

Interrelations between housing supply agents: the metropolitan housing market in Prague¹

Ing. Mgr. Martin LUX

Institute of Sociology, Academy of Sciences
Socio-economics of Housing Department
Jilská 1
110 00 Prague 1
Phone: +420 222 221 655
martin.lux@soc.cas.cz

Ing. Petr SUNEKA

Institute of Sociology, Academy of Sciences
Socio-economics of Housing Department
Jilská 1
110 00 Prague 1
Phone: +420 222 221 655
petr.sunega@soc.cas.cz

PLEASE, DO NOT QUOTE!

Article published in *Post-Communist Economies* 22 (1): 99-117.
DOI: 10.1080/14631370903525629.

Abstract: The paper presents the main findings from a detailed analysis of the interrelations between selected agents in the supply side of the housing market in Prague. It discusses the sources of potential market inefficiencies emerging from the nature of interrelations between developers, construction firms, and the producers of building materials in transition economy. The research was conducted in 2007, during a period of growing demand for owner-occupied housing in Prague. The results highlight the barriers which prevent housing supply to react effectively to changes in housing demand. The findings may be thus a good contribution to the more general discussion of the efficiency of housing markets.

Keywords: housing supply, market efficiency, transition economies

JEL: R31 (L11, L13)

¹ The work on this article was supported by the Grant Agency of the Czech Republic, grant no. 403/09/1915.

Introduction

Several studies have examined the market-based (private) housing supply in developed countries (DiPasquale and Wheaton 1994, Meen 2001, Barker 2003, Olsen 1987 and others), but there is no comprehensive study for transition countries, where housing markets emerged only several years ago and housing supply has many specific features. Even for developed countries, there is considerable inconsistency in findings among studies. The only real consensus that has been reached is that research in the field of housing supply remains rare compared to research on housing demand (Smith 1976, Fallis 1985, Olsen 1987, Smith et al. 1988, Mayer and Somerville 1996, Somerville 1999 and others).

We can distinguish two streams of housing supply analysis: a) ‘macro’ studies of housing supply price elasticity (such as Poterba 1984, Stover 1986, Topel and Rosen 1988, DiPasquale and Wheaton 1994, Malpezzi and Maclennan 2001 and others) and housing market efficiency (Case and Shiller 1989, Rosenthal 1999 and others), and; b) more detailed ‘micro’ studies of the process of housing provision and land planning, which often also include the assessment of the competitiveness of the housebuilding industry (Lansley 1987, Somerville 1999, Ball 2006, Barker 2003 and others). Both types of studies compare empirical findings with theoretical assumptions of effective (competitive) markets; they evaluate the response of market supply on demand shocks and may also discuss what consequences this has on the role of the state in the housing market.

According to theory, a rise in house prices (provoked by demand shock) should be followed by a positive response from the supply side of the market and lead to a price fall (perfectly elastic supply). “If the market is efficient, then any deviations between new building prices

and construction costs should disappear more quickly than the time required for construction, thereby eliminating excess profit opportunities for builders” (Rosenthal 1999, p. 288). In such an environment, there is no scale economy and, consequently, there are many competing actors who do not see any benefit from capital concentration – there are no market failures (such as monopolistic competition), no arbitrage opportunities, and no firms with excess profits. Markets provide an optimal allocation of resources on the basis of consumer sovereignty. If consistent with the theory of the competitive market, housing starts should fall with the increase in construction costs, and land prices should fall with rising construction costs.

According to DiPasquale (1999), Backley (1999) and others, the ‘macro’ studies produced very different empirical findings on housing supply price elasticity (from infinitely elastic to partially inelastic supply).² The differences are often explained by the variance in institutional and regulatory systems in different countries or regions (for example, in the field of planning, land administration), but due to the fact that there is often a variation in the resulting elasticity even for one territorial unit there may be other methodological factors behind the instability of results (for example, misspecification of econometric models, inappropriate model assumptions, distinct methods of estimation).

The ‘micro’ studies also produced an entire range of possible conclusions. Some authors argue that the housing construction market leads naturally to production specialisation (Somerville 1999) and scale economy (Maisel 1953, Stover 1986), and thus oligopolies or

² The results of the following studies are evidence of this variation: Muth (1960), Follain (1979), Smith (1976), Poterba (1984), Stover (1986), Topel and Rosen (1988), DiPasquale and Wheaton (1994), Malpezzi and Maclennan (2001), Meen (1996) and others.

monopolistic competition can emerge. Others sometimes admit that there are signs of gradual concentration in the housebuilding industry, but they see the cause of this process in geographic market diversification and the specificity of housing as an economic good; they provide proof that the housing construction industry remains an example of a perfectly competitive market and that there are few (if any) possibilities for a ‘real’ scale economy or excess (economic) profit (Ball et al. 2000, Ball 2006, Rosenthal 1999). As Ball points out: “Within new supply, most techniques of production are freely available and widely known ... It is also easy in market economies to set up real estate development and construction companies ... concentration ratios are frequently low in construction” (Ball 2006, p. 7). Ball only acknowledges the existence of an information asymmetry, which does not significantly affect the competitiveness of the housebuilding industry. The variations in findings again might be caused by the different methodology of data analysis and especially by the availability and reliability of data – this fact has been confirmed by analysts themselves. Though economic data sources are limited and often not reliable, thus diminishing the added value of an ‘objective’ economic analysis, sociological methodology has only occasionally been applied in this field (Bourdieu 2000) and the findings have been ignored by the main housing supply analysts.

When analyzing housing supply from a ‘macro’ perspective authors assume housing supply to be one homogenous bundle of activities and suspend very complex and quickly changing interrelationships between agents within the housing supply itself. Though analysts using the ‘micro’ perspective pay more attention to individual production (specialisation) segments of the housing provision chain, they also often ignore the changing and complex network of interrelations between those segments (agents). Their analyses thus remain incomplete; for example, a thorough analysis of the influence of the building materials’ industry on the

efficiency of the housebuilding industry is missing. If interrelations are taken into account, then studies have assigned a more important role to financial factors such as interest rates or credit availability (Mayer and Somerville 1996, Chan 1999) than to material costs and their influence on housing supply responsiveness (this fact is also mentioned by Neto 2005, p. 19).³ At the same time, it is in the production of building materials that innovations can give producers economic profits thanks to patent protection (Ball et al. 2000).

Some ‘micro’ studies concentrate on the most competitive segments of the production chain, such as the housebuilding industry, house sales, the mortgage lending, and the land market. However, this may lead to over-optimistic conclusions about overall market competitiveness (Ball 2006). They often do not distinguish the market segment of apartment housing from the market segment of detached family houses. This might be due to the fact that in some countries, such as the UK or the USA, there are few structural differences between them. If we were to look at the multitude of relationships between developers, housebuilding firms (construction firms, main contractors), and producers of building materials in the specific market segment of apartment housing and in the specific environment of a smaller transition country, the picture might change, and it might support the hypothesis that the supply side of the housing market, though many parts of it are open and competitive, can suffer from systemic inefficiencies that derive from the characteristic features of the interrelationships between those agents. In this paper we therefore intend to search for the source of inefficiencies not within the particular segments (agents) of housing supply, but instead in the

³ They argue that higher interest rates may induce borrowers to invest in more risky projects; the increased default risks lead banks to higher risk premiums and thus periods of tight credit may depress aggregate housing construction sector competitiveness or the builders’ ability to respond to price signals (Chan 1999).

very practical, informal interrelationships between them (like, for example, Bourdieu 2000, Eccles 1981).

