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From Land to Housing
A GPN Approach of Salzburg

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Geographies of Uneven Development

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Abstract

This paper takes a closer look on the production processes of housing and opens up the black box of the land-housing nexus. By means of the GPN approach different stakeholders are identified and the intra- and inter-firm relations are analysed. The outcome, which is based on interviews set in the context of Salzburg, shows a tendency towards vertical integration. Moreover, the influence of the financial sector as well as of regulation cannot be neglected. Whereas the turbulences of the financial and economic crisis made credit providers more prudent, (private) investors re-discovered residential real estate as an attractive financial asset. The GPN of housing is subject to different regulations. In the case of Salzburg the strict regulation of building areas as well as the organisation of a state-aided housing segment creates the basis of different sub-markets.

Keywords: Residential Real Estate, Global Production Network, Qualitative Research, Housing, Construction Industry, Land-Housing Nexus

1. Introduction

It is no surprising that housing attains much attention in social sciences, since if fulfils one of our *basic* needs. Any form of housing offers shelter, i.e. protection from both the natural and the social environment. Furthermore, from an economic perspective housing constitutes for most households a significant and recurring expenditure. A large share of a households' disposable income is used to cover housing costs. Gstach (2010, p. 102-103) shows that renter households in Europe pay around 20 % to 30 % of their disposable income as rent. At the same time housing cannot be substituted by another commodity nor is it possible to restrain from its consumption (Weichhart, 1987, p. 6-9; Galster, 1996, p. 1797-1798). Besides fulfilling its basic role for shelter, housing also envelops important social and cultural functions. It offers not only a place for individual socialisation, but also represents social and economic standing. Both *how* as well as *where* one lives can function as status symbol (Weichhart, 1987, p. 6-9; Galster, 1996, p. 1797-1798). At the same time housing envelops an explicit geographic component. Real estate is grounded, i.e. the location of an object is immobile and cannot be changed.

Within the scientific community, a broad range of housing topics are being discussed, which makes an exhaustive listing impossible. Nonetheless, some discussions attain much attention from both geographers and economists. One such prominent topic is housing prices. Within the neo-classical framework regional economic fundamentals such as economic growth, income and employment are used to explain housing prices (e.g. Hwang and Quigley, 2006; Ferrari and Rae, 2011). Also topographic determinants (Saiz, 2010) or specific consumer advantages offered by cities (Glaeser and Gottlieb, 2006; Glaeser et al., 2001) function as explanatory variables. Heterodox approaches such as used by Harvey (1974), Smith (1979), Jäger (2003) and Smet (2015) apply the concept of land rent in an urban context to discuss housing prices from a political economic perspective. Another 'hot' topic is the use of urban (residential) real estate in the accumulation strategies of financial capital (Harvey, 1978; Theurillat et al., 2013). Especially in the wake of the subprime crisis economic geographers discuss this subject, e.g. Aalbers (2009), Crump et al. (2008), Dymski (2009) and Gotham (2012).

Whereas the academic interest in housing is unabated, the question is, however, rarely posed how housing units are produced, i.e. which actors and transformation processes are necessary to supply housing? As a matter of fact, housing literature is rather vague on the land-housing nexus, although it implicitly assumes such a link (e.g. land rent theory). One could thus claim that overall literature treats this link as a black box. Nevertheless, a closer look could offer great insights on the network of embedded actors and on grounded processes of capital accumulation. The transformation of land to housing involves social processes which have a distinct articulation in time and space, i.e. "bundles of practices and material arrangements always in the making" (Berndt and Boeckler, 2011, p. 565). Therefore, this paper will introduce a heuristic framework to shed light on this black box.

The framework developed in this paper is based on the concept of Global Production Networks (GPN), as it appears to allow grasping the complexity of the land-housing nexus[1]. First, the land-housing nexus implies a notion of input-output. It is exactly this notion, which constitutes the core of a GPN (Coe et al., 2008, p. 274-279; Dicken, 2011, p. 56-57). It structures the land-housing transformation process and its actors by means of the sequential steps of production, distribution and consumption. Second, the concept of a production network regards the interactions between these actors as continuous social processes (Coe et al., 2008; Berndt and Boeckler, 2011). Therefore, the GPN approach is time and space sensitive. Third, the GPN framework allows for including the influence of non-firm actors (e.g. governments, civil society organisations etc.) and non-core firms (e.g. business service providers, financial system) into the analysis. As discussed by Dicken (2011, p. 56-68) and Coe et al. (2008) production networks are regarded to be contested areas of social interaction, i.e. they are continuously subject to change. Coe et al. (2008) acknowledge that GPN literature does not tap into the full potential of this approach. Although the present paper will also not be able to realise the full potential of the GPN framework, it envelops some important aspects such as intra-firm relations, the functional and physical interaction between actors as well as the interaction between horizontal and vertical networks. The heuristic GPN framework will be complemented by insights from the construction industry literature as well as the field of urban studies to open up the land-housing black box.

