningar.8 Expropriationslagens ersättningsregler sätter alltså upp ramarna vid förhandling om ersättning även för dessa fall, även om själva intrånget och rätten till ett visst markområde legitimeras genom annan fastighetsrättslig lagstiftning än expropriationslagen.

Den nya regeln har dock gett upphov till en rad potentiella problem. Flera av de lagstiftningar som hänvisar till expropriationslagen har s.s. inte ”hängt med” vid förändringen, vilket gett upphov till inkonsekvenser samt oklarheter hur vissa av bestämmelserna ska tillämpas. Bl.a. utgår olika ersättning för likvärdiga intrång beroende av vilken följdslagstiftning som tillämpas. Vidare är ett potentiellt problem att förhöjda ersättningsnivåer riskerar att väsentligt förnya eller försvåra genomförandet av angelägna projekt beroende av vilka typer av värden som påslaget ska omfattas av.

**Närmare problembeskrivning – värdepåverkan från influenser**

Som nämntes ovan utgår olika ersättning för likartade intrång beroende av vilken inställning följdslagstiftningarna har till expropriationslagen och dess påslagsregel. För att konkretisera detta kan vi tänka oss följande principiella exempel:

Två fastigheter, A och B, ligger bredvid varandra och har ett marknadsvärde om 2 000 000 kr variera. A drabbas av ett intrång för byggande av väg från Trafikverket. Från vägen uppstår buller som sänker värdet med 1 000 000 kr på både A och B. Skadorna är så stora att båda fastigheterna i sin helhet blir inlösta av Trafikverket. Ersättningen till B blir här 2 500 000 kr (2 000 000 *1,25). För A blir ersättningen istället 2 250 000 (1 000 000*1,25 + 1 000 000). Skillnaden i ersättning beror av att i de fall en fastighet avstår mark för exempelvis en väg ska påslaget inte omfatta s.k. företagsskadod,9 t.ex. buller. För B, som inte avstår någon mark, blir påslaget tillämpligt fullt ut eftersom den lag-

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6 Noterbart är att det i äldre lagstiftning har funnits liknande bestämmelser vid expropriation. Se t.ex. 1845 års expropriationslag där det utgick ett påslag om 50 % på fastighetens värde.
7 Se härom prop. 2009/10:162 s. 66.
8 Exempel på följdslagstiftningar är plan- och bygglagen, väglagen, lagen om byggande av järnväg och miljöbalken. Se Sjödin m.fl. (2016) för en grundlig genomgång av dessa lagstiftningar.
9 Bestämmelsen kallas ”influensregeln” som bl.a. innebär att sådan negativ (eller positiv) inverkan på fastighetens marknadsvärde, som själva expropriationsföretaget har, inte omfattas av påslaget.
stiftning som är tillämplig, miljöbalken, har en annan inställning till påslagsregeln vid inlösen av hela fastigheter.

För att illustrera och konkretisera problemformuleringen något ytterligare kan nämnas att problemet av influenser gällande företagsskador har ställdits på sin spets i samband med flytten av Kiruna stad. I samband med flytten har många privatägda bostadsfastigheter tagits i anspråk eller kommer att tas i anspråk i framtiden. Om lagstiftningen tolkas strikt kommer påslaget om 25 % inte omfattas på någon av den del av ersättningen som utgör företagsskada eftersom i princip hela värdeminskningen vid värdetidpunkten kommer kunna härledas från verksamheter som beror av expansionen av gruvverksamheten, dvs. influensregeln kommer bli gällande.

En fråga som uppstår i kölvattnet när expropriation av bostadsfastigheter sker likt det i Kiruna och med hänsyn till företagsskador är om man verkligen har stärkt äganderätten så som var tanken när man 2010 införde påslagsregeln? Dvs. kan man med framgång hävda att äganderätten är stärkt för den typ av situation som uppstår när människor tvingas flytta från sina hem och bostäder men inget påslag sker på löseskillingen? Att påslaget inte tillämpas för den typen av situation torde åtminstone kunna ifrågasättas då det brukar anses som ett av mest allvarliga ingreppen i äganderätten när någon tvingas flytta från sin bostad.

De potentiella problemen i samband med flytten av Kiruna stad skulle mycket förenklat kunna illustreras enligt följande tysiutning: 1) Företaget (gruvdriften) kommer påverka marknadsvärdet negativt av de fastigheter som ska bli inlösta av LKAB. Hur stor påverkan kommer bli är svårt att bedöma, men mycket troligt i en betydande omfattning. 13 Om man utgår från rekvisiten i 4:2 ExL kommer det troligen inte anses som skäligt att företagsskadan ska tälas av fastighetsägaren; den ska alltså ersättas dock utan ett påslag om 25 % på den del av ersättningen som utgör själva företags-skadan. 2) På oexploaterade fastigheter och fastigheter som är bebyggda med bostadshus, men som inte direkt omfattas av flytten, kommer potentiellt en kraftig värdestegring ske i och med att de som tvingas flytta från sina fastigheter måste hitta en ersättningsbostad om de vill bo kvar i Kirunamrådet. 3) Om kommunen eller LKAB ska köpa alternativt expropriera oexploaterade fastigheter för tätbebyggelseändamål kan dessa fastigheter vara influerade av förväntningar om att exploatering kommer ske i framtiden vilket resulterat i att förväntningsvärden uppstår som en del av marknads-värdet. 14 Förväntningsvärden i kombination med påslagsregeln kan då i fall tre så som följd att mark för ersättningsbostäder och annan nödvändig infrastruktur riskerar att bli väsentligt dyrare.

Ett annat område där tillägget om påslag inte närmare granskats är hur regeln ska tillämpas vid kommunala markförvärv för bostadsbyggande. Oklarheter föreligger hur påslaget ska tillämpas på förväntningsvärden av oexploaterad mark. 15 Förväntningsvärden kan något förenklat beskrivas som värden som uppstår inom ett oexploaterat område pga. att det finns förväntningar om att området får exploateras i framtiden. Vid tiden för ianspråket gäller dock dessa värden inte att realisera för fastighetsägaren då tillstånd för exploatering saknas. Problemet här är om influensregeln även blir gällande för detta fall och om en avräkning ska göras på ersättningen. Om en avräkning inte ska göras ska påslaget tillämpas för förväntningsvärden, vilket innebär att kostnaderna för att förvärva mark kan öka väsentligt. Problematiken kring påslagsregelns tillämpning för förväntningsvärden har uppmärksammats av Planprocessutred-

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10 Påslagsregeln ska alltså inte tillämpas på företagsskador.
11 Detta problem kommer troligen även att finnas vid Sverigeförhandlingarnas projekt om dessa genomför.
12 Frågorna har delvis utrettas i Ds 2016:16 med Bertil Bengtsson som ansvarig utredare.
13 Se härom Ds 2016:16 s. 37 ff.
14 Se mer om förväntningsvärden och påslagsregeln nedan.
15 Se även ovan.
ningen som menar att oklarheter föreligger kring vilken ersättning som ska utgå för dessa fall och att frågan behöver utredas vidare. Utredningen belyser även att ökade kostnader i form av ersättning kan påverka kommunernas aktiva markförvärvspolitik. Konsekvenserna av detta har inte utretts närmare enligt utredningen.

Ersättningssystemet som en harmonisk helhet?

Som förhoppningsvis framgått av de ovan, om än mycket ytligt, beskrivna situationerna finns det potentiella konflikt situations som kan uppstå när mark för allmänna ändamål ska förvärvas an- tingen tvångsvis eller via frivilliga förhandlingar. Dessa konflikt situationer är naturligtvis något som inte är önskvärt då målet torde vara att ersättningssystemet ska vara enhetligt, befinna sig i någon form av harmoni och kanske viktigast, vara enkelt att förstå samt att man på förhand ska kunna förutse vilken ersättning som ska utgå för en viss typ av intrång. Med detta sagt kommer delar av det fortsatta avhandlingsarbetet (troligtvis) försöka identifiera och analysera vilka poten- tiella konflikt situations som finns inom ersättningssystemet samt ge förslag på hur dessa situat- ioner eventuellt kan lösas.

Mycket kort om metod

Tanken är att arbetet främst och i första hand kommer tillämpa en rättsdogmatisk metod. Ända- målstolkningar kan också bli aktuellt att tillämpa. Även inslag av rättsekonomi kommer troligt att finnas för frågor som framförallt rör effektivitet inom ersättningssystemet.

Referenser

Ds 2016:16 Ersättning vid expropriation av bostäder.

Proposition 2009/10:162 Ersättning vid expropriation


SOU 2015:109 Bättre samarbete mellan stat och kommun vid planering och byggande

SOU 2016:3 Höghastighetsjärnvägens finansiering och kommersiella försäkrings. Delrapport från Sve- rigeförhandlingen.


\[16\] SOU 2015:109 se specifikt kapitel 12.
The Legal Concept of ‘Home’: A Concealed but Embedded Feature of Swedish Landlord and Tenant Law, Occasionally Infringing Human Rights?*

HAYMANOT BAHERU**

1. Introduction

Legal issues relating to the home in property law are often distilled into questions concerning the unbalanced contractual relationship between the landlord and the tenant, priorities of rights in cases of conflicting interests, as well as the social function rental dwellings serve. In the human right’s paradigm, a distinction is made between a (rental) dwelling and a (tenant’s) ‘home’. The question is then: What is the legally relevant meaning of home, if any?

There is no simple answer to that question. The answer will also differ depending on within which disciplinary it is studied. There is no Swedish statutory definition of the concept of home, in any field of law. Where one has a place of residence seem to be of major importance in at least landlord and tenant law, enforcement law, social security law, tax law and procedural law, and a relevant factor in many other areas of law.

The extent of consideration given to the concept of home in the Swedish legal research is scarce.¹ So far, no coherent doctrinal concept of ‘home’ has

* Unless otherwise noted, all translations are my own.
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¹ The most extensive research is credited to Anna Christensen in Hemrätt i hyreshuset. En rättsvetenskaplig studie av bostadshyresgästens besittningsskydd. 1994. Stockholm: Juristförlaget. She examines the right to home in the context of tenure security. In her research, Christensen makes use of C. Gunnar Bergman’s construction of tenant’s right to home from the early 1920s. Bergman argued that a distinction must be made between any rental
been developed, but there has been some efforts made in landlord and tenant law. In the 1920s, Bergman, Professor of Law, connected the meaning of the concept to its “social meaning”. Christensen, Professor of Law, suggested some 70 years later that the legal concept of home, is connected to the common understanding of the word. Even if these explanations seem to be similar, they depend on either reliable sociological research or public consensus to provide guidance in legal practice. In the absence of that, one has to rely either on an approximation of the concept by the help of legal sources or on related, legally established, concepts.

The second question above, whether there is a legally relevant concept of home, is easy to answer. Article 8(1) of the European Convention on Human Rights and Fundamental Freedoms (ECHR) provides for the right to respect for one’s home. The ECHR and the supplementing convention protocols were incorporated in Swedish domestic law by 1 January 1995, and those of the subsequent protocols that have entered into force have been incorporated as well. The concept of home is not defined in the convention. The understanding of the concept has been developed by the case law of the European Court of Human Rights (ECtHR). The court has repeatedly emphasized the concept’s autonomy to domestic classifications. The home, regardless of its legal nature or its use, is protected under the convention.

There are potentially two parallel concepts of ‘home’ in Swedish law, if one would accept the convention based concept as also being a Swedish one.

dwelling let for residential purposes and a ‘home’. His writings made arguments in support of protecting the rental dwelling’s function as a home. His arguments can be found in the article ‘Hyresgästens hem’ in Tiden 1922 no 2: 92–112; the pamphlet ‘Hyresfrågan och hemmets rätt: till hyresgästerna inför hemskyddets slut den 1 oktober 1923’, Lund 1923; and a lecture transcript together with Herman Kuntze: ‘Hyresfrågan och samhället. Föredrag hållet å Göteborgs Högre Realläroverk den 27 januari 1924’, 1924. Göteborg: Framåt.

2 Bergman 1922, p. 92.
3 Christensen 1994, p. 362.
5 E.g. Winterstein and Others v. France (application no. 27013/3), judgment of 17 October 2013, § 69.
A dwelling that might be protected as a home by the convention, does not necessarily receive the same protection in landlord and tenant law. Is there a concealed but existing concept of ‘home’ within the realm of chapter 12 of the Land Code (1974:994)? If yes, how does it correlate with the concept of ‘home’ that has been developed by the ECtHR?

My ambition is not to present conclusive concepts of home. Rather, the purpose is to provide a conceptual springboard for which the concepts can be understood – both within the scope of the Land Code and Article 8 of the ECHR.7

2. Why is it Relevant?

An understanding of the concept of ‘home’ is relevant because the interest to protect an occupant’s home is taken into consideration both by the legislator and the courts in various contexts. In the Swedish landlord and tenant law, the need to protect a tenant’s home has been used as an argument for rent regulation by the legislator in terms of affordability, enabling tenants to remain in the rental dwelling they currently occupy.8 The interest to protect a tenant’s home is also reflected in the statutory tenure security that most tenants enjoy on the basis of the Land Code. On a general level, there seems to be a consensus on the interconnectedness of the concept of home, the tenant’s right to home and tenure security. The tenant’s right to home applies to the specific rental dwelling that the tenant currently occupies as home. It is a form of residential right.9 There has been some doctrinal resistance against

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9 The tenant’s right to home differs from right to housing, in which case housing is understood in the concept of access to roof over one’s head. There is no general right to housing, (Lind, Anna-Sara. 2009. Sociala rättigheter i förändring. En konstitutionell studie. Uppsala: Uppsala universitet, p. 38). The right is declared as objective provisions for the public institutions: The Instrument of Government (1974:152) 1:2 paragraph 2 states “… the public institutions shall secure the right to employment, housing and education …” (my emphasis). The Social Services Act (2001:453) 3:2 stipulates that the social services shall “promote the individual’s right to housing” (my emphasis). In the context of social ser-
the concept. 10 Although the legislator does not make use of the concept of home in the Land Code, the existence of tenants’ ‘right to home’ is probably not strongly contested today. 11

The relevance of home is however articulated or taken into account by the legislator and the judiciary beyond landlord and tenant law. E.g., the consequences of an occupier’s loss of home is taken into account in the context of enforced sales of tenant-owned dwellings. 12,13 Furthermore, the ‘home’ has been described by the legislator and legal scholars as a non-economic interest that can protect the individual against interference in cases of compulsory acquisition. 14 Therefore, the concept of ‘home’ could arguably be relevant beyond the context of tenant’s right to home.


Victorin and Dahlquist-Sjöberg express scepticism to the existence of such right. The authors write: “Some writers, like Anna Christensen, make the issue of tenure security to a main issue of nearly ideological nature. Christensen’s ways to address the issues in the book “Right to home in rental housing” is a clear example of such a setting. The goal, to create a “right to home”, goes in fact significantly beyond pure tenure security issues, but nevertheless indicate trajectory.” (my emphasis). Victorin, Anders and Dahlquist-Sjöberg, Anders. 2003. Flexibilitet och besittningsskydd. Stockholm: Kungliga tekniska högskolan (Rapport nr 15, KTH:s Bostadsprojekt, uppsats nr 23), p. 26. Similarly, Lundstedt met Bergman’s writings from 1922 with scepticism (SOU 1923:76 p. 57 ff.).

Kjellbom & Alexius has described the tenant’s right to home as an implicit principle in the social services legislation, (Kjellbom & Alexius, p. 288). The Social Welfare Board can act as an independent party and recover the tenant’s right to home in the event a tenant is delayed with payment of rent by assuming payment responsibility, thus ensuring the tenant’s right to his/her home (Land Code 12:44, item 1). The Social Welfare Board’s right to guarantee the fulfilment of the tenant’s obligation to pay rent does not require the landlord’s consent, (Prop. 1992/93:115 p. 16).


When the asset that is subject to compulsory sale is a tenant-owned dwelling which serves as the debtor’s resident, it may be exempted from compulsory sale. The exception applies, inter alia, if the total value of the asset does not make the exemption unreasonable. Presently, tenant-owned dwellings that are valued above 300,000 SEK are not exempted (NJA 2004 p. 373). Sandstedt argues that the lack of consideration given to the debtor’s share in the asset, combined with the development of the market price, has made this benefit for home occupants merely theoretical. Sandstedt, Johan. 2016 “Utmätning av bostad – och EMK:s tilltagande betydelse” ERT 2016: 596–634, p. 599 f.

The protection of the tenant’s ‘home’ in landlord and tenant law precedes the protection of the home under Article 8 of the ECHR. The conceptualizing of ‘home’ in Swedish landlord tenant law can be dated to Bergman’s writings in the beginning of the 1920s. Article 8(1) provides for the right to respect for one’s home. A tenant’s home is therefore protected under separate rights to home in Sweden. A tenant that is at risk of losing one’s home may therefore base his/her case on either of these grounds. The ECtHR has found Article 8 to be applicable in cases brought by tenants. When a tenant makes his/her case on the basis of the Land Code, the provisions on tenure security apply, see above.

3. Is There a Concept of ‘Home’ within the Realm of the Land Code?

3.1 Introduction

The legislator does not make use of the concept of home in the Land Code. The question of whether there is a concept of ‘home’ within the realm of the Land Code can be answered by identifying which provisions in the Land Code establish the legitimacy of the home interest. As stated above, the concept of home is highly related to tenure security. As the latter assures the tenant’s right to home, it’s a relevant point of departure for analysis.

A potential understanding of the concept of ‘home’ within the realm of the Land Code has been provided by Christensen, who writes: “the concept of home that has developed in court rulings [concerning tenure security] coincides with the concept of home in everyday life.” How does one determine the everyday understanding of a concept? One way could be to compare with the definition of the noun ‘home’ in the national encyclopedia, where it is defined as “habitual residence of a particular individual, family or

15 See note 3.
16 See also, Bengtsson 2016, p. 39.
similarly; often with regard to the personal nature of the decoration, etc.  

Christensen’s conceptualizing of the concept is directly related to her understanding of tenant’s right to home – which she considers to be a normative concept. Bergman, as explained above, relates the understanding of the concept to its “social meaning”. See 3.3 below.

In the following, I will attempt to provide a conceptual springboard for which the concept of home within the realm of the Land Code can be understood by (a) connecting it to underlying concepts of housing rights in two conceptual categories: security and privacy; and (b) subjective experiences. The category of security refers to the material protection a physical structure can provide against physical hardship and insecurity: a protection against natural elements and against intrusions from others. The category of privacy refers to the home as a private sphere – a separation between the private and the public. The last category takes into account the bond an occupant develops with the dwelling he/she occupies over time. This sense of attachment is social and psychological and therefore difficult to mould into any other usable legal term than non-economic values.

3.2 Security and Privacy

3.2.1 The Home as a Physical Structure

In the Land Code, a rental dwelling is defined as a house or parts of a house, that is let, or primarily let, for residential purposes in exchange for compensation, 12:1, paragraphs 1 and 3. The statutory definition is mainly based on the material physical structure as well as its use. The object of a rental contract may either be a ‘house’ or ‘parts of a house’. A legal definition of the terms is not provided in the statute. A ‘house’ or ‘parts of a house’ can thus refer to one- or two dwelling buildings, garage, furnished room, a rental

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20 Christensen 1994, p. 4.
21 Bergman 1922, p. 92.
23 For discussions on conceptualizing the home as a physical structure, see Fox O’Mahony 2007, p. 155 ff.
24 Chapter 12 of the Land Code regulates both residential and commercial tenancies. A unit that does not serve residential purposes is a commercial unit, Land Code 12:1 paragraph 3 e contrario.
dwelling in a multi-dwelling building, etc. Additionally, ‘a rental dwelling’ may encompass several physical units, if the objects are let as one under the same contract. Bengtsson, Hager & Victorin, write that the understanding of the term ‘house’ can be derived from the “common understanding” of the word combined with “common sense”. Björkdahl connects the understanding of the term to its “traditional” meaning by arguing that provisions on the standard of a rental dwelling in the Land Code, articles 12:9–18c, do not provide much room for deviations in terms of construction and standard. The impreciseness is generally not a practical problem, especially in residential tenancy.

