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Abstract: *The aim of the paper is an analysis of changes affecting the financial affordability of rental and owner-occupied housing over the course of the economic transformation in the Czech Republic. To evaluate housing affordability the authors used housing expenditures-to-income ratios and data files from the Czech Statistical Office. The objective of this paper is also to draw attention to the need to modify standard indicators when measuring housing affordability in countries in transition. In this regard the authors particularly note the huge differences in affordability ratios between households living in so called “privileged” and households living in the “unprivileged” housing market sectors.*

Introduction

The aim of the paper is to draw attention to the specific nature of measuring housing affordability in transition countries, which requires the use of special model techniques. As we will attempt to demonstrate, primary data analysis can produce a distorted image of what the real scope of the problem of housing affordability or unaffordability is, and which groups of households are truly at risk of a high housing expenditures burden. Although such specific model techniques proposed here are unusual within the context of housing studies and are not used in advanced countries, we believe that owing to the specific nature of the economic transformation in the former communist countries and the poor quality and inadequate statistics in these countries, the use of the techniques described herein could produce useful supplementary information.

General problems connected with measuring housing affordability

There are three basic approaches to analysing housing affordability (Garnett 2000): the indicator approach, the reference approach, and the residual approach. The indicator approach uses indicators to measure the household expenditures-to-income ratio. Indicators usually represent the share of expenditure on housing out of household income. Hulchanski (1995) has pointed out that housing affordability becomes a problem for households when the share of their expenditures on securing adequate housing out of their total net income exceeds a certain limit. The indicators used may vary according to how housing costs and household income are defined. Housing costs may include just the expenditure on rent (in the case of households in the rental housing sector), or they may also encompass expenditures on energy or other services connected with housing, expenditures such as the repayment of loans secured to purchase or maintain housing (in the case of households in the owner-occupied sector), etc. Housing costs entered into the calculations may or may not be decreased by the amount of the housing allowance that a household collects. Household incomes can also be calculated as gross or net (i.e. after taxes and other mandatory insurance payments). The indicator most commonly used in evaluating the financial affordability of rental housing is the indicator of the share of net rent or housing expenditures reduced by the amount of the housing allowance out of total net household income – called rent-to-income ratio or housing expenditures-to-income ratio.

There is no fixed maximum value of ratio used in the reference approach. Instead, the reference approach either refers to the situation in another sector of housing (e.g. the level of rent is fixed according to the level of rent in the sector of private rental housing) or refers to the need to secure housing for certain groups of the population (e.g. rent should be set at a level that is affordable to families of employee households with a number of children and with low wages). More commonly used is the residual approach, which starts out by evaluating the level of so-called residual income, which is the amount of total net household income, reduced by expenditures on housing and by the amount of the subsistence minimum, necessary to cover the other essential living costs of the individual household members. Grigsby and Rosenberg, for example, have argued that affordability should be defined in relation to the need for an income that, after deducting housing expenditures, is adequate to cover the other basic needs of the household members (cited in Hui 2001).

However, none of the above approaches fully sheds the need for a certain normatively set maximum limit that when exceeded indicates that a household's current housing is unaffordable – for example, a set maximum housing expenditures-to-income ratio or

minimum residual income (hereafter *affordability limit*). Like any other normative judgement, it is difficult to scientifically justify a fixed affordability limit. The definition of affordability used by The National Housing Federation in the United Kingdom and applied to social rental housing states that “rent is affordable if the majority of working tenants do not fall into the poverty trap as a result of their dependence on the housing allowance or are not spending more than 25% of their net (household) income on rent” (Lux, Burdová 2000). According to information from Bramley (1991), the Housing Corporation (an institution that monitors the activities of housing associations, which also distribute state subsidies among housing associations in the UK) used an affordability limit of 33% of the rent-to-income ratio for the rental sector that is covered by housing associations (the rule of “rent at 33%”, Bramley 1991, 21). Except for some general housing-policy provisions, the British government does not explicitly stipulate any affordability limit. In the Netherlands the umbrella organisations of independent housing associations apply an affordability limit that equals 25% of the housing expenditures-to-income ratio in the (predominant) social sector of rental housing, while in the United States the U.S. Department of Housing and Urban Development (HUD) applies the principle of “fair market rents” in the sector of rental housing at a 30% rent-to-income ratio (Kaufman 1997; Muldou, Ewalt 1996). “The generally accepted affordability limit for rental housing in Switzerland, like in many other countries, is such that basic expenditures on housing should not exceed 25% of household income” (Thalmann 1999, 1941).

In some countries an affordability limit is not set explicitly, but it is implicit in the policy the state develops for its targeted housing allowance. Hills has noted that the “idea behind the German model of the housing allowance is that rent for adequate housing should not exceed 25% of total household expenditures; though it may be as much as 30% for single-member households” (Hills 1990, 160). There is always a normative and even subjective judgement involved in setting an affordability limit, and it would be difficult to determine such a limit by “objective” means, as any method selected for this purpose can easily be questioned from a scientific perspective. A certain development in this regard is the “quasi-normative” approach to housing affordability (Lux 2004, 2007).

The normative aspect of determining the affordability limit is just one of the problems connected with measuring and evaluating housing affordability. Every indicator used to measure how affordable housing is for various groups of households must also be able to address the fact that an analysis of housing expenditures alone does not sufficiently take into account the quality of housing, the size of the housing inhabited, the protection of tenant rights, and other costs connected with housing (e.g. the costs of commuting). The main disadvantage to the concepts of the housing expenditures-to-income ratio and residual income is that they do not adequately take into account the individual attributes of housing, especially quality and location. A high housing expenditures-to-income ratio among some households living in rental housing (which at first glance looks like a problem of housing affordability), for instance, need not necessarily result from low household income or a generally high level of housing costs, but may instead derive from the fact that these households are living in flats that are too luxurious and/or too large in relation to their household size (for example, a two-member household living in a four-bedroom flat), where the rents are higher. Were such households to move to more “appropriate” housing (which, again, can only be defined normatively), then the housing expenditures-to-income ratio might decrease to a level that is not defined as unaffordable. A simple “unadjusted” calculation of the housing expenditures-to-income ratio may therefore give a distorted picture of how many households are genuinely struggling with housing affordability. Consequently, many studies further refine the housing

expenditures-to-income ratio so that it better takes into account so-called housing overconsumption (or underconsumption) and housing quality.

An inspirational contribution to improving the measurement of the affordability of rental housing is found in a study by Thalmann (1999), who attempted to include the physical condition of the housing and the amount of housing consumption directly in the calculation of the housing expenditures-to-income ratio (and thus in the calculation of housing affordability). “Some households expend a large part of their incomes on housing because they wish to live at a high level of comfort ... on the other hand, the conventional index of affordability overlooks needy households that are spending less on housing than the affordability limit. Many of those households are living in housing that is insufficient in size or quality, not because they would prefer to spend their incomes on other goods, but simply because they cannot afford adequate housing” (Thalmann 1999, 1933). In order to determine what “adequate” housing is, it is again necessary to apply certain norms. Thalmann applies a rule where an adequately sized flat is one in which the number of habitable rooms equals the number of inhabitants. His findings reveal widespread housing overconsumption in Switzerland, i.e. the high standard of housing demanded by individual households. The data show that 85.4% of households in the sample overconsume housing (Thalmann 1999, 1938). His results indicate that while 18% of households have a housing expenditures-to-income ratio higher than 25% (that is, higher than what is normatively regarded as affordable), a full 13.1% of households (73% of the households whose housing expenditures-to-income ratio is above the affordability limit) would be able to afford housing that is adequate for them; in other words, if they lived in adequate housing, their housing expenditures-to-income ratio would be below the affordability limit. Thalmann’s findings and his methodological approach are extremely useful for an analysis of housing affordability in the Czech Republic.