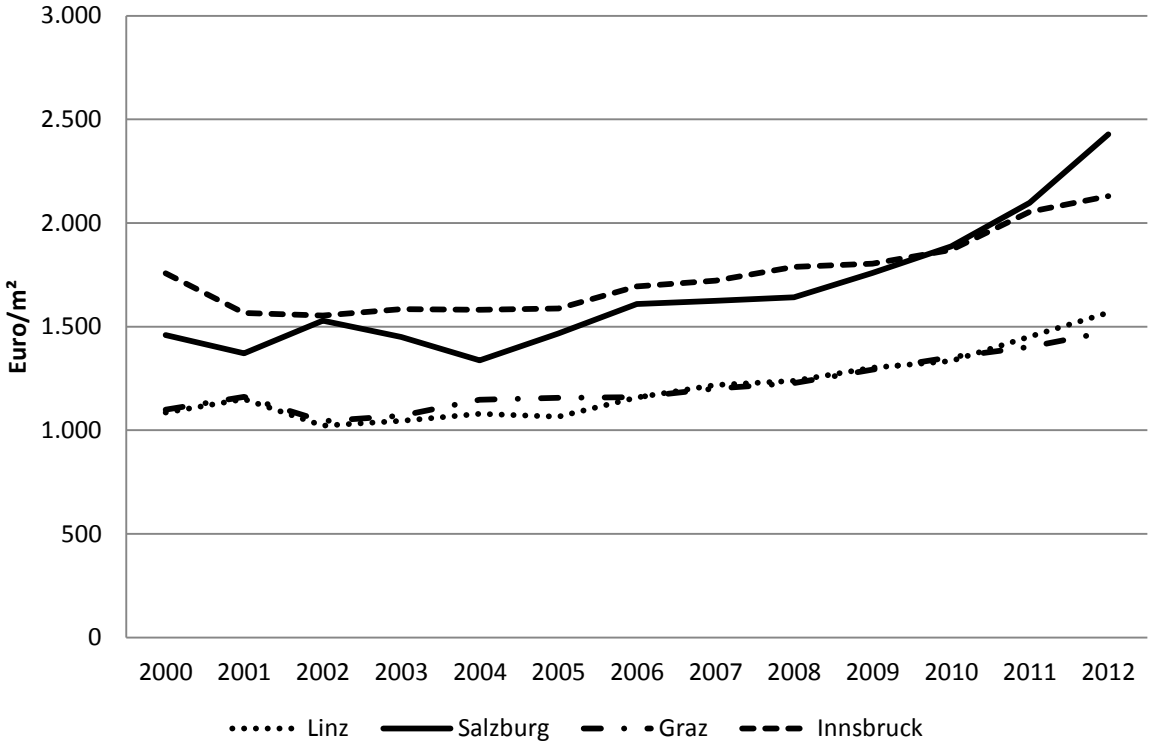

Figure 1 Prices for used housing units (WKO, multiple years)

Since the GPN approach is time and space sensitive, it is necessary to pin down the land-housing nexus to a specific case study. Based on three considerations this paper opts to

[1] Within this paper the 'Global' component of GPN is more or less neglected, which is due to the nature of the case study. Nevertheless, in other case studies, which include geographically more extensive actors, this component could gain in importance.

apply the GPN framework to the city of Salzburg. First, the urban structure in Europe is characterised by relative small cities. According to urban population data of Eurostat (2015) a significant share of Europe's population (e.g. in the Netherland up to 40%) lives in urban areas with less than 600,000 inhabitants. Salzburg with a population of around 150,000 people (Stadt Salzburg, 2014, p. 10) can thus be regarded as an example of such a small urban structure. Second, within the Austrian context Salzburg represents an interesting case. Since 2000 housing prices in Salzburg increased stronger than those in comparable Austrian cities such as Graz, Linz and Innsbruck (Figure 1). As a matter of fact housing in Salzburg has always been relative expansive (Weichhart, 1987, p. 32-40). Whereas it is not the aim of this paper to explain this price difference, the approach allows discussing how the housing-GPN in Salzburg will both be affected by and affect housing prices. Third, we decided to analyse the housing-GPN of Salzburg due to pragmatic considerations. Besides the fact that we had a good physical and cultural (e.g. language) access to this research field, the size of this city allowed for conducting a limited number of interviews, while still generating a representative sample.

2. Housing: a result of production networks

In order to analyse the supply of residential real estate it is necessary to understand the production network of housing. By explicitly stating that housing units are the result of production networks, the different interactions within these networks can be analysed on multiple levels. This paper opts for a GPN approach, because it offers some significant advantages with respect to a Global Commodity Chain or a Global Value Chain approach (Coe et al., 2008, p. 272; Plank and Staritz, 2009; Hess, 2009). First, due to the complexity of housing markets a linear approach seems not appropriate. As will be discussed later in this paper housing units are not standardised end products of a production chain. The GPN approach accounts for this complexity by regarding the production process as a network integrating firms. Second, and at least as important, the GPN framework explicitly incorporates non-firm actors as important elements of this production network. Especially with regard to housing, the production network will not only be characterised by the construction industry, real estate developers and real estate agents, but it will also be subject to the influence of financial firms (e.g. loans, mortgage) and government regulations (e.g. zoning and growth control).

Figure 2 shows a stylised representation of a GPN. The core of a GPN is the transformation of inputs into products which are consumed. Besides input, transformation and consumption, distribution is also considered a basic component of a GPN. Between these different components there is simultaneously a flow of the product as well as a flow of information (and money) in the opposite direction. This horizontal network is connected with different vertical networks. On the one hand the production network is intertwined with various suppliers of technology, energy, services and logistical inputs. On the other hand the production network is imbedded in specific social, economic and political setting.

By means of institutions such as government, markets, legislation and financial system the specific form of the production network, i.e. the interaction between actors, is defined. Coe et al. (2008, p. 276-277) stress the importance to incorporate 'circulation processes', i.e. the physical and functional connections between the different components of a GPN. In addition to these interactions, the internal structures and logic of firms, which are considered as main makers and shapers of a GPN, should be included (Coe et al., 2008, p. 277-278). In the following steps the general GPN framework is discussed with respect to residential real estate.