From a theoretical point of view, and for the purposes of conceptualizing the ‘home’, certain characteristics of the physical structure – as proposed in the legal doctrine – are of interest: (i) provision of physical shelter for its occupiers, and (ii) exclusive occupation and use of a confined space. These characteristics provide the locus of the ‘home’. As the occupant’s right to use is exclusive, the ‘home’ has a feature of a private sphere: the home provides its inhabitants with a measure of security against attack or invasion by other individuals. In terms of standard for residential tenure, the law prescribes a minimum standard that is related to its fitness for use, Land Code 12:9.

25 The understanding of ‘building’ (Swe. byggnad) in this context differs from use elsewhere by the legislator, where a building can refer to constructions such as bridges, railway constructions etc. Björkdahl, Erika P. 2013. Hyra av bostad och lokal. Uppsala: Iustus förlag, p. 28 f. (“Björkdahl”) with references to Lejman, Fritjof. 1951. Rättsförhållanden mellan hyresvärd och hyresgäst, Lund: C. W. K. Gleerup, p. 11 f.


28 Björkdahl, p. 29.

29 Holmqvist, Leif and Thomsson, Rune. 2016. Hyreslagen. 2016-06-01: Zeteo, comment to 12:1. In the preparatory works, it is expressed that a rental dwelling includes, in addition to one or more rooms, kitchen or kitchenette and sanitary facilities, (Prop. 1974:150 p. 491). The account for amenities suggests a strong correlation to adequate housing, see note 36.

30 Lejman, p. 11 f.; Björkdahl, p. 28 ff. and Bengtsson, Hager & Victorin, p. 37.

31 Bergman 1923, p. 5; Barros, p. 360 ff.

32 Bergman 1923, p. 19: “My home is my castle!”

33 The provisions on the standards of rental dwellings can be compared with Bergman’s first requirement on the homes in residential properties: “wholesome and reasonably maintained residential dwellings.” (Bergman 1923 p. 6).
3.2.2 The Use of a Rental Dwelling

A (residential) rental dwelling must be let for, or mainly let for, residential purposes. Herein lies a social right aspect of the concept of home: access to adequate housing.34 A residential tenant may not make use of the dwelling for other purposes than the one intended, Land Code 12:23. Use against such purpose could be deemed as breach of contract by the tenant. E.g., when a tenant sublets a unit via apartment sharing services extensively – and receives compensation thereby – the ‘use’ of the apartment is more commercial than residential.35, 36 Therefore, it has been argued that ‘home’ refers to the occupier’s place of residence.37, 38 Christensen argues that while it is possible for a person to rent several dwellings, the location that is considered as ‘home’ is the one where the occupant has his/her place of residence.39 See the connection to residential values below.

3.3 Subjective Experiences and the Concept of Home

3.3.1 Introduction

Although an adequate physical structure for shelter is an essential starting point for an analysis of the concept of ‘home’, it cannot be isolated from the occupant’s subjective experiences of social and personal nature. If one is to use Fox O’Mahony’s conceptualizing of home as “house + x”, these meanings

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34 Right to adequate housing is considered to be a social right, proclaimed inter alia in Article 31 of the Charter of Fundamental Rights of the European Union.

35 See the Rental Board’s decision of 17 August 2015 in case no. 8741-15 and RBD 10:82, where an apartment was used for prostitution purposes. A tenant that makes use of a rental dwelling for other purposes than residential could risk forfeiture, Land Code 12:42 paragraph 1 item 4.

36 A unit “mainly” let for residential purposes, may be used for residential and commercial purposes. In such cases, the nature of the lease needs to be classified as either residential or commercial, Land Code 12:1 paragraph 3. The preparatory works suggest that a unit let for mixed purposes, may be classified as a residential unit as soon as the residential element is not of minor significance in comparison to the commercial element of the lease. Should the planning and the equipment of a unit be specially prepared for a particular trade, the assessment would be the reverse. (Prop. 1968:91, Appendix A., p. 11 and 124.)


38 When the courts (a Rental Board or Svea Court of Appeal) assess where a person has his/her place of residence, the records from the registration of personal status is assumed to accurately reflect the person’s residence, unless special circumstances to the contrary are presented (RH 2003:60).

could be the x-factors: “the locus for family life, a place of safety, a place of privacy, continuity and a sense of permanence”.\textsuperscript{40} Bergman presents a similar understanding of the home: He writes that the \textit{social understanding} of ‘home’ is (i) a personal attachment to a specific rental dwelling; (ii) it serves as the locus for family life; (iii) where a unity has formed between the unit and the household effects; and (iv) a place that is invested with meaning and memories.\textsuperscript{41} Bergman further argues that \textit{permanency} is closely associated with the understanding of home.\textsuperscript{42}

Fox O’Mahony’s x-factors and Bergman’s account of its social meaning exemplify the tenant’s subjective experiences that are of non-economic nature.\textsuperscript{43} Christensen refer to these values collectively as “home values”.\textsuperscript{44} They are reflected in the following categories of non-economic values: \textit{emotional values} and \textit{residential values}.\textsuperscript{45}

\subsection*{3.3.2 Emotional Values}

This category refers to the emotional values a person attaches to a property. A person does not need to own the property, it is sufficient that he/she has a connection to it.\textsuperscript{46} Emotional values are therefore of personal appreciation.\textsuperscript{47} Christensen observes that a ‘home’ does not necessarily need to be the one where one is physically present at all times: “it can be the place one considers as home and the place one returns to after a long journey or the lengthy hospital stay.”\textsuperscript{48} In residential tenure, a tenant can develop personal attachment

\textsuperscript{40} By drawing on the work of other disciplines, Fox O’Mahony portrays a concept of home beyond proprietary interests in a tangible dwelling to capture ‘the x factor’ within a cluster of home values. Fox O’Mahony identifies the following x-factors: ‘financial investment’, ‘physical structure’, ‘territory’, ‘identity’ and a ‘social and cultural unit’ (Fox O’Mahony 2007, p. 139 f.).
\textsuperscript{41} Bergman 1923, p. 19.
\textsuperscript{42} Bergman 1922, p. 92.
\textsuperscript{43} Fox O’Mahony 2013, p. 167 f.
\textsuperscript{44} Christensen 1994, p. 362.
\textsuperscript{45} Bengtsson 2016, p. 16 ff.
\textsuperscript{46} Bergman took early a position against conceptualizing the ‘home’ exclusively in relation to ownership. In 1922 he wrote: “… the development in Sweden has moved towards the direction where the majority of the population in urban areas live in rental dwellings… the solution to the housing question in the cities does not lie in the building of owner-occupied houses in the foreseeable future. The one-sided aspiration in the aforementioned direction has – albeit great aspiration – led to the disregard of all the homes in the rental dwellings.” (Bergman 1922, p. 92.)
\textsuperscript{47} Bengtsson 2016, p. 18 f.
\textsuperscript{48} Christensen 1994, p. 361.
to a specific rental dwelling; the dwelling can be invested with meaning and memories. The courts have seemingly delimited the scope of attachment exclusively to the rental dwelling; i.e. it does not encompass the location of the rental dwelling. E.g. the tenure security of a tenant who wanted to keep a supplementary dwelling due to strong personal connection to a certain location in the form of family and friends, was not deemed to be an interest meriting protection.

3.3.3 Residential Values

This category refers to the tenant’s peaceful enjoyment of the rental dwelling. Residential values differ from emotional values in the sense that peaceful enjoyment of one’s home is protected by provisions in the Land Code. Residential values are universally applicable to all types of residential dwellings. Residential values encompass residential quality and safety.

Residential Quality

The tenant’s comfort and well-being is a category of residential values that is connected to the use of the residential dwelling. The tenant’s ability to peacefully enjoy the rental dwelling can be affected by the standard of the dwelling and the occurrences of disturbances. The courts seem to acknowledge an ambit of enjoyment which encompasses the environment surrounding the residential dwelling. Deficiency in residential qualities can be sanctioned with remedial injunction and rent reduction, both when an objective deficit is at hand, i.e. deficits in its fitness for use, as well as the occurrence of disturbances of other kind, e.g. odor (even when it comes from neighboring property), harassment or other aggressive behavior from neighbors, loud noises, loitering, or the occurrence of excessive levels of radon in relation to recommended guidelines, Land Code 12:9–18.

49 Bergman 1923, p. 19.
50 Svea Court of Appeal’s decision of 22 April 2010, case no 4617-09.
51 Compare with Demades v. Turkey (application no. 16219/90), judgment of 31 July 2003. See 4.3.2 below.
52 Bengtsson 2016, p. 18.
53 Ibid., p. 90 f.
54 Ibid., p. 93; NJA 2016 p. 303.
55 E.g., RH 1988:11, RH 2002:27 & NJA 2016 p. 303. For additional account of cases, see Holmqvist and Thomsson, comments to 12:16.
Safety

In the context of landlord and tenant law, safety may be understood in the form of *sense of permanence*.\(^{56}\) A home is connected with being domiciled.\(^{57}\) The purpose of the provisions on tenure security is to ensure the continuance of a tenant’s occupation of his/her home and thereby create “increased independence and well-being” for the tenant, according to the legislator.\(^{58,\,59}\) The tenant’s security of tenure also applies in relation to a new owner, provided that the lease is in writing and the tenant has moved into the flat prior to the party substitution, Land Code 7:13 – a form of a *right in rem*.\(^{60}\) Herein lies the connection between right to home and tenure security: Christensen argues that the former is the independent legal basis for tenure security in Swedish landlord and tenant law.\(^{61}\) The tenant does not need to reside in the unit prior to the party substitution, it is sufficient if he/she has made use of the unit somehow.\(^{62}\) Here, the connection between the concept of ‘home’ and the notion of permanency does not seem to have been taken into consideration.

The provisions of tenure security are constructed as a general entitlement to extension of the lease upon the landlord’s termination of the contract.\(^{63}\) The provisions ensuring tenure security provide for security of multiple homes, but the court rulings suggest a strong protection for a dwelling considered to be the occupant’s home. A tenant who occupies a dwelling let for recreational purposes does not enjoy a comparably strong tenure security.\(^{64}\)

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\(^{56}\) Bergman 1922, p. 92. According to Bergman, a home “cannot tolerate frequent moves.” (Bergman 1922, p. 94).

\(^{57}\) Bergman 1922, p. 92.


\(^{59}\) Compare with Fox O’Mahony’s *x-factors*.


\(^{61}\) Christensen 1994, p. 94, Svea Court of Appeal’s Decision of 22 October 2010, case no 4617-09.

\(^{62}\) Björkdahl, p. 203.

\(^{63}\) Land Code 12:45–52. An account of the provisions on tenure security is outside the scope of this paper. A brief overview of interest in this context: The provisions exempt certain tenures, e.g. subtenures for shorter periods than two years, furnished rooms (which can consist of several rooms and include bathrooms – but not a kitchen. Hotel rooms are examples of furnished rooms. [Bengtsson, Hager and Victorin, p. 62; prop. 1974:150 p. 491]), or dwellings let for recreational purposes when the tenure has lasted for a shorter period than nine months or when the unit is a part of the landlord’s own resident, Land Code 12:45.

\(^{64}\) Christensen 1994, p. 84.
Despite the applicability of a general entitlement to extension of the lease, the circumstances of the individual case can be as such that restrictions are imposed, Land Code 12:46. Here, the landlord’s objective reason(-s) for terminating the contract is balanced with the interest(-s) of the tenant warranting protection. The requirement of objectivity entails a delimitation on grounds a landlord may base his/her case upon. The inconveniences a loss of home could entail to the specific tenant’s safety and comfort and well-being is taken into consideration as an interest warranting protection.

A balancing of interests is applied when parties present an objective ground and an interest justifying protection, respectively. In the event one of the parties fails, the courts have ruled in favor of the other party. Consequently, if both parties fail, the lease is extended. An extension of a lease when the tenant’s interest does not warrant protection is questionable with respect to the infringement of the landlord’s property rights and the society’s counter interests to rationally dispose of the limited dwelling stock. The outermost delimitation of what can be considered a home should be unwarranted infringement on conflicting interests, which in this context are the landlord’s property rights and the society’s objective to secure the right to housing.

E.g., forfeiture of lease, tenant’s breach of obligations is to the extent that the tenure could not reasonably be extended (e.g. delay with payment of rent), demolishing of the house and a termination of tenancy is not unfair for the tenant, etc. Land Code 12:46.

Bengtsson 2016 p. 91; Victorin and Dahlquist-Sjöberg, p. 33.

Could be referred to as “social reasons” or “social considerations”.

Bengtsson, Hager and Victorin, p. 66 note 14, with references to RBD 18:83 and RBD 4:87 (where the tenant’s interests did not warrant protection).

Victorin and Dahlquist-Sjöberg, p. 33. The authors suggest that the consequence is directly related to the construction of the provisions on tenure security in the Land Code. In her studies of normative patterns, Christensen identifies the protection of the established position as a basic normative pattern in the areas of law she calls the “social dimension” (i.e. rules that govern circumstances and relationships, which directly affect everyone in their everyday lives. The function of the rules is to maintain, secure and develop the everyday life.). Christensen writes that the special characteristic of the normative pattern of the established position is exhibited by its exclusive availability to those who have already established themselves in a certain position. (Christensen 2000, p. 290.)

Victorin and Dahlquist-Sjöberg, p. 33.

The provisions on tenure security do not take into consideration how the residential dwelling stock should be distributed in the society, Christensen 1994, p. 84.
3.4 Is There a Concept of Home within the Realm of the Land Code?

The account above suggests that it is possible to distill a concept of home by departing from provisions in the Land Code combined with case law that take the home interest into consideration and connecting it to housing interests. This method of conceptualizing the home enables a portrait of the concept that goes beyond proprietary interests in a tangible dwelling. In residential tenure, the property that the occupant may claim as his/her ‘home’ is mainly based on the subjective interests of the occupier of the defined area which provides a roof over head.

4. The Concept of ‘Home’ in Article 8 of the ECHR

4.1 Who is Protected, and Who Must Respect or Protect?

4.1.1 Who is Entitled to Respect for their Home?

Article 8 of the ECHR states:

Right to respect for private and family life

(1) Everyone has the right to respect for his private and family, his home and his correspondence.

(2) There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others.

The right to respect for one’s home is entitled to everyone, i.e., it is not exclusive to occupants of a type of property one may own. A person who has established a home enjoys protection of said home, regardless of the legal nature of the property – or its use. The concept of ‘home’ is not dependent on lawful or lawfully established occupation. The right to respect for one’s home is exclusive to those who have a home: Article 8 does not provide for

72 The selection of case law is based on relevance to the theme.
73 Grabenwarter, p. 196.
a right to housing.\textsuperscript{75,76} Nor does it entitle each family to have a home for themselves.\textsuperscript{77}

A person may occupy a home without any proprietary interest in that home. Both owned and rented dwellings fall within the scope of Article 8. In \textit{Khatun and Others v. the United Kingdom}, the Commission expressed that for the purposes of Article 8, there is no distinction made between applicants who have a proprietary interest in the land on which their house was built and those without such interest.\textsuperscript{78}

A habitation can be a ‘home’ for a person who is neither its owner or its tenant, but resides there because of family connection.\textsuperscript{79} In the landlord and tenant law context, the tenant’s co-habitants may have an independent right to respect for their home, provided that they have or have had “\textit{sufficient and continuing links}” to the place.\textsuperscript{80,81} See 4.3 regarding “\textit{sufficient and continuing links}”.

\textbf{4.1.2 Who is Subject to a Corresponding Duty to Respect the Home?}

Article 8 portrays a protection for individuals against arbitrary interference by the public authorities (\textit{vertical effect}). The Article does not impose an obli-
The Legal Concept of ‘Home’: A Concealed but Embedded Feature …

gation on private parties towards the home occupant, e.g. private landlords (direct horizontal effect). The word ‘respect’ in the context of Article 8 suggests the existence of positive obligations on contracting states. The ECtHR has observed that positive obligations are inherent in an effective respect for family life (and also, privacy, home and correspondence).\(^82\) Additionally, Article 1 of the ECHR requires that the contracting states secure the rights and freedoms of the convention. The Article has been interpreted as imposing both negative and positive obligations upon the contracting states.\(^83\)

Article 8 does arguably have an indirect horizontal effect in relation to disputes between landlords and tenants on the basis that the reference to ‘public authorities’ includes courts, and that the courts have a duty to comply with the convention rights.\(^84\) In the sphere of interpersonal relations, the ECtHR has stated that “a fair balance needs to be struck between the general interest and the interests of the people concerned”.\(^85\)

4.2 Why is it Relevant to Conceptualize the Home within the Ambit of Article 8?

In a human rights context, the courts need to ascertain the scope of Article 8 in order to determine the permissibility of an interference with a right: First by considering the applicability of the Article (8.1); second, (i) whether an action, e.g. termination of a lease, is an interference with a tenant’s right to respect for his/her home – and if so, (ii) whether the interference is justified (8.2), including the proportionality of the interference to the end pursued.

A conceptualizing of the ‘home’ in the ECHR context is of importance when the courts assess the permissibility of an interference of the right. In the balancing exercise that is carried out in the second step, the courts need to depart from an understanding of the concept as it is understood within the ambit of Article 8. Keeping in mind that the ECHR is a living instrument and that the ECtHR interprets it in the light of societal changes and in line with present-day conditions, the concept is continuously developing.\(^86\)

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\(^{82}\) Marckx v. Belgium (application no. 6833/74), judgment of 13 June 1979.

\(^{83}\) Harris, O’Boyle, Bates and Buckley, p. 21.

\(^{84}\) See also Lees, Emma. 2015. Horizontal Effect and Article 8: McDonald v McDonald, Law Quarterly Review, 131: 34–39.


\(^{86}\) Demades v. Turkey, § 33; Cossey v. the United Kingdom (application no. 10843/84), judgment of 27 September 1990, § 35.
In the following section, the concept of home will be analyzed in connection to the conceptual categories of (a) security and privacy; and (b) subjective experiences, defined under 3.3 above. It will be followed by an account of the relevant domestic courts’ understanding of the concept.

4.3 The Concept of ‘Home’ within the Realm of Article 8

4.3.1 Security and Privacy

The ECtHR has expressed that a home is usually “the place, the physically defined area, where private and family life develops.” (my emphasis) A room that is part of a house can in itself constitute a home. The requirement of a physically defined area suggests a connection to the home as a physical structure with regards to the function the physical structure provides, i.e. to provide the occupant a private sphere. The ‘home’ as a physical structure is a prerequisite for the development of ‘sufficient and continuing links’ as there needs to be a physical space within which such links may be forged. A property without a house cannot constitute a home. The court’s development of the notion of ‘home’ does in this respect give support to the concept of home that has been developed by Fox O’Mahony (home = house + x) as well as Bergman’s conceptualization of the concept in relation to its “social meaning.”