The methodology of measuring the affordability of housing in the Czech Republic

Given that the indicator approach to the analysis of housing affordability is one of the most commonly used methods in international comparisons, it will also be used in our analysis of housing affordability in the Czech Republic. The housing expenditures-to-income ratio will be especially used to observe the affordability of rental housing. In conformity with the points outlined above regarding the use of the housing expenditures-to-income ratio, the method was modified (see below) and defined as follows:

*Housing expenditures-to-income ratio = monthly expenditures of a household on housing (rent, basic expenditures, aggregate expenditures) / monthly total net household income * 100 (%),*

where:

1. *basic* expenditures of the household on housing = the sum of expenditures on rent, central heating, hot water, electricity, gas, energy, water and sewage charges, and other municipal services;
2. *aggregate* expenditures of the household on housing = the sum of basic expenditures on housing and expenditures on structural and home maintenance, construction requirements, and the maintenance of household installations, loan repayments on the house or flat, and property taxes.

The housing affordability is analysed separately for households living in rental housing (municipal, state, and private rental flats) and households living in owner-occupied housing (privately owned flats or family homes); households living in cooperative housing, which has

the features of both rental and owner-occupied housing, are excluded from this analysis of housing affordability. For the purpose of monitoring the developments in the affordability of *rental* housing the calculation of the housing expenditures-to-income ratio logically encompasses only the basic expenditures of the household on housing; aggregate expenditures are included only in the analysis of affordability of the owner-occupier housing. The values of the indicators of the affordability are calculated using data from the Family Budget Surveys 1990–2003 (FBS 1990–2003) conducted annually by the Czech Statistical Office (CSO).¹

The FBS does not distinguish between expenditures on secondary housing (cottages or recreational homes) and expenditures on primary housing. In 1990 14.3% of all households in the FBS indicated they were also the owners of a recreational home (according to the results of the 1991 Census – the percentage was 12.5%), while in 2001 the percentage, according to the same source, had decreased to 12.4% of households (according to the results of the Census 2001 11.3% of households). Expenditures on secondary housing thus artificially increase the officially indicated housing expenditures-to-income of Czech households.

When calculating the housing expenditures-to-income ratio of households in EU countries, the housing expenditures are usually purged of the sum of allowances or benefits intended mainly to cover a household's costs connected with housing. In the FBS up until 2003 the housing allowance was not monitored as a separate item but together with other forms of social income encompassed under the category of other household social incomes. In this case the amount of the housing allowance is reflected in the sum of total net household incomes. But the fact of whether the allowance is deducted from total household expenditures or, conversely, is included to increase total net income actually has a fundamental effect on the housing expenditures-to-income ratio. The following example demonstrates how: consider a household that spends CZK 5,000 a month on housing, while its total net monthly income is CZK 15,000. The housing expenditures-to-income ratio is 33.3%. Assuming that the household is entitled to a housing allowance of CZK 1,000, if the allowance is included as part of household income, that ratio decreases to 31.3%, but if it is deducted from expenditures on housing the ratio decreases to 26.7%. This departure from an otherwise customary practice outside the Czech Republic (where the amount of the housing allowance is deducted from housing expenditures) can, especially in international comparisons, also artificially increase the officially indicated housing expenditure-to-income ratio of Czech households.

In addition to the problems mentioned here, which are specific to the work with statistical data in the Czech Republic, it is also necessary to take into account some of the shortcomings

¹ This is an annual in-depth survey, which aims at monitoring the flows of cash and other assets in the budgets of a sample of selected households. The FBS's respondent unit and the sample unit is the household, i.e. a group of persons who live and run a household together. These households are usually centred on families, but a household can consist of an individual. The FBS household sample is created using the quota sampling method, which levels extremes. The basic sample indicators are the household's social category, the number of dependent members (in pensioner households the number of members), and the net income per person (in single-member pensioner households, sex is also a sample indicator). Every household included in the survey maintains a survey log, in which it records its incomes and expenditures over the course of a year. In the FBS the distribution of households representing individual social categories is not designed to correspond to the distribution of such households in the population, so in our analysis weights are applied to the FBS data in order to overcome this deficiency. To do this we used coefficients derived from data from the representative Microcensus 1992, 1996 surveys conducted by the Czech Statistical Office (data files FBS 1990–1997) or weights recommended by the Czech Statistical Office (FBS 1999–2003).

of the indicator of the housing expenditures-to-income ratio itself – especially the problem of housing overconsumption identified by Thalmann (1999). Therefore, in the analysis of housing affordability in the Czech Republic the resulting data on the housing expenditures-to-income ratio will be purged of housing overconsumption in order to avoid the case like that in Switzerland, where households paying too much for their housing (or more exactly, whose housing expenditure-to-income ratio is above the affordability limit) “artificially” include also households that are overconsuming housing but could otherwise afford adequate housing for themselves.²

Becoming the owner of one’s own home or flat tends to involve very high, though often one-time, costs, which are connected with the process of property acquisition, and therefore, in addition to analysing the housing expenditures-to-income ratio based on aggregate housing expenditures, the affordability of owner-occupied housing is measured using an alternative indicator commonly used to measure housing affordability outside the Czech Republic – the price-to-income ratio (the ratio of the average transaction price of housing to average household income).

Finally, housing affordability is analysed separately for the rental and the owner-occupier sectors of housing, and then also separately for various segments of the housing market. Two basic segments of the housing market evolved during the transition period in this country connected with access to housing (the socio-economic perspective). The “legacy” of the effects of the housing policy of the previous regime and the continuation of rent controls and the privatisation of flats at advantageous price terms during the period of the economic transformation are the main causes of the division of Czech society in terms of access to housing and ultimately also the affordability of housing into two basic, clearly distinguishable (though hard-to-define) groups:

- the segment of households enjoying the advantages of “privileged” housing, which encompasses people paying regulated rent, people who acquired their own or cooperative housing before 1989, and people who had the opportunity to buy their own housing during the privatisation of municipal flats, wherein flats were and still are sold at prices far below market prices;³
- and the segment of “non-privileged” housing, occupied by people who, precisely because of the existence of rent controls on flats in the “privileged” segment, are paying unnecessarily high market rents (Lux, Sunega 2004), and who, owing to fixed-term tenancy contracts and the arbitrary methods of determining rent levels (initial and

² In addition to the adjustments mentioned here, the analysis also took into account the fact that the declared incomes of Czech households are not, given the significance of the grey economy in the Czech Republic, entirely reliable. However, increasing declared incomes by incomes from the grey economy (untaxed incomes) is a relatively complex and highly speculative task. An attempt to minimise the distortion in income statistics caused by the existence of the grey economy can be found in, for example, Lux et al. (2003a).

³ The prices of the flats the municipalities privatised by selling them to the current occupying tenants vary between municipalities and even in time (generally the difference between the price asked in the privatisation of municipal flats and the market prices has decreased over time). The method used to calculate the price of such a flat in the Czech Republic, unlike many other transition countries, is in the competence of the individual municipalities and is not centrally stipulated by law. However, it is highly probably that the price of a flat in this form of privatisation never in any Czech municipality reached the level of what the market price would have been (or more precisely, of what the market price for a flat of the same category but vacant and without a tenant entitled to regulated rent), not even in those municipalities where flats were sold to tenants at so-called “standard prices” determined on the basis of a government decree on real estate appraisals (e.g. in municipality of Prague 1). Even in these cases the real market price of the privatised flats would have been much higher than the price requested by the municipalities from current tenants.

subsequent), enjoy very little legislative protection against the actions of landlords (in contrast to the very rigid protections of “old” tenants), people sometimes referred to as “in forced cohabitation” (divorced couples or adult children who owing to their low income and lack of any hereditary “privileges” are forced to continue living together in one household), and people who have acquired their own or cooperative housing under market conditions and paid the price set by the market.