The substantial economic reform in the transition countries makes them good examples for describing also the dynamics of the interrelationships between housing supply agents. It is clear that firms are going to behave one way during the uncertain period of early transition and another way in the more predictable environment in later years. Similarly, as described by Lansley (1987) for developed countries, during the 1960s firms focused on market specialization (which led to an increasing number of actors and growth in overall market competitiveness), while during the economic crisis of the 1970s firms followed flexible ‘survival’ strategies and tried to expand into different segments of housebuilding (which led to mergers and bankruptcies, and the competitiveness of the sector substantially worsened).

This paper concentrates on an analysis of the informal interrelationships (and their change) between selected agents of housing supply in the segment of apartment housing in a metropolitan (Prague) housing market in the Czech Republic; namely, between developers, construction firms, and the producers of building materials. These interrelations (networks) can be adequately analysed based on the opinions of the actors themselves; i.e. with the aid of sociological methodology. The results show that the growth in competitiveness in one segment of housing supply may worsen competitiveness in other segments, and *vice versa*, owing to the basic features of the interrelationships between selected housing supply agents. Although the findings remain rather hypothetical owing to the methodology used (perception data), they show that the wider application of sociological methodology can help the understanding of the processes within housing supply. The methodology of questionnaire surveys, qualitative interviews and focus groups that was applied in our analysis can be

expanded in the future, for example, by experimental sociology and other qualitative techniques.

Alongside the above-mentioned benefits, this paper is also one of the few on housing supply in transition countries. The transition from centrally planned housing construction without any official market relations into a system based on private housing development and market-based housing finance offers a unique opportunity to look at the very basis of private housing development. Given the short history of their existence, the agents are open to sociological questioning and market analysis. The technological revolution in building materials and the opening up of the domestic economy to international competition led to rapid increases in the price of building materials – the cost of materials represents about one-half of housebuilding costs, which is unique when compared to developed countries where the price of labour is higher. The prices of many materials quickly matched the world prices – that is, prices in developed countries where the purchasing power of the population is much higher. The production of building materials thus could have played an important role in the pricing of new housing and the scale of total output.

In the Czech Republic, developers usually direct the whole process of housebuilding, but they hire large construction firms for the actual land development and building construction. This system, which differs from practices in the UK or the USA, is probably also the result of the transition. While development firms were established only a few years ago by young businessmen committed to housing development in an uncertain and risky transitional economic environment, the biggest private construction firms emerged from the privatization of former ‘giant’ state-owned construction companies and they often retained rather conservative management. The managers of these companies, accustomed to the comfortable

state financing of housing construction, did not have the skills to direct housing construction in the new market conditions, especially given the uncertainties during the first phase of the transition. The separation of development and construction functions may also be an outcome of relatively soft land supply regulations (Ball 2006, p. 168).

Another specific feature is that a substantial amount of the construction of detached family houses is directed and very often also carried out by the future owners and their families (even more so than in Germany or France). There are thus significant structural differences between the segment of detached family housing and the segment of apartment housing. Finally, owing to the decentralization of administration, property restitution and other transitional factors, the influence of land planning on housing supply became very limited. Consequently, the factor of planning, often mentioned as being behind the slow reaction of housing supply to price signals in many developed countries, had much less importance in the Czech Republic (Lux et al. 2008).

Context

Along with most other European post-socialist states, the Czech Republic radically reformed its political, social and economic systems after 1990, a process which is usually referred to as ‘transition’. With some reservations and exceptions, the following institutional model was shared by many socialist countries prior to 1990. Most of the economy was in state ownership, the economic and political systems were dominated by the central state, and political power was in the hands of one political party. In the field of housing (housing finance) this meant relatively extensive public (mostly state) interventions to decommodify housing production, housing management, and housing consumption; interventions

supporting new housing construction via extensive state subsidies, influencing tenure structure through property expropriation and controlling housing consumption through rent and price regulation (Lux (ed.) 2002; Lux (ed.) 2003; Lowe, Tsenkova 2003; Donner 2006). This specific housing system is sometimes called the East-European Housing Model (Hegedüs, Tosics 1996, 1998): the state controls both demand and supply sides of the housing sector and does not allow the market mechanism to develop as an integrating mechanism.

After 1948, Czech housing policy was based on the principle that a home is such an important good in the life of a person that rising costs of building, repairing, and maintaining housing should not be reflected in household expenditures. This policy resulted in an almost total expropriation of private apartment housing and in the attempt to apply an egalitarian approach to satisfying housing needs. At the time, the state took on the responsibility for ensuring the provision of housing for each member of society. The mass construction of state rental housing was subject to central planning and it was realised by a few ‘giant’ state-owned construction companies. The costs were fully covered from the state budget. The expropriated land was easily available. However, the extensive state-financed housing construction increasingly suffered from limited resources, so despite continual ideological declarations, later on other forms of housing construction were also permitted – enterprise, cooperative, and individual housing.

Enterprise housing construction was financed partly from the resources of the state enterprises, partly from the state budget, and partly from long-term state bank loans. Cooperative housing construction had been organised since 1958 by housing cooperatives and its costs were covered by contributions from the cooperative’s members, state subsidies, and long-term low-interest state bank loans. Individual housing construction primarily involved

the construction of family houses, financed primarily from the resources of individuals and long-term low-interest state bank loans. All the banks were state-owned and their loans did not take the form of mortgage credits; nor did project financing for housing construction exist. The construction of cooperative and enterprise apartment housing was conducted by the same group of 'giant' state-owned construction companies.

Housing cooperatives differed from their counterparts in democratic countries. The pre-war housing cooperatives were forcibly merged into cooperative 'giants' (e.g., in the 1950s, one housing cooperative emerged in Prague to manage the entire stock of cooperative housing built in the pre-war period within the territory of the city). New housing development was also conducted by large Building Housing Cooperatives, which over time in large towns were managing flats sometimes numbering in the thousands. Cooperative statutes were required to be uniform and differences were not tolerated. Owing to the massive numbers of members of these cooperatives, the initially democratic procedures of the cooperative members were replaced with proceedings among 'delegates'. The 'nationalisation' of cooperative movement resulted in the destruction of the original idea behind cooperative associations as independent 'self-help' entities and it suppressed any potential market relations that could have increased efficiency and competition with administratively operated state housing construction.

The only 'market' relations were in the field of individual family house construction, but such relations were officially denied and existed especially as a part of the grey economy. Future house owners not only prepared and directed the whole construction process (and were thus motivated to bargain on building materials' prices), but, because few small construction firms existed, they had to perform a substantial portion of the construction work by themselves and

with the help of their families (and/or illegally pay non-taxed sums of money to specialists when qualified work like the installation of electricity or heating systems was required).

As in other sectors of the economy, after 1990 the housing sector began to transform from an administrative planning system to a system based on market principles. According to the initial housing policy plans, the role of the state should have been limited to that of establishing the conditions in which a housing market could emerge. The denationalisation of the entire economy took place. The privatisation of enterprises and services was divided into ‘small privatisation’ of shops and business premises, and ‘large privatisation’ of state enterprises, including construction companies. The process of the decentralisation of power and the renewal of regional self-government included the transfer of the housing stock from state to municipal ownership (approximately 39% of the housing stock). Insufficient fiscal decentralisation, the large inherited debt on housing maintenance, rent regulation, and strong tenant protection all created incentives for the privatisation of municipal housing.