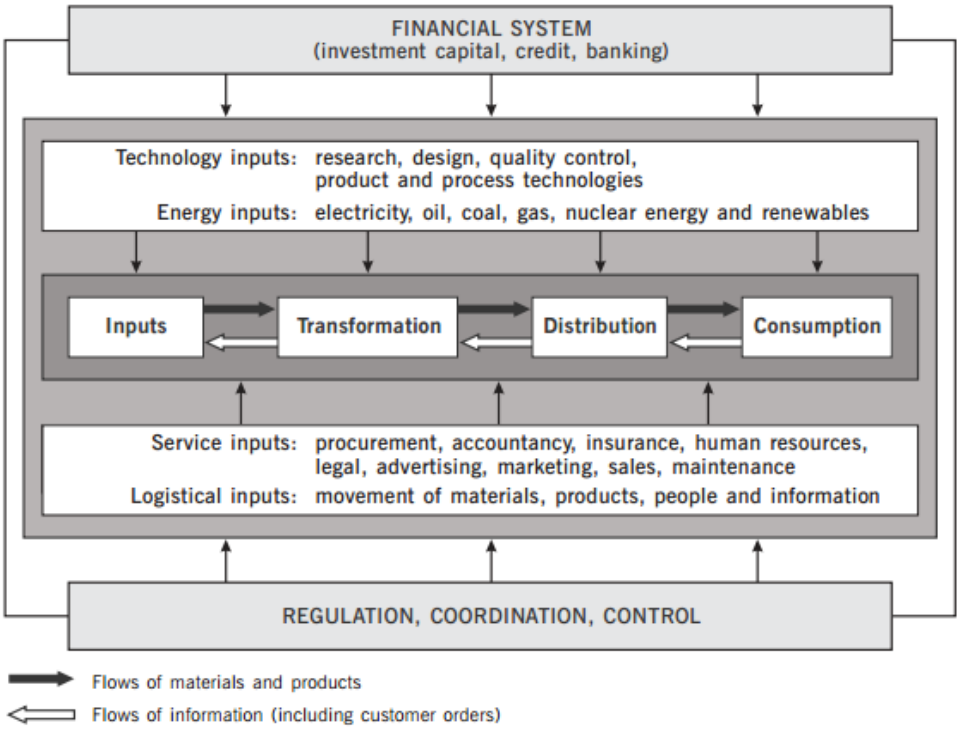

Figure 2: Global Production Network (Dicken, 2011, p. 57)

2.1. Inputs

Notwithstanding the fact that housing units consist of a broad spectrum of building materials (Dubois and Gadde, 2002, p. 621), this paper will regard only land and built environments as main inputs. Any housing unit is grounded and its interaction with the natural environment is characterised by its building area. However, not every housing unit on offer on housing markets is built on previously unused land. Therefore, it seems appropriate to consider also existing built environments as a second defining input factor.

The influence of building materials is not really important for the specific research question of this paper. Dubois and Gadde (2002, p. 622-623) show that building materials are highly standardised, which is due to the complexity of construction. As a result they describe "the coupling between the production of building materials and what is done on site" (Dubois and Gadde, 2002, p. 625) as loose, i.e. the interdependence between both components is low.

Therefore, it is safe to focus only on land and built environments as defining inputs of housing units.

2.2. Transformation

The transformation of these inputs to housing units is a main activity of the construction industry. As argued by Winch (2003) the construction process should be regarded as a complex system. In a similar vein Dubois and Gadde (2002, p. 622-624) show that complexity in construction is due to two main characteristics of this industry. First, the construction process has to deal with different forms of uncertainty. Since each housing unit is unique, its construction process is also a unique project of different actors. Second, within a construction project a high level of operational interdependence is at hand. Whereas Dubois and Gadde (2002, p. 624-626) regard the construction industry as a loosely coupled system, they acknowledge that within a specific construction project a tight coupling between the involved actors is necessary. Within construction projects the activities of different actors are highly dependent on each other.

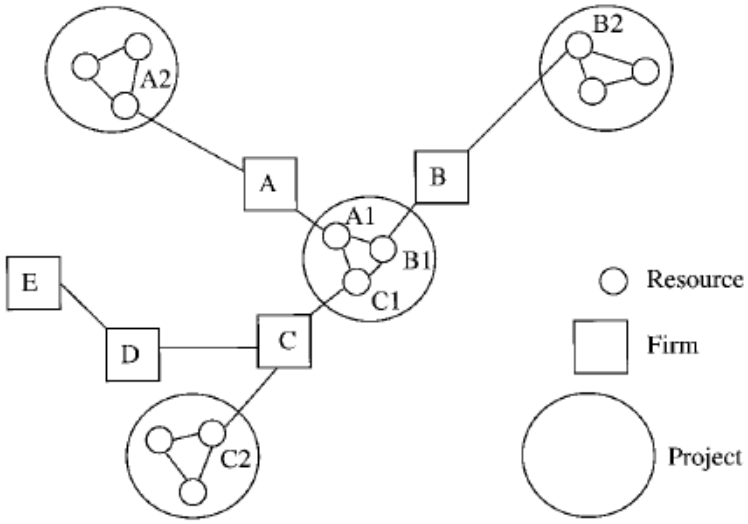

Figure 3: Stylised representation of the construction industry (Dubois and Gadde, 2002, p. 625)

The work of Dubois and Gadde (2002) offers great insights with respect to inter- and intra-firm relations (Figure 3). Whereas they argue that inter-firm relations within a specific construction project are tight, other inter-firm and even intra-firm relations tend to be loosely coupled. Since activities within a specific construction project are intertwined and interdependent, construction firms reduce risk by introducing internal and external organisational buffers. These buffers should absorb negative effects (e.g. delays), which would otherwise influence other construction projects.

2.3. Distribution

The distribution of housing is an aspect, which is a bit more complicated as it involves different actors and it is not standardised. Similar to Theurillat et al. (2013) and Heeg (2013)

we distinguish between four different settings, which have different implications for the distribution process. First, the construction of housing is promoted by private households, which function after production as owner-occupiers. For this group there is usually no distribution phase, as these households build for their personal use. Nonetheless, if household configurations change (e.g. children, old age, breakup) or due to foreclosure, these housing units could enter the distribution phase. Second, private companies construct housing units to sell them with profit. This business model is based on creating exchange value and cashing in on a one-time transaction. For this group of actors distribution is necessary as they produce for an anonymous market. This being said, they need to possess tacit knowledge about this market to be successful. Third, some actors regard housing units as a way to invest financial capital. Basically, they invest in housing units with the purpose of generating profit through a combination of renting out these housing units, which generates a constant cash flow, and speculating on the increasing market value of residential real estate. The distribution channel has a double function to this group. On the one hand, they have to acquire housing units, which they can subsequently let or resell. On the other hand, they also supply and distribute these housing units. With respect to the distribution of housing units they act both on the supply as well as on the demand side. Fourth, another group of financial actors are engaged in residential real estate by means of portfolio investments. In contrast to the other actors, these financial investors do have little to no interest in the physical infrastructure of housing, but they trade with property rights. The corresponding business model is based on generating profits by speculating on the value of these property rights. Whereas financial capital invested in residential real estate becomes spatially fixed and temporally bound, the distribution channel of these actors is based on financial instruments, which enable to overcome this temporal-spatial-fix (Gotham, 2012; Harvey, 1978, p. 122-124). As a result of these financial instruments a link between local real estate markets and global financial capital is created (Crump et al., 2008, p. 746-750; Aalbers, 2009; Dymski, 2009; Martin, 2011).