Unlike other social inequalities this segregation of the market (and the social inequality in access to housing it generates) did not develop out of market pressures but exclusively through the actions of the state and municipalities and through the central and local housing policy (Lux 2006): what is all the more remarkable is that none of the income or social criteria that usually accompany other redistribution policies were taken into account in this case. This substantial economic subsidy (a subsidy in the form of low rent in rental housing or in the form of a price lower than the market price of the housing purchased) has not been means-tested, and unjustified from the perspective of social justice (Sunega 2005). However, it is not the aim to make an evaluation of the housing-policy reforms here; but for the analysis at hand the important finding here is that two notably distinct segments of the market (which are not of course entirely homogeneous) have clearly taken shape. Therefore, the analysis of housing affordability was conducted separately for the “privileged” and for the “non-privileged” housing sectors, and the results are presented in separate sub-chapters.

Given that at the time this thesis was written no other guidelines existed, the following three normatively selected affordability limits for the housing expenditures-to-income ratio are used – 20%, 25% and 33%. The most relevant affordability limit in the Czech Republic is (corresponding also to international practices) considered to be a limit of 25%. In each sub-chapter devoted to the affordability of various types of housing tenure and housing in different market segments, the percentage of households whose housing expenditures-to-income ratio exceeds the affordability limit is also monitored.

The affordability of rental housing in the “privileged” housing sector 1991 - 2003

The affordability of rental housing is monitored for the years 1991, 1993, 1995, 1997, 1999, 2001 and 2003, based on data from the Family Budget Surveys. The housing expenditures-to-income ratios relate to the “privileged” rental-housing sector, which includes rental flats owned by the municipality, the state or private landlords in which tenants pay (the maximum) regulated rent. Enterprise rental flats are excluded from the analysis because they constitute only a very marginal percentage in the FBS. The following data adjustments were made owing to the division of the analysis into special market segments, the above-mentioned shortcomings of the FBS, and the general difficulties involved in using the housing expenditures-to-income ratio indicator:

- an adjustment of the declared level of rent, owing to the fact that the analysis in this part of the paper refers only to the “privileged” housing sector, and that a portion of households indicated in their survey logs the higher rent paid per m² of the total floor area than how much the maximum (regulated) monthly rent for this type of flat in a given year has been (this was either the result of a mistake, methodological error, or because they did not belong to the “privileged” housing sector);
- an adjustment that takes into account expenditures on secondary housing (cottages, recreational homes), which in the FBS are not distinguished from those on primary housing;

- an adjustment that takes into account the housing allowance (which unfortunately was not observed separately in the FBS until 2003) based on the assumption that all eligible households applied for the housing allowance and the amount of the allowance consequently reduces housing expenditures;
- an adjustment that takes into account housing overconsumption in conformity with the qualitative rule that the number of household members = the number of habitable rooms (adjustment based on Thalmann 1999).

The first adjustment of the basic housing expenditures-to-income ratio is an adjustment of the rent level so that it corresponds to the level of rent in the “privileged” housing sector. It is likely that there are other justifications for this adjustment, as the nature of the FBS (which is almost a panel survey) is such that it can be expected that the overwhelming majority of the households included in the survey really live in the “privileged” housing sector (i.e. in the rental sector paying regulated rent), but in the survey households record other expenditures connected with housing as a rent too. Given the constant and relatively large proportion of households (always around 30% of households) that in each of the years monitored (that is, even at the start of the economic transformation, when regulated rent applied to almost every household in the rental sector) cited a higher level of rent in the survey than what was the valid maximum regulated rent at the time, it is likely that a certain portion of households, constant over time, does not just record the net rent in their logs but indicates a level of rent that in reality includes expenditures on other services connected with occupying the home/flat (e.g. monthly services fees for the lighting in the building corridors, for the operation of the lifts, etc.).

Every case of a household where the amount of rent indicated in the FBS exceeded the maximum level of regulated rent in the relevant municipal size category was assigned the level of regulated rent for the relevant category of flat and municipal size in the given year. Given that the maximum rate adjustments of so-called regulated rent were usually made as of 1 July of the given year, the resulting rent level was set as the arithmetic average of the level of the regulated rent valid before 30 June and the level of the regulated rent valid after 1 July of the given year.

In order to account for expenditures on secondary housing the difference was determined between the level of basic housing expenditures of households that owned a recreation home and the level of basic housing expenditures of households that did not own a recreational home. Owners of recreational homes tend mostly to be households with a larger number of members, who also usually reside in larger flats and thus also have higher basic expenditures on primary housing; so the differences in the level of basic housing expenditures were calculated while taking into account the size of the primary housing. The differences were also adjusted by correction coefficient that accounted for the size of the municipality where the household’s primary housing is located. Finally, for all households that indicated they own a recreational home the level of basic housing expenditures has been reduced by the average observed difference in housing expenditures taking into account the size of their primary housing and simultaneously controlling for the size of the municipality of their primary housing.

Another adjustment to the basic housing expenditures-to-income ratio intended to reflect the effect of the housing allowance (or other benefits exclusively targeting housing), which up until 2003 was not monitored in the FBS separately. Given that the main objective of this part of the thesis is to more accurately measure housing affordability, we have made the logical

assumption: every household entitled to the housing allowance actually applied for it; even though in reality this is not the case, the fact that some households do not apply for the housing allowance should not artificially increase the problem of housing affordability. The amount of the housing allowance is calculated on the basis of reported household incomes. The housing allowance is then deducted from the basic housing expenditures entered in the calculation of the housing expenditures-to-income ratio, and not added to the total household income.

The problem of housing overconsumption proved to be very significant in the Czech housing sector. Housing overconsumption means that a household inhabits a flat that is more than adequate in size, and that understandably can have a fundamental effect on the household's housing expenditures-to-income ratio. The most commonly used standard for determining the degree of housing consumption is the number of habitable rooms in the housing in relation to the number of household members. As the first step, the amount of the average basic housing expenditures for households in the rental sector is calculated for each flat size (the number of rooms) and for individual municipality size categories (by population size). Then, following the rule that "the number of rooms = the number of household members", the degree of housing overconsumption is calculated for each household. Based on knowledge about the actual size of the flat occupied and the amount of housing overconsumption, it is possible to determine an adequate level of housing consumption for every household (meaning a flat in which the number of rooms corresponds to the number of household members) and a level of basic housing expenditures that correspond to flat size in a municipality of the same size category in which the household currently resides. In other words, if a household with two members resides in a three-room rental flat, then following this approach the amount of overconsumption is one room. Therefore, in the next step the household is assigned a level of basic housing expenditures (adjusted to account for the level of regulated rent, expenditures on secondary housing, and the amount of the housing allowance) for households living in two-room flats in the same sized municipality.