The capital subsidies for state rental housing construction practically disappeared soon after the change of the regime; prices of construction materials were liberalised and quickly increased. Both factors led to the sharp decrease in housing construction output (Table 1). In 1995, the government started to support new municipal rental housing construction through subsidies that, a bit later on, amounted to CZK 400,000 per new dwelling (about one-third to one-quarter of the average costs of dwelling construction in the second part of the 1990s). The output was 62,000 housing starts between 1995 and 2002. Because there were no bidding costs or income ceilings (targeting) for dwelling allocation and because the programme was transformed in a way that allowed speculation and abuse, the programme was highly criticised and ultimately, in 2003, it was substantially amended. The private construction of detached

family houses continued after 1990 and featured the same patterns established during socialism (self-construction; family solidarity in the form of mutual financial and physical assistance; use of wider family social networks; contracting in the grey economy); small construction firms gradually became involved in the construction of family homes.⁴ Conversely, apartment housing development (with the exception of the quasi-municipal housing described above) almost disappeared for more than a decade.

The conditions for the private development of apartment housing were poor and surrounded by an unprecedented level of uncertainty. The housebuilding industry and the building materials industry were technologically under-developed, inefficiently managed, over-employed and dependent on (accustomed to) comfortable state finance – the private construction firms that emerged from enterprise privatisation particularly lacked skilled managers and technicians to meet the changes in quality preferences and the demand for innovations. The banks knew nothing about project financing, and though the necessary legislation for the extension of mortgage loans was passed in 1995, mortgage financing did not spread as quickly as expected. This was mainly owing to macro-economic situation, particularly inflation and high nominal interest rates, but there were also psychological reasons: people were wary of taking on a large debt for a long term, and there was still a feeling that living in debt is somehow immoral (Lux et al. 2005).

The effective housing demand was suppressed by economic reforms, leading to a fall in real incomes, economic recession, and banking crises. The future of the economic reforms

⁴ In fact, even in 2007 a substantial amount of the construction of family houses was still being performed by the house owners themselves, and a substantial amount of the income of small firms and individuals engaged in family house construction remained undeclared and probably formed an important part of income earned in the grey economy.

themselves became uncertain. The land was subject to restitution (creating an additional level of uncertainty) and the turnover on the private flat market was marginal due to the low number of privately-owned flats (thus creating an information vacuum in prices and demand). It is thus logical that there was almost no private apartment housing development for several years. The first development only began in the late 1990s and mostly concentrated on the very high end of the market. In an environment of huge uncertainty and a lack of competition, the few developers asked for high-risk premiums. Though there are no exact economic statistics to prove this fact, the interviews with the developers themselves show that the operating margins were as high as 100% at that time (see below). Due to the high demand for new apartment housing, which had long gone unsatisfied by the market, most of the new flats were sold very quickly, often before construction had even started.

The success of the first housing developers led others to enter the market and the situation gradually improved (Table 1). After 2004, in most developed regions (especially in the capital Prague) where real household incomes and the prices of existing housing started to grow rapidly and the ratio of prices for existing dwellings to construction prices substantially increased (new housing started to compete with the existing housing stock) private housing development gradually emerged (in 2007 it was already possible to speak of a 'housing construction boom'). In 2007 especially there was substantial growth in the demand (and prices) for owner-occupied flats, provoked by positive demographic factors, rent deregulation, low interest rates, and a relaxation of the criteria for granting mortgage loans. The demand for new flats was also accelerated by the fear that in 2008 the VAT on new housing construction would substantially increase. In 2007, 41,649 housing units were completed in the Czech Republic, of which 9,422 were in Prague. In the Czech Republic, slightly more family homes were built than new flats in apartment buildings, but in Prague alone, flats were the more common form, and in

2007 they accounted for 84% of all newly built housing (7,915 units). The new apartment housing supply gradually became dominated by private capital, and the share of public housing construction out of total completed dwellings steadily decreased (Table 1).

Table 1

Most construction work (housing and non-housing) was gradually taken over by large construction firms. In 2002, firms with more than 300 employees were responsible for 38.5% of all construction work and they lagged behind mid-sized firms in this field. But by 2008, these firms were already performing 45% of the volume of construction work (*Czech Statistical Office*). The concentration was probably even greater in the production of building materials: in 2000 the combined revenue of the ten largest producers accounted for 65% of total revenue acquired by the top 100 producers of building materials and by 2007 this share was already 88% (*URS Prague*). Based on these indicators it is evident that both markets exhibited a strong tendency towards concentration. Despite of rapid increase in demand for construction works, the average total number of employees working for construction firms in the Czech Republic increased only slightly between 2002 and 2006, and the number of manual workers did not even change. The gross wages of employees in the construction sector have increased annually by around 6% (*Czech Statistical Office*).

Information about the market shares of construction firms in the residential construction market in Prague (operating as main contractors during apartment housing development) is not available, so in order to obtain a general idea of what those share are we investigated how many housing units were built by different construction firms in Prague in 2005 and 2006. We looked at the annual reports and the web sites of construction firms for information on the

projects the firms had worked on; the total number of completed dwellings for Prague has been obtained through the Czech Statistical Office. In 2005, five construction firms (main contractors) were responsible for the construction of 55% of all completed dwellings in apartment buildings in Prague (two firms 26%, ten firms 70%). From an analysis of development industry magazines, the web sites of development projects, and the web sites of development firms and real estate agencies we were also able to create a database of advertised development projects involving the construction of 20 or more flats. This database allowed us to estimate the market shares of the main housing developers in Prague. According to this source, five development firms built 52.5% of all initiated dwellings (two firms 31%, ten firms 69%) and ‘only’ 40% of completed dwellings (two firms 24%, ten firms 60%) in apartment buildings in Prague in 2005 and 2006. The level of concentration in the two housing supply segments is thus comparable, with slightly a higher level of concentration in the housing construction sector.

To determine the market shares of manufacturers of the different types of building materials we obtained information from the Czech Statistical Office and the Business Register. From the statistical office we obtained lists of firms engaged in the manufacturing of buildings materials, documented under the Industrial Classification of Economic Activities (hereafter ICEA). We used category ‘26.4 Production of masonry materials, tiling and similar products’, ‘26.5 Production of cement, lime and plaster’, and category ‘26.6 Production of concrete, plaster, lime and cement products’. In each category we obtained information on the total revenue of all firms with at least 100 employees in 2005. We also obtained information from the firms’ annual reports about their own revenues. With this information we put together market shares in each category. The revenues of five largest firms in the production of concrete, plaster, lime, and cement products accounts for 23% of the total revenue; the degree

of concentration in this sector is therefore low. However, the production of cement, lime, and plaster is more concentrated – the revenue of four firms accounts for 62% of the total revenue in this ICEA category. An even higher concentration was detected in the production of masonry, tiling, and similar materials (especially bricks, one of the main materials used in housing construction in the CR). One firm makes 40% of the total revenue in this ICEA category and two firms' combined revenue accounts for 78% of the total revenue in this ICEA category. The level of concentration is therefore very high.

Figure 1 shows the development of the construction costs-to-income ratio in the CR in 1997-2007.⁵ While it is evident from the figure that the ratio did not rise, it is nonetheless also evident that, as time passed and the market consolidated, it did not decrease either, even though it might have been expected to do so. The 'revolution' in housing construction after 1990, which involved moving from a model of state-built rental housing to a model of commercial residential development, underwent a certain transition period - the former actors (the state) quickly withdrew from the market, but they did so at a time when no sufficiently stable new (private) actors had yet emerged and when this business involved considerably high market risks. The high costs of housing construction were at that time regarded as being part of a temporary, transitional phase, that is, processes that could not be completed 'overnight'. But as the years of transformation progressed and right up to 2006 and even into 2007 the cost trend mirrored the trend in household incomes, and nominal, though not real, costs have continued to rise.