In addition to these four different groups of actors, it is necessary to include real estate agents. With respect to distribution processes they occupy a pivotal position as they are well informed about the local conditions of real estate markets. Since these markets are highly complex, this information can be turned into money. Evans (2004, p. 47-76), Smet (2015, p. ???) and Galster (1996, p. 1797-1799) offer a thorough discussion of this market complexity by showing that housing markets do not correspond to the common definition of a competitive market. Therefore, real estate agents' competitive advantage is based on information asymmetry (e.g. Levitt and Syverson, 2008). The services they offer are catered to the specific needs of the second and third types of actors as well as those of customers.

2.4. Consumption

One of the main challenges analysing residential real estate relates to the special features of housing (Weichhart, 1987, p. 6-9; Galster, 1996, p. 1797-1798). Residential real estate

cannot be regarded as a common product. First, it is not possible to refrain from its consumption nor can it be substituted by another commodity, since it fulfils the basic human need for shelter. Second, the consumption of housing is also linked to important social and cultural functions. It offers not only a place for individual socialisation, but also represents social and economic standing. Third, since the location of residential real estate is immobile, each object is unique. Fourth, residential real estate is extremely heterogeneous due to internal as well as external properties (e.g. size, facilities, construction year, public infrastructure and neighbourhood characteristics). Fifth, since residential real estate is durable and consumption is continuous, only a small fraction of the existing stock is available on housing markets.

The heterogeneity of residential real estate implies that one should speak of housing markets instead of a housing market. This inevitably leads to the question how these submarkets can be defined. Galster (1996, p. 1799-1780) argues that there are three possible classification approaches. First, housing sub-markets could be defined according to spatial characteristics. Second, the definition of sub-markets could be based on a bundle of housing unit characteristics. Third, the perception of consumers regarding housing units can be utilised to differentiate residential real estate.

In addition to housing heterogeneity, i.e. housing submarkets, it is necessary to discuss the definition of "consumption". It should be clear from the previous subsection that not every actor who buys housing units can be regarded as a consumer. Since the actors, which regard residential real estate as a financial investment, are regarded as part of the distribution sphere, consumers are defined as those actors who withdraw a housing unit from a sub-market. In this regard, consumers are mainly owner-occupiers (principal residence, second home, etc.) or renter households. They have as main objective the satisfaction of their basic need for shelter.

2.5. Information flows

To depict the flow of information, which is represented by the white arrows in Figure 2, this paper includes the work of Winch (2003), which displays that information can enter the transformation process in four different ways. Besides the material flow, which corresponds to our concept of transformation, He introduces the concept of the production information flow to emphasise the importance of product design. This flow is defined as "the flow of information required for the production of the product from initial concept through to delivery to the customer" (Winch, 2003, p. 111). Figure 4 shows a possible transformation process in detail and includes the production information flow. Based on the involvement of the customer four production strategies are defined: concept-to-order, design-to-order, make-to-order and make-to-forecast. Note that based on our understanding of the production network of housing units, this customer can be part of the distribution (e.g. project developers) or the consumption sphere. With respect to the construction industry this distinction helps to understand the production network complexity.

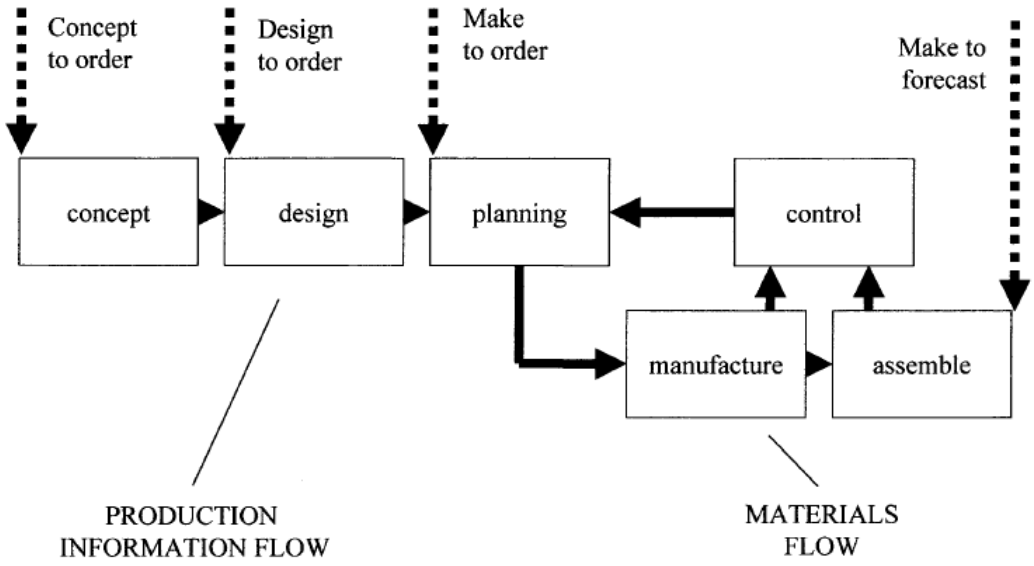

Figure 4: Production strategies and process flows (Winch, 2003, 112)

3. The Construction of Housing in Salzburg

This section takes a closer look by means of the previously developed GPN-approach at residential real estate in the city of Salzburg. Based on data published by the city of Salzburg (Stadt Salzburg, 2002-2007; 2009-2013a) and other secondary data sources, the four main aspects of the production network are discussed.

3.1. Residential Real Estate in Salzburg: General Situation

The city of Salzburg has approximately 150.000 habitants, which live in around 85.000 dwellings. The structure of these dwellings has been quiet constant during the last decade. Most housing units can be found in multi-family houses (81.30%), whereas one- or two-family houses account for 16.12%. The ownership structure shows that public authorities own less than 5%, half of all residential dwellings are registered as co-ownership, one fifth is owned by non-profit institutions, private individuals own 16.53% and other legal entities (mainly corporations) account for around 5%.

With respect to the possible classifications of housing submarkets the age of housing units as well as their spatial location could be relevant. Almost 20% of all housing units were constructed before 1945, another 15% between 1945 and 1960, 40% in the period 1961-1980 and 17% during the 1980s and 1990s. Since 2000 around 9% of all dwellings were constructed. Some statistical registration districts (*statistische Zählbezirke*) display simultaneously a high percentage of overall residential dwellings and a low fraction of one- or two-family houses (e.g. Lehen-Süd: 4.22% and 0.36%, Elisabeth-Vorstadt: 4.45% and 0.69%). Some other registration districts are characterised by a high fraction of both variables (e.g. Maxglan/Äußere Riedenburg: 6.20% and 4.73%, Leopoldskron/Moos: 4.88% and 17.45%, Gnigl/Langwied: 4.03% and 7.24%).