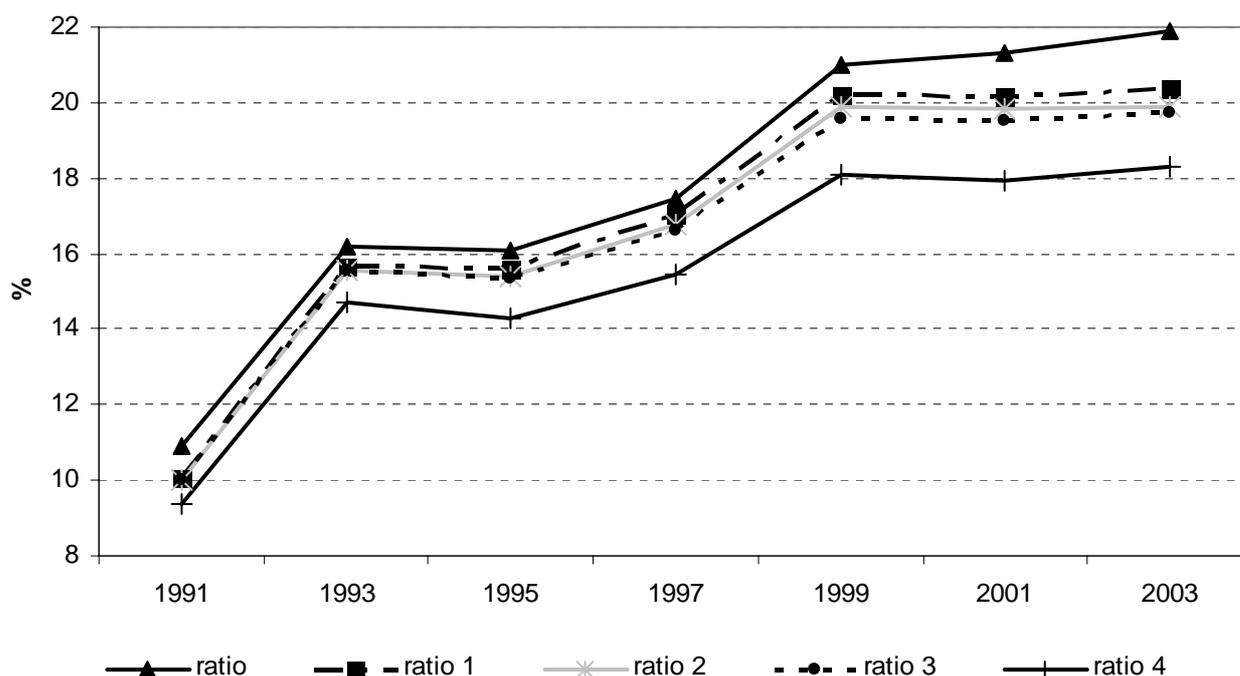
Figure 2 illustrates the development of the unadjusted average basic housing expenditures-to-income ratio (marked as "ratio") for the sum of all households in the "privileged" rental sector and the effect of the above-described adjustments on its value (marked as "ratio 4"). The curve marked "ratio 1" traces the development of basic housing expenditures-to-income ratio in individual years with the assigned regulated rents for households that indicated in their survey logs a higher amount of paid rent than the level of regulated rent at that time. The curve marked "ratio 2" shows the development of the housing expenditures-to-income ratio after assigning regulated rent and excluding the expenditures on secondary housing. The curve marked "ratio 3" corresponds to the housing expenditures-to-income ratio after assigning regulated rent, excluding the expenditures on secondary housing, and reducing housing expenditures by the amount of the housing allowance(s). The curve marked as "ratio 4" shows the basic housing expenditures-to-income ratio after assigning regulated rent, excluding the expenditures on secondary housing, reducing housing expenditures by housing allowance and adjusting housing consumption (excluding overconsumption). The Figure clearly illustrates that housing overconsumption has the biggest effect on the difference between the value of the original unadjusted ratio and the resulting ratio in individual years. The average value of the unadjusted housing expenditures-to-income ratio in 1991 is 10.92 %, in 1993 it increases to 16.20%, in 1995 it falls slightly to 16.10%, in 1997 it reaches 17.44%, in 1999 21%, in 2001 21.31%, and in 2003 it increases even further to 21.90%. The respective yearly values of the adjusted housing expenditures-to-income ratio ("ratio 4") are 9.37%, 14.72%, 14.29%, 15.47%, 18.10%, 17.91%, and 18.32%. In the final year in the analysis

(2003) the difference between the unadjusted and the adjusted housing expenditures-to-income ratio is roughly four percentage points, which in terms of the effects of the official results of analyses of financial affordability of housing on housing and social policy in the Czech Republic is a relatively significant difference.

Figure 2 also clearly indicates that the biggest increase in the average basic housing expenditures-to-income ratio occurs in the years 1991 to 1993 and 1997 to 1999. The differences in the values of the unadjusted and the adjusted basic housing expenditures-to-income ratio increase during the observed period. It is interesting, for example, that the effect of taking into account the housing allowance significantly increases between 1995 and 1999, decreases slightly in 2001, and decreases more notably in 2003. The reason for the increasing effect of the housing allowance between 1995 and 1999 on reducing the housing expenditures-to-income ratio is the growing proportion of households entitled to the housing allowance and the effect of supplementary housing benefits in 1997 and 1999. Between 2001 and 2003 the proportion of households entitled to the allowance decreased (from 9.4% to 6.9%), while the average amount of the allowance remained virtually unchanged.

The effect of housing overconsumption over the course of the years between 1995 and 2003 decreases – if in 1995 the overconsumption formed 58% of value of difference between unadjusted and adjusted ratios, in 2003 it was only 39%. However, this is not because there is a decrease in the proportion of households overconsuming housing; on the contrary, it increases (in 1995 it was 26%, in 1997 26%, in 1999 34%, in 2001 35%, and in 2003 33%). The average amount of overconsumption in the period observed increases (from 1.13 rooms in 1995 to 1.29 rooms in 2001, and 1.27 rooms in 2003). However, the structure of overconsumption changes: the number of households overconsuming housing in large flats increases, while the proportion of households overconsuming housing in smaller flats decreases. There is an economic rule that variable unit costs decrease at a larger volume; analogically, in larger flats the expenditures on one room are lower than the expenditures on one room in smaller flats. This is the main a reason for this finding.

Figure 2: Average basic housing expenditures-to-income ratios in 1991 – 2003

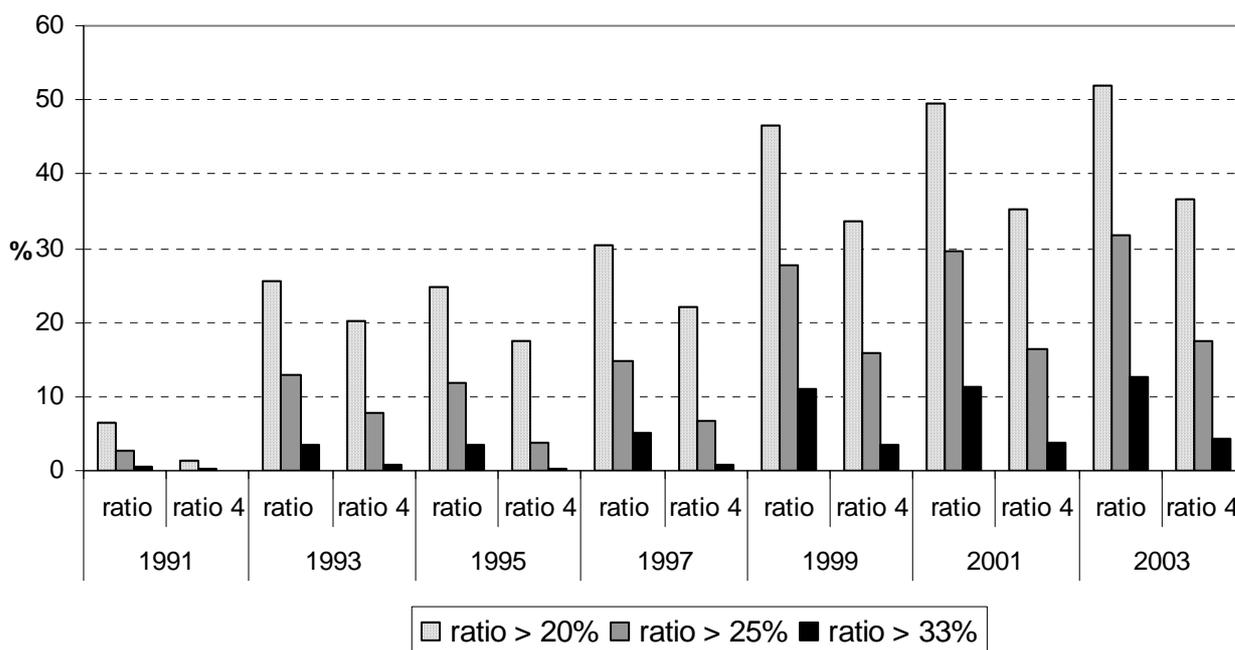


Source: FBS 1991 – 2003, author's calculations. Data sets from the FBS 1991 – 1997 are weighted according to the Microcensus 1992, 1996; data sets from the FBS 1999, 2001 and 2003 are weighted with coefficients recommended by the Czech Statistical Office.