⁵ We do not plot the final selling price but only estimated new flat construction costs, which are lower than the selling price; it is the ratio of the average construction costs of a new flat with an average floor area of 57 m² not including the costs of acquiring a plot to the annual average disposable household income (Czech Statistical Office).

Figure 1

According to theory, a rise in price should be followed by a positive response from the supply side of the market and lead to a price fall. It is clear that this was not the case throughout the entire decade of transition (2000-2007), though there were some signs of price stagnation in 2003-2005 (Figure 2). The same applies for Rosenthal's theoretical assumption (see above): the deviation between new building prices and construction costs substantially increased in time and construction activity (output) is thus characterised by high volatility (Figure 2). The level of response depends upon the price and availability of inputs, their substitutability, future expectations for housing demand, construction lags, ease of entry and exit, and the size and structure of the building industry (Pryce 1999, p. 2283). There could thus be several reasons why supply has not adequately reacted to price changes. Pryce (1999) in particular has devoted attention to development planning controls (which increase uncertainty and the price of an option to hold land vacant) and expectations of cyclical price movements among developers. However, neither of these factors is relevant to the situation in the Czech Republic, where planning restrictions were largely relaxed after 1990 and newly established private developers had no experience with price cycles on housing market.

The development of construction costs is also not consistent with the theory of efficient, competitive markets. Housing starts do not fall with the increase in construction costs and house prices (as well as land prices) rise with the level of construction costs (Figure 2). Somerville (1999) explains this fact by city growth and the relation between land rents and agricultural land rents on the outskirts of the cities. However, other explanation may lie in specific character of interrelationships between different agents within the housing supply and

the nature of the change of these interrelationships in time – and this forms the main focus of our analysis.

Figure 2

Methodology and data

We limited the analysis of the interrelations between selected housing supply agents (developers, construction firms representing the main contractors, and producers of building materials) to the metropolitan housing market, i.e. to Prague. There are several reasons for this restriction: the overwhelming majority of new apartment housing output was and still is concentrated in Prague; the prices of new flats started to effectively compete with the prices of existing housing due to the sharp appreciation in existing house prices in Prague; and the growth of the relative economic power of the capital city in overall country economic output substantially increased regional differences in housing affordability – housing affordability, and consequently responsiveness of housing supply, became a particularly real problem for the inhabitants of (and immigrants to) Prague (Lux et al. 2008). We focused our analysis on the segment of apartment housing (due to the specific nature of detached family house construction in the Czech environment). Our main goal was to analyse the character of interrelationships between selected housing supply agents in 2007, i.e. in the year of substantial growth in housing demand and the time of the ‘housing construction boom’. However, to understand the change in these interrelationships between 2002 (little private apartment housing construction) and 2007 (the boom in apartment housing construction), we tried, at least partially, to analyse the character of these interrelationships also before the year

of 2007. The influence of the banking sector (project financing) and land ownership and planning was not surveyed.⁶

To achieve the goals we applied a research methodology combining quantitative and qualitative sociological techniques. We conducted a survey called *Housing Construction 2007* among the main representatives of selected housing development firms, construction firms, and manufacturers of building materials, operating in the Prague apartment housing construction market. The survey was comprised of a questionnaire survey, nine semi-standard interviews, and two focus groups. The questionnaire survey involved the participation of high representatives from twenty housing development firms, five housing development and investment firms, two firms engaged in a combination of housing development and housing construction, sixteen construction firms, and six manufacturers of building materials; altogether interviewing forty-nine respondents. Respondents from the development and construction firms were high representatives of selected companies (owners, board members, high-ranking senior managers); half of the representatives from manufacturers of building materials were also drawn from the ranks of lower-level company management (however, even in those cases, managers had to ask senior management whether they could give us an interview, and the opinion they expressed during the interview was that of the firm). The questionnaire was filled in during a phone interview.

⁶ Alongside the lack of data and the need to focus this paper only on some aspects of housing supply, there are other reasons for this suspension. First, the relationship between the financial and housing development segments of supply have already been analyzed (see above) and we wanted to direct our analysis towards otherwise neglected interrelationships (such as between housing development and the production of building materials). Second, the influence of land planning on market competitiveness is currently somewhat weak owing to the relaxation of conditions during the transition.

In-depth, semi-standard (roughly one-hour), face-to-face interviews were conducted with top representatives of nine selected agents, and two focus group discussions (roughly two-hour) were carried out with another fifteen representatives of agents. The combination of quantitative and qualitative sociological methods helped us to better understand complex market relations and thus guarantees the reliability of the questionnaire survey results. The focus groups themselves were organised as discussions among different types of actors, where they could defend (argue) their views face to face with other interpretations. The intention of the focus groups was to put agents representing different groups in the production chain (developers, construction firms, producers of building materials) around one round table and look for a consensus. The representatives of different agents were able to discuss the main findings of the questionnaire survey, which were presented to them by a moderator. Selected statements given by respondents during the in-depth interviews or focus groups will be presented below, set out in italics and quotations marks.

The survey respondents, or better the firms they represented, formed a relatively good and representative sample of selected housing supply agents: the interviewed construction firms operated as main contractors for 48% of completed housing units in apartment buildings in Prague in 2006 and the interviewed developers completed 69% of the total number of new housing units in the same year. The market share of producers of building materials could not be estimated in the same manner. However, the combined revenue of the interviewed producers of masonry, tiling, and similar materials constituted 79% of the total revenue made in this category of material production in the entire Czech Republic.

Findings

The questionnaire survey included a question about estimating the margins of different actors involved in the housing provision chain: a manufacturer of building materials, a wholesale supplier, a construction firm (main contractor), a development firm, and a real estate agency. The average figures were verified during in-depth interviews and during the detailed ‘deconstruction’ of the new average flat price in the course of two focus groups. The average gross and net (profit) margins in the middle of 2007⁷ were estimated as follows:

	Gross margins	Net (profit) margins
Manufacturer of building materials	20 - 25 %	10 – 15 %
Wholesale supplier	10 - 13 %	3 – 5 %
Construction firm (main contractor)	10 - 15 %	4 – 6 %
Development firm	16 - 19 %	14 – 17 %
Real estate agency	3 - 4 %	1.5 – 2.5 %

According to the respondents, while just a few years ago (when apartment housing development was in its ‘infancy’) housing developers held the largest share of the pie of aggregate profit margins, in 2007 their share on total generated profits decreased, and it is rather the manufacturers of building materials, construction firms, and building material wholesalers who were increasingly acquiring bigger pieces of the profit pie. The construction

⁷ The average margins were estimated for the construction of a flat in Prague with an average floor area and built on the periphery of the city. The margins of the development firms can be substantially higher if the flats are built in more attractive central locations.

boom that characterised the period in which the survey was conducted did not benefit everyone equally – the development firms' margins fell in the face of growing competition, but the margins of all the other actors grew.