3.2. Inputs

Since 2000 the price of land allocated for residential buildings increased significantly. As displayed in Figure 5 prices increased at least by factor 2.5 and this evolution was independent on the quality of location. In the same period the consumer price index (CPI) of Austria increased by 28.2 % (Statistik Austria, 2014a). Moreover, since the outbreak of the global financial and economic crisis in 2007-2008 land prices surged.

By taking into account the number of sold building lots an intuitive interpretation of the land price increase can be made. To put it blunt, a price increase is either caused by an increase in demand or a reduction of supply or a combination of both. The information in Figure 4 tends to support the assumption that the land price increase was the result of increased demand for building lots[2]. The number of sold building lots displays an increasing trend, at least until 2010. Due to the lack of further information the reduction in 2011 and 2012 cannot be interpreted.

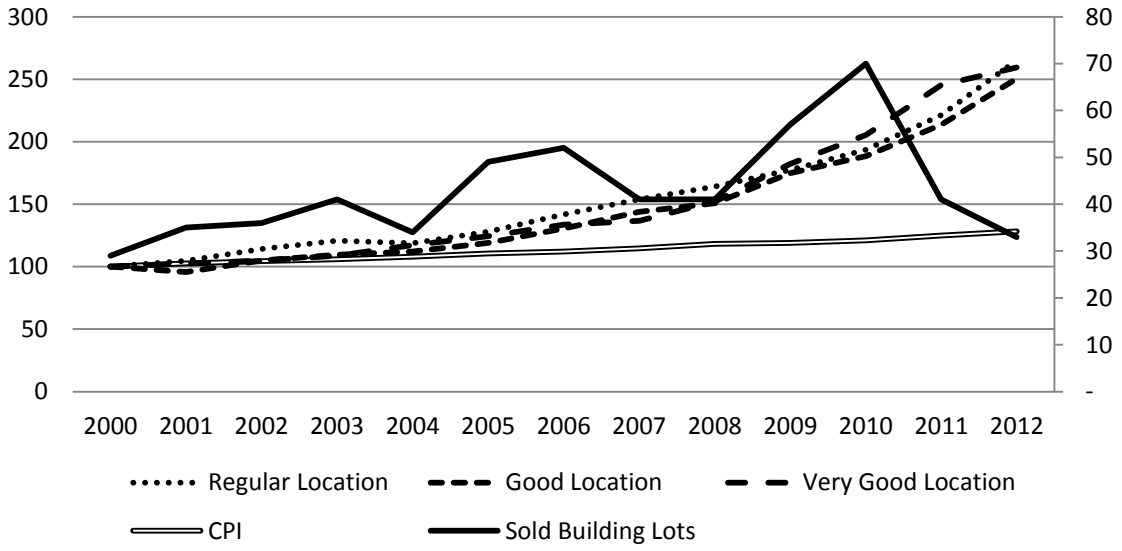

Figure 5: Number of Sold Building Lots (right axis) as well as Indices of Land Prices (different locational quality) and of Consumer Prices (left axis) (WKO, 2001-2013; Statistik Austria, 2014a; Stadt Salzburg, 2002-2007; 2009-2013a)

3.3. Transformation/Distribution

In the previous section it was more or less possible to distinguish between the transformation and the distribution aspect. However, this distinction is difficult to maintain while discussing quantitative data. Therefore, we decided to offer a descriptive analysis of the data for the period 2000-2012, which sheds light on new housing units.

With respect to new housing units Figure 6 displays that construction is rather volatile. The number of new housing units could change quite substantially from year to year. This number ranged from 450 in 2005 to 852 in 2011, which is a significant difference. Moreover,

[2] These data include both built and unbuilt building lots.

the promoters of these new housing units can be divided into three main categories: private individuals, non-profit institutions and other legal entities. This distinction is relevant, since these actors have different interests and their logics differ remarkably (Theurillat et al. 2013). Notwithstanding, these differences it is rather hard to depict any trends with respect to their building activities. Note also that public (local) authorities do not function as building promoters.

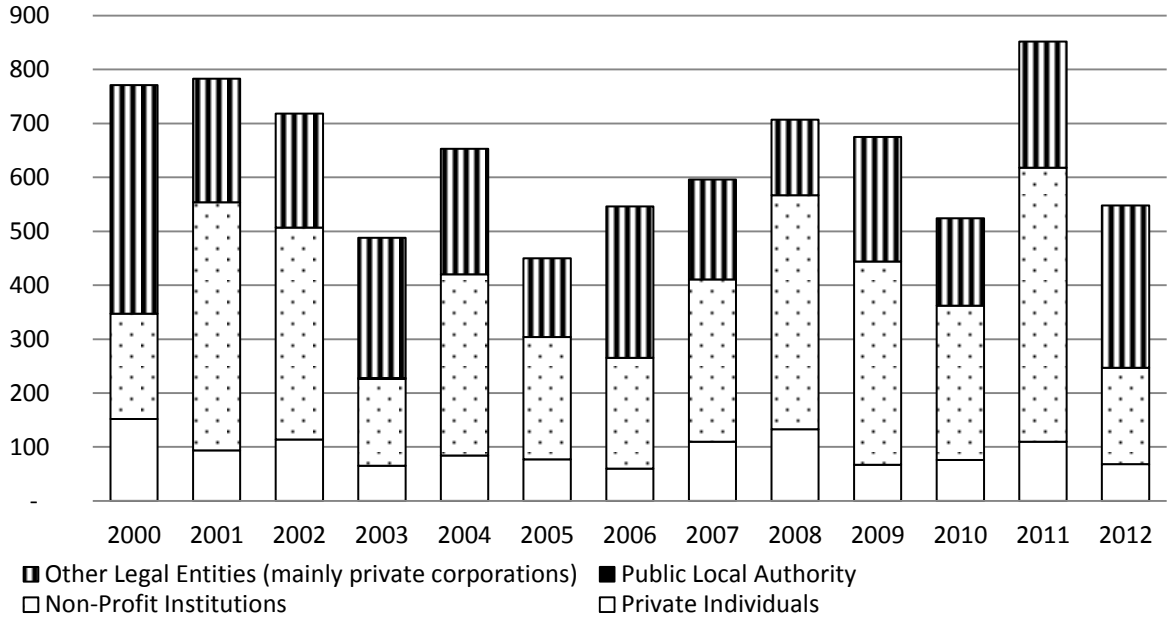

Figure 6: New Housing Units and Their Promoters (Stadt Salzburg, 2002-2007; 2009-2013a)