The concept of home can be understood in the conceptual category of privacy. The right to respect for one’s home is embedded in the context of protection of ‘private and family life’. The ambit of privacy is limited to “privacy at home”; freedom from interference. As Buyse has observed, the

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87 E.g. Moreno Gómez v. Spain (application no.4143/02), judgment of 16 November 2004, § 53; Giacomelli v. Italy (application no. 59909/00), judgment of 2 November 2006, § 76; Gaida v. Germany (application no. 32015/02), judgement of 3 July 2007, p. 9; Hatton and Others v. the United Kingdom [GC] (application no. 36022/97), judgment of 8 July 2003, § 96.
89 Buyse, p. 297.
91 Loizidou v. Turkey (application no. 15318/89), judgment of 18 December 1996, § 66.
92 See 3.1 and notes 40 & 61.
93 Compare with Fox O’Mahony 2007, p. 461 and Buyse, p. 303.
security element of the concept of home as a physical structure is absent in the ECtHR’s case law.94

4.3.2 Subjective Experiences
Sufficient and Continuing Links
The concept of ‘home’ is an autonomous concept. As stated above, the concept is not related to proprietary interests. Whether a certain place can be regarded as home within the ambit of Article 8 is much related to the specific circumstances of the case. In general, home has been identified as the place to which the person has or has had “sufficient and continuing links”. Present occupation is not definitive to the question of whether or not there are ‘sufficient and continuing links’. The ECtHR’s qualification of what constitutes a ‘home’ in relation to an occupant’s “sufficient and continuing” links suggests that the main underlying housing concept that is connected with the concept of home is attachment – in the broad sense.

In Gillow v. the United Kingdom, the applicants had been absent from the home they had established and lived in for two years in Guernsey, UK, for nineteen years. The applicants had, in the view of the ECtHR, retained sufficient continuing links with their house for it to be considered their “home” for the purposes of Article 8.95 Factual circumstances of the case that strengthened the “sufficient and continuing links” were: the applicants had sold their former home in another city and moved to Guernsey with their family and furniture (no alternative home); the applicants had retained ownership of the house during their absence; they had kept their furniture in it and had returned to the property with the intention to take up permanent residence. While residency for two years, ownership and the keeping of personal belongings are objective factors supporting sufficient and continuing links to a place, the applicants’ intent to permanently reside in their house is of subjective nature. The court also suggests factual circumstances that could have diminished continuing links: the establishment of another home within the UK and length of absence.96

In Buckley v. the United Kingdom, time in the sense of lengthy habitation and absence of intent to establish another home was also strengthening factors. Here, the applicant had acquired some land in 1988 to which she

94 Buyse, p. 302.
95 Gillow v. the United Kingdom.
96 Ibid., § 46.
moved her three caravans, even though the site had not received planning permission for residential use of caravans. The factual circumstances of the case the court took into consideration were objective factors such as the applicant’s ownership of the land and lengthy habitation: She had lived there almost continuously since 1988. The court also took into consideration that her acquisition of the land was for the purposes of establishing a home, which is a subjective matter. The court’s reasoning also suggests that “sufficient and continuing links” was strengthened by the absence of intent to establish another residence elsewhere.

A temporarily broken continuity does not appear to weaken the applicants’ link to a place. In Buckley v. the United Kingdom, the applicant had temporarily set up her caravan elsewhere because of “family reasons.” Case law suggests that broken continuity as a result of the respondent state does not diminish an applicant’s “sufficient and continuing links”. Taking into consideration the impact of time in the sense of lengthy habitation has had for the establishment of “sufficient and continuing links” in the cases mentioned above, it is possible to argue that temporary occupation of a place, e.g. use of hotel rooms, falls outside the ambit of home. In Hartung v. France, an artist’s dressing room that had been made available for the applicant’s use on occasional basis, did not qualify as a home for the purposes of Article 8.

In the aforementioned cases, the absence of establishment of another residence strengthened the applicants’ “sufficient and continuing” links to a dwelling. In Demades v. Turkey, a house that had not been established for being used as a primary residence, qualified as a ‘home’ in the ambit of Article 8. The court reasoned that “it may not always be possible to draw precise distinctions, since a person may divide his time between two houses or form strong emotional ties with a second house, treating it as his home.” Whether a secondary residence can be regarded as a home in the meaning of Article 8, depends on factual circumstances in the specific case. In Demades v. Turkey, the court took both objective and subjective factors into consider-

97 The home was thus unlawfully established.
98 Buckley v. the United Kingdom, § 54.
99 Ibid.
100 See Buyse, p. 297.
101 See Buyse, p. 297. Compare with note 65 regarding the exception of furnished rooms, e.g. hotel rooms, from the provisions on tenure security in the Land Code.
102 Hartung v. France (application no. 10231/07), decision from 03 November 2009, En droit, p. 1.
103 Demades v. Turkey, (application no. 16219/90), judgment of 31 July 2003, § 33.
ation. Objective factors supporting the existence of “sufficient and continuing” links were: the house was fully furnished and equipped, the applicant and his family had made regular use of it and had resided in the house substantial periods of time over the years. It had served inter alia as a holiday home and for providing hospitality and entertainment to relatives, friends and persons associated with the applicant’s business activities. The objective matters suggest the need to make regular use of a residence in order for it to qualify as a home. The court also weighed in subjective factors such as the applicant’s and his family’s treatment of the house as a home.

Emotional Attachment
In Connors v. the United Kingdom, the ECtHR characterized the right to home as a right “which concerns rights of central importance to the individual’s identity, self-determination, physical and moral integrity, maintenance of relationships with others and a settled and secure place in the community.” The emotional attachment a person may develop with a home can be understood in view of this characterization. Home in this context resonates with Fox O’Mahony’s value clusters of home as ‘identity’ and as ‘a social and cultural unit’.

The mere circumstance that a person has a personal attachment to a location because of one’s personal family history does not seem to suffice. In Loizidou v. Turkey, the court expressed that the ambit of home in Article 8 does not encompass “an area of a state where one has grown up and where the family has its roots but where one no longer lives.” I.e., the mere presence of the x-factors without the house cannot constitute a home, if home is understood in Fox O’Mahony’s (home = “house + x”).

Residential Values
Peaceful enjoyment of the home. The concept of home is connected to residential values of peaceful enjoyment of the home. Peaceful could be understood

104 Connors v. the United Kingdom (application no. 66746/01), judgment of 27 May 2004, § 82.
105 Fox O’Mahony identifies two constituting elements of home as identity: (i) the importance of home in an occupier’s self-identity, and (ii) the importance of home in the occupier’s social identity, (Fox O’Mahony 2002, p. 598 f.).
106 Loizidou v. Turkey, § 66.
Haymanot Baheru

as “quiet enjoyment of that area”. The occupants’ ability to peacefully enjoy his/her home seems to be related to both the impact of the environment and the occupants’ “personal security and well-being”. The ECtHR has developed a case law where breaches of the right to respect for the home include intrusions that are not concrete or physical, but could be categorized as disturbances, e.g. noise, emissions, smells or other forms of interference. These type of disturbances may result in the violation of a person’s right to respect for his/her home if they prevent him/her from enjoying the amenities of the home.

Permanency. As stated above, the ECtHR has developed the concept of home mainly in relation to an occupant’s sufficient and continuing links. The court’s view on the strengthening factor of lengthy habitation combined with the court’s view of loss of one’s home as “a most extreme form of interference with the right to respect for the home”, suggests a notion of permanency in the concept of ‘home’ within the ambit of Article 8. When tenants have been obliged to vacate a rental dwelling, the obligation has been regarded as an interference to their right to respect for their home.

4.4 Swedish Courts’ Understanding of the Concept of Home within the Ambit of Article 8

In a case from Svea Court of Appeal (The Gullstrand case), a tenant had been repeatedly delayed with payment of rent in 2014 and 2015, and on several occasions, it had been a matter of considerable delays. The tenant had been delayed even after receiving notice of correction and termination. She had thereby breached her obligations as a tenant to an extent that the lease could not reasonably be extended, Land Code 12:46 para. 1 item 2. The tenant made an argument for extension of her lease partly on the basis that a ter-

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107 Moreno Gómez v. Spain (application no. 4143/02), judgment of 16 November 2004, § 53.
108 Gillow v. the United Kingdom, § 55.
109 E.g., Hatton and Others v. the United Kingdom, § 96; Powell and Rayner v. the United Kingdom (application no. 9310/87), judgement of 21 February 1990, § 40.
110 Zehentner v. Austria (application no. 20082/02), judgement of 16 July 2009, § 59.
111 Ćosić v. Croatia (application no. 28261/06), judgment of 15 January 2009, § 18; Stanková v. Slovakia (application no. 7205/02), judgment of 9 October 2007, § 57; McCann v. the United Kingdom, § 47.
112 Only rulings from the Rental Boards and Svea Court of Appeal (final authority on issues relating to tenure security) are of interest here.
113 See note 65.
mination would violate her children’s right to respect for their home, as provided for in Article 8 of the ECHR. The court of appeal dismissed her argument on the basis that “one who does not own – but rents – lacks the strong protection that ownership of a home provides.” This seemingly clear and simple statement raises one important question: is the court’s understanding of the convention based right to respect for home interconnected with residential types?

The court made references to Danelius, who writes “one who does not own – but rents or leases – has a more restricted right to respect for one’s home.” (my emphasis) Danelius argues that termination of contract upon the end of lease or forfeiture is permissible interference within the scope of Article 8. The court has seemingly interpreted Danelius’ statement as grounds for dismissal of a tenant’s objection of losing the home of herself and her children without considering a potential interference with the tenant’s right to respect for her home, as provided for in Article 8.

As stated above, the ECtHR has held that the loss of one’s home is “a most extreme form of interference with the right to respect for the home”. Therefore, anyone at risk of “an interference of this magnitude should in principle be able to have the proportionality of the measure determined by an independent tribunal in the light of the relevant principles under Article 8 of the Convention”. A proportionality assessment has to be made even if the tenant’s right to occupation has expired under domestic law. Svea Court of Appeal has not made any assessment of the permissibility of the interference of the right to respect for home in this specific case.

In the Gullstrand case, the court made references to two preceding decisions. In the first one, RH 2014:45, a couple had taken far-reaching measures with the property in terms of constructions without the landlord’s consent. The extensive renovations pursued even after the landlord sent them notice to cease. The court concluded that their actions were of that nature

114 Svea Court of Appeal’s decision of 2014-11-21 in the combined cases of ÖH 936-14, ÖH 1589-14 and ÖH 1592-14.
115 Danelius 2015, p. 427.
116 Ibid.
117 Zehentner v. Austria, § 59.
118 Zehentner v. Austria, § 59; with references to McCann v. the United Kingdom.
119 McCann v. the United Kingdom, § 50.
120 The three decisions from the Svea Court of Appeal in chronological order: RH 2014:45, case no. ÖH 936-14, decision of 21 November 2014 (“Victoria Park Case”) and the Gullstrand Case.
that is exclusive to the property owner and that the lease could not reasonably be extended due to their serious breach of their obligations as tenants, Land Code 12:46 sec. 1 item 2. The tenant who still resided in the apartment argued that the court should take into consideration her right to respect for her home under Article 8. The tenant stated that she currently resided there alone with her children and that the dwelling was the place they felt safe; and that they would have a hard time finding an equivalent resident. Here too, the court first made references to Danelius’ statement. Continuing, the court reasoned that the reasons for terminating were strong enough and that the lease should not reasonably be extended. The court argued that considering the severity of the tenant’s actions, a termination of the lease was a proportionate infringement to her right to respect for her home. It is unclear how the court took the tenant’s or the children’s interest to remain in their home into consideration.

The second case referenced in the Gullstrand case is the “Victoria Park Case”. The case concerned the termination of leases for three separate tenants. All three tenants had asked the court to take into consideration their right to respect for their home as provided for by Article 8 in the ECHR. The landlord’s reasons for requesting termination of the leases were in brief: (i) their children’s criminal behavior in various forms – allegedly both collectively and separately; (ii) one of the tenant’s disturbing behavior; and (iii) all tenant’s neglectful payment of rent. The court assessed the various grounds for termination separately and found one of the tenant’s repeated failure to pay rent in combination with his accumulated debts, was a breach of his obligations as a tenant to an extent that the lease could not reasonably be extended, Land Code 12:46 sec. 1 item 2. In its subsequent engagement of Article 8, the court departed from Danelius’ statement followed

121 See note 65.
122 RH 2014:45.
123 See note 65.
124 The court did not find the other two tenants’ delay to make payment to be a breach of obligations as a tenant to an extent that the lease could not reasonably be extended. The court found that the first tenant had been delayed with payment of the rent between three to 17 days between July and October 2014, which would generally be a serious breach of his obligations as a tenant. In a subsequent general reasonability assessment, the court took into consideration that the tenant did not have any remaining debts, as well as his duly payment of the rent prior to the landlord’s termination of the contract, and thus found that the tenant’s lease could be extended. The second tenant had been delayed with payment of one month’s rent. The court did not find her breach of her obligations as a tenant severe enough to terminate the lease.
by a balancing of interests. Continuing, the court found that “the grounds for not extending the lease were so strong, the tenant’s interest to remain in his residence should yield in favor of the landlord’s interest in the lease to end.”125 The court considered a termination of the lease to be a proportionate infringement of his right to respect for the home in relation to the severity of the tenant’s breach of his obligations. Unlike the first two cases, the court made a balancing of the parties’ interests in the Victoria Park Case.

As stated above in 4.1.1, a dwelling can be a ‘home’ for a person who is neither its owner or its tenant, but resides there because of family connection.126 In both RH 2015:45 and the Gullstrand case, the tenants were parents who advocated for their children’s right to respect for their home. It is not possible to arrive at any conclusions on the children’s independent right to home from these decisions as they were not parties in the respective cases. Their right to respect for their home was dependent on the court’s conclusions regarding the parents’ right to respect for their home.

The account above suggests a conceptual challenge for the domestic courts when a tenant who no longer enjoys tenure security pursuant to the provisions in the Land Code invokes his/her convention based right to respect for his/her home. The courts’ understanding of the concept seem to be interrelated with proprietary interests.

A methodological challenge is also suggested when the question is the permissibility of an interference with a tenant’s right to respect for his/her home. In all abovementioned cases, the termination of the tenants’ leases was in accordance with the provisions in the Land Code. An obligation for a tenant to move from a residential dwelling amounts to an interference with his/her right to respect for his/her home – even if the court’s decision is in accordance with the law.127

The second paragraph of Article 8 permits interference with the exercise of the right. An interference in the enjoyment of rights protected under Article 8 is permissible as long as it is “in accordance with the law and is necessary in a democratic society” in order to pursue one of the legitimate aims enumerated in the paragraph: the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the

125 Victoria Park Case, p. 13.
126 Buyse, p. 297.
127 E.g. Pašičić v. Croatia, § 38; Ćosić v. Croatia, § 18; McCann v. the United Kingdom, § 47 and Stanková v. Slovakia, § 57.
rights and freedoms of others. The interference also needs to be proportionate to the legitimate aim pursued. It falls outside the scope of this article to give an account for the permissibility assessment. This brief introduction aims to demonstrate the questionability of the method used by the courts above. A blank reference to Danelius’ commentary on the right to respect for a home is not sufficient when the courts assess the permissibility of an interference with a human right protected by the ECHR. A method where the courts permit an interference with Article 8 based on Danelius’ conclusions could lead to unpermitted interferences with tenant’s right to respect for their home.

5. In Conclusion

My ambition in this article has not been to present conclusive concepts of home. The aim has been to provide a conceptual springboard for which the concept of ‘home’ can be understood within the scope of the Land Code and Article 8 of the ECHR. The method used when conceptualizing the concept within the realm of the Land Code has been to distill a concept of home by connecting provisions in the Land Code – combined with case law that take the home interest into consideration – to housing interests. In the context of the ECHR, the same housing interests served the purposes of concretizing the meaning of “sufficient and continuing links”. This method enables a legally relevant understanding of the concept – at least in the context of landlord and tenant law.

The account of the domestic courts’ decisions when tenants have invoked their right to respect for their homes, suggests a need of further research on the concept of home: particularly within the context of residential tenure.

The value of network structure in public transport systems

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Abstract

Transport networks offer accessibility between geographical places and thereby also serve as a link between different markets. One aspect of networks is that the value of the network is a function of the size of the network, in terms of the number of links and nodes. Vertices, or nodes, in the network have characteristics in terms of e.g. size but also its position in the network and accessibility to other nodes. It is reasonable to assume the value of different vertices may differ across the network. The purpose of this study is to analyse how properties of a network, and especially node characteristics of a network, contribute to the value of the network. This is performed by calculating different centrality measures, using existing physical railway infrastructure and how public rail transport have been planned in the network. In order to capture whether there is a value to how a network is constructed and used we apply a hedonic price model. Results show that characteristics of a railway network contribute to the perceived value of house prices in an area.
Introduction

Networks have shown to exhibit general characteristics that have proven useful in the application of many areas. One aspect of networks is that the value of the network is a function of the size of the network. Furthermore, vertices, or nodes, in the network have characteristics in terms of e.g. size but also the position in the network. Therefore, it is reasonable to assume the value of different vertices may differ across the network.

Transportation networks offer accessibility to geographical places. Thereby, it serves as a link between different markets that households interact on. Previous research (overviews are provided in Debrezion, Pels, & Rietveld, 2007; Mohammad, Graham, Melo, & Anderson, 2013) find a positive impact of proximity to railway stations to property prices. However, the effect seems to differ depending on the context. Factors that influence the findings range from data quality and accessibility, to differences in types of transport communications and real estate market characteristics. However, little is known about if characteristics of network structure is perceived and valued by households. Previous knowledge of the role of networks and their characteristics suggest it could play an important role (ref).

Previous research (Bohman & Nilsson, 2016) identified a significant effect of distance to commuter stations on housing prices. The effect was even more important for single-family houses in the lower price segments. A further step is to explore qualities of the rail network and characteristics of the different stations in the network. There is then a need for developing measures that capture the varying strength across the network. This study is an attempt to develop characteristics of the rail network and to capture the economic value of qualities in a network. The value of these network qualities is thought of to be captured by the willingness to pay for houses in the area. Results in this study would thus give insights into the willingness to pay for accessibility provided by the structure of the network. The purpose is to analyse how properties of a network, and especially node characteristics of a network, contribute to the perceived value of accessibility. We aim to capture the value of network characteristics by using a hedonic price modelling.

Data is collected for single-family house transactions in 2014 in the region of Scania. Public transport data and infrastructure data is collected from commuter train timetables and data on physical infrastructure in order to calculate network characteristics. Station characteristics can be estimated using different types of measures, which are based on network theories. Using network theory to analyse relations between people started in the field of social networks in the 1950’s(Derible, 2012). Freeman (1979) presents three measures of displaying centrality in a network that have become common in social network analysis. Network qualities can be depicted by characteristics of the stations in the rail network, i.e. station position in the network, size of nodes and strengths of the links, with the use of such centrality measures. Previous research (Augusto, Gonçalves, & Nassi, 2009) stresses the importance of network structure in an overall planning system, and suggest that analysis of the network, and the position of nodes, are useful in planning networks that contribute to sustainable mobility and overall urban development.