The principal question is whether actors' profit margins correspond with the level of risk they bear in actual housing development, or whether, on the contrary, they do not, and instead could indicate that some actors were abusing their dominant position in the market. The respondents in the questionnaire survey were given an opportunity to assess the level of business risk (on a scale of 1 to 5, where 1 means the lowest risk and 5 the highest risk) borne by individual actors involved in residential construction, and thus indirectly assess how commensurable the margins are. In the view of the respondents, real estate agencies bear the lowest risk (with an average score of 1.4) and also have relatively low margins. Manufacturers of building materials also have a relatively low risk (1.7), but in reality they have high margins, even after deducting operating expenses. Conversely, the highest risk, in the opinion of respondents, is borne by development firms (4.5), which also have the highest margins, and by construction firms (3.8), whose margins surprisingly do not match their level of risk and are relatively low. Mid-way between the two poles of risk level are wholesalers in building materials (2.1), whose estimated net margin, in relation to the margin level of construction firms, is commensurate to their risk. The biggest inconsistencies between the estimated margin and the estimated risk therefore existed among manufacturers of building materials (a relatively high margin with relatively low risk) and construction firms (a relatively low margin with relatively high risk).

In the questionnaire part of the *Housing Construction 2007* survey the questions were aimed at directly determining whether, in the opinion of the respondents, some actors in the market

abuse their dominant position in the market. In response to the question of whether they believe that manufacturers of building materials abuse their dominant position in the market to make a disproportionately high profit, 55% did believe so (20% of the respondents did not answer the question); among those who actually answered the question, 70% agreed they did. In addition, all the separate groups of respondents agreed in the majority with that statement (developers, construction firms), except for the manufacturers of building materials themselves. The in-depth interviews and the focus groups both showed that in the past two years manufacturers saw their prices and margins raise the most. Manufacturers themselves explained this as a consequence of the increasing emphasis clients put on the quality of construction materials and the preference for a strong company brand-name; another reason cited was that this type of production is technologically demanding, it takes a long time to build the required production factories, and equipping these factories especially is a complex process.

However, oligopolistic structures have emerged in certain spheres of the production of building materials, not just within individual countries but even across the European continent. These multinational firms practise a more or less uniform ‘global’ price policy in the different countries they operate in, because if they did not, ‘undesirable’ competition could arise between the company’s individual plants. For these reasons building materials manufactured in the CR are often sold almost at the same price as building materials manufactured in advanced countries, where the population’s purchasing power is stronger.

“I think that it’s the materials manufacturers who are making the biggest bundle now. What can you say, there is a monopoly on the most basic materials. Here in the European market

there isn't any real competition. Worldwide there is, but in Europe there isn't, so this is natural, right."

*"Firms actually deliberately create a monopoly on those materials. When you think of how many firms here are owned, say, by ***,⁸ and that company is one of the 100 biggest companies in the financial world. And it buys up all the manufacturers in Europe, or in the world, so that it has a monopoly. So *** is now theirs, *** is theirs. And those two used to be competitors in Europe. For instance, there are only three in the world in glass. It's just about playing games with trademarks."*

"The fact is that when I think back my feeling is that the manufacturers of building materials were preparing for this for a long time. I remember how in the 1990s all the brickworks were being bought up, and they were only being bought up so that they could be shut down. When you travel through the countryside you find one closed brickworks after another, and that was done fully intentionally. Those are brickworks that were definitely turning a profit."

"...manufacturers of building materials abused the situation. For instance, this year in the winter the price of mineral glasswool went up by 100%, from CZK 2500 a cubic metre it now sells for CZK 5000 or even more. It's simply atrocious. We know how it was, how that manufacturer waited until a shortage occurred, then he cut us off, so we went to Slovakia to buy glasswool, and the manufacturers here waited and then things let up, but the prices had changed... because here the manufacturers of materials have gradually been coming together into blocks, and the market is controlled by just a couple of firms."

⁸ For the purpose of respondent confidence guarantee we deleted all personal or firm names from selected statements. The names are substituted in the text with stars.

The manufacturers of building materials themselves see their behaviour as natural:

“Look, we’re a multinational firm, with production in 20 European countries, and sales essentially all over the world. The European Union has made this possible, and in brick production it’s, in my view, just the same, it’s not just a matter of a national market, but of the logistically optimal distance, regardless of where your borders are... Our parent company is watching from somewhere abroad, and with perfect logic it says, if I sell it in Germany then it costs this much, if I sell it in Russia it costs this much, if I sell it in the CR then it costs this much. You can keep the production of material in the Czech Republic if the price is not going to be lower than the distance differential. I mean it’s perfectly logical, right? That’s the way it is. That’s the market. There’s nothing you can do about it...”

“I openly tell my customers: If you want this material then it has to be at this price, if the price is lower then we’re sending it out there. If we want the products to get here, then it’ll only be at a price where you pay the parent company more here than you’d pay there, not a lot more, but something ... So it’s not that someone says there’s a surplus in Spain so their going to sell there at a lower price. In Spain there’s a surplus, and in Russia there’s a shortage. Of course you’re not going to supply Russia from Spain. But Spain reaches into France, and France reaches a bit into... the radius of supply is extended. In this way you slowly reach over into Russia ... If we wanted to abuse the situation then I’d let the country starve. But like my colleague said, ties are sensitive; you can’t leave a loyal customer in the lurch, because he’ll turn elsewhere and start taking other materials.”

Unlike in the previous case, the majority of respondents did not agree with the statement that developers make too high profit on new housing construction – only 18% of respondents definitely or somewhat agreed with this statement, while 53% definitely or somewhat disagreed with it and 26% of respondents did not answer the question. It is not just developers who disagreed with this statement but also the majority of representatives of construction firms; however, not the majority of manufacturers of building materials. Also, almost all the participants in the in-depth interviews and focus groups disagreed that developers in Prague are able to abuse their dominant position to make excessively high profits. The questionnaire survey deliberately included some questions that developers could not respond to. One such question related to whether in the opinion of the other respondents developers agree in advance on a price policy for end clients, in order to avoid competing with each other too much. Almost 80% of the respondents answered that they believe this is not true.

The in-depth interviews and focus groups revealed that this has not long been the situation and just several years ago (respondents indicated around five years) developers occupied a dominant position in the entire process of residential real estate construction and were making excessively high profits. This dominant position was the result of the absence of competition and the rising demand for new housing, which allowed developers to attain margins as high as 100% or more. However, the respondents shared the opinion that this ‘transition’ period is now over and thanks to rising competition developers’ margins have been sharply decreasing.

Respondents also in the majority disagreed with the statement that it may be the large construction firms that abuse their dominant position in the market and thus make excessively high profits – 55% of respondents disagreed with this statement, while 28% agreed and 14% refused to answer. However, the disagreement is clear only among the representatives of

construction firms, as one-half of the developers rather or definitely agreed with the statement, as did the majority of the manufacturers of buildings materials questioned. The survey also included a question that this time representatives of construction firms could not answer, regarding whether in the opinion of respondents large construction firms agree in advance on dividing up spheres of influence and thus also on a price policy in order to avoid competing too much with each other; 68% of those who answered this question believed that this is often or usually true.

The relative position of developers and construction firms seems to have fundamentally changed recently. While the margins of developers were falling and competition in this sector was growing, in the construction sector the market ran up against a shortage of capacity and the large construction firms capable of providing engineering services even for large-scale residential development projects found the doors open to them for increasing their margins, and more than ever before they began to take advantage of their position and ‘pick and choose’ among developers.

“..construction work, that’s the biggest pain...My own opinion is that that market never went through any restructuring...there are many state or public contracts that are even less efficient owing to the way in which they’re awarded, the way in which they’re monitored. I think that at present there’s no real pressure on these firms to seriously compete with each other. The public sector soaks up so much production capacity... Then there’s the fact that they all know each other. The tender situation is so simple. In the list of services there’s always one or two specific points that can only be supplied by one specialised supplier, or there are two or three of them here that could do it. That one supplier probably then is in some way going to be involved in every bid offered by every other supplier bidding for the

contract. This means that for someone operating in this sector it's always very easy to have an overview of all the participants involved."