The number of housing units promoted by private individuals corresponds more or less with the number of registered owner-occupier units, i.e. units built by and for the promoter. This corresponds with the assumption that private individuals mainly built housing units to fulfil their own housing need. The remaining units entered the distribution phase either as rental housing units or as owner-occupier dwellings. Although it is impossible to establish a link between these types of housing units and the promoter category, years with a high activity of non-profit institutions (e.g. 2001, 2002, 2008, 2009 and 2011) displayed higher shares of rental housing units. This result could imply that these non-profit actors are more likely to develop rental housing units. Moreover, the lion's share of all new housing units, i.e. between 85% and 95%, was the result of new housing projects. Therefore, it could be claimed that existing housing infrastructure is not upgraded but demolished.

Construction Costs	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Salzburg	99.2	104.4	104.0	108.0	104.9	114.7	n.a.	131.5	140.5	130.9	134.1
Private Individuals	107.9	108.2	109.1	112.6	109.8	129.6	n.a.	129.0	131.5	145.5	152.4
Non-Profit Institutions	96.3	103.1	99.9	108.0	101.1	111.0	n.a.	127.1	134.0	119.0	121.7
Other Legal Entities	97.8	100.1	104.1	104.6	106.6	111.8	n.a.	143.7	149.0	140.2	153.4
Austria	102.1	103.7	106.4	111.8	114.3	119.5	124.8	131.4	132.2	136.4	139.5

Table 1: Indices of Construction Costs (Year 2000 = 100) (Statistik Austria 2014b; Stadt Salzburg, 2002-2007; 2009-2013a)

Table 1 shows different construction cost indices. A comparison between the development of the overall construction costs in Salzburg with the Austrian figure display a similar trend and increase. However, if the Salzburg index is broken down to the different promoter categories, a significant difference between non-profit organisations on the one hand and private individuals as well as other legal entities on the other emerges. It is telling that the construction cost of non-profit institutions was slightly below the Austrian CPI (2011: 125.0). Furthermore, the prices of new housing units with basic interior amenities and basic transport infrastructure displayed a similar development as the construction cost index of the other legal entities. The price development of new housing units, which offer better interior as well as external living qualities, however, lied substantially above the increase of construction costs (WKO, 2001-2013). This could indicate that the construction of such housing units became increasingly more profitable.

3.4. Regulation

Before we turn to the empirical aspect of our paper, we have to discuss two regulations, which are specific for Salzburg and have a significant impact on the GPN of housing. First, the historic city centre of Salzburg is since 1996 part of the World Heritage List of the UNESCO. According to the UNESCO (2013) the city centre of Salzburg is of outstanding universal value for three reasons. First, "Salzburg played a crucial role in the interchange between Italian and German cultures, resulting in a flowering of the two cultures and a long-lasting exchange between them" (UNESCO, 2013). Second, "Salzburg is an exceptionally important example of a European ecclesiastical city-state, with a remarkable number of high-quality buildings, both secular and ecclesiastical, from periods ranging from the late Middle Ages to the 20th century" (UNESCO, 2013). Third, "Salzburg is noteworthy for its associations with the arts, and in particular with music, in the person of its famous son, Wolfgang Amadeus Mozart" (UNESCO, 2013). Although the historic city centre was first enlisted as a Heritage City in 1996, the cultural heritage of the city centre is protected by law since 1967 (Land Salzburg, 2013).

Second, besides the protection of the baroque city centre also the rural character of Salzburg as well as its romantic landscape is preserved by regulation. Since 1985 the *Grünlanddeklaration* (Green Areas Declaration) is used to protect the city landscape. Since then this declaration became gradually more binding. The Green Areas Declaration was a response to the urbanisation processes of the 1960s and 1970s. During these processes new urban settlements occupied previously unused land and this affected the romantic and rural landscape of Salzburg (Tschandl and Veigl, 2007; Stadt Salzburg 2013b). Out of the civil protest to protect this landscape against multi-family housing and other projects, this declaration was born.

The effect of these regulations is twofold. On the one hand, housing promoters have to take these regulations, as well as others (e.g. building laws), into account. These regulations have an impact on the planning phase of any construction project in Salzburg. On the other hand,

these regulations function also as an instrument to Salzburg's residents to oppose and to block construction projects or even to make them virtually impossible. An interesting case in point is the ongoing conflict concerning the Rehlplatz (Pabinger, 2012: p. 2-3; SN, 2015: p. 12).

4. The GPN of Housing in Salzburg

Whereas the previous sections helped to conceptualise the GPN of housing (Section 2) and offered some first quantitative data with respect to the specific case study (Section 3), the presented information is not sufficient to understand the working of this GPN. In order to develop such full understanding, we conducted semi-structured interviews, i.e. guided interviews. In order to cover our research field, multiple informants were invited to participate. This resulted in fourteen one-hour interviews with executives from different organisations, i.e. actors. It is noteworthy that our informants displayed long experiences both within the respective companies as well as within Salzburg.

Before we turn to our findings, we briefly describe the involved actors. Three interviews were conducted with representatives of non-profit institutions, who act as housing promoters for state-aided rented flats. Five construction companies cooperated, who partially also function as building promoters and in one case also as main contractor. Three interviews were conducted with informants from real-estate agencies and one informant worked for the real-estate division of a trusteeship. One interviewee was an executive of a special interest group. One informant was manager of a division in a financial institution, which financed among others building projects. Whereas this description offers a general overview and basic information about the involved actors, we point out that most actors were involved in different elements of the GPN.