The structure of the article is as follows. The next section provides previous literature to network analysis and the use of network measures. It also includes some previous literature to hedonic price models, which in this study is primarily of interest for its capacity to estimate the value of non-market goods. This is followed by a presentation of network measures and interpretations in this study. The final section before conclusion presents the data and the hedonic price model, used for valuing network qualities by using the transport network measures constructed. The final section discusses the conclusions and possible applications of the results.
Literature review

The notion that land value increases when accessibility increases draws theoretically on early geographical theories of Alonso (1964), who identified land rent, defined as the capitalised value of land value, as a function of the accessibility to goods and services. This implies that investment in infrastructure, which increases accessibility, will also be reflected in property prices.

Using network theory to analyse relations between people started in the field of social networks in the 1950’s (Derrible, 2012). The study of network in social sciences seems to originate from the study of social networks (Freeman, 1977, 1978). Freeman (1978) presents three measures of displaying centrality in a network that have become common in social network analysis. During recent decades, studies have also applied network analysis approach to transport studies (Curtis & Scheurer, 2017).

Centrality measures have developed to describe the nature of positions in the network. The measures have later also been applied to physical networks such as city structure (Crucitti, Latora, & Porta, 2006) and train networks (To, 2015). Li, Xu & Shi (2015) apply network theory for studies of the dynamic evolution in world shipping, showing the central but declining position in the world shipping network. An important difference to social network is that transport networks are geographically positioned with exact locations in a three-dimensional space.

Networks structure is related to productivity of cities, and previous studies suggest that connectivity between cities are important in explaining productivity levels of the cities (Blumenfeld-lieberthal, 2009). This seems especially important for European cities as compared to cities in other parts of the world, where often the largest city in a country also demonstrates the highest level of productivity (McCann, 2012). Blumenfeld-lieberthal (2009) measure networks according to degree and clustering effects and compare the characteristics of networks as well as the role of the different nodes, which in their study refer to cities.

Augusto et al. (2009) suggest using centrality measures as a means to provide a more balanced development of places when planning and developing public transport. They also provide a case study of the development of the bus transportation in Rio de Janeiro, in order to highlight how centrality measures can be used to show how investments affect both the characteristics of station, but also the accessibility of other types of services such as hospitals, daycare centres and schools. In a study of 28 metro systems from different parts of the world, Derrible (Derrible, 2012) aims to provide a global approach to the development of centrality. (Erath, Löchl, & Axhausen, 2009) study the network development of the Swiss road network between 1950-2000.

Estimating willingness to pay: Hedonic price models

Using house prices as a means to estimate attribute values has developed by Rosen (1974), whose hedonic price model is based on Lancaster’s (1966) consumer theory in which goods are treated as bundles of attributes. Hedonic price models have since become standard tools for estimating values of a vast array of non-market goods such as noise (Nelson, 2004), green areas (Czembrowski & Kronenberg, 2016) and proximity to good schools (Nguyen-Hoang & Yinger, 2011).

Applying network measures of accessibility to explain property prices is to our knowledge not common at this stage. One example is (Orford & Webster, 2016) who, using Cardiff as a case study, model street network accessibility to explain housing prices. The results suggest that
accessibility measures can replace some traditional measures such as distance to CBD, and can be used to model both positive and negative externalities.

**Measures of network qualities and node characteristics**

Centrality is a concept that originates from social sciences of the 1950s (Derrible, 2012). The basic structure of a network is different vertices, or nodes, that are connected. Freeman (1979) presents three measures of centrality that have become common in social network analysis, but are also applied on e.g. urban structures and transportation networks: degree centrality, closeness and betweenness. These measures have commonly been used to indicate the role and strength of different nodes in networks. Specifications of the different measures vary across studies.

Transportation networks typically differ from social networks in some respects. First of all they are fixed in space, i.e. geographical, and therefore the position is set. However, for railways there is still a difference between the physical network and the planned traffic, and thereby the network structure may in fact change as a result of traffic planning, even if the fixed network remains unchanged. Secondly, in this study vertices will not only be defined as intersections, but the definition will also include stations that do not offer any intersections between lines.

The closeness centrality has to do with the speed of the network, in the sense that a node with higher closeness centrality communicates more quickly with other elements in the network. The closeness centrality has to do with the speed of the network, in the sense that a node with higher closeness centrality communicates more quickly with other elements in the network. It considers accessibility as ‘ease of movement and can be described as an average score for travel impediment (Curtis & Scheurer, 2017). In its most simple form, the closeness centrality corresponds to the inverse of the sum of the distances.

\[
C_C(v_i) = \frac{1}{\sum_{j=1}^{n} \text{dist}(v_i, v_j)} \quad v_i, v_j \in V
\]

The measure is sometimes developed to express distance in an exponential form, as a way to capture distance decay effect. Typically this implies that the effect of another vertex diminishes as distance between the vertices increases. Another extension of the model is to weight the expression by the strength of the respective vertex. These two adjustments provide a gravity structure to the expression, in which larger and closes vertices provide a stronger force of attraction than smaller, more distance ones.

\[
C_{\text{grav}}(v_i) = \sum_{j=1}^{n} \frac{w_j}{e^{-\alpha \cdot \text{dist}(v_i, v_j)}} \quad v_i, v_j \in V
\]

The second concept is degree centrality. This specifies the number of direct relations with other vertices in the network. This can be explained as the capacity to receive e.g. information in an information network.

\[
C_D(v_i) = d(v_i), v_i \in V
\]

This has been modelled as the number of direct relations with other nodes in a network. The regionally planned train line system (see scheme in appendix 2) is used to construct the adjacency matrix. By counting the number of observations in columns or rows, the number of stations in the system that can be reached without changing train is observed. This adjacency matrix also reveals the number of lines that stops at each stations.

In this study the degree centrality is modelled as the as the number of direct relations along planned train lines, i.e. stations that can be reached without changing trains. Thus, The adjacency matrix is constructed based on the train line scheme (see appendix 2) for the regional rail system in Scania. Only stops within the region are accounted for from the scheme. Thus, stops on the interregional lines outside of the administrative borders of Scania are not included in the
adjacency matrix. Since the different lines are included separately, it also possible to address how many different lines that stops in each station.\(^1\)

Derrible (2012) uses a betweenness indicator (only for transfer and end points in the metro network) in order to highlight the transfer characteristics of a node. Normalized measures are necessary when comparing different systems (Derrible, 2012), but are thus not necessary here.

\[
Betweenness\ \text{centrality}\ C_B(v_i) = \sum_{i=1}^{n} \sum_{j>k}^{n} \frac{g_{kj}(v_i)}{g_{kj}}
\]

Based on the idea that the relative dependence is an important aspect of its structural position. The number of times that a node partakes in an interaction over the shortest path in the network. For calculation, the betweenness centrality corresponds to the number of times that a node passes through the vertex \(v\), in relation to the total number of paths.

**Network characteristics of stations in the Scania network**

The main economic center in the region is the Malmo-Lund area in the south-west, together accounting for a population of slightly less than half a million people. The area is also located close to the Oresund bridge with relatively close access to Copenhagen. In the north-western corner, the second economic center in the region is Helsingborg of about 100,000 people. It has ferry transport to Helsingor connecting Helsingborg with the Danish market.

The physical infrastructure of the rail network in Scania is presented in Figur XX. The railway network is heavier on the west side of the region. In the northeast Hässleholm makes a central node for rail running south-north as well as west-east, there is also one railway running north-east passing Markaryd on its way to the west coast and Halmstad. In the south there is a single railway connecting the cities Simrishamn and Ystad with the Malmo-Lund area.

The railway network consists of national traffic lines connecting Malmo and Lund to the capital, Stockholm as well as to the second largest city, Gothenburg. The connection to Gothenburg goes along the coast through Helsingborg. In addition to the national lines, the network consists of regional train lines that serve as commuter lines to the different parts of the region.

\(^1\) This is something that can be further explored in order to develop a betweeness measure...
Figur 1. Railway network system in Scania

In the following figures, our different measures of station characteristics are presented to illustrate the usage of the physical network. As a first measure of station attractiveness, we simply present the number of departures from each station that was open for passenger transport in 2014. The stations with the highest number of departures are also the ones where both Öresundståg and Pågatåg operates. The Öresundståg operates across regions as well as crossing the national border over to Denmark. Stations with more departures are found in and between Malmö and Lund, stretching towards Ystad, and also some stations around Helsingborg.
Figure 2. Railway stations depicted by the number of departures

If figure 2 depicted the size of each station on its own merits, figure 3 depicts the accessibility of each station to other attractive stations in the network. Accessibility to other sizeable stations are desirable, but attractiveness decays with distance. The expression of the closeness centrality measure (figure 3) depicts an illustration of accessibility of each station, taking account of the size of each other station in the system. Size is here measured as number of departures from each other station in the railway network. The measures builds on the traditional gravity assumptions that larger nodes also provide more attraction than smaller nodes. In economics terms, this is in line with agglomeration theories, in which larger markets also provide stronger attractions. In the figure it is evident that the stations with highest accessibility are located in and between Malmö and Lund, followed by stations just outside the area, most of them are found on the way to Helsingborg.
Figure 3. Closeness centrality expressed in gravity form. Average measure of proximity to other vertices in the network, weighted by number of departures. Based on eq. (ii), $\alpha = 2.5$.

Figure 4 depicts the number of stations with direct connection, i.e. reachable without changing lines. The figure reveals how this type of accessibility differs from some more commonly used measures, since some relatively peripheral stations still score relatively well given that they are along traffic line with relatively many stations. This measure partly captures the effect of traffic planning, since changing the planning will also affect numbers of stations that can be reached directly. The highest scoring stations are however still the stations in the largest urban areas.
Figure 4. Degree centrality. Number of railway stations in the system that can be reach directly (without changing trains). Based on eq. (iii).

The three measures presented in the previous figures depict somewhat different characteristics of the stations in the network. In table 1 pairwise correlations between the variables, summaries to what extend these measures are correlated. Correlation between the variables are not extensive. Most correlation is found for the variable gravity and the variable direct access in connection to number of departures.

The exploration of these variables will in the next section be related to sales prices in an hedonic price model. The purpose this that exercise is to find out whether network characteristics are perceived and valued by the public. A first indication show that all three measures present a positive correlation with sales prices.
Table 1. Pairwise correlation of network characteristics of stations

<table>
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<tr>
<th></th>
<th>Degree centrality</th>
<th>Closeness centrality</th>
<th>Departures</th>
<th>Sales price</th>
</tr>
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<td>Degree centrality</td>
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<td>Closeness centrality</td>
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<td>Departures</td>
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<tr>
<td>Sales price</td>
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<td>0.3715</td>
<td>0.2109</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Data and model for estimating the hedonic price model

The formulation of hedonic price models typically differ across studies, partly as a result of the differences in data collection (Debrezion et al., 2007; Mohammad et al., 2013). An overview of the variables in this study is provided in table 2. The variables can be divided into three major groups, property attributes, neighbourhood attributes and transport attributes.

Housing data consists of all transactions of single-family housing in the Scania region in 2014. The data is originally from the Swedish cadaster, which contains all registered transactions. Whereas many studies rely on data from property brokers, thereby accounting only for a smaller share of the market, the cadaster data contains the total number of transactions.

Data on infrastructure is collected from different sources. The Swedish Transport Administration provides data on the physical infrastructure in terms of railway and road data. They also provide data on rail timetables, i.e. the use of the physical infrastructure in the network. The set up of lines in regional commuter systems is planned by the regional public transport authorities (regional PTA) thus data on lines have been collected from Skånetrafiken.

Socio-economic variables on income and population are collected from different sources all originating from Statistics Sweden.
Table 2 Table of variable used in the Hedonic price model

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<th>Variable</th>
<th>Description</th>
<th>Source</th>
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<td><strong>Dependent variable</strong></td>
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<td></td>
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<td>PRICE</td>
<td>Price (log transformation) of single-family houses, 2014</td>
<td>NLS</td>
</tr>
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<td><strong>Property attributes</strong></td>
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<td></td>
</tr>
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<td>SIZE</td>
<td>Floor area, defined as living area (m²)</td>
<td>NLS</td>
</tr>
<tr>
<td>LEASE</td>
<td>Leasehold of land owned by municipality, 1 if house is leasehold 0 otherwise</td>
<td>NLS</td>
</tr>
<tr>
<td>DETACHED</td>
<td>Detached house, 1 if house is detached 0 otherwise</td>
<td>NLS</td>
</tr>
<tr>
<td>AGE</td>
<td>Age of building. Houses constructed before 1929 are marked as 1929. The stated age may be adjusted after major renovations or extensions</td>
<td>NLS</td>
</tr>
<tr>
<td>BEACH</td>
<td>Beach-side property, 1 if closer than 150 m to the waterfront, 0 otherwise</td>
<td>NLS</td>
</tr>
<tr>
<td>QUALITY</td>
<td>Quality index of the physical attributes of the building</td>
<td>NLS</td>
</tr>
<tr>
<td><strong>Neighbourhood attributes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>POP</td>
<td>Population size, municipality level</td>
<td>Region Skåne/SCB</td>
</tr>
<tr>
<td>INCOME</td>
<td>Average income, municipality level</td>
<td>SCB</td>
</tr>
<tr>
<td>INCOME_NEIGHBOUR</td>
<td>Average income proxy based on raster data, vicinity of house</td>
<td>SCB</td>
</tr>
<tr>
<td>COAST</td>
<td>1 if house located in coastal municipality, 0 otherwise</td>
<td></td>
</tr>
<tr>
<td>OSTERLEN</td>
<td>1 if house located in the Osterlen beach community, 0 otherwise</td>
<td></td>
</tr>
<tr>
<td><strong>Transport attributes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STATION_DIST</td>
<td>Travelling distance using road network (km)</td>
<td>STA a)</td>
</tr>
<tr>
<td>STATION_CLOSE</td>
<td>Dummy variable where 1 indicates property within 200 m from station, 0 otherwise</td>
<td>STA a)</td>
</tr>
<tr>
<td>HW_DIST</td>
<td>Distance to nearest highway (hundred km)</td>
<td>STA a)</td>
</tr>
<tr>
<td>HW_CLOSE</td>
<td>Dummy variable where 1 indicates property within 200 m from highway, 0 otherwise</td>
<td>STA a)</td>
</tr>
<tr>
<td>CBD_DIST</td>
<td>Distance to nearest labour market centre (thousand km)</td>
<td>STA a)</td>
</tr>
<tr>
<td>MALMO_LUND</td>
<td>1 if the closest station is in Lund or Malmo, 0 otherwise</td>
<td>STA a)</td>
</tr>
<tr>
<td>DEPARTURES</td>
<td>Number of departures for the closest train station in 2014</td>
<td>Skånetrafiken</td>
</tr>
<tr>
<td>CENT_CLOSE</td>
<td>Expressed in gravity form. Specified in eq. (ii)</td>
<td></td>
</tr>
<tr>
<td>CENT_DEGREE</td>
<td>Number of railway stations in the system that can be reach directly. Specified in eq. (iii)</td>
<td>Skånetrafiken</td>
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</table>

Table 3 presents descriptive statics of the data used for analysis
Table 3 Descriptive statistics

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<th>min</th>
<th>max</th>
<th>sd</th>
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<td>57000</td>
<td>1918.935</td>
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<td>2904</td>
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<td>.1295732</td>
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<tr>
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<td>0</td>
<td>1</td>
<td>.4089248</td>
</tr>
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<td>2014</td>
<td>71.49708</td>
</tr>
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<td><strong>BEACH</strong></td>
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<td>0</td>
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<td>.4206362</td>
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<td>6.976119</td>
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<tr>
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<td>.000107</td>
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<td>.0267586</td>
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<td>1</td>
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<td><strong>DEPARTURES</strong></td>
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<td>5.447833</td>
<td>1.320162</td>
<td>8.44984</td>
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Results from the hedonic price model is included in table 4. The station characteristics are successively supplemented as additional independent variable for the analysis of attributes that affect house prices. The variables contribute to the explanatory power of the model by raising $R^2$ to 0.498. By simply adding the number of departures from each station (DEPARTURES) $R^2$-squared increases to 0.48. The correlation matrix in table 1 displayed correlations of 0.51 and 0.53 for the variable CENT_CLOSE and the variable CENT_DEGREE in connection to number of departures. When adding CENT_DEGREE to the analysis (column 3) the parameter for DEPARTURES changes sign, which suggest problems with multicollinearity. The DEPARTURES variable is thus excluded in the final two regression. The parameters for both CENT_DEGREE and CENT_CLOSE turn out significant and with a positive sign, which is according to expectations. Other variables in the model remain fairly stable with the inclusion of the station characteristic variables. This does not apply to the variables CBD_DIST and MALMO_LUND. The negative impact on sales price of distance to central business district seem to be further emphasized by the additional station variables.

Results suggest that although the size of nodes in themselves are important, the position of stations and connections with other stations in the network seems to as important.
Table 4 Results from hedonic price regressions, (robust OLS)

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<td>(0.107)</td>
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Observations: 8,490
R-squared: 0.376
References


Appendix 2

Train lines Scania
Abstract

In this research it was shown that, in general, spatial filter enhance the fit and moderately improve the prediction of the logit credit risk model. It was observed that the fit and prediction results depend on the created weight matrix when using spatial filtering. With the increase of the neighbor links, the prediction by the spatial model increase and slightly outperform the base model. Detected positive autocorrelation indicate the existence of clusters of defaults within geographical area, which could confirm the need for use of spatial filter or other spatial techniques. Also, existence of positive spatial pattern in the credit risk assessment could be taken in consideration by the national banking regulators (central banks) and appropriately treated in the regulation, so that estimated credit risk parameters reflect the true risk condition of the companies and their microeconomic surrounding.

Keywords: credit risk, probability of default, binary choice models, logit, spatial filter

April, 2017
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Introduction

Banks in their regular business are undertaking credit risks to make profit. In the process of aligning incurred credit risk with the profit from the risky activities banks assess the credit risk by using classification techniques which help them detect problematic clients and assess the credit exposure and potential losses.

In the banking industry, in accordance with the Basel standard (BCBS, 1998), a lot of research is done on the estimation of the “probability of default” of the bank customers, as the main credit risk parameter. “Probability of default” along with other parameters (“Loss given default” and “Exposure at default”) is used by banks in the process of credit pre-approval, ex-ante credit portfolio optimization and credit targets determination, post-disbursement credit classification and credit impairment appraisal, having direct impact on the financial results of the banks. Although the existing list of credit risk classification techniques is rather long, there is still room for the introduction of novel techniques.

Recently, a new paradigm predicts that due to the linkage between companies (especially between small and medium sized companies) on local and regional level, credit risk is becoming contagious within the local area. This means that credit risk parameters estimated on local level could be different from the estimates on national level. Therefore, appropriate spatial techniques have been introduced for assessing the spatial dimension of credit risk.

In several papers the use of kriging and geographically weighted regression have been tested as the supplement to the classical credit risk classification model. In this study, we use a technique - spatial filtering - as an enhancement instrument to the prediction of credit risk models. So far, no study known to us has been published that has applied this method to credit risk estimation. A comparison was made between the prediction accuracy of the classical binary choice model estimation, without spatial techniques and with spatial techniques. In addition, we analyzed estimates from the “base” binary choice model analyzed, controlling for rural/urban/cosmopolitan dimension.
Literature Background

Estimating default probabilities for individual obligors is the essential step for assessing credit exposure and potential losses.

From the point of view of the information input used for credit risk classification, two broader classes of models exist for estimating this parameter: models that rely on market information (prices of stocks, bonds) and models that are based on accounting information. Also, there are hybrid models that use as explanatory variables economic variables, accounting data, and ratings data (Jorge, 2006).