One reason again could be the increased emphasis on the quality, on 'brand-names', and the fact that only a limited number of construction firms operating in the CR are capable of handling a large project at a high-quality level (providing appropriate guarantees). However, the main reason seems to be the lack of capacity.

*"At the end of the year there was such a shortage of labour that the prices went up, I'd say about 30% to 50%, for labour. For facades, say, we were paying CZK 350 a metre for thermal facades and at the end of the year we were paying 700. And the different construction sites were playing tug of war with these people, with the façade workers. Some manager would come along from *** and say: 'Hey boys, how much is *** paying you?' '400?' 'I'll give you 500.' And by Saturday they were working somewhere else."*

This capacity shortage could derive from the fact that bricklaying is not regarded as a very prestigious job, but it is also because of the shortage of foreign workers.

"The biggest problem I find is that there's no labour to do the physical work. I'd say that now that the post-revolution construction market has been functioning for 15 years, a stocktaking of things has taken place, and in my eyes it looks very bad. The first thing is foreign workers. Here the state failed wherever it could, that's perfectly clear. All of the post-revolution construction was performed by workers from the East, specifically from Ukraine, and the state, which could have taken x different steps to help them assimilate here, left them for the entire 15 years entirely at the mercy of their 'mafias'. As soon as the construction boom

began in the East, they simply went back home. The second thing is the total collapse of vocational education. It's simply non-existent. You won't see a construction worker on site under the age of, I'd say, 35. There just aren't any, and when there are, then they're kids from special education schools working as auxiliary help. This is an utter catastrophe. So basically, whoever has the labour now rules the market."

During focus group discussions and in the in-depth interviews an opinion was voiced, eventually confirmed by some construction firm representatives, that construction firms have begun to share much more information with each other about their past experiences and possible future activities (including plans to take part in development tenders) and to some extent also informally divide up contracts, the market.

"Unfortunately, you developers, your contracts gradually became as tough as, just so, so tough, to the point where we as construction firms have either had to reject doing flats or, to tell you the truth, we do a lot of agreeing over who'll take what project right now. Today, when I've three housing projects and I know that I want to do only one, say, here in Prague, and someone calls me and says: so hey, pull out and leave it to me, I'll say: okay, fine, take it. Sometimes we don't even make offers. That's the state things are in today. Because if we have the opportunity to look elsewhere, then we'd prefer to build anything rather than flats."

*"And we all call each other. This one calls and says, what will be your offer, and I say, 280, I could've gone to 270, but I wouldn't have gone lower. They say: we're at 265, we'll think it over again. *** says, I'm not going lower than 280. Then *** get their hands on it, and say, I won't go lower than 300. This means that today there's more telephoning going on"*

“I believe I’d see the problem in the agreements between big construction firms, which, I’m not saying that they’ve reached cartel agreements, but let’s say that there are some clear signals that offers are coordinated, and thanks to that, these construction firms, no matter how transparent the tender procedure is, are able to get the kind of prices that allow them to attain the kind of profit margins they do.”

At the end of the questionnaire survey respondents answered a question about connections between the economic sphere and politicians. The question asked them their opinion of the effect that lobbying by construction firms and developers has on politicians’ decisions. This was an open question, so respondents could state anything about this problem. More than 41% of all respondents indicated that lobbying by the above-mentioned actors has a big effect in the CR, and 31% of respondents indicated that lobbying has a certain influence on politicians’ decisions. The majority of those who felt that lobbying has an effect on politicians’ decisions were referring to lobbying at the local, i.e. municipal, level (23% of respondents) and only a small number were referring to lobbying at the central level, that is, at the state and parliamentary level (18% of respondents). According to respondents, local lobbying mostly has an effect on things like adopting a particular zoning plan, getting municipal (public budget) financing of infrastructure for residential construction (utilities, roads), favouring local firms in the construction or sale of land (with a local firm threatening to lay off people or shut down if it does not get the contract), and the non-transparent sale of municipal land to interested parties determined in advance (the problem of corruption was mentioned most in this case).

Many respondents mentioned another related issue: the building contracts that large construction firms obtain, not for housing construction, but for the construction of public

infrastructure (roads, motorways, railroads, metro lines, etc.). Respondents pointed out that, although in residential construction the gross margins of construction firms are ‘only’ around 8%, in the case of a public contract for infrastructure the margins of these same construction firms shoot up to around 20%. Moreover, in the opinion of many respondents, public (state and municipal) contracts often account for more than 50% of the sum value of all the contracts large construction firms have.

*“For example, *** makes no secret about it. Some colleagues were at a panel discussion on public contracts where a woman from *** got a bit carried away and it slipped out that their margins on private sector contracts are 2, 2.5%, which is an absolutely extreme scenario, that doesn’t cover anything, administration, nothing, but for the state sector they have 20%, and they’ve got it divided up so that it’s half and half of each type.”*

“The construction firms here are working in completely different markets. There’s a market where they work for some private client, say, for a developer, and another one where their margins are completely different, with completely different rules, it’s something completely different. It’s necessary to distinguish them as two very different things.”

Conclusions

In this paper we concentrated on the nature of (and the changes to) the interrelationships between selected agents in the apartment housing provision chain in Prague. This focus has been explained by the specific housing market context in the Czech Republic and defended as missing in most major housing supply analyses conducted in developed countries. For this purpose, we used sociological methods instead of relying on pure economic data analysis.

We discovered that the nature of interrelationships between some crucial agents in the supply of new apartment housing, and especially the nature of the changes to them over time, could also lie behind some of inefficiencies in housing supply. The crisis (huge market uncertainties, the lack of bank financing) created an uncompetitive environment in the segment of housing developers (thus allowing capital-strong developers to ask for relatively high profit margins in the first phase of the transition) while the construction industry and the building materials industry remained largely competitive, though technologically underdeveloped. When overcoming the crisis, after the establishment of market-based housing finance systems and during the period of low inflation, which all substantially increased the effective demand for new flats, the segment of housing development became, on the opposite, increasingly competitive (leading to sharp cuts in profit margins of developers). Instead, the competitiveness has been gradually restricted in the market with construction materials' production (by capital concentration) and due to lack of labour and few construction firms skilled enough to undertake large residential development projects also in the construction market (leading even to market failures such as monopolistic competition or informal market divisions). As one respondent said, 'whoever has the labour, rules the market'. Developers increasingly felt that they are being 'held ransom' to the small number of construction firms, which were aware of their growing market strength. At the time of the survey, certain restrictions led the market to set even a higher price per unit for larger transactions than for smaller transactions; the market started to behave entirely irrationally.

*"To be specific last year there was, I don't know, probably my colleague here knows about it, we were bidding on glasswool, *** was selling it. And the way it worked was ... if you*

wanted, say, 20 thousand cubic metres or more, then the price per unit was higher than if you just wanted 5 thousand cubic metres. The price per unit was higher.”

The rise in the demand that provokes competition in one part of the production chain (housing development) seems to reduce the competition in another part of the chain (manufacturing of building materials, construction industry) and *vice versa*. If this really were true, it would be impossible ever entirely to create a competitive environment in the housing market. However, this statement remains still rather hypothetical than conclusive: the process of change in the interrelationships between selected housing supply agents has been analysed only for a short and specific period of time, and the conclusions were obtained mainly by means of sociological research methods (opinions, perceptions).