4.1. Input

The market for building plots within the city area is generally considered as tight. Whereas some interviewees referred to a high demand as co-explanatory variable, most pointed out that the supply of building plots was limited. Besides the general limited access to building plots in urban areas, the effect of the Green Areas Declaration was acknowledged. This declaration created according to the interviewees an artificial barrier to land. This restricted supply was regarded as a fact with which the different actors had to cope. Nonetheless, we could not detect a willingness to abandon the Green Areas Declaration, since this would not induce a fundamental shift in the current situation and it would have a negative impact on the current cityscape of Salzburg. Another problem with respect to the access to building plots is their mobilisation. In the current economic environment, i.e. low interest rates for savings deposits and high uncertainty on stock markets, landed property in Salzburg is regarded as a safe and sound investment. Therefore, the readiness of landed property owners to sell is perceived as rather low.

Considering these facts, it is unsurprising that this market segment is highly competitive. The companies, whose business model is (partially) based on the access to building plots, developed different (informal) strategies to gain this access. These active search strategies range from employees, who go into the field to look for possibilities, over informal contacts with (previous) customers, to informal networks with professionals, who have access to specific information (e.g. notaries). The decision to acquire a specific building plot is the result of an assessment process, in which different divisions of the company are involved. According to our informants at least two-thirds of these building plots feature a building, which is subsequently demolished.

The impact of regulation should not be underestimated. Besides the Green Areas Declaration, other zoning policies of the city government have a significant impact (e.g. rededication). By identifying building plots above 2,000 m² as areas for state-aided rented flats the city government excludes private housing promoters, since it creates a monopoly for non-profit institutions as housing promoters. Moreover, it puts a binding price cap on such landed property. Due to this regulation non-profit institutions are only allowed to pay a specific amount for land prices.

4.2. Transformation

According to our interviewees the main actors, which are involved in the transformation process, can be divided into four types. The first type of actors are private building companies. Although their core business is construction, they seize from time to time the opportunity to act as a building promoter. As building promoters this type of actors develop housing units with the purpose to sell. The second type of actors has a long term commitment to the building project, as these actors develop rental housing units. Their business model is based on residential real estate ownership and on rental revenues, which generate constant revenue flows. Project developers are the third type. Whereas these actors do not own any construction companies, their business logic is to look for opportunities to develop residential real estate. They outsource the transformation process to different construction companies. The fourth type of actors are the non-profit institutions, which develop mainly state-aided rented flats. These institutions also outsource the transformation process. Note that save the non-profit institutions Theurillat et al. (2013) define a similar kind of real estate actors.

With respect to coupling our results deviate partially from Dubios and Gadde (2002). Whereas they distinguish between tight coupling within a construction project and loose coupling otherwise, we argue for a more nuanced differentiation. On the construction level we observe not only a tight inter-firm cooperation but also a tendency of construction companies to deploy same teams to smoothen inter-personal interaction within the company. Moreover, there was a clear preference to cooperate with partners, which are deemed trustworthy, i.e. they keep their promises and deliver the expected quality. Cooperation on construction level between companies could also be more at random as it

results from the outcome of a bidding process. On the firm level we encountered different legal constructions. On the one hand, most firms cover different areas such as construction, planning, development, marketing, etc. In this case the legal structure corresponds with these different internal logics of operation. On the other hand, these legal structures also allow optimising profitability. On the inter-firm level we would expect according to Dubios and Gadde (2002) loose forms of cooperation. This is, however, only partially the case. There is cooperation between construction companies as they engage in a partnership to buy (standardised) equipment and materials as well as to employ specialised labour on a short term base. Furthermore, there exist more or less stable cooperation between construction companies on the one hand and project developers, non-profit institutions or financial institutions on the other. As one interviewee pointed out with respect to cooperation, all in all housing projects are only to a certain extent technical challenges, but from a legal perspective highly complex.

The peculiar situation of high land prices in a small city is perceived by most informants as the reason why the market is dominated by regional firms. In order to be profitable it is key that actors have access to local knowledge. For example, one of these actors gathers data on real estate transactions since the 1990s and developed a real estate index (Hölzl-Hubner, 2015). In this aspect the location of the building plot also influences project possibilities. The location, its land price and its corresponding building laws determine the feasibility of housing projects. In addition, the size of the market makes it less attractive to non-local actors. Therefore, it is not surprising that most housing projects, which require high capital commitments, are co-financed by local financial institutions, which provide credits and which have access to this specific local information.

The role of non-profit institutions for the construction industry should also be mentioned. These institutions develop housing projects and rely on construction companies by means of tender for the physical transformation. As previously discussed and reaffirmed throughout our interviews, these projects generate a significant share of new housing units. Construction companies regard the bidding process as highly competitive. Although profitability is rather low, construction companies still engage in such cooperation, since it generates revenues which allow maintaining a specific firm size (e.g. number of employees). This perceived low profitability was also a main reason for construction companies to diversify their activities and to specialise vertically, e.g. develop their own housing projects and look for possible inter-firm cooperation.

To conclude, we turn to the impact of regulation on the transformation process. First, project developers noted that the realisation of housing projects is especially time consuming due to the administration process of building permits. Strict regulations within the city (e.g. Green Areas Declaration and cultural heritage protection) hamper the planning phase of housing projects and can cause significant delays (e.g. Rehrlplatz-Project). Second, according to our interviewees regional differences in building standards, building laws and

housing subsidies have their impact on building costs. This being said, they regarded this only as a non-sufficient explanation for high housing prices in Salzburg.

4.3. Distribution

In general, the housing market in Salzburg city is characterised by high demand. Especially the demand for small housing units for one- or two-person households is currently high. The main actors on this market are non-profit institutions, vertically integrated companies and real estate brokers. The former two types have their internal marketing divisions, which act as broker to future owner-occupiers. Due to their specific local market knowledge and contact to consumers these divisions are actively involved in the design and planning phase. The production of housing units in Salzburg is mainly based on the concept of "made to forecast" (cf. Figure 4). The transaction of property can occur as soon as the planning phase is finished, i.e. even before the housing units are actually built. The distribution of state-aided rented flats is partially organised through governmental institutions and the involved non-profit institutions.

The competition between real estate brokers is perceived as fierce. Since these brokers establish a link between sellers-buyers and landlords-tenants, their business model and success is mainly based on their personal contacts to these different groups. Moreover, the importance of these personal contacts also explains the rather low level of cooperation between brokers. Although real estate brokers develop customer data bases, they acknowledge that the lion's share of their successful sales is initiated through active marketing. These databases are mainly interesting to contact potential small investors or to cover a specific market segment, e.g. high price segment.