Credit scoring model is an example of an accounting model, where financial ratios based on accounting data are used to predict company default and classify companies by credit quality. Development and testing of scoring models based was boosted after publishing of the famous Z-Score model (Altman, 1968). Credit scoring models use multiple discriminant analysis as a statistical technique to classify an observation into one of several a priori groupings dependent upon the observation's individual characteristics (Altman, 1968).

Similarly, binary choice model (probit and logit models) as an hybrid models are extensively used in credit risk classification (Jorge, 2006). In this paper it is used logit binary choice model.

Spatial techniques in credit risk assessment have been recently used and due to the positive effect of their introducing, they might become regular part of the standard estimation set.

First, Stine (2011), detected spatial correlation in default rate of mortgage in the US counties. Later, Agarwal, Ambrose, Chomsisengphet and Sanders (2012) confirmed the presence of spatial correlation. Fernandes and Artes (2016) argue that adding kriging outcome variable in the logistic model improves its accuracy. Other authors were rather focused on use of spatial methods in modeling credit contagion (Barro and Barroso, 2010). Also, Albuquerque, Medina and Silva (2016) construct credit scoring models using Geographically Weighted Logistic Regression (GWLR) techniques.

This study uses a spatial approach - spatial filtering, to improve the prediction capacity of the credit scoring model. By testing the use of spatial filtering in credit risk prediction and classification, the study attempts to bridge this research gap. Spatial filtering is a technique already used in other fields of science (medicine, environmental planning, ecology, etc). It is nonparametric in nature and eliminates spatial autocorrelation. As argued by Anselin (1988), spatial autocorrelation might be the result of the underlying spatial process or missing factors with strong spatial influence on the residuals. Hence, by not including the spatial correlation in the estimation, estimated parameters and standard errors may be biased (Wakefield, 2003). Spatial filtering is distribution free and robust to model specification errors compared with spatial maximum likelihood estimator (Tiefelsdorf and Griffith, 2007). An early application of parametric spatial filtering can be found in Griffith (1979).
Methodology

Banks try to estimate the losses that might incur if creditors default on their obligation. When the assessment of losses is done on the aggregate level, this indicator is called expected losses (BIS, 2005). Losses above this threshold are called unexpected losses. Expected losses are priced by the banks in the credit risk premium, while according to Basel Accord (BCBS, 1988), unexpected losses are expected to be covered by the capital that banks needs to hold.

According to Basel (BIS, 2005), “...the Expected Loss of a portfolio is assumed to equal the proportion of obligors that might default within a given time frame (1 year in the Basel context), multiplied by the outstanding exposure at default, and once more multiplied by the loss given default rate (i.e. the percentage of exposure that will not be recovered by sale of collateral.).”

The indicator expected losses is modular and can be decomposed as a product of its components:

\[ EL = PD \times EAD \times LGD, \]

where,

(PD) stands for Probability of default, which gives the average percentage of obligors that default in their rating grade in the course of one year

Exposure at default (EAD), which gives an estimate of the amount outstanding (drawn amounts plus likely future drawdowns of yet undrawn lines) in case the borrower defaults

Loss given default (LGD), which gives the percentage of exposure the bank might lose in case the borrower defaults. These losses are usually shown as a percentage of EAD, and depend, amongst others, on the type and amount of collateral as well as the type of borrower and the expected proceeds from the work-out of the assets

This paper is focusing on the prediction of state of the company (default / non-default), using Probability of default.

Binary choice model (Greene, 2012) is used, where the state of the company is the dependent variable and there are only two states of dependent variable. In our case, two states are: default on the payments (state “1”) and non-default state (state “0”):

\[
\text{Prob}(Y = 1 \mid x) = F(x, \beta) \\
\text{Prob}(Y = 0 \mid x) = 1 - F(x, \beta).
\]

where \(x\) is the set of factors, such as financial indicators, dummy variables for industry, size, town etc and \(\beta\) is the set of parameters that reflects the impact of changes in \(x\) on the probability.

The normal distribution has been used in many analyses, giving rise to the probit model,

\[
\text{Prob}(Y = 1 \mid x) = \int_{-\infty}^{t(x) \beta} \phi(t)dt = \Phi(x')\beta.
\]
When the logistic distribution is used, the model is called the **logit** model

\[
\text{Prob}(Y = 1 | x) = \frac{\exp(x^T \beta)}{1 + \exp(x^T \beta)} = \Lambda(x^T \beta).
\]

For the sake of simplicity PD is calculated on the portfolio level, not on the rating category level. Therefore, a bivariate choice model is used (in our case logit), rather than the ordered choice model.

Explanatory (predictive) variables are financial indicators from financial statements of the company, similar Altman (1968), information about the company (size, industry) and geolocational information (town where company has its head office and XY coordinates).

In the set of analyses are included several financial indicators:

- **liquidity indicators**
  - current ratio = (current assets / current liability)
  - quick ratio = (current assets - inventory)/current liability

- **turnover indicators**
  - sales revenues / accounts receivable
  - sales revenues / assets
  - costs / inventory
  - costs / sales revenues
  - costs / accounts payable

- **profitability indicators**
  - ROE = (net profit / capital + reserves)
  - ROA = (net profit / assets)
  - Net profit margin < (net profit / sales revenues)

- **debt indicators**
  - leverage = (liabilities / capital + reserves)
  - liabilities / assets
  - short term credit / sales revenues
  - current liability / sales revenues

- **banking credit indicator**
  - value of pledged collateral to outstanding credit

To avoid the problem of collinearity, few variables were skipped and we use the following:

- current ratio + sales revenues to accounts receivable + sales revenues to assets + Net profit margin + ROA+ ROE+ leverage + liabilities / assets + collateral to outstanding credit

In comparison, when utilizing a comprehensive list of financial ratios in assessing a firm's bankruptcy potential Altman (1968) has selected few predictive variables (ratios):

- Working capital/Total assets, Retained Earnings/Total assets, Earnings before interest and taxes/Total assets, Market value equity/Book value of total debt and Sales/Total assets.

The procedure of testing whether to use some geographical or spatial variable in the credit risk model is to create two models: base model and model with geographical or spatial
component and to examine the difference in their fit (in the sample) and their prediction capacity (out of the sample).

When examining the fit, Akaike information criterion (hereinafter AIC) introduced by Akaike (1973) is used as the measure of goodness of fit. For the assessment of the prediction accuracy, accuracy (confusion) matrix is used, as in Stehman (1997), from which several indicators are used:

Confusion matrix

<table>
<thead>
<tr>
<th></th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Predicted</td>
<td>TP</td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>FN</td>
</tr>
</tbody>
</table>

condition positive (P) - the number of non-default cases (“0”s) in the data
condition negatives (N) - the number of default cases (“1”s) in the data

TP – True Positive
FP - False Positive
FN – False Negative
TN – True Negative

Sensitivity (recall or True Positive rate) = TP / (TP + FN)
Specificity (True negative rate) = TN / (TN + FP)
Precision = TP/(TP + FP)
Negative predictive value = TN / (TN + FN)
Accuracy = (TP + TN)/ (P + N)
F1 score = 2 * precision * sensitivity / (precision + sensitivity)
(F1 score is the harmonic mean of precision and sensitivity)

First, comparison was made between “base” model and model with included geographical variable.

Then, a comparison was made between prediction accuracy of the classical binary choice model estimation, without spatial filtering and with spatial filtering. When fitting the model with spatial filtering, Moran eigenvector GLM filtering is used as in Bivand (2008).

In the Moran eigenvector approach suitable orthogonal patterns are chosen and added to the model (linear or GLM framework) and consequently the spatial dependence observed in the residuals can be moved into the model (Dray et al., 2006; Griffith and Peres-Neto, 2006).

It uses brute force to search the set of eigenvectors of the matrix MWM, where
$M = I - X(X^t X)^{-1} X^t$

is a symmetric and idempotent projection matrix and W are the spatial weights.

**Data and data manipulation**

For the purposes of this research, data on companies from the Republic of Macedonia are used. Financial ratios of the companies, their size and industry were obtained from the Central Registry, where companies are obliged to submit their financial reports. Records about their credit exposure by amount, collateral value and municipality residence were obtained through Central Bank. Data about geographical coordinates were obtained from the Cadastre.

The data cover 2 years: financial reports are as of 31.12.2013 and 31.12.2014, and payment history data is as of 31.12.2014 and 31.12.2015. Hence, “train data period” was end of 2013 year-end of 2014 year, and “test data period” was end of 2014 year - end of 2015 year. So, the estimated probability refers to 1 year period. Company get state 1= “default”, if the rating category of its credit is downgraded.

For the test of prediction power of the credit risk model with included geographical variable, 80% of the data is randomly selected to be train data set (data for 4,520 companies) and 20% to be test data set (data for 1,130 companies).

For the purpose of use of spatial techniques, data was structured as a panel, such that there is info for the same company in 2 time periods, which was facilitating the estimation of the weight matrix, since the locations and created neighbor list object were the same. Train and test set each have data for 1106 companies.

Once the probabilities were estimated, the companies were classified according to appropriate cut-off point. If the probability > cut-off point, the company was classified as defaulted, otherwise it was classified as non-defaulted. Since some prediction measures are increasing with the lower cut-off level, while other prediction measures increase with the higher cut-off level, several cut-off points were used for classification of the companies from the test data base and wider perspective on the prediction accuracy was introduced. As the cut-off points were used quantiles from the sample of estimated probabilities (0.25, 0.50, 0.75, 0.90, 0.95, 0.99).
Results

We compared the base model and the model with included geographical variable (distance to the capital). When we compared the fit of the base model (Appendix 2) with the fit of the model with included distance to the capital (Appendix 3), this variable does not have explanatory power (high p value > 0.05) and the model has higher AIC. Conversely, the geo-model has slightly better prediction power then base model (Appendix 6).

A comparison was made between the base model and the model with included geographical dummy (dummy denotes whether municipality where company resides is cosmopolitan/urban/rural). When we compared fit of base model (Appendix 4), with the model with included geo-dummy (Appendix 5), the dummy for “rural” municipality has some explanatory power (p value less then 0.10). Still the model has higher AIC and worse prediction power in all prediction measures, except for F1 score (Appendix 6).

Also were done Moran's I test for spatial autocorrelation. We observed cases of non-significant and significant positive autocorrelation (Appendix 7). It is not surprising result, since the assumptions underlying the Moran's test for spatial autocorrelation using a spatial weights matrix in weights list form, are sensitive to the form of the graph of neighbour relationship (Cliff, 1981).

After we fit the models we estimate the probabilities. It was noticed that when fitting the models with spatial filter technique, range of the estimated probabilities was higher then with the base model and usually it coincide with better classification accuracy.
The research also focused on the use of the spatial filtering as the prediction improvement technique. As we can notice from the appendix 7, the number of eigenvector needed to remove spatial autocorrelation decrease with the increase in the number of the links of the spatial neighbor matrix.

Regarding the fit, if we compare the AIC, almost all models with fitted eigenvectors (except for model with 4 links) have lower AIC then the base model, who has AIC of 677.5 (Appendix 7).

Estimated coefficient in the spatial model were to some extent different then the coefficients in the base model.

The comparison between the models is done using ANOVA test on deviance (Chambers and Hastie, 1992). All tests have p value lower then 0.05 (only model with 4 links has p value lower then 0.10), which support the need for use of eigenvectors (Appendix 7).
From the appendix 7, we can notice that the prediction accuracy (expressed as the average of the all accuracy measures across all cut-off points) increase with the increase of the links of the spatial neighbor matrix (from 0.4319 to 0.4400, when the base has 0.4360 accuracy). In the appendix 8 are given accuracy measure for all confident levels and all models. This results confirm the benefit of the use of spatial filtering in credit risk classification models, as it can slightly improve their prediction capacity. Still, the effects are sensitive to the number of the links in the spatial neighbor network.

Graph. Two eigenvectors used in the model with more then 5 average links

Conclusion
It was shown that, in general, spatial filter enhance the fit and can slightly improve the prediction of the credit risk model.

The tests showed that effect of adding eigenvectors to the base model is higher then the effect of adding some geographical dummy or geographical variable like distance to the capital.

Still, geo-dummies help us to detect that companies in rural municipalities have lower probability of default, although not very significant.

It should be noted however that the fit and prediction results depend on the created weight matrix when using spatial filtering.

Results showed that with the increase of the neighbor links, the prediction by the spatial model increase and slightly outperform the base model.

It was confirmed that the form of the graph of neighbor relationship determines the significance of the spatial autocorrelation tests.

Positive autocorrelation indicate existence of clusters of defaults within geographical area, which could confirm the need for use of spatial techniques. Also, existence of positive spatial pattern in the credit risk assessment could be taken in consideration by the national banking regulators (central banks) and appropriately treated in the regulation, so that estimated credit risk parameters reflect the true risk condition of the companies and their geographical position.

Further research in this field could be extended by using more different types of spatial weight matrices and use of more datasets, especially from the bigger countries.

References


Griffith DA and Peres-Neto PR, (2006), Spatial modeling in ecology: the flexibility of eigenfunction spatial analyses.


Appendix 1
### Summary of the Train Data

<table>
<thead>
<tr>
<th>Metric</th>
<th>Min.</th>
<th>1st Qu.</th>
<th>Median</th>
<th>Mean</th>
<th>3rd Qu.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Ratio</td>
<td>0.184</td>
<td>1.153</td>
<td>3.185</td>
<td>2.185</td>
<td>2.478</td>
<td>15.697</td>
</tr>
<tr>
<td>Rev. to Receivables</td>
<td>0.2074</td>
<td>2.0220</td>
<td>3.7476</td>
<td>11.683</td>
<td>7.5033</td>
<td>430.2439</td>
</tr>
<tr>
<td>Rev. to Assets</td>
<td>-0.04496</td>
<td>0.58460</td>
<td>0.86462</td>
<td>1.05752</td>
<td>1.31969</td>
<td>1.31969</td>
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<tr>
<td>ROE</td>
<td>-0.02118</td>
<td>0.01677</td>
<td>0.07201</td>
<td>0.11393</td>
<td>0.16493</td>
<td>0.16493</td>
</tr>
<tr>
<td>ROA</td>
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<td>0.007201</td>
<td>0.032431</td>
<td>0.056961</td>
<td>0.087149</td>
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</table>

### Summary of the Test Data

<table>
<thead>
<tr>
<th>Metric</th>
<th>Min.</th>
<th>1st Qu.</th>
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<th>Mean</th>
<th>3rd Qu.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Ratio</td>
<td>0.1737</td>
<td>1.1814</td>
<td>1.6982</td>
<td>2.2665</td>
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<td>Rev. to Receivables</td>
<td>0.1842</td>
<td>2.0024</td>
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<td>0.54966</td>
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<td>1.04990</td>
<td>1.30550</td>
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<tr>
<td>ROE</td>
<td>-0.01258</td>
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<td>0.10985</td>
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</tr>
<tr>
<td>ROA</td>
<td>-0.000000</td>
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<td>0.004106</td>
<td>0.004106</td>
<td>0.058921</td>
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</tbody>
</table>

### Appendix 2

```r
bayesglm(formula = change ~ ., family = binomial(link = "log"),
```
Data = train_short

Deviance Residuals:

<table>
<thead>
<tr>
<th>Min</th>
<th>1Q</th>
<th>Median</th>
<th>3Q</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1.3697</td>
<td>-0.5731</td>
<td>-0.4653</td>
<td>-0.3403</td>
<td>2.9366</td>
</tr>
</tbody>
</table>

Coefficients:

|                    | Estimate | Std. Error | z value | Pr(>|z|) |
|--------------------|----------|------------|---------|---------|
| (Intercept)        | -2.1546191 | 0.4025701  | -5.352  | 8.69e-08 *** |
| year2015           | 0.1128103  | 0.1002975  | 1.125   | 0.260692 |
| Size2              | 0.0821172  | 0.1912142  | 0.429   | 0.667595 |
| Size3              | 0.5140642  | 0.2274472  | 2.260   | 0.023812 * |
| Size4              | -0.0788766 | 0.2540885  | -0.310  | 0.756234 |
| SECTORB            | 0.5481473  | 0.4730827  | 1.159   | 0.246590 |
| SECTORC1           | 0.1327798  | 0.3296999  | 0.403   | 0.687147 |
| SECTORC2           | -0.1416611 | 0.3839908  | -0.369  | 0.712189 |
| SECTORC3           | 0.4576639  | 0.3480894  | 1.315   | 0.188581 |
| SECTORC4           | -0.2763622 | 0.3497564  | -0.790  | 0.429437 |
| SECTORC5           | -0.1596831 | 0.3538280  | -0.451  | 0.651772 |
| SECTORD            | -0.7829673 | 1.6704921  | -0.469  | 0.639281 |
| SECTORE            | 0.4824018  | 0.7715121  | 0.625   | 0.531795 |
| SECTORF            | 0.0750753  | 0.3033305  | 0.248   | 0.804519 |
| SECTORG            | 0.0367440  | 0.2780638  | 0.132   | 0.894872 |
| SECTORH            | 0.3155657  | 0.3147884  | 1.002   | 0.316117 |
| SECTORI            | 0.1020587  | 0.4086743  | 0.250   | 0.802795 |
| SECTORJ            | 0.2372854  | 0.4426947  | 0.536   | 0.591957 |
| SECTORK            | 0.0000000  | 2.5000000  | 0.000   | 1.000000 |
| SECTORL            | 0.1671382  | 0.6250030  | 0.267   | 0.789146 |
| SECTORM            | -0.1734742 | 0.4075845  | -0.426  | 0.670388 |
| SECTORN            | 1.6914936  | 0.5226388  | 3.236   | 0.001210 ** |
| SECTORP            | -1.2502308 | 1.5238358  | -0.820  | 0.411960 |
| SECTORQ            | 0.3264658  | 0.5442565  | 0.600   | 0.548614 |
| SECTORR            | -0.6675638 | 1.7692206  | -0.377  | 0.705935 |
| SECTORS            | 0.9206047  | 0.6193434  | 1.486   | 0.137168 |
| current indicator  | -0.055592  | 0.0434618  | -1.278  | 0.201127 |
| pri_prod_pobar     | -0.0002935 | 0.0016343  | -0.180  | 0.857473 |
| revenues to assets | -0.5223239 | 0.1005643  | -5.194  | 2.06e-07 *** |
| ROE                | 0.5095352  | 1.1613616  | 0.439   | 0.660850 |
| ROA                | -5.2971146 | 2.9003897  | -1.826  | 0.067798 . |
| nprof_marg         | 0.7076491  | 1.1639969  | 0.608   | 0.543222 |
| leverage           | -0.0266401 | 0.0293924  | -0.906  | 0.364747 |
| oblig. to assets   | 1.4162763  | 0.3742803  | 3.784   | 0.000154 *** |
| col_to_value       | -0.8888151 | 0.00199411 | 0.041   | 0.967397 |

---

Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 2936.9 on 3856 degrees of freedom
Residual deviance: 2779.4 on 3822 degrees of freedom
AIC: 2849.4

Number of Fisher Scoring iterations: 13

Appendix 3

Deviance Residuals:

<table>
<thead>
<tr>
<th>Min</th>
<th>1Q</th>
<th>Median</th>
<th>3Q</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Coefficients:  Estimate  Std. Error  z value  Pr(>|z|)
(Intercept)  -2.155e+00  4.065e-01  -5.301  1.15e-07 ***
Year 1.128e-01  1.003e-01   1.125  0.260680
Size2 8.215e-02  1.913e-01   0.430  0.667553
Size3 5.142e-01  2.278e-01   2.257  0.024024 *
Size4 -7.870e-02  2.552e-01  -0.308  0.757762
SECTORB  5.482e-01  4.731e-01   1.159  0.246566
SECTORC1  1.327e-01  3.300e-01   0.402  0.687596
SECTORC2 -1.418e+00  3.844e-01  -0.369  0.712237
SECTORC3  4.577e-01  3.481e-01   1.315  0.188594
SECTORC4  7.870e-02  2.552e-01  -0.308  0.757762
SECTORD  7.828e-01  1.671e+00  -0.469  0.639387
SECTORF  7.516e-02  3.035e-01  -0.248  0.804398
SECTORG  3.684e-02  2.783e-01   0.132  0.894680
SECTORH  3.156e-01  3.148e-01   1.002  0.316175
SECTORI  1.020e-01  4.087e-01   0.250  0.802853
SECTORJ  2.375e-01  4.436e-01   0.535  0.592366
SECTORK -1.957e-01  3.538e-01  -0.551  0.578354
SECTORL  4.825e-01  7.716e-01   0.625  0.531760
SECTORM  4.825e-01  7.716e-01   0.625  0.531760
SECTORN  1.673e+00  5.251e+00  3.222  0.001272 **
SECTORO -1.673e+00  5.251e+00  -3.222  0.001272 **
SECTORP  1.673e+00  5.251e+00  3.222  0.001272 **
SECTORQ  1.673e+00  5.251e+00  3.222  0.001272 **
SECTORR  1.673e+00  5.251e+00  3.222  0.001272 **
SECTORS  1.673e+00  5.251e+00  3.222  0.001272 **
current indicator -5.555e-02  4.347e-02  -1.278  0.201322
pri_prod_pobar  7.077e-01  1.164e+00  0.608  0.543199
revenues to assets -5.223e-01  1.006e+01 -0.519  0.608081
ROE  5.096e-01  1.161e+00  0.439  0.660818
ROA  9.209e-01  6.203e+01  1.485  0.137654
nprof_marg  7.077e-01  1.164e+00  0.608  0.543199
leverage -2.664e-02  2.940e-02  -0.906  0.364855
oblig. to assets  8.045e-04  1.994e-02  0.040  0.967817
dist_from_centre -1.733e-01  4.084e-01  -0.424  0.671413

Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 2936.9  on 3856 degrees of freedom  Residual deviance: 2779.4  on 3821 degrees of freedom
AIC: 2851.4

Number of Fisher Scoring iterations: 13

---

Appendix 4

Deviance Residuals:
  Min       1Q  Median       3Q      Max
-1.3705  -0.5775  -0.4647  -0.3365   2.9768
Coefficients:

| Estimate  | Std. Error | z value | Pr(>|z|) |
|-----------|------------|---------|---------|
| (Intercept) | -2.0110616 | 0.3918025 | -5.133 2.85e-07 *** |
| year2015   | 0.1081597  | 0.0976425 | -1.108 0.267987 |
| Size2      | 0.0522331  | 0.0976425 | 0.528 0.599847 |
| Size3      | 0.04868747 | 0.0976425 | 2.224 0.026159 * |
| Size4      | -0.0780140 | 0.0976425 | -0.801 0.419479 |
| SECTORB    | 0.1113657  | 0.0976425 | 1.130 0.261598 |
| SECTORC1   | 0.0470834  | 0.0976425 | 0.482 0.628672 |
| SECTORC2   | -0.1278608 | 0.0976425 | -1.315 0.186229 |
| SECTORC3   | 0.4363354  | 0.0976425 | 4.467 0.000000 *** |
| SECTORC4   | -0.2656268 | 0.0976425 | -2.729 0.006254 * |
| SECTORC5   | -0.4949800 | 0.0976425 | -5.098 0.000000 *** |
| SECTORD    | -0.8035587 | 0.0976425 | -8.254 0.000000 *** |
| SECTORDF   | 0.0784849  | 0.0976425 | 0.804 0.422204 |
| SECTORG    | 0.008013   | 0.0976425 | 0.082 0.934110 |
| SECTORH    | 0.3262440  | 0.0976425 | 3.337 0.000761 *** |
| SECTORI    | 0.1785352  | 0.0976425 | 1.826 0.068544 |
| SECTORJ    | 0.1573496  | 0.0976425 | 1.611 0.107047 |
| SECTORK    | 0.0000000  | 0.0976425 | 0.000 1.000000 |
| SECTORL    | 0.0132909  | 0.0976425 | 0.136 0.892672 |
| SECTORM    | -0.1564169 | 0.0976425 | -1.607 0.109846 |
| SECTORN    | 1.636699   | 0.0976425 | 16.815 0.000000 *** |
| SECTORP    | -1.263351  | 0.0976425 | -13.025 0.000000 *** |
| SECTORQ    | 0.2914817  | 0.0976425 | 2.982 0.003647 ** |
| SECTORR    | -0.6946579 | 0.0976425 | -7.137 0.000000 *** |
| SECTORS    | 0.9048144  | 0.0976425 | 9.257 0.000000 *** |
| current indicator | -0.068220 | 0.0976425 | -0.698 0.488288 |
| revenues to receiv | 0.0006415 | 0.0976425 | 0.065 0.950790 |
| revenues to assets | -0.5774494 | 0.0976425 | -5.924 0.000000 *** |
| ROE        | 0.7912357  | 0.0976425 | 8.133 0.000000 *** |
| ROA        | 1.1573496  | 0.0976425 | 12.138 0.000000 *** |
| nproof_marg | 0.684653  | 0.0976425 | 7.050 0.000000 *** |
| leverage   | -0.0252684 | 0.0976425 | -0.260 0.797083 |
| obliga.to assets | 1.3526234 | 0.0976425 | 14.046 0.000000 *** |
| col_to_value | -0.0047678 | 0.0976425 | -0.049 0.961490 |

Signif. codes: 0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 3096.1 on 4031 degrees of freedom
Residual deviance: 2921.0 on 3997 degrees of freedom
AIC: 2991

Number of Fisher Scoring iterations: 13

Appendix 5

Deviance Residuals:

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Coefficients:  Estimate Std. Error z value Pr(>|z|)
(Intercept)  -1.9327884  0.4011482  -4.818  1.45e-06  ***
year2015         0.1078221  0.0976740   1.104  0.269638
Size2          0.1078221  0.0976740   1.104  0.269638
Size3         0.4574680  0.2200163   2.079  0.037595  *
Size4          0.1154076  0.2471040  -0.467  0.640471
SECTORB      0.6017030  0.4430837   1.358  0.174467
SECTORC1     0.0279027  0.3244443   0.086  0.931465
SECTORC2    -0.1400438  0.3755209  -0.373  0.709199
SECTORC3    0.3956444  0.3394951   1.165  0.243861
SECTORC4     0.1078221  0.0976740   1.104  0.269638
SECTORC5  -0.0258209  0.0286921  -0.900  0.368157
SECTORI   0.2926648  0.3087911   0.948  0.343244
SECTORJ     0.1464088  0.3918545   0.374  0.708679
SECTORK  -0.0489471  0.0637948  -0.766  0.442308
SECTORL   0.3155391  0.7613786   0.414  0.678558
SECTORM    0.1154076  0.2471040   0.467  0.640471
SECTORN     1.5740263  0.5243641   3.002  0.002684  **
SECTORP -1.2419045  1.5247618  -0.814  0.415364
SECTORQ    0.7320434  1.1193388   0.654  0.513114
SECTORS     0.2926648  0.3087911   0.948  0.343244
current indicator  -0.0700718  0.0439362  -1.595  0.110745
revenues to receiv.  0.0006993  0.0014306   0.489  0.624968
revenues to assets 0.5444658  0.0992840  5.484  4.16e-08  ***
ROE       0.3355379  0.2033449   1.650  0.098924 .
urban   -0.0349231  0.1031850  -0.338  0.735023
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 3096.1  on 4031  degrees of freedom
Residual deviance: 2918.2  on 3995  degrees of freedom
AIC: 2992.2

Number of Fisher Scoring iterations: 13

Appendix 6
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**Model with spatial filter (1 link)**

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Social and political pathways for sustainable housing in rural India


*School of Forest Science and Resource Management, Technical University Munich

Article Info

Abstract

Implementing sustainable social housing is a vital aspect on the way towards social and economic well-being of India's deprived rural population. In this study, we analyse the present housing situation in rural India and the Indian governmental social housing programme "Pradhan Mantri Awaas Yojana-Gramin" (PMAY-G). The paper also identifies and discusses the availability of sustainable materials which are suitable for the social housing projects in rural India. Further, the potential of community engagement in the social housing projects is discussed. The study is based on the review of existing research and policy papers as well as three expert interviews. Three key conclusions were drawn from this study. First, the new PMAY-G is meant to provide the social housing in a more beneficiaries-favourable way. Despite the difficulty of measuring the overall success of this programme to date, it is important to indicate that PMAY-G fosters convergence with other existing social programmes. Second, it was discovered that the potential for utilizing sustainable resources is high, although they vary broadly across the different regions of the country. Third, the community engagement was determined as a key to a healthier civic culture, improved skills and knowledge of the rural inhabitants, thereby increasing their participation in the social and political programmes.

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Abbreviations

BPL - Below Poverty Line
BTPT Model - Build Together Pay Together Model
GoI - Government of India
IAY - Indira Awaas Yojana
MIS - Management Information System
MoRD - Ministry of Rural Development-Government of India
NREGA - Mahatma Gandhi National Rural Employment Guarantee Act
NTSA - National Technical Support Agency
PMAY-G - Pradhan Mantri Awaas Yojana-Gramin
PMU - Programme Management Unit
1. Introduction

Despite India's rapidly growing economy and GDP, poverty among its population, particularly in rural areas where the majority of people live, remains pervasive. Similar to other emerging economies worldwide, its wealth is not equally distributed across the whole population. Over 700 million people live in India's rural areas, of which a large part is lacking adequate shelter and access to electricity, clean drinking water, and sanitation (Kumar, 2014). This poses a significant challenge to the provision of affordable housing for low-income households. Although government-sponsored housing for the rural poor existed in the form of Indira Awaas Yojana (IAY) since 1985 as a sub-programme and 1996 as an independent one, due to its complex nature, the house construction time was unpredictable and the prevailing demand did not equal the supply (Srivastava & Mangrulkar, 2016). The shortfall of affordable and available housing options means millions of Indian households live in confined and poorly constructed homes (Mahadevan, 2015). Moreover, current rural housing's construction practices are lacking environmental concerns as they commonly utilize high energy consuming resources for constructing buildings. Thus, the sector fails to address energy and resource efficiencies (Srivastava and Mangrulkar, 2016).

Kumar (2014) described Maslow's basic needs hierarchy, according to which housing is an important indicator for quality of life and is positioned right next to food and clothing, emphasizing its fundamental importance. The significance of providing adequate and sustainable housing becomes evident when considering that it is not only an integral part towards social justice, improved quality of life and poverty alleviation, but it also reduces the pressure on the environment through use of natural resources and energy efficient measures. In its entity, sustainable social housing is that which "combine[s] the protection of the environment, sensible use of natural resources, economic growth and social progress" (Edwards and Turrent, 2000, p.1). It has the overarching goal of establishing sustainable and healthy communities.

Although, to date, some studies have examined the development and implementation of sustainable social housing in India (Nagrath & Gilbert, 2014; Srivastava & Mangrulkar, 2016;
Mahadevan, 2015), they have concentrated on social housing in urban India, neglecting the rural area dimension. Thus, the aim of this research is to analyze the present housing situation in rural India and the newly rolled out PMAY-G. While doing so, the study depicts the current social and political housing practices and looks to identify areas of potential improvement. Thus, this study pursues the following research questions:

1. To what extent does the existing policy framework support the social and sustainable housing in rural India?
2. How is the availability of resources and building materials related to sustainable construction methods?
3. What is the potential of engaging the community in managing social housing projects?

2. Methodology

In order to explore the social and political pathways for sustainable housing in rural India, we conducted a review of articles published from the year 2004 to 2016, as well as policy papers, reports and case studies published by the Government of India (GoI) and other autonomous bodies. The references include studies on social and affordable housing, national policy and environment-friendly building materials.

An online search of scientific articles was conducted using Scopus and ScienceDirect. The policy papers and reports were acquired from the GoI and other institutional websites. The following keywords were used for article search: [SOCIAL HOUSING INDIA, RURAL HOUSING INDIA, POLICY TOWARDS SOCIAL HOUSING IN INDIA, SUSTAINABLE RURAL HOUSING, SUSTAINABLE BUILDING MATERIALS, COST EFFECTIVE BUILDING MATERIALS, BUILDING TECHNOLOGIES IN RURAL INDIA, SUSTAINABLE CONSTRUCTION MATERIALS, CONSTRUCTION TECHNOLOGIES RURAL INDIA, TRADITIONAL HOUSING RURAL INDIA, COMMUNITY ENGAGEMENT RURAL INDIA, COMMUNITY ENGAGEMENT IN SOCIAL HOUSING INDIA, COMMUNITY ENGAGEMENT RURAL INDIA, COMMUNITY ENGAGEMENT IN SOCIAL HOUSING INDIA]

Furthermore, primary data were gathered through three interviews with experts on social and sustainable housing in India. These interviews were conducted via video conference and
the interview guide was designed based on the earlier literature review. The talk concerning the policy framework was held with Ms. Zeenat Niazi, Vice President at the Development Alternatives Group, who has 26 years of experience in the field of habitat processes and housing technology. Concerning the resource availability, the interview was carried out with Mr. Kirtee Shah, Chairman at KSA Design Planning Services, who has 40 years of experience in shelter and housing projects in rural and urban areas. The questions regarding community engagement were addressed by Dr. Prabir Kumar Das, Founder of Studio 1860, who is a design and construction specialist with technical expertise in project appraisal, planning, implementation and management of community based construction. The interviews lasted between 60 and 85 minutes and were recorded and transcribed verbatim.

3. Results and Discussion

3.1 Policy framework

Social housing programmes started with refugee rehabilitation in India after independence and have been taken up by the GoI as a poverty alleviation tool ever since. As part of its commitment ‘Housing for All’ by 2022, the government re-constructed the former IAY into PMAY-G with effect from 1st of April 2016 (PMAY-G Implementation Framework, 2016). The programme aims to provide a robust house to all families that are either homeless or living in dilapidated houses by 2022. The first milestone under that is to assist construction of 10 million houses by 2019 and the final number at the end of 2022 is planned to stand at 29.5 million houses. Based on the earlier experience of social housing, among other things, the minimum size of the house plan has been increased from 20 m² to 25 m² and the unit financial assistance have been increased from ₹ 70,000 to ₹ 120,000 for plains and ₹ 75,000 to ₹ 130,000 for hilly and difficult areas. The cost of unit assistance is shared between central and state governments with the ratios varying between 60:40 and 90:10 depending on the region of the country (PMAY-G Implementation Framework, 2016).
3.1.1 Financial arrangement and targets

With the maximum unit assistance being 130,000 Indian Rupees, the total budget of PMAY-G for the first 10 million houses that are expected to be constructed is approximately 13,008 billion Indian Rupees. The grant money under the programme allocated to the individual states and union territories includes the administrative expenses and the reserve funds for special projects (PMAY-G Implementation Framework, 2016). In order to receive these grants, the states need to submit an Annual Action Plan and the same has to be approved by the Empowered Committee of the Ministry of Rural Development (MoRD), GoI. As verified by the local governing bodies or Gram Sabhas, 15% of the total budget is allocated for the minorities and designated disadvantaged groups such as the Scheduled Castes and Scheduled Tribes. Financial highlight of the programme would have to be the fact that after all the due-diligence, the assistance in the form of grant money is transferred directly to the bank accounts of selected beneficiaries, thereby eliminating the possibility of any misuse of funds by a third party.

3.1.2 Identification and selection of beneficiaries

The Socio-Economic Caste Census of India (SECC) has set out the housing deprivation parameters which help select the beneficiaries in a fair and transparent manner. Once the genuinely deprived households are identified from the SECC data, they are also verified by the Gram Sabhas\(^1\) (MoRD, SECC 2011). It is interesting to note that the final list of beneficiaries brought out under this mechanism and called as the ‘Universe of Eligible Beneficiaries’ seems to address the issue of free riders or eligible households missing out in the previously used BPL lists. Realizing the urgency in the cases of homeless and other far deprived families, cross verified priority lists are also prepared for granting the assistance. A grievance redressal system has also been put in place for potential beneficiaries to lodge

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\(^1\) Gram Sabhas is a self-governing body at the village level in India that performs functions as prescribed by the federal state from time to time. They play a vital role by electing the right candidates as representatives of Gram Panchayats and when needed, influence their decisions for the welfare of the village.
complaints if they do not agree with priority lists and allocation ranking that are announced (PMAY-G Implementation Framework, 2016). Considering the large population, geographical complexity and the programme being new, the success of the grievance redressal system is yet to be tested.

3.1.3 House construction

Construction of houses being the most critical link in this value chain, it is important to note that the very nature of support makes PMAY-G a social programme. The programme is public and the government provides the monetary and technical support. It is important to note that the individual construction of houses is the beneficiary’s own responsibility. Following the land tagging, issue of sanction letter and release of grant money in the form of instalment by the central and state governments, they do not engage in the actual construction directly or through contractors. Exceptions are made in the case of old age beneficiaries whose houses may get constructed under the mason training program and be treated as model houses. Either way, the construction is expected to complete in 12 months or sooner from the date of sanction (PMAY-G Implementation Framework, 2016). *Figure 1* shows the relation of the 7 different stages of construction of a typical 25 m² house and based on an inspection by State-appointed Junior Engineer (JE), the release of unit assistance instalments.

*Figure 1. Different stages of house construction under PMAY-G*
3.1.4 Support mechanism

The goal of timely completion and reaching the maximum beneficiaries through the programme set the need for what is known as the beneficiary support services. The items of work under these services include (PMAY-G Implementation Framework, 2016):

i. Sensitizing beneficiaries

ii. Development of house typologies for the different regions

iii. Mason training and skill certification

iv. Sourcing of construction material

v. Additional support to old and disabled beneficiaries

vi. Facilitating loans from banks

The implementation support itself is also managed at two levels. At the national level, the National Technical Support Agency (NTSA) is the supporting body and at the state level, it is the Programme Management Unit (PMU). Based on the institutes and personnel identified for the job and their responsibilities that are defined, PMU is further subdivided into state level, district level, block level and most importantly Gram Panchayats. It is important to note that Gram Panchayats are pre-existing cornerstones of the local self-governments in rural India whose members are elected by the Gram Sabha (MoRD, E-book 2014-2015). Among all the support units, they are the most critical as they are the closest touch point to the beneficiaries. The NTSA is responsible for the monitoring, budgetary management, information education and communication, trainings and workshops, and coordinating technical facilitation centres. On the other hand, PMUs are responsible for social mobilisation, selection of partner institutions, construction quality assurance and process guidance (PMAY-G Implementation Framework, 2016).