According to the focus group participants, the costs of building materials where is high capital concentration (brickworks, thermal insulation), make up ‘only’ about 12% of total construction costs (24% of material costs, around 6.5% of final selling price); the influence of the producers of building materials on whole market efficiency should therefore not be exaggerated. On the other hand, the effect of cost growth at the beginning of the provision chain might be much higher than the effect of cost growth at the end of the provision chain – higher material costs may increase, in their absolute value, the margins of construction firms, developers, and real-estate agencies and may add to the costs of design works and project finance. This may just be the result of the fact that margins and some cost items are traditionally computed (requested) in the form of a constant percentage from a lower basis (often construction costs). These methodological limits represent the challenges for future research in this field.

References

- Backley, D. M. 1999. The long-run elasticity of new housing supply in the United States: empirical evidence for 1950 to 1994. *Journal of Real Estate Finance and Economics* 18: 25-42.
- Ball, M. 2006. *Markets and Institutions in Real Estate and Construction*. Oxford: Blackwell Publishing.
- Ball, M., Farshchi, M., Grilli, M. 2000. Competition and the persistence of profits in the UK construction industry. *Construction Management and Economics* 18: 733-745.
- Barker, K. 2003. *Review of Housing Supply. Interim Report – Analysis*. London: ODPM.
- Bourdieu, P. 2000. *Les structures sociales de l'économie*. Paris: Seuil.
- Case, K.E., Schiller, R.J. 1989. The efficiency of the market for single family homes. *American Economic Review* 79: 125-137.
- DiPasquale, D. 1999. Why don't we know more about housing supply? *Journal of Real Estate Finance and Economics* 18: 9-24.
- DiPasquale D., Wheaton W. 1994. Housing market dynamics and the future of housing prices. *Journal of Urban Economics* 35:1-27.
- Donner, C. 2006. *Housing Policies in Central Eastern Europe*. Vienna.
- Eccles, R.G. 1981. The quasi-firm in the construction industry. *Journal of Economic Behaviour and Organization* 2: 335-357.
- Fallis, G. 1985. *Housing Economics*. Toronto: Butterworths.
- Follain, J. 1979. The price elasticity of the long-run supply of new housing construction. *Land Economics* 55: 190-199.

- Hegedüs, J., Tosics, I. 1996. Disintegration of the East-European Housing Model. In: D. Clapham, J. Hegedüs, K. Kintrea, I. Tosics (eds.). *Housing Privatization in Eastern Europe*. Greenwood Press.
- Hegedüs, J., Tosics, I. 1998. 'Rent reform – issues for countries of Eastern Europe and the Newly Independent States'. *Housing Studies* 13: 657-658.
- Chan, T.S. 1999. Residential construction and credit market imperfection. *Journal of Real Estate Finance and Economics* 18: 125-139.
- Lansley P.R. 1987. Corporate strategy and survival in the UK construction industry. *Construction Management and Economics* 5: 141-155.
- Lowe S., Tsenkova S. (eds.) (2003). *Housing Change in East and Central Europe. Integration or Fragmentation?* London, New York: Ashgate.
- Lux, M. (ed.) 2002. *Bydlení – věc veřejná*. (Housing – Res Publica). Prague: SLON.
- Lux, M. (ed.) 2003. *Housing Policy – an End or a New Beginning*. Budapest: LGI/OSI.
- Lux, M., Sunega, P., Kostelecký, T., Čermák, D., Montag, J. 2005. *Standardy bydlení 2004/05*. (Housing Standards 2004/05). Prague: Institute of Sociology.
- Lux, M., Sunega, P., Kostelecký, T., Mikeszová, M. 2008. *Standardy bydlení 2006/08* (Housing Standards 2006/08). Prague: Institute of Sociology.
- Maisel, S.J. 1953. *Homebuilding in Transition*. Berkeley: University of California Press.
- Malpezzi, S., Maclennan D. 2001. The long-run price elasticity of supply of new residential construction in the United States and the United Kingdom. *Journal of Housing Economics* 10: 278-306.
- Mayer, Ch. J., Somerville, C.T. 1996. Regional housing supply and credit constraints. *New England Economic Review*: 39-52.
- Meen, G. 1996. Spatial aggregation, dependence and predictability in the UK housing market. *Housing Studies* 11: 345-372.

- Meen G. 2001. *Modelling Spatial Housing Markets. Theory, Analysis and Policy*. Boston: Kluwer Academic Publishers.
- Muth, R.F. 1960. "The demand for non-farm housing," in Harberger, A.C. (ed.) *The Demand for Non-Durable Goods*. Chicago: The University of Chicago Press.
- Neto, M.S. 2005. Analysis of the determinants of new housing investment in Spain. *Housing, Theory and Society* 22: 18-31.
- Olsen, E.O. 1987. *The Demand and Supply of Housing Services: A Critical Review of the Empirical Literature*. In. Mills, E.S. (ed.) *Handbook of Regional and Urban Economics*, Volume 2. Elsevier.
- Poterba, J. M. 1984. Tax subsidies to owner-occupied housing: an asset market approach. *Quarterly Journal of Economics* 99: 729-752.
- Pryce, G. 1999. Construction elasticities and land availability: a two stage least-squares model of housing supply using the variable elasticity approach. *Urban Studies* 36: 2283-2304.
- Rosenthal, S.S. 1999. Residential buildings and the cost of construction: new evidence on the efficiency of the housing market. *Review of Economics and Statistics* 81: 288-302.
- Smith, B.A. 1976. The supply of urban housing. *The Quarterly Journal of Economics* 90: 389-405.
- Smith, L.B., Rosen, K., Fallis, G. 1988. Recent developments in economic models of housing markets. *Journal of Economic Literature* 26: 29-64.
- Somerville, C.T. 1999. Residential construction costs and the supply of new housing: endogeneity and bias in construction cost indexes. *Journal of Real Estate Finance and Economics* 18: 43-62.
- Stover, M.E. 1986. The price elasticity of the supply of single-family detached urban housing. *Journal of Urban Economics* 20: 331-340.

Topel, R., Rosen, S. 1988. Housing investment in the United States. *Journal of Political Economy* 96: 718-740.