Within the distribution phase the influence of investors should not be neglected. This became clear when our interviewees discussed the impact of the recent financial and economic crisis. Due to low interest rates and increased uncertainty on stock markets, investors looking for an alternative investment opportunity turned to residential real estate. This increased demand had a significant impact on housing prices, as shown by Figure 1. Based on our interviews, we identify two major investment motives. First, investments are made to generate an investment return based on a cash flow through renting out. Especially institutional investors such as pension funds and insurance companies use this strategy. For this group location is secondary. Nonetheless, higher housing prices influenced rent prices, as investors tried to maintain their return. Second, investments were made to conserve the value of money. These investors were more considered with respect to location and other characteristics. Until 2010 Salzburg experienced an investment boom in luxury housing units, i.e. exclusive real estate which allows extracting monopoly rent (cf. Smet 2015). Whereas the influence of non-regional investors could not be neglected, Salzburg is unattractive to big investors due to its small market size and relative small investment opportunities.

4.4. Consumption

Whereas it was for our interviewees rather difficult to define clear submarkets, it became clear that they implicitly use this concept on a day-to-day basis. Their concepts displayed a hybrid version of the previously discussed classification methods (Galster, 1996). Basically the actors distinguished between "North" and "South", which were also associated with specific urban districts. This distinction was based on different characteristics. "North" was regarded as more densely populated area with multi-storey dwellings. "South" displayed more one- or two-family dwellings within green areas, higher land prices and high-income households. Furthermore, due to the reputation of certain urban districts potential customers perceived housing units markedly differently. Notwithstanding this basic differentiation, most informants stressed that it is extremely important to be familiar with all places and streets of Salzburg, as market situations can change accordingly. This information is also used as input for future housing projects (i.e. built to forecast).

Customers, which are mainly from Salzburg and its surroundings, can be classified according to the housing type they consume. With regard to owner-occupiers, it was noted that for average-income households it became almost impossible to acquire housing ownership. Due to prevailing high prices young families do not have the capital resources to cover (at least) the required one-third of purchasing price. As a result, most observers see an inter-generational support, i.e. the parent-generation of these young families provides necessary capital. As a result young families either move to suburban areas or rent. Owner-occupiers originate mainly from high-income households with managerial positions or self-employed professionals. Besides a private rental market, there is also an important state-aided opportunity. However, there are long waiting lists for the latter. According to our interviewees the current housing market pushes average-income households to Salzburg's suburban areas. On the one hand, these households cannot afford the high prices to acquire ownership (or to rent space for a growing family). On the other hand, they do not come into consideration for state-aided rental units.

4.5. GPN Potential

As discussed by Coe et al. (2008) the GPN approach offers the possibility to analyse different aspects of the production process. Therefore, we conclude this section by discussing two aspects, which are important for the housing GPN of Salzburg, but are not regarded as core elements of this GPN. First, the financial aspect of housing projects is treated. The high capital commitments involved with housing transactions require the support of financial institutions. In the case of Salzburg, these institutions are locally embedded and provide credits to both consumers as well as property promoters. The recent financial and economic crisis had a markedly influence on Salzburg's housing market. On the one hand, financial institutions became more prudent and required stricter obligations and increased securities of promoters. Although this did not invoke a credit crunch, building activities were influenced by this change in banking policy. On the other hand, housing units in Salzburg

became targeted by investors, who were looking for alternative investment opportunities. As a result Salzburg experienced a significant price boom between 2008 and 2013. Whereas our interviewees regarded these prices as high, they did not regard this development as a price bubble. Due to strict financial conditions the market was regarded as stable. Nonetheless, they pointed out that a change in legislation, which increases available building lots, or an interest rate increase could have a significant negative impact on housing prices.

Second, regulation has a markedly impact on housing markets. Laws and prescriptions on different governmental levels (e.g. city, province, national) influence the transformation process of land into housing units. The mixture of land use regulation, building law, subsidies, building promoter regulation, different floor space indices etc. induce a specific output of housing units. As a result spatial differences even within relative small cities such as Salzburg emerge. In the case of Salzburg the official channels to attain a construction permit is regarded as very time consuming. Moreover, as one interviewee pointed out, the construction of housing units is characterised by its high legal complexity. Simultaneously, both landlords as well as rental households face an opaque tenancy law.

5. Conclusion

This paper set out to open the black box which transforms land into housing. We regarded this black box explicitly as an outcome of social processes involving multiple actors with different interests. By applying the GPN approach insights on the networks of these embedded actors were gathered. Since these networks are time and space sensitive we opted to analyse the city of Salzburg.

With respect to the core of the GPN, we observed a tendency of private companies toward vertical integration. Whereas construction activities offer little scope to capture value, construction companies expanded and integrated value creating and capturing activities (e.g. project development, sales) into their business structures. As a result enterprises emerged which cover the input-transformation-distribution elements. This also implies that the organisational structure of these enterprises increasingly diverges from its legal structure. Also non-profit institutions are vertically integrated companies, although they contract out the construction of residential real estate. Due to this process of tender, competition between construction companies is encouraged (cf. low profitability). The existence of these non-profit institutions is based on the regulation of state-aided rented flats.

Independent of the housing project, actors tended to reduce risk and uncertainty by engaging in different inter-firm relations. Whereas we expected to find mainly forms of loose coupling between firms, this result is surprising. The foundation of these inter-firm relations is trust. This is not only the due to uncertainties faced during construction but also an indication for the legal complexity of housing projects. Fierce competition at multiple segments of the GPN forms another incentive for inter-firm cooperation. We interpret this

as an attempt to reduce risk by developing strategies to influence the GPN. At the same time this behaviour makes market interactions intransparent, which reduces available information and enforces competition.

From our analysis it should be clear that both regulation as well as the financial industry are two main components of the housing GPN. Regulation influences all stages of the GPN. It defines land availability, project design, the legal structure of companies, distribution and consumption. Besides the direct involvement of the financial industry as credit provider, it cannot be neglected that residential real estate as financial asset is indirectly subject to changes on financial markets. This is shown by the impact of the global financial and economic crisis. On the one hand, financial institutions introduced stricter rules to provide credit. On the other hand, investors increasingly regarded housing units in Salzburg as attractive assets. This is ironic, since this crisis originated in US housing markets.

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