A more detailed analysis of the housing expenditures-to-income ratio for individual groups of households would clearly reveal the worst position of senior-citizen households, which in all years have the highest housing expenditures-to-income ratio. However, while in 2003 the value of the average unadjusted basic housing expenditures-to-income ratio of senior citizens was 29%, when the factors that largely “artificially” increase the housing expenditures-to-income ratio are taken into account this figure decreases to roughly 24%, thus by five percentage points. The main cause of the big difference is the effect of housing overconsumption common in this group of households.

Figure 3 shows the percentages of households in which the basic housing expenditures-to-income ratio in individual years exceeds the normatively set affordability limit at 20%, 25%, and 33%. I decided that for an analysis in the Czech Republic the most relevant affordability limit would be a housing expenditures-to-income ratio of 25%. In 2003 32% of households (one-third of households living in the “privileged” rental housing sector) show an unadjusted housing expenditures-to-income rate above the level of affordability limit of a 25%; after adjusting the ratio the percentage decreases to 17%. Compared to the start of the transition period this is a vivid and sharp increase: while in 1991 the percentage of households with a housing expenditures-to-income ratio above the level of the affordability limit is just 2.6% (and after adjustments even less than 1%), in 2001, ten years later, the percentage is ten times higher.

Figure 3: Percentage of households with a basic housing expenditures-to-income ratio higher than 20%, 25% and 33%



Source: FBS 1991–2003, author’s calculations. The data set from the FBS 1991–1997 is weighted according to the Microcensus 1992, 1996; the data sets from the FBS 1999, 2001 and 2003 are weighted with coefficients recommended by the Czech Statistical Office.

Note: *ratio* – unadjusted basic housing expenditures-to-income ratio;

ratio 4 – adjusted basic housing expenditures-to-income ratio (taking into account all other effects).

A closer analysis of inequalities between individual age, social, income, and professional categories of households reveals that housing in the “privileged” rental housing sector in no way means that the given household cannot end up in financial difficulty: on the contrary, the degree of inequality between the highest-income and lowest-income households grows in time and many groups of households (individuals, some senior citizens, single mothers) are exposed to a housing expenditures-to-income ratio above the affordability limit even after the ratio is adjusted. One of the reasons for this might be that the “privileges” in this market segment are too equally distributed between “poor” and “rich” and overall equally high hidden economic subsidy derived from regulated rent paradoxically exacerbates social differences instead of reducing them (Lux et al. 2004). Rent regulation is not targeted according to household income, and the housing allowance does not reflect real but rather only tariff expenditures on housing (see more below).

The affordability of rental housing in the “unprivileged” housing sector (2002)

A real quantification of the affordability of “market” rental housing in the Czech housing environment cannot be made, as statistics on market rents are only very rarely collected by selected commercial institutions – this is only based on advertised rents and such surveys are limited to small number of large towns. In the FBS the proportion of households truly paying market rent is marginal; this is the result of the method of data collection and also the fact that still only a relatively small portion of Czech households live in the “unprivileged” segment of market rental housing.

However, to omit a special analysis of this sector of the market would be a distortion of the cited official data, and therefore we regard it as the “lesser evil” to attempt an estimate by using model approach. That method involves estimating market rent from the estimated market price of an occupied flat. There is not much known about the social and financial situation of households living in the unprivileged market rental sector, but the majority of experts are inclined toward the opinion that all social groups of households are represented in this sector. Therefore, for this purpose the data from the FBS 2002 are used with one basic restriction – only households living in rental housing and households headed by a person under the age of 40 are selected for the analysis (the decisive majority of households headed by someone over the age of 40 has a high probability of obtaining housing in the privileged housing sector).⁴ The analysis especially includes younger households, so that the final results do not create the impression of an analysis that has been deliberately distorted. It is a fact that young people, after a certain period in their career, often attain on average higher incomes than older people – if we were to include in the analysis households headed by a person over the age of 40, then the resulting housing expenditures-to-income ratio would be higher, and if we were to include in the analysis households of senior citizens, then it would be much higher. However, the results could be regarded as a distortion, because there is little probability that elderly people will be living in market rental housing.

For rental flats of selected households we estimated specific market rents as a product of average yield from residential housing investments in the Czech Republic and estimated market price of their flats. To estimate market rent it was therefore first necessary to estimate the market price of the rental flat occupied by selected household. House prices were estimated by the hedonic price (OLS) regression model (see, e.g., Lux et al. 2004) using data from the Ministry of Finance and the Czech Statistical Office on the transaction prices in 2002, obtained from transfer taxes. The hedonic price function is determined using the data set on housing prices, which includes the following variables: the date (documented by the financial bureau), type of real estate, buying price, estimated price, measurement units (m²), buying price and estimated price per measurement unit, a coefficient of the building facilities, depreciation of the property (in %), and size category of the municipality and district. A series of semilogarithmic hedonic regression models were tested with the aim of creating a model capable of maximising the percentage of the explained variability of the dependent variable (log house prices). The final model explains 63.97% of the variability of the dependent variable (Adjusted R²) and the following explanatory variables were used: measurement units (m²), measurement units squared, a dummy variable for the category of housing wear (in relation to the age of the building or the period in which it was built), regional dummies, and the size of the municipality. The following table 1 presents the model’s specifications.

⁴ Ultimately the results of our analysis do not reveal what the real housing expenditures-to-income ratio is for households living in “unprivileged” rental housing, but rather what the housing expenditures-to-income ratio would be for younger households (with a household head aged 40 or under) from the “privileged” sector of housing if they were to find themselves in the “unprivileged” segment of the market. This indirect indicator makes it possible to at least some degree to compare the affordability of rental housing in the “unprivileged” and “privileged” housing segments.

Table 1: Hedonic price function – flat prices in CR in 2002

Source	SS	df	MS	Number of obs = 4325
Model	1515,25812	23	65,8807879	F(23, 4301) = 334,78 Prob > F = 0
Residual	846,398513	4301	0,196791098	R-squared = 0,6416 Adj R-squared = 0,6397
Total	2361,65663	4324	0,54617406	Root MSE = 0,44361

lcn_kup	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
pocet_mj	0,0236966	0,0014514	16,33	0,000	0,0208511	0,0265421
sqr	-0,0000542	0,0000103	-5,29	0,000	-0,0000743	-0,0000341
op1	-0,6447746	0,038431	-16,78	0,000	-0,7201192	-0,56943
op2	-0,4880771	0,0373345	-13,07	0,000	-0,5612719	-0,4148823
op3	-0,3629427	0,0379136	-9,57	0,000	-0,4372729	-0,2886125
op4	-0,2744983	0,0381146	-7,20	0,000	-0,3492225	-0,1997741
op5	-0,2109235	0,0421033	-5,01	0,000	-0,2934677	-0,1283794
stred	-0,5800259	0,028568	-20,30	0,000	-0,636034	-0,5240178
jih	-0,8846489	0,0311851	-28,37	0,000	-0,9457878	-0,82351
plzen	-0,7710393	0,0409981	-18,81	0,000	-0,8514168	-0,6906618
karv	-0,7649516	0,032605	-23,46	0,000	-0,8288742	-0,7010289
ustec	-1,457525	0,0401228	-36,33	0,000	-1,536187	-1,378864
lib	-0,8448741	0,0534833	-15,80	0,000	-0,949729	-0,7400192
krah	-0,6617855	0,0315036	-21,01	0,000	-0,7235488	-0,6000223
par	-0,6600079	0,0374882	-17,61	0,000	-0,733504	-0,5865117
vyso	-0,720403	0,0357831	-20,13	0,000	-0,7905564	-0,6502497
jihm	-0,5635517	0,0285063	-19,77	0,000	-0,6194387	-0,5076647
olom	-0,7836234	0,0451744	-17,35	0,000	-0,8721885	-0,6950583
zlin	-0,6226611	0,0298811	-20,84	0,000	-0,6812436	-0,5640787
mosl	-1,155942	0,0312179	-37,03	0,000	-1,217145	-1,094739
vel_kat1	-0,9885236	0,0318039	-31,08	0,000	-1,050876	-0,9261715
vel_kat2	-0,6011283	0,0212055	-28,35	0,000	-0,642702	-0,5595546
vel_kat3	-0,4257507	0,018123	-23,49	0,000	-0,4612811	-0,3902204
_cons	13,17018	0,0591379	222,70	0,000	13,05424	13,28612