Tables

Table 1: Completed dwellings 1995-2007

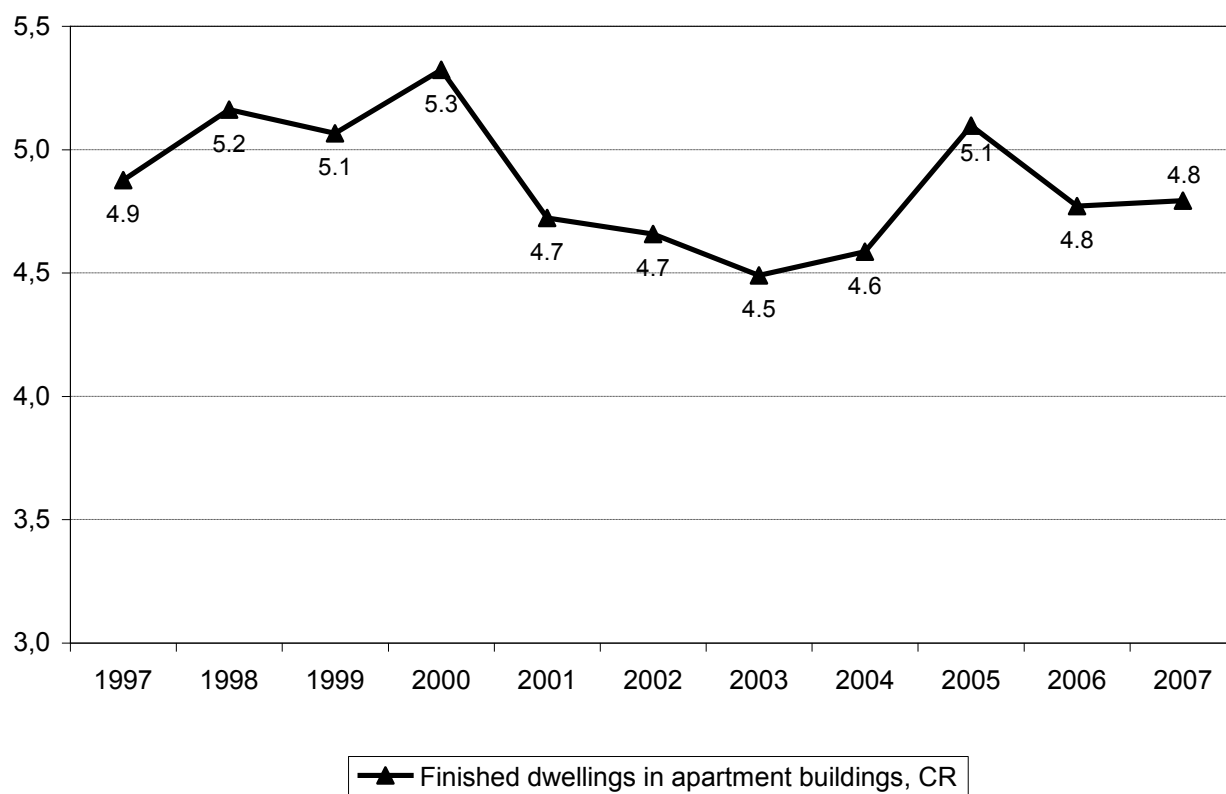
Year	Finished dwellings total (including extensions)	Finished dwellings in family houses (including extensions)	Share of finished dwellings in family houses (%)	Finished dwellings in apartment buildings	Finished state / municipal dwellings in apartment buildings	Share of finished state / municipal dwellings in apartment buildings (%)	Finished private dwellings in apartment buildings*	Share of finished private dwellings in apartment buildings (%)*
1995	12,998	7,036	54.1	2,755	1,689	n.a.	n.a.	n.a.
1996	14,482	7,516	51.9	4,143	2,727	n.a.	n.a.	n.a.
1997	16,757	8,582	51.2	4,568	2,835	n.a.	n.a.	n.a.
1998	22,183	10,670	48.1	6,827	3,216	n.a.	n.a.	n.a.
1999	23,734	11,777	49.6	6,598	2,925	n.a.	n.a.	n.a.
2000	25,207	13,377	53.1	5,926	2,897	11.5	2,493	9.9
2001	24,759	13,641	55.1	5,912	2,686	10.8	2,336	9.4
2002	27,292	14,673	53.8	6,393	2,612	9.6	2,990	11.0
2003	27,127	13,883	51.2	7,720	2,605	9.6	3,647	13.4
2004	32,268	15,755	48.8	10,722	3,641	11.3	5,587	17.3
2005	32,863	15,742	47.9	11,526	2,430	7.4	7,712	23.5
2006	30,190	14,917	49.4	10,070	2,624	8.7	6,113	20.2
2007	41,649	18,723	45.0	18,171	2,397	5.8	14,904	35.8

*The Czech Statistical Office includes in this category all dwellings in apartment buildings built by physical or legal persons with the exception of housing cooperatives. A portion of the dwellings was built by the state or by private companies and it is possible that some dwellings built as quasi-municipal were also included in this category.

Source: Czech Statistical Office

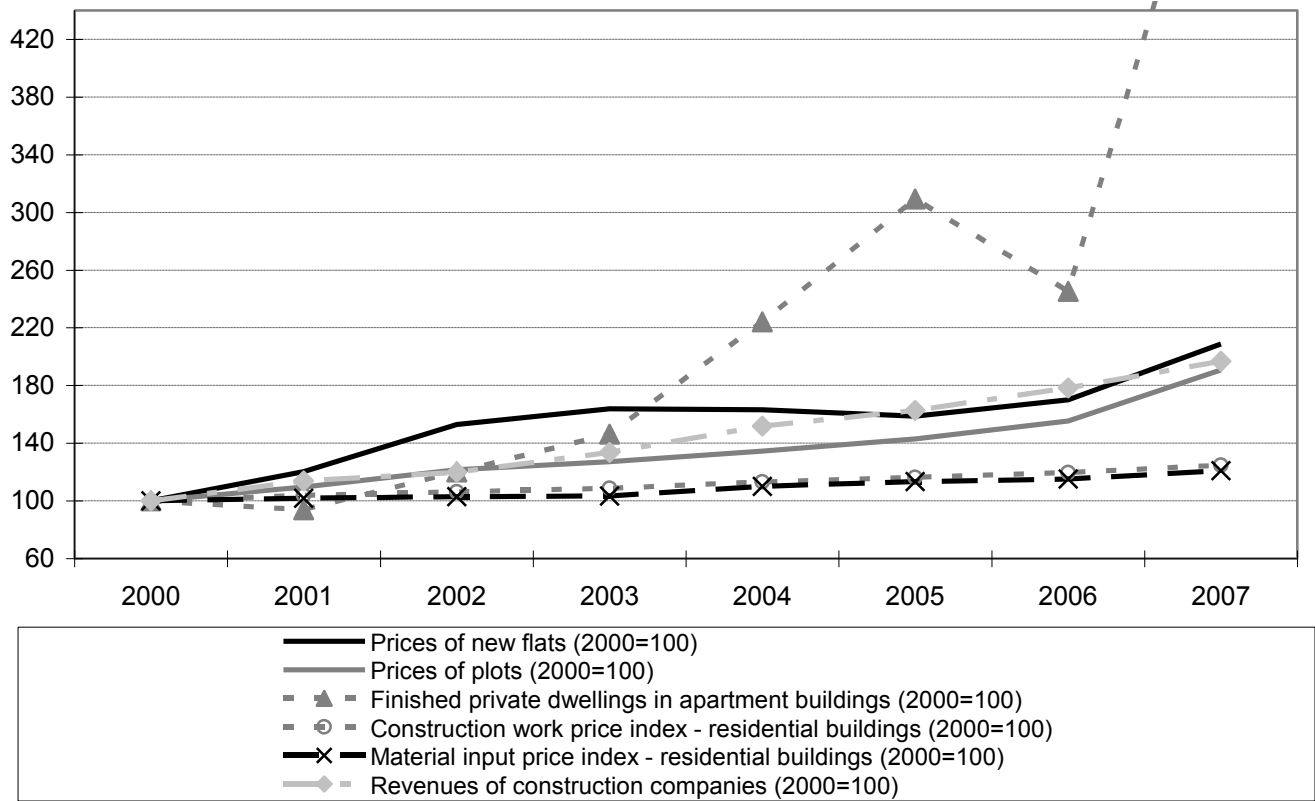
Figures

Figure 1: Construction costs-to-income ratio (1997-2007)



Source: Czech Statistical Office (Analysis of housing construction on the territory of the Czech Republic 1997-2005, Analysis of housing construction in 2006, Family Budget Survey).

Figure 2: Price indices and construction costs



Source: Czech Statistical Office, own computation