To monitor the overall process and performance in real time through the use of workflow parameters like targets, registrations and bank accounts, GoI and state governments are making use of a software tool, AwaasSoft. The software is also the only recognised and

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2 Gram Panchayats is the organization of elected representatives by the members of Gram Sabha of the village. It is a self-governing body but formally recognized by the GoI.
legitimate reporting tool. This end-to-end eGovernance model, as the government calls it, goes beyond the computer based MIS and includes the mobile application called AwaasApp. The latter captures geo-referenced data to facilitate government inspections, as well as potential beneficiaries keeping track of priority lists. (PMAY-G Implementation Framework, 2016)

3.2 Availability of natural and sustainable resources

3.2.1 Sustainability in the context of social housing in India

The overall concept of sustainable housing can be split in several components: economic sustainability, social sustainability and environmental sustainability (Nagrath, 2014). Approaching environmental problems is interconnected with considering financial aspects as well as social and cultural preferences of beneficiaries (Shah, 2017). The current programme PMAY-G, as it was discussed previously, includes these considerations and aims at enabling villagers to use environment-friendly materials (Nagrath, 2014). Experienced artisans, architects, civil engineers and project managers that are either aligned with or are part of the NTSA and PMU, impart eco-building skills to unskilled individuals and some existing artisans who then carry out the construction. Green technologies and the use of local and renewable material is also promoted by the Construction Skill Development Council of India. (Niazi, 2017) Enabling an extended amount of people to improve their current living situation by building a new home is directly connected to an increased demand for building materials. In conjunction with the increasing population in India, the housing situation puts high pressure on the material and housing industry (Madurwar, 2013). As Reddy already stated in 2004, India has one of the largest construction industries worldwide, especially in terms of volume of natural resources used for building houses. This increased demand induces an increased negative environmental impact. Overall, the construction sector is responsible for around 22% of greenhouse gas emissions (Reddy, 2004). In the context of climate change and international climate goals, it is therefore of national interest to foster the use of less energy consuming and more eco-friendly resources to reduce potential greenhouse gas emissions.
At the micro-level, however, financial aspects are commonly of higher priority to rural citizens than dealing with abstract environmental problems. Construction materials are the main expense factor with 60% to 65% of the cost of building a new house (Kumar, 2014).

3.2.2 Natural and sustainable building materials

Commonly used building materials such as cement, steel, aluminium, etc. are counted as high energy consuming materials. Due to the more complex production process, those materials are usually manufactured centrally and thus have to be transported over longer distances to their point of final destination. The resulting high environmental impact can be countered by using local techniques and materials. Thus, a less energy consuming production and comparatively short transportation distances can be achieved (Reddy, 2011). Additional benefits are a healthier place to live for the citizens and a minimising of global warming by reducing CO2 emission. Furthermore, local labour is stimulated as well as the use of local artisans (Kumar, 2014). Reddy (2004) summarises the main components regarding sustainable materials and alternative technologies as follows:

“Energy conservation; Minimize the use of high energy materials; Concern for environment, environment-friendly technologies; Minimize transportation and maximize the use of local materials and resources; Decentralized production and maximum use of local skills; Utilization of industrial and mine wastes for the production of building materials; Recycling of building wastes, and Use of renewable energy sources.”

Both Shah (2017) and Kumar (2014) argue that there are several innovative technologies already available in India that are in accordance with the previous points and which use locally available materials such as waste products, mud, bamboo, etc. Techniques and materials, however, may differ strongly between the various states of India. Besides differences in cultural developments, this is also due to the varying climate zones and environmental conditions on the ground (Bhanj et al., 2008). Due to the scope of this study, we focused on locally available sustainable materials. The following materials are most prevalent in rural India.
Bamboo is a commonly used building material in rural India. It is a natural and renewable resource with a fast-growing rate. The costs for bamboo are low and because of the hollowness it is a light material which makes it suitable for the construction in areas with a high risk of earthquakes (Ministry of Environment, Forest & Climate Change, 2011). Because of its light weight, it is suitable for roofing which is applied in practice in the form of corrugated roofing sheets (P. van der Lugt, 2006) and is also used in the form of bamboo mat boards that have similar properties like plywood. Furthermore, it can be used for reinforcement of concrete where it can substitute steel and timber (SHEE, 2010).

Bamboo grows best in tropical regions, but can also be found in subtropical and temperate regions of India. Thus, the bamboo distribution varies across the country. This is also because it can grow in various kinds of soil conditions with varying moisture level or mineral content. Therefore, two graphs are introduced to illustrate the distribution of forests and bamboo areas. Figure 2a shows the geographical forest distribution in India. Figure 2b shows the state-wise distribution of bamboo in these forests areas. Figure 2a reveals a very dense forest cover in the North-Eastern states of India. In these states, there is also a high density of bamboo areas within the forests. The bamboo distribution of all North-Eastern states combined count for 50% of the whole bamboo area in India. In contrast to this, the north has the lowest abundance of bamboo due to the temperate climate conditions. Although states like Uttarakhand, Himachal Pradesh and Jammu Kashmir have a large abundance of forests, bamboo is not represented in large numbers. In Kashmir for example there is no natural growing bamboo at all (Ministry of Environment, Forest & Climate Change, 2011). Dense forest distribution can also be found in the states of Chhattisgarh, Maharashtra and Madhya Pradesh, where bamboo distribution counts for one quarter of whole of India. Considering bamboo as a local building material therefore depends strongly on which region is considered.
Compressed earth bricks are particularly suited for rural areas. The use of raw earth for construction in India has been applied since ancient times in the form of mud as plaster in wattle and daub, sun dried mud bricks or raw rammed earth (Auroville, 2016). Nowadays, compressed earth bricks are well suited for rural areas due to a process that can be implemented on a local scale (Reddy, 2011). Compared to other building materials like burnt bricks, they show a great potential for energy reduction as they don’t need to be burned. Furthermore, they are around 20% to 40% more cost efficient compared to brick masonry (Reddy, 2011). The availability of compressed earth bricks depends on the soil condition of the region. The fabrication requires a soil type of min 20% clay, which is enhanced by 5% to 10% of cement (SHEE, 2010). In total, compressed earth bricks are highly relevant for sustainable social housing because soil is available almost everywhere and the production of
bricks can be performed even by a semi-skilled person. This enables an easy transfer of the technology, if required, and leads to low costs (Auroville, 2016).

A third important resource is fly ash, which is a by-product of combustion. It occurs as a residue of industrial burning processes like in waste incineration plants. It has been widely used as a substitute for cement since the 1930s. In practice, bricks are made from a 60% to 70% share of fly ash. It is an advantageous substitute to concrete, which has a high ecological impact (Naik and Moriconi, 2005). Of the annually produced 100 x 10⁶ t of fly ash from thermal power plants, only 2% to 3% is used as a building material. The high availability is due to India's continued reliance on combustion of coal for electricity production and the low usage shows the untapped potential of fly ash in construction (Reddy, 2011; Guttikunda, 2014). Figure 3 shows this growing share of electricity production from coal in India. It increased from 51% in 1980 to 68% on an average in the 1990s and has since then stayed at a high level. The increasing share is expected to continue in the next decades because of the government’s plan to expand coal based energy production in the future. Figure 4 shows the geographical distribution of coal-based power plants in India in 2012. One can see a concentration of these power plants in the Eastern States of Jharkhand, Chhattisgarh, Odisha and West Bengal, and especially in the western region of the State of Maharashtra. The distribution of thermal power plants and the growing consumption of coal in the future demonstrate the high availability and potential of fly ash in India. (Guttikunda, 2014)

![Figure 3. Electricity production from coal sources (% of total), (The World Bank, 2017)](image-url)
Case Study Assam

Assam is a state in the North-Eastern part of India and situated in a region with the highest bamboo distribution in the country. The report ‘A Compendium of Rural Housing Typologies by the Ministry of Rural Development (2016)’ subdivides Assam into five different zones, which are characterized by different geographical conditions (Figure 5). Although the total forest distribution of Assam is high, Zone A and B are characterized by almost no forest cover. Therefore, bamboo has to be sourced from other zones to be used as an alternative building material. Meanwhile, bricks are the primary building material in Zone A and B. Fly ash bricks are widely available due to the presence of thermal power plants (MoRD Compendium, 2016). In contrast, Zone C is characterised by highest forest cover, which implies high availability of timber and also bamboo. At the same time, there is limited access to fly ash bricks, which led to a traditional architecture based on timber. In Zone D, fly ash
bricks are easily available due to thermal power plants in the cities Bongaigaon and Tinsukia. Although forests in this zone are less dense than in zone C, bamboo is still available and utilized. On the other hand, Zone E is rich in both bamboo and fly ash bricks and therefore, both materials are used for construction (MoRD Compendium, 2016).

The case of Assam shows that the availability and utilization of sustainable building material strongly depends on the geographical conditions and the cultural preferences of the local communities.

![Figure 5. Subdivision of Assam into five geographical zones (MoRD Compendium, 2016)](image)

3.2.3 Delivery system

Kumar (2014) describes institutional mechanisms that extend governmental support beyond general guidance. According to this study, there is a need for providing beneficiaries with a set of components such as technologies, skills, designs, and materials. Relating to sustainable constructions, it is mentioned that local organisations shall provide training in appropriate technologies and highlight the beneficial value of local materials. Thus, villagers can experience that a design which combines the aspects of ‘local’ and ‘sustainable’ can
offer several advantages. Besides facilitating local labour, it also provides a healthier living environment and higher resistance to natural calamities, though latter is highly dependent on the architecture (Kumar, 2014). Bhanj et al (2008) argues for a network of rural building centres to achieve this skill transfer between experts and beneficiaries. Furthermore, a delivery system is mentioned which helps to eliminate constraints and guarantee the availability of construction inputs. Shah (2017) develops this idea further and links the success of introducing more sustainable materials to an efficient delivery system. According to him, nationwide use of environment-friendly materials is only achieved, if beneficiaries are convinced of their benefit and if those materials are easily accessible and available. Figure 6 illustrates the essential components of both sustainable and social housing in rural India and categorises them in four areas.

![Diagram](image)

**Figure 6.** Essential components of sustainable and social housing in rural India
3.3 Community Engagement

As mentioned in 3.1.3, the construction of a house is the beneficiary’s responsibility, which makes community engagement an important aspect. Its potential will be discussed in the following section. Community engagement involves a broad range of activities, including informing, listening, and working with local people, seeking input from them and bringing them together. More precisely and in the context of social housing, it covers consultation, collaboration in decision making, and empowerment. There are three different reasons why engaging the community is crucial. First of all, to reduce isolation, meaning that less isolated and thus more engaged community members lead to a healthier and more vibrant civic culture. Second of all, to improve skills, confidence, and knowledge. This form of capacity building can for instance lead to the formation of tenant groups, and social events. Third of all, to empower individuals to participate in programmes and services in the community, which can facilitate increasing cooperation as well as coordination of projects and services to improve the community, thus creating a strong community feeling. (NSW, 2012)

3.3.1 Co-learning of community and NGOs

Beneficiaries of the PMAY-G Programme often do not know how to use the money they receive from the government due to inexperience and lack of guidance (Das, 2017). Therefore, the PMU and NGOs are readily available to provide advice and training sessions. Direct involvement of beneficiaries in developing their settlement layouts, based on guidelines and housing typologies (MoRD Compendium, 2016, Niazi, 2017), is usually best for the community’s own development and the best outcomes of the programme as a whole. Therefore, using both the community’s existing capacities, as well as developing new ones, should be encouraged. NGOs can learn a lot from the beneficiaries, e.g. in how to handle local materials and what the community really needs in order to thrive. Dr. Das recommends to never impose any top-down ideas, but to be patient in engaging and getting to know the communities and how they live. Different households have different requirements which can often clash with technical requirements. Thus, it is important to develop models together with
the community. He also emphasizes the role of local women in developing a good, comprehensive and socially accepted design. (NSW, 2012; Das, 2017)

3.3.2 The Build Together Pay Together Model

Sometimes qualified families that are in acute need of housing do not receive the unit financial assistance for a prolonged period of time. According to Dr. Das, there are around five times more houses needed than the 29.5 million planned by the government. Even if one is fortunate enough to receive the unit financial assistance, it is often not adequate to construct houses that fulfil their needs. Furthermore, many non-BPL households also require loans to build houses. (Das, 2017) For these people, the “Build Together Pay Together” (BTPT) Model can be a reasonable solution. Its Standard Operating Procedures can be used by Housing Finance institutions, NGOs and some state government housing schemes such as the Mukhyamantri Awas Yojana in Madhya Pradesh and the Credit-cum-Subsidy scheme in Bihar. It was first implemented in Bundelkhand (Madhya Pradesh) and successfully resulted in 28 houses being constructed within 7 months. The aim of the project is to construct low cost eco-houses for the rural working poor in collaboration with an implementation agency through the use of bank loans. (Srivastava and Mangrulkar, 2016) As rural banks typically have high interest rates, the debtors often cannot pay them back (Das, 2017). The BTPT idea is to form joint liability groups of 5-6 households within one village prior to them getting a loan sanctioned. All the members need to open savings and loan accounts, and deposit initial earnest money. In case of a shortfall on one member’s account during the repayment period, other group members are expected to take onus for it in order to ensure the continuity of the construction. This peer pressure within the groups ensures a reliable repayment process. (Srivastava and Mangrulkar, 2016) The Bandhan Bank is specialized in this micro-financing and gives loans to groups at reasonable interest rates of around 9.0%, which makes it affordable for them. The ideal solution for most households are the receipt of several small loans over a period of time in order to enable the addition of more

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3 Mukhyamantri Awas Yojana is a state level extension of the PMAY-G.
components to the fundamental house. (Das, 2017) Although individual beneficiaries receive support services with financial planning and capacity building, the bureaucratic processes itself are further reduced for individuals by doing combined projects. (Srivastava and Mangrulkar, 2016)

3.3.3 Skill development and workmanship

Working together with other community members facilitates a faster and more efficient construction process of the houses (Srivastava and Mangrulkar, 2016). In addition, it is a cheaper alternative as contractors do not need to be hired (Das, 2017). Vulnerable families, physically challenged people or persons living alone also get a chance to obtain a house (Niazi, 2017). Beneficiaries of the Mahatma Gandhi National Rural Employment Guarantee Act (NREGA), which assures 100 days of unskilled wage employment, depending on the region of their presence, can receive 90 or 95 man-day’s support for constructing their houses themselves (PMAY-G Implementation Framework, 2016). Additionally, a joint procurement of the material in consideration with seasonal price changes will in most cases lead to a better price offered by the suppliers (Das, 2017).

3.3.4 Community empowerment and future prospects

In a community-based participatory system, the progress is monitored, reported and optimized not only by the institutions supporting the implementation but also by the community itself. As a result, the beneficiary’s involvement in decision-making in their community is enhanced. The skills also improve their future employment opportunities, e.g. to later on become master masons, supervisors or master trainers as well. (NSW, 2012) Local employment can also be created by using alternative technologies such as the Rat Trap Bond technology⁴, which is more labour intensive but needs less material (Das, 2017). The acquired construction and project management skills can also pave the way for future

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⁴ The Rat Trap Bond Technology is a brick masonry method of wall construction, in which bricks are placed in vertical position instead of conventional horizontal position and thus creating a cavity (hollow space) within the wall. Introduced in the 1970s, it is used extensively for its lower construction cost, reduced material requirement and better thermal efficiency than conventional masonry wall, without compromising the strength of the wall.
cooperation and coordination of community development projects and services as it would strengthen people’s feeling of political effectiveness and personal responsibilities (NSW, 2012). The community members are also empowered to set-up and strengthen local micro-enterprises in production and supply of eco-building materials such as precast products, poles and tiles. Thereby, the community engagement also facilitates enterprise development and a completion of local value chains resulting from this decentralised material procurement. (Srivastava and Mangrulkar, 2016)

4. Conclusion

This study contributed towards gaining an understanding of the current housing situation in rural India by discussing the present social and political housing practices. Based on our literature review and analysis, we drew the following conclusions:

1. The government uses the PMAY-G to provide housing to the poverty-stricken families and individuals in rural India while fostering social and sustainable practices. A milestone was the revision of the former IAY Programme by modifying the framework more in favour of potential beneficiaries. Besides an increase in living space and monetary support, the new avatar, PMAY-G Programme also addresses several shortcomings of the earlier guidelines. Thus, PMAY-G is looking to improve the living conditions of millions of rural families. To guarantee the success of this programme, the government set up institutions for supporting beneficiaries at a national, as well as state level. Overall responsibility of constructing the house still lies with the beneficiary and is strongly linked to a comprehensive governmental support mechanism. The success of the programme cannot be estimated at this early stage. To address the various plausible issues during implementation, we recommend to monitor the realisation of the programme closely and make changes if necessary. Furthermore, it was described that PMAY-G fosters convergence with existing programmes like NREGA, Swachh Bharat and Disaster Management Act which address the issues of employment guarantee, sanitation & hygiene and rehabilitation & settlement, respectively. We
recommend that all the aspects of implementation are met with equal thrust and stories are captured to form case studies for the future outlook.

2. It was shown that the availability of specific building materials is highly dependent on the region. Bamboo may be easily accessible in one village while another area may have to rely on compressed earth bricks. Hence, sustainability in the construction can only be achieved by providing the beneficiaries a set of housing designs which align with the local conditions. Potential for increasing the overall availability of sustainable resources is high since there are a variety of alternatives to replace conventional building materials, such as fly ash as substitute for concrete. However, it was also shown that fostering the use of those materials in practise is strongly dependent on the acceptance of beneficiaries. Since PMAY-G specifically addresses BPL households, skills and knowledge of innovative architectures are often missing. This is an opportunity to demonstrate potential beneficiaries the advantages of specific designs, such as higher resistance to natural catastrophes, while including cultural and social needs. An effective delivery system can be used as basis for providing an accessible market for provision of adequate materials.

3. It was highlighted that community-driven social housing projects can help to strengthen the bonds in a community and reduce resident isolation as well as exclusion from labour markets. Beneficiaries that work together can share responsibilities and make use of synergies. This especially helps people with less experience and in situations where official guidance is not sufficient. Furthermore, it was found that a bottom-up approach facilitates selected beneficiaries to engage more actively. This is of particular importance when considering that PMAY-G is a social programme which requires people participation. We therefore recommend to strengthen an exchange of skills and knowledge between communities, NGOs and the government. The collaboration can have a positive impact on local employment, enterprise development, skill exchange and stimulate the use of local and environment-friendly materials. Implementing sustainable social housing is therefore a vital aspect on the way towards social and economic well-being of India's deprived rural population.
If the government constantly works towards iteratively adapting PMAY-G and manages to foster synergies between existing institutions, the programme has the potential to improve the living situation of millions of people living in rural India. Through addressing community engagement and providing adequate skills and technologies, a sustained success can be achieved rather than short-term development.

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Institutional and structural change – effects on employment and house prices on local markets in Sweden 1985–2014

Work in progress dated 2017-05-09

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Introduction

There are many examples of when economic structural change leads to asymmetrical local growth and inequality between regions. The literature on regional development and inequality is popular with terms related to geography, such as region, spatiality, locality, proximity, district, local context, and neighbourhood effects (Wei, 2015). The literature suggests that the reason for asymmetric local growth is that economic structural change affects municipalities and districts differently (Martin, 2011). Further, local growth has been of focus in a selection of disciplines using different theoretical and methodological approaches; from regional planning and economic geography focusing cities as agglomeration and drivers of growth (Krugman, 1991; Wu, & Chen, (2015), labor markets (Suedekum, Wolf, & Blien, 2014), human capital (Gennaioli et al., 2013), the relationship between real estate prices and accessibility (Du & Mulley, 2012). The problem of measuring socio-economic development on a local level has stimulated research in many different disciplines (i.e. economic geography, economic history), for many decades (Barro 1991; Gallup et al. 1999; Maddison 1995).