where:

pocet_mj - number of measurement units (m²);
sqr - housing units squared (m²)²;
op1 - the category of housing wear for flats in buildings built before 1946 (assigned a value of 1, otherwise 0);
op2 - category of housing wear for flats in buildings building between 1946 and 1960 (assigned a value of 1, otherwise 0);
op3 - category of housing wear for flats in buildings built between 1961 and 1970 (assigned a value of 1, otherwise 0);
op4 - category of housing wear for flats in buildings built between 1971 and 1980 (assigned a value of 1, otherwise 0);
op5 - category of housing wear for flats in buildings built between 1981 and 1990 (assigned a value of 1, otherwise 0);
the reference category for flats in buildings built after 1990.

stred - Central Bohemia Region (variable assigned a value of 1, if the flat is in the Central Bohemia Region, otherwise 0);
jih - Southern Bohemia Region;
plzen - Pilsen Region;

karv - Karlovy Vary Region;
 ustec - Ústí Region;
 lib - Liberec Region;
 krah - Hradec Králové Region;
 par - Pardubice Region;
 vyso - Vysočina Region;
 jihm - Southern Moravia Region;
 olom - Olomouc Region;
 zlin - Zlín Region;
 mosl - Moravia-Silesia Region;
 the reference category is Prague.

vel_kat1 - municipality size category up to 1999 inhabitants (if the flat is located in a municipality with up to 1999 inhabitants it is assigned a value of 1, otherwise 0);
 vel_kat2 - municipality size category between 2 000 and 9 999 inhabitants;
 vel_kat3 - municipality size category between 10 000 and 49 999 inhabitants;
 the reference category is the municipality size category over 50 000 inhabitants.

In order to calculate the annual market rent, the estimated price of the flat was subsequently multiplied by the annual yield of 6.5% corresponding to the net yield on investments into residential real estate in 2002. The yield value is the median value between the value determined in the appraisal ordinance issued by the Ministry of Finance (appendix no. 34, ordinance no. 279/1997 Coll. of the Ministry of Finance) for 2002 and the value indicated by the Institute for Regional Information for modelling market rent in smaller municipalities used in 2002 (IRI 2002). The resulting unadjusted average basic housing expenditures-to-income ratio for households living in the “unprivileged” rental housing sector in 2002 is 27.9%; after taking into account expenditures on secondary housing it is 27.7%; after taking into account expenditures on secondary housing and the reduction of expenditures by the housing allowance it is 27.3%; and after taking into account expenditures on secondary housing, the reduction of expenditures by the housing allowance, and housing overconsumption it is 25.6% (N = 326). If I use the affordability limit of 25% of the housing expenditures-to-income ratio and with knowledge of all the preliminary assumptions (this is an estimated rather than a real situation), 49.6% of households from “unprivileged” rental housing had unadjusted housing expenditures-to-income ratio higher than the affordability limit and 43.7% of same households have an adjusted housing expenditures-to-income ratio higher than the affordability limit in 2002.

The affordability of owner-occupied housing in the “privileged” housing sector (1991-2003)

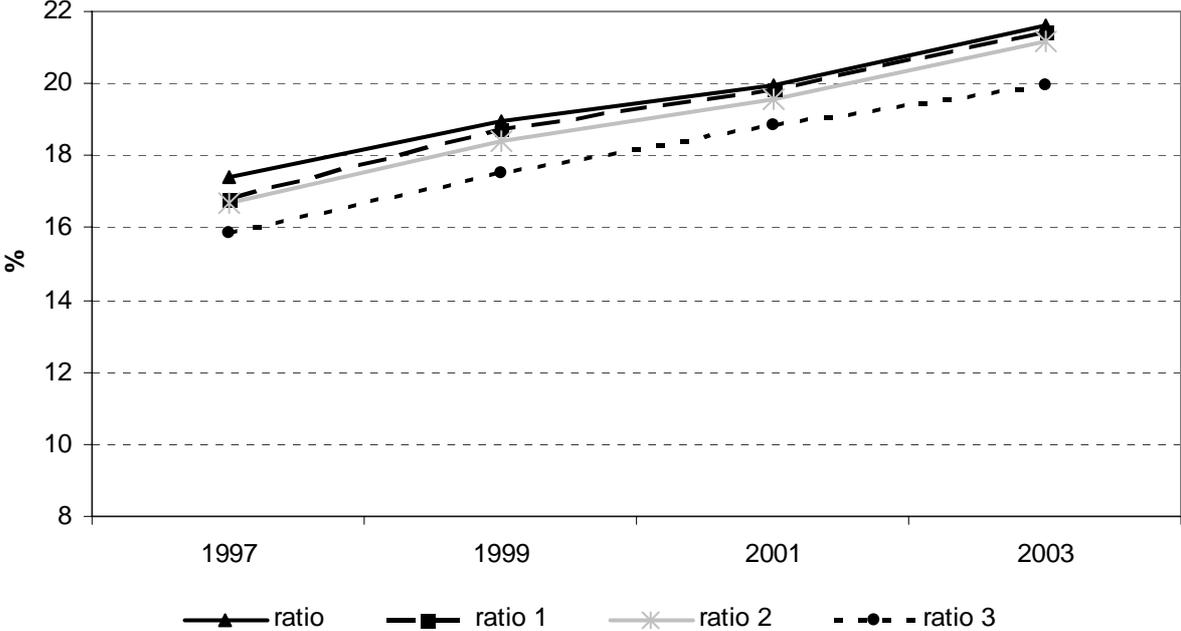
For the main purpose of this chapter of the thesis (a comparison of housing affordability in the “privileged” and “unprivileged” segments of the housing market) the affordability of owner-occupied housing was analysed only for households that live in an owner-occupied flat. The hedonic price function used in the previous sub-chapter to analyse the affordability of housing in the “unprivileged” segment of the market only allows us to model the price of housing for flats and not for family homes. Results relating to the entire owner-occupied housing sector (that is, results including households occupying family homes) will be presented at the end of this sub-chapter.

In order to evaluate housing affordability for households that acquired their flats before 1989 or did so in the process of the privatisation of flats after 1989, it is only possible to use the indicator approach (the housing expenditures-to-income ratio) on the FBS data, similarly to the way it was used in the analysis of the rental sector. Given the nature of the FBS survey it

can be assumed that only a marginal portion of households have acquired their housing in the open market at market prices; at least, there will not be enough of them for there to be any significant effect on the average results. But in order to calculate the housing expenditures-to-income ratio the aggregate housing expenditures will be used (instead of basic expenditures, as in the case of rental housing). Only those households living in owner-occupied flats were selected from the household sample.⁵ The aggregate housing expenditures were again purged of the effects of the housing allowance (since 1996 households from the owner-occupied housing have also been eligible for housing allowance), expenditures on secondary housing, and housing overconsumption.

Figure 4 shows the development between 1997 and 2003 of the average aggregate housing expenditures-to-income ratio following each of the individual adjustments; Figure 5 shows the percentage of households that exceed the affordability limit for the adjusted and unadjusted housing expenditures-to-income ratio. In 2003 the average unadjusted aggregate housing expenditures-to-income ratio for these households reached almost 22%; the average adjusted ratio in the same year is 20%. According to Figure 5, in 2003 30% of these households had an unadjusted housing expenditures-to-income ratio higher than 25%, respectively 20% of households had an adjusted housing expenditures-to-income ratio higher than 25%.