It may seem natural that in a transition process, municipalities and regions develop diversely, i.e. unemployment will increase in a region that lag behind, but decrease in regions that benefit on the transition process. In neoclassical theory, this will even out over time due to wage differentials and mobility. In a region with an increasing demand for labour, wages will rise and the opposite will happen in a region with decreasing demand for labour. However, these inequalities between regions sometimes seem to be persistent.

Local labour markets have been analysed in numerous studies in recent years, for example in relation to cultural diversity (Suedekum, Wolf, & Blien, 2014), mobility, overeducation and educational mismatch (Croce & Ghignoni 2015; Ramos & Sanromá, 2013), and trade and technology (Autor, Dorn & Hanson, 2015). Even though mobility in different forms is central in these studies, mobility still becomes a one-dimensional factor. Concerns like housing prices, public transport or other factors that may be central for mobility of the individual is seldom or never analysed.

Another thread in the research has been spatial mismatch hypothesis (SMH). The research derives from Kain’s (among others Kain, 1968) research on discrimination of African-Americans in wealthy neighbourhoods. The hypothesis is that the closer you live to the location of jobs, the higher probability
to have a job, and because African-Americans are discriminated in wealthy neighbourhoods were the jobs are located, unemployment is higher in these groups. Conclusively, improving spatial access to jobs would lead to better outcomes on employment among African-Americans. However, even though SMH highlights the importance of accessibility, fairly little has been done on how the house market works (beyond discrimination), even though transportation has been highlighted with this stream of research. Further, change, and specifically, structural change has not been highlighted within this stream of research.

Further, institutional change may affect spatial inequality. North (1990) defines institutions as “the rule of the game”. According to North (1990, 2005) there are both formal institutions (laws and regulations) and informal constraints - or institutions - (norms and tradition). According to North, institutions can be defined as “the constraints that human beings impose on human interaction” (North, 2005, p. 59). Conclusively, institutional change could be changes in rules and regulations, for example new laws that concerns housing or as mentioned above, a government policy on improving spatial access to jobs, but it could also be a change in norms.

The aim of this paper is to highlight how institutional and structural change has affected municipalities in Sweden when it comes to employment and housing. For this, we use official data from Statistics Sweden on house prices and employment. Data is on municipality level and covers thirty years, 1985–2014. The research question then becomes: In relation to employment and house prices, which municipalities has gained and which has lost from institutional and structural change during this period? Which municipalities has managed to adopt, and which has not?

The perspective in this paper is that the rate of employment on a local labour market is affected by mobility. The idea that mobility affect employment is far from new. Already Friedman (1968) emphasized the role of mobility, but also the Swedish Rehn-Meidner model is constructed on the idea that mobility can have a positive influence on the labour market, and specifically, if mobility is high, both unemployment as well as inflation could be kept on lower levels. Further, we claim that mobility can be hindered by the local housing market. This connection between unemployment and the housing market has, however, been less explored, but there are exceptions. Dohmen (2005), for example, studies home ownership and unemployment from the perspective that with home ownership follows higher moving costs and therefore home ownership leads to less mobility and higher unemployment. In addition, Lux & Sunega (2012) comes to this conclusion in a study on the Czech Republic. Within the
Czech Republic, the post-socialist policy has been to privatize public housing and to encourage householders to buy their house. As Lux & Sunega point out “…if governments pursue a policy of increasing homeownership, this may have the unintended consequence of making specific labour segments less mobile” (Lux & Sunega, 2012, p. 501).

Even though, there are an important relationship between housing and the labour market, these two markets have less often been integrated into one simultaneous model. In this paper, we develop a conceptual model where the labour and the housing markets interact. We consider four regions with a high demand on the labour market (employment rate above average) and housing market (house prices above average) or low demand on these markets simultaneously. In this non-equilibrium model, long-term low employment rate (and high unemployment or inactivity) would be possible due to costs of moving, low wage differentials and insufficient institutional arrangements. However, what we are interested of in this paper is how high and low demand on labour respectively housing has varied between different periods.

This paper is structured as follows: In the next section, the conceptual model will be outlined. This simple model is a taxonomy in two dimensions: local labour markets and local housing markets. The aim with the model is to show how non-equilibrium situation can exist side by side. For example, one local market may experience a high demand on the labour market, while another experience a low demand, and this situation may persist over time. This also goes for the housing market.

In the section after, we discuss structural change in Sweden from a Schumpeterian structural analytical perspective. We use the structural periods for Sweden suggested by Schön (2007; 2009). By structuring the years 1985–2014 in periods of structural change, and combining these periods with geographic areas, this will give us a possibility to study how structural change has affected different parts of Sweden and if structural change has led to divergence or convergence between local markets during these periods. Further, this periodization could also be used to discuss major reforms on the housing market in Sweden, which is discussed in the section after. In Sweden, these were the Income Tax Reform 1990–1991 and the reduction of subsidies in the beginning of the 1990s.

In the fifth section, we discuss data and show our results. Data is presented descriptively in maps and analysed by studying convergence/divergence by comparing variation in the data for the different periods. The paper ends with a discussion on how institutional and structural change may have
contributed to divergence between regions, but also, as in some cases, why some local labour markets seem to converge.

*A conceptual model*

The following conceptual model considers a neoclassical model with four regions with either high demand on the labour market (employment above average) and housing market (house prices above average) or low demand on these markets simultaneously. A third and fourth situation would be high demand on one market and low demand on the other, as figure 1 shows.

Figure 1: A conceptual model of non-equilibrium on two markets simultaneously.

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<thead>
<tr>
<th>Housing market</th>
<th>Labour market</th>
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<td>High demand</td>
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<td>High demand</td>
<td>Local labour market 1</td>
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<td>Employment rate <em>above</em> average</td>
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<td></td>
<td>House prices <em>above</em> average</td>
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<tr>
<td>Low demand</td>
<td>Local labour market 3</td>
</tr>
<tr>
<td></td>
<td>Employment rate <em>above</em> average</td>
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<tr>
<td></td>
<td>House prices <em>below</em> average</td>
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1 For a clarification: By “high demand” we mean a demand above average, and “low demand” is, consequently, below average.
To begin with, we consider completely flexible prices and lack of mobility. Low mobility can be caused by high costs of moving or regulated mobility by the authorities. With flexible prices, wages and house prices would adapt to a new equilibrium before people started to move. On the other hand, if prices (wages and house prices) are sticky, but the cost of moving relatively low (and mobility is allowed by authorities) people will move (or commute), which will result in an equilibrium on each local labour market, but also in an equilibrium on the total, national labour market.

The third situation, the non-equilibrium situation, is the situation when the cost of moving (or commuting) exceeds the gains. Here the housing market becomes important. For example, net losses on selling houses/apartments in a situation with excess supply (and decreasing prices), could be considered as a moving cost. If people not are prepared to take this cost, we will have a permanent non-equilibrium situation.

Consider local labour market 1. This is a local labour market in expansion and has moved into highly productive areas and need labour; both high-skilled as well as in low-skilled service positions. When there is an excess demand for labour, we know that wages will increase. Because it is an area in rapid expansion, both demographically as well as economically, there will be an excess demand for housing. Because of this excess demand, house prices will increase.

The opposite of the local labour market 1 is labour market 4. This is a region that lags behind in the economic structural transition. Unemployment is high and there is an excess supply on the housing market because people are getting poorer, but also because people are moving out from the region. If people would move from local labour market 4 to 1, they would do a net loss on their house, but they would also have to pay more for new housing in their new region. The conditions on the housing market therefore hinder a move from local labour market 4 to 1.

A different and more advantageous situation would be for unemployed people living in local labour market 2. If they own a house they may sell it to a net profit and to a lower cost move to local labour market 1. The most attractive local labour markets would probably be local labour market 3. Here there

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2 There is an ongoing discussion on how the new knowledge and service society has been polarized and that an increase in high-skilled jobs lead to an increase in low-skilled service jobs, so called “high-touch jobs” like waitressing, cleaning, caring and serving. This will be discussed later.
is a demand for labour but still excess supply of houses. If so, there would be a flow of labour into this local labour market and house prices would soon start to increase.

Conclusively, there are two local labour markets (2 and 3) where some sort of equilibrium on the labour market would be possible to reach. For local labour markets 1 and 4, a persistent non-equilibrium state is the most likely situation.

There are several examples from countries that experience structural and spatial change where increasing demand for housing lead to bottlenecks in the urban and regional development. Housing prices has attracted increasing public attention in line with the growth of a commercial housing market replacing the old welfare housing supply system. For example, the commercial housing market has become an important source of housing provision for urban residents in China (Chen et al., 2011). In addition, the demand for housing in China has experienced a rapid increase because of the accelerated urbanization driven by rapid economic growth and increased migration from rural regions into cities (Song & Zenou, 2012). The rapid demand for housing provides raising housing prices in Chinese cities, especially large and medium-sized cities have risen substantially (Ren et al., 2012). Compared to household income, housing is unaffordable to a large proportion of urban residents, which tends to become a serious social problem in China (Chen et al., 2011; Li, 2012). Housing price ranked second in 2013 (top one from 2007 to 2012) as one of the most pressing public social problems in China (Ren et al. 2012). Chinese housing prices as an example on the problems of middle-income trap and spatial inequality Zhang, & Tang, (2016).

\textit{Structural change}

One way of analysing structural change is to use Lennart Schön’s Schumpetarian concept (see for example Schön 2009, 2007). In this approach, technical innovation is central and the creation of new complementarities around macro innovations. The structural cycle can, according to the concept, be accrued in two growth periods interrupted by crises. The first growth period is characterised by transformation. This period is around 20–25 years long. During this period, development is uneven and unbalanced. The second period is characterised by rationalisation. During this period, growth accelerates. This period is around 15–20 years long.
After the last Swedish structural crises (1975–1980) followed the so-called third industrial revolution, when the microchip and its complementarities started a new technological wave. According to Schön’s concept, there was a transformational period of structural changes from the late 1970s up to the beginning of the 1990s, which was follow by a transformational crisis in the beginning of the 1990s. From mid 1990s, Sweden has experienced an exceptional growth rate with a doubling of the growth, which indicate that Sweden had experienced the rationalisation phase the last 15 years. We should around 2010 be in the end of this rationalisation period, facing a structural crisis. In relation to the tendencies on the labour market, this seems reasonable.

**Swedish economy 1985–2014**

As figure 1 shows, Swedish economy was hit by major recessions twice during the period. The first one, characterized as a transformational crisis in Schön’s definition, coincide with the European “ecu-crisis” in the beginning of the 1990s. The second major drop in economic growth coincide with the Great Recession and the international financial crises 2008–2009. According to Schön’s concept and periodization, this crisis could be categorized as a structural crisis.

**Figure 1:** Swedish economic growth (change in real GDP) 1985-2014.

![Swedish economic growth chart](chart.png)

Source: National Institute of Economic Research [Konjunkturinstitutet], Forecast Database.
The two major recession over this period affected employment and the labour market quite differently. As figure 2 shows, employment dropped severely in the 1990s recession, but minor during the Great Recession 2008–2009, even though GDP dropped more during the Great Recession.

Figure 2: Swedish employment rate age 20-64. National average.

Source: Statistics Sweden, ÅRSYS and RAMS.

However, what has changed over time is the rate of employees in service and manufacturing. Figure 3 shows how structural change has affected the sectors service and manufacturing. From 1990 to 2014, the share of employed in the service sector (not incl. education and healthcare) has increased from around 35 percent to around 45 percent. On the other hand, the share of employees in manufacturing has decreased over the same period from 20 percent to 12 percent. Further, even though there are a long-term trend over the last fifteen years towards the service economy, we can see a “jump” upwards (in the service curve) and downwards (in the manufacturing curve) during the Great Recession. During the recession in the beginning of the 1990s, we can observe a minor drop in manufacturing, but no related upturn in service.
Figure 3: Number of employed in service (not incl. education and healthcare) and manufacturing in relation to total number of employed. Sweden, 1990 – 2014.

Source: Statistics Sweden, RAMS.

Conclusively, due to the drop in production and employment and the change in production structure, we argue for a periodization in three periods. The first period (1985–1992) cover a transformation period and ends with the transformational crisis 1992–1993. The second one (1993–2008) is a rationalization period and ends with the structural crisis 2008–2009. The last period can be considered as a period after the Great Recession.

Institutional change

The Swedish real estate market has undergone severe institutional change during the last 50 years. During the period studied in this article, a reform of major importance was Income Tax Reform 1990-1991. Further, during the beginning of the 1990s, the Liberal/Conservative Government lowered the housing subsidies. These reforms coincide with the recession in the beginning of the 1990s.
Data and results

Our analysis derives from the conceptual model described above, where we use a taxonomy with four different non-equilibrium situations. To visualize and exemplify this model we use official data from Statistics Sweden on house prices and employment rate (age 20–64) on municipality level. We standardize the data from each single municipality (per year) with the national average. For employment rate this is calculated as follows:

\[ s_{it} = \frac{l_{it}}{l_t} \]

where

- \( i \) = municipality
- \( l \) = employment rate
- \( t \) = year

House prices are managed the same way. This gives us a standardized rate that could be above 1 (employment rate or house prices above the national average) or below 1 (below national average).

We have accrued the data into three periods in accordance with the structural cycles discussed above. For this, we have calculated averages for each municipality over the period on each variable respectively. We have combined the variables in accordance with the conceptual model in Figure 4 and this is presented descriptively in three maps corresponding to the periods 1985-1992, 1993-2008 and 2009-2014.
The maps in figure 4 show a concentration of the prosperous municipalities over time. In the period 1985–1992 the municipalities with both an employment rate, as well as house prices above average (red colour on the map) is more spread out over the country. In 2009 – 2014, there is no such municipality above the Stockholm region. One municipality that seems to stand out, however, is Jönköping, which can be considered as an urban centre in the middle of Småland.

When it comes to the Stockholm region, we can see a concentration. The “red” municipalities where more spread out in the Stockholm region in the first period, but concentrated more towards Stockholm City in the last period. It is interesting to notice that Norrtälje, north of Stockholm, move from housing prices above average to below average after 2008, but the employment rate is still above average. In Western Skåne and Halmstad we can see that house prices increase to a situation above average over the period, but we can also see an increase in employment rates in some cases. Halmstad, for example move
from a situation with employment rate and house prices below average in the first period, to the opposite in the last period.

For the part of the country above Stockholm (Norrland) we move from a situation mainly below average, both on employment rate and house prices (grey colour), to a situation with still low (or decreasing) house prices, but with employment rate above average. Two municipalities (Östersund and Falun) moves from a situation with house prices above average in the first period to a situation below average after 1992. However, employment rate is above average in all periods in these two municipalities.

In general, we can see that the green and the red coloured municipalities are less than the grey and the yellow coloured, and this difference seems to increase over time (the green and the red become fewer). This may implicate that we see a polarization when it comes to house prices; municipalities with house prices above average are in the last period mainly concentrated to the west coast and the Stockholm region. A majority of the municipalities experience house prices below average, which must mean that in municipalities with house prices above average, the prices are far above.

Testing the emergence of increased divergence for employment rates and house prices

The maps in figure 4 provides a visual pattern of increased divergence between Swedish municipalities. The divergence of labour and real estate markets are analyzed in Figures 6–8. The figures builds on the conceptual model presented earlier. Municipalities above the horizontal axis experience house prices above average and municipalities under the axis experience house process below average. For employment, the municipalities to the left of vertical axis experience higher rates than the average and to the right lower rates that average.

The first period, 1985–1992, the majority of municipalities are clustered in the middle of the diagram indicating a homogenous relationship between employment and low house prices. For the second period, 1993–2008, there is a larger dispersion among the municipalities with an increasing number of municipalities with high house prices and high employment rates but also general trend with decreasing house prices. For the third period, a divergence is evident.
Figure 5: Employment and house prices 1985-1992

Figure 6: Employment and house prices 1993-2008
What if there are significant differences within the three periods that we wish to test for equality of variance? The test conducted is that of Levene (1960) (labeled as W0 below), which is robust to non-normality of the error distribution. Two variants of the test proposed by Brown and Forsythe (1974), which uses more robust estimators of central tendency (e.g., median rather than mean) are also computed. We apply the test to the municipality data series to examine whether the variance of the population is constant across the time periods for each of the two variables; employment rate and house price. The test reports Levene’s robust test statistic (W0) for the equality of variances between the three periods using the mean and the two statistics proposed by Brown and Forsythe that replace the mean in Levene’s formula with alternative location estimators. The first alternative (W50) replaces the mean with the median. The second alternative replaces the mean with the 10% trimmed mean (W10).
Table 1: Robvar Employment by Period 1 to 3

<table>
<thead>
<tr>
<th>Period</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Freq.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.99934999</td>
<td>.03638318</td>
<td>280</td>
</tr>
<tr>
<td>2</td>
<td>1.0167577</td>
<td>.0498756</td>
<td>280</td>
</tr>
<tr>
<td>3</td>
<td>1.0173105</td>
<td>.05045612</td>
<td>280</td>
</tr>
<tr>
<td>Total</td>
<td>1.0111394</td>
<td>.04672923</td>
<td>840</td>
</tr>
</tbody>
</table>

W0 = 12.867218   df(2, 837)     Pr > F = 0.00000313
W50 = 12.896311  df(2, 837)     Pr > F = 0.00000305
W10 = 12.884615  df(2, 837)     Pr > F = 0.00000308

Table 1 shows that the test clearly reject the hypothesis of equal variance across the time periods for the employment rates in Swedish municipalities. The increased standard derivation from period 1 to 3 illustrates the divergence occurring during the early 1990 in the Swedish economy in local labour markets.

Table 2: Robvar House prices by Period 1 to 3

<table>
<thead>
<tr>
<th>Period</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Freq.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.87256151</td>
<td>.40279243</td>
<td>280</td>
</tr>
<tr>
<td>2</td>
<td>.76727225</td>
<td>.48461694</td>
<td>280</td>
</tr>
<tr>
<td>3</td>
<td>.71351242</td>
<td>.54386837</td>
<td>280</td>
</tr>
<tr>
<td>Total</td>
<td>.78444873</td>
<td>.48454201</td>
<td>840</td>
</tr>
</tbody>
</table>

W0 = 8.3498008   df(2, 837)     Pr > F = 0.0002567
W50 = 4.6066082  df(2, 837)     Pr > F = 0.01024015
W10 = 6.2687891  df(2, 837)     Pr > F = 0.00198467

Table 2 provides a similar pattern however, the changes in the standard derivation between the period are more equally distributed, even if they significantly differ. The results of the test show divergence over time on both local markets; local labour markets as well as local housing markets.
Discussion and conclusions

The present study highlights how structural and institutional change affect spatial inequality within two interlinked markets, labour market and the housing market over time.

These results show the importance of local markets characteristics. Structural and institutional change could favour or disfavour a local market. Our analysis indicate increasing divergence between Swedish municipalities over the period 1985 to 2014. However, the magnitude of the divergence differs within the studied period showing stronger effects during the early periods.

Despite its preliminary nature, this paper attempts to be innovative in relation to asymmetrical local growth. By shedding some light on the causes and the nature of non-equilibrium of two markets with different demand and supply of housing and employment opportunities, the paper provides a conceptual framework to analyse the spatial outcome of two markets.

References