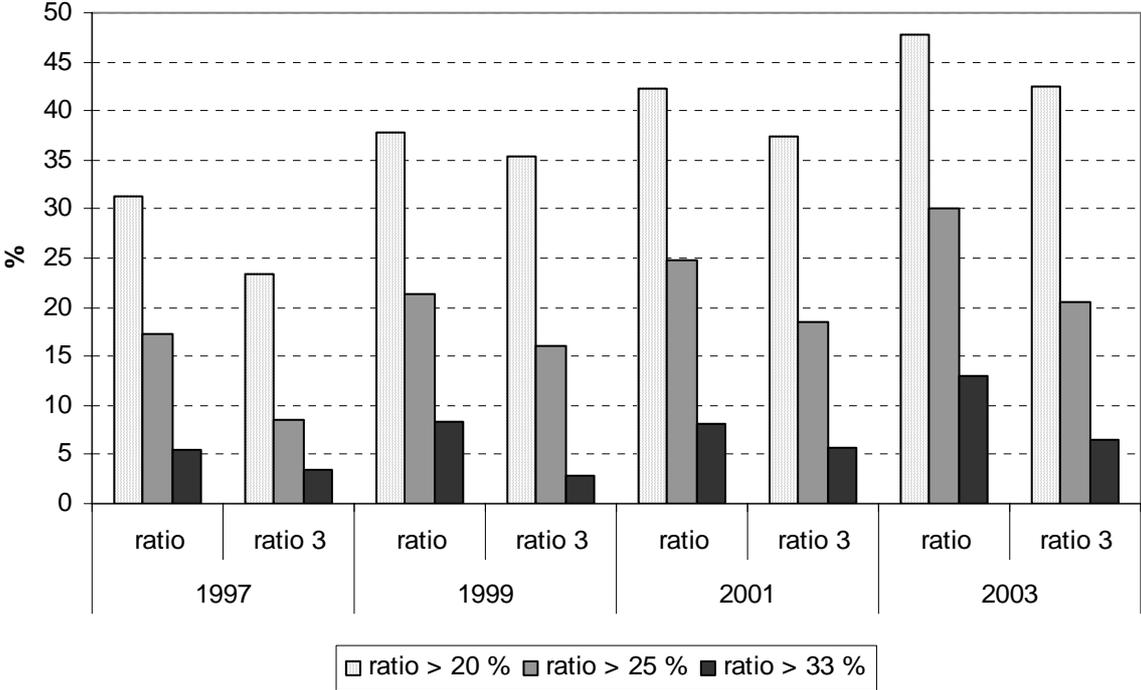
Figure 4: Average aggregate housing expenditures-to-income ratios in 1997 – 2003



Source: FBS 1997–2003, author’s calculations. The FBS 1997 data set is weighted according to the Microcensus 1996; the FBS data sets for 1999, 2001 and 2003 are weighted with coefficients recommended by the Czech Statistical Office.

⁵ In the FBS 1991 data set there was no category for owner-occupied flats and in the years 1993 and 1995 the proportion of households living in this tenure has been too low for a reliable analysis. Therefore, the housing expenditures-to-income ratio (adjusted and unadjusted) is monitored for this segment of owner-occupied housing only during the period of 1997-2003.

Figure 5: Percentage of households with aggregate housing expenditures-to-income ratios above 20%, 25% and 33%



Source: FBS 1997–2003, author’s calculations. The FBS 1997 data set is weighted according to the Microcensus 1996; the FBS data sets for 1999, 2001 and 2003 are weighted with coefficients recommended by the Czech Statistical Office.

Note: *ratio* – unadjusted aggregate housing expenditures-to-income ratio,
ratio 3 – adjusted aggregate housing expenditures-to-income ratio (taking into account the effects of secondary housing, the housing allowance, and housing overconsumption).

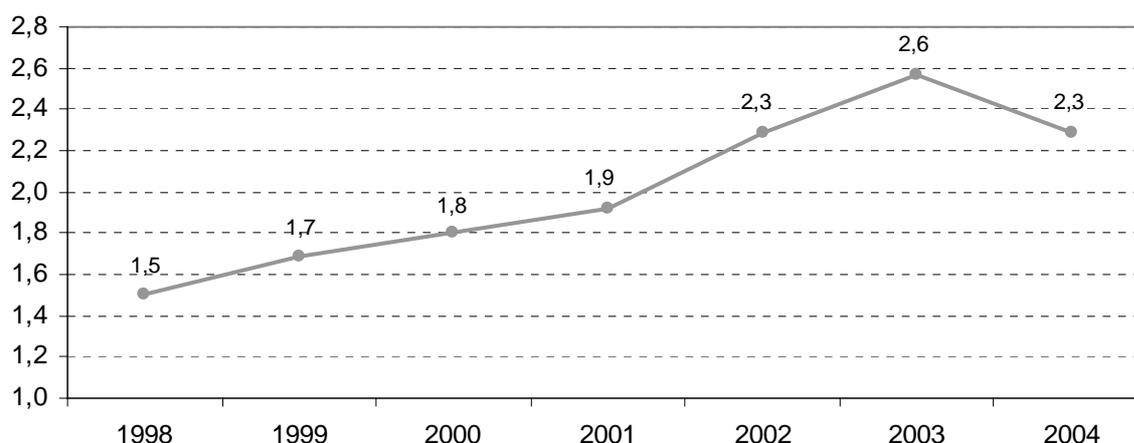
The housing expenditures-to-income ratio of all households living in owner-occupied housing (including those households that live in their own family homes) would be lower, as the housing expenditures-to-income ratio of households living in own family homes in the “privileged” housing segment is relatively low – in 2003 the unadjusted aggregate housing expenditures-to-income ratio would be 18.5% (in 1991 just 10.5%) and the adjusted ratio would be 17.2%. In 2003, according to the unadjusted housing expenditures-to-income ratio, 21% of households living in the “privileged” segment of owner-occupied housing would exceed the 25% affordability limit, and according to the adjusted ratio the figure would be 11.5% of households. Clearly the effect of the adjustments on the levels of the housing expenditures-to-income ratio in the owner-occupied housing sector is less than it is in the rental housing; but housing overconsumption remains significant, and its significance increases over time.

The affordability of owner-occupied housing in the “unprivileged” housing sector (2002)

In international literature the affordability of owner-occupied housing is monitored using special indicators comparing the house prices and household incomes, rather than using the indicator approach (i.e. the housing expenditures-to-income ratio). A standard indicator commonly used is the price-to-income ratio (P/I) – the ratio of the average (median) price of existing housing to the average (median) total annual net income of a household. This indicator shows how many annual net incomes the average (median-income) household would have to spend in order to be able to acquire an average (median-price) flat.

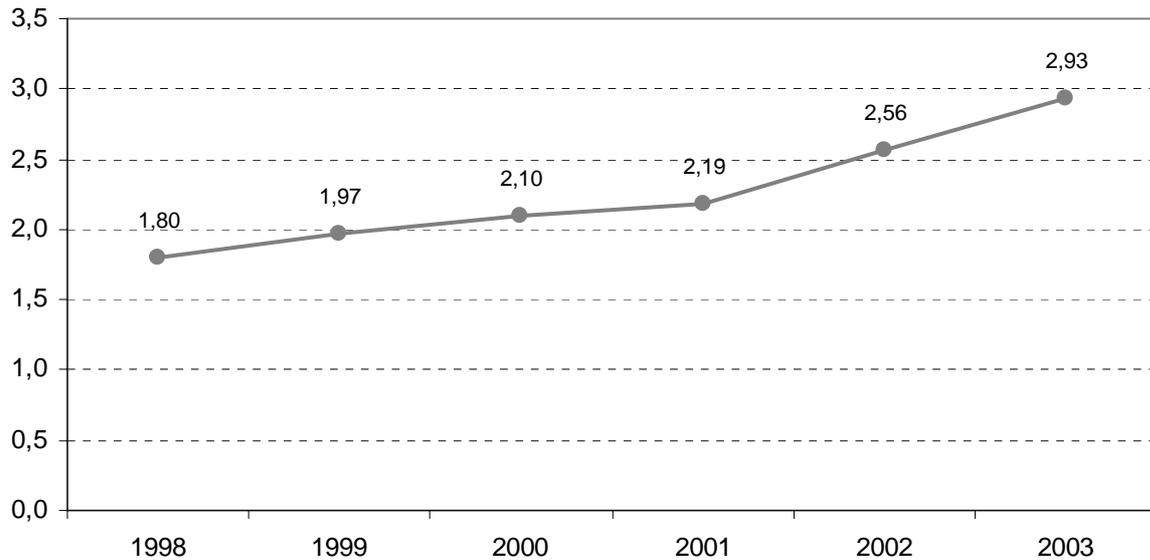
The household incomes reported in FBS surveys were therefore compared to the average transaction prices of flats sold, as recorded by the Czech Statistical Office (*Ceny sledovaných....2005*), since 1998, the year that the Czech Statistical Office began to systematically monitor house prices. Figure 6 shows a relatively sharp increase in the P/I indicator between 1998 and 2003 and its subsequent decline in 2004. Thus, with the exception of 2004, during the monitored period flat prices grew faster than household incomes. Given that the primary aim of this paper is to analyse the affordability of housing, the P/I indicator should be weighted by population size, as there is a difference if the indicator value is high in a region with a population of one million and the indicator value is low in another region with a population of only 300,000 of inhabitants. If both values had the same weight, then the results would be distorted, as the problem of housing affordability would in fact be higher than the observed values suggest (the higher P/I indicator would apply to a larger number of people). Therefore, the values of the indicator were weighted by the population size in individual Czech regions and then within these regions by municipality size. Figure 7 shows the development of the weighted P/I indicator for the period between 1998 and 2003. It is evident that the value of the indicator in 2003 is in reality higher after weighting than what has been indicated in Figure 6.

Figure 6: The development of the P/I indicator without weights in the Czech Republic (1998–2004)



Source: Czech Statistical Office, author's calculations

Figure 7: The development of the weighted P/I indicator in the Czech Republic (1998–2003)



Source: Source: Czech Statistical Office, author's calculations

Between 1998 and 2003 alone (i.e. within the space of six years) the average value of the P/I indicator increased from 1.8 to 2.9 (the weighted indicator), or in other words, it almost doubled! While the slight decline in house prices that ensued (after the Czech Republic's became a member of the EU, which resulted in a partial burst of the price bubble) helped increase the affordability of owner-occupied housing, it was by no means enough to offset the effect of the preceding increase. It may be assumed that at the start of the 1990s the value of the P/I indicator was significantly lower than in 1998, but this assumption cannot be verified. The affordability of "unprivileged" owner-occupied housing thus worsened substantially over the course of the transformation.

An alternative way in which to monitor the affordability of owner-occupied housing and better compare it with the affordability of housing in the "privileged" segment of the housing market (and with the affordability of housing in the rental sector) is to use the indicator approach (the housing expenditures-to-income ratio); in this case using aggregate housing expenditures, including also repayments of mortgage credits used to purchase housing. As in the case of the ratio used in the rental sector, here the housing expenditures-to-income ratio is defined as the average share of the sum of monthly annuity payments on standard mortgage credit obtained for the purchase of existing housing (though at real market prices in 2002) and all other monthly expenditures connected with housing (total housing expenditures) out of the total net monthly income of the household.

Since the necessary statistics do not exist, we used a simulated model situation, in which all current flat owners under the age of 40 (or in which the head of the household is under the age of 40) in the FBS 2002 are paying mortgage instalment on the flat they are living in at an amount that corresponds to the price of their flat in 2002. As in the case of "unprivileged" rental housing we do not know by whom or when the flat was bought, so the model situation does not correspond to reality. However, it does show how high the total housing expenditures-to-income ratio would be for young Czech flat owners if they lived in the "unprivileged" segment of the market, that is, in flats acquired at market prices during 2002

(and also were these owners unable to take advantage of income from the sale of some other piece of real estate or financial gifts from family members or an inheritance). This simulated model example mostly closely resembles the situation of first-time housing buyers who often have no other property to draw on and no interest-free assistance.

The market price of owner-occupied flats in the FBS 2002 was already estimated using the hedonic price model described above. In 2002 households were able to use building savings loan and mortgage credit to finance their housing needs, and this was a standard combination of financing in that year. The maximum amount of mortgage credit usually covered only 70% of the estimated price of the real estate (loan-to-value ratio). Therefore, to calculate the housing expenditures-to-income ratio I assumed that households did apply for mortgage credit to cover 70% of the purchasing price of an older, existing flat, with a maturity term of 20 years, and that they obtained the remaining amount (to cover the remaining 30% of the flat's purchase price) from a building savings scheme. The target sum from a building savings scheme was determined as the difference between the highest amount of mortgage credit provided and the purchase price of the flat. The household saved half of this target sum, and it obtained the other half in the form of credit from a building savings bank at an annual interest rate of 6%; the monthly instalments were set at 0.5% of the target sum. The annual interest rate⁶ on the mortgage credit was 5.73%.

The housing expenditures-to-income ratio for 2002 was calculated by taking into account the tax relief that existed by that time, namely, a reduction of the tax base by the amount of interest paid on both types of credit up to a maximum of CZK 300,000 annually. The amount of this tax saving was determined from the difference between disposable income calculated from the tax base minus the sum of interest and disposable income calculated from the tax base without any reductions. Given that in the FBS only the incomes of the household head and the head's spouse are consistently distinguished, this tax saving was calculated separately for the income of the household head and the head's spouse, and the higher of the two incomes was included in the analysis (in other words, it was logically assumed that the interest "deduction" would be used by the one whose income would result in a higher tax saving). The housing expenditures-to-income ratio was calculated on the basis of the real amount of the monthly instalments paid on both forms of credit in the first year. This means that the fact that the maturity term on credit from a building savings bank tends to be shorter than the maturity term on mortgage credit, and therefore that the housing expenditures-to-income ratio decreases once the credit from a building savings plan has been fully redeemed, was not taken into account in the analysis.

The average unadjusted aggregate housing expenditures-to-income ratio in 2002 for households belonging to this housing market segment was 31.1%; after taking into account secondary housing expenditures it was 31.1% (thus, unchanged), after taking into account secondary housing expenditures and the reduction of expenditures by the housing allowance it was 30.6%, and after taking into account secondary housing expenditures, the reduction of expenditures by the housing allowance, and housing overconsumption it was 29.7% (N = 147). In 2002 the unadjusted housing expenditures-to-income ratio of 60.8% of the selected households in this housing segment exceeded the affordability limit (25%) and the adjusted housing expenditures-to income ratio of 57.2% of households exceeded the affordability limit.

⁶ This interest rate corresponds to the weighted average interest rate on mortgage credit granted to physical persons in January 2003, according to data from Fincentrum Hypoindex. Data on the average interest rates on newly granted credit in 2002 are not available.

Comparison and conclusions

The standard way of measuring housing affordability is with the aid of the indicator approach, i.e. using the housing expenditures-to-income ratio. However, this indicator alone is not capable of taking into account housing quality (especially the degree of housing consumption), and therefore in the literature it is usually adjusted. Moreover, in our opinion, measuring the housing expenditures-to-income ratio in the Czech environment requires that addition of adjustments to account for deficiencies in data collection and adjustments to account for the fact that this country, like other post-socialist countries, is experiencing a period of transformation. For these reasons, we monitored the development of housing affordability separately for the owner-occupied and rental sectors (while leaving aside the cooperative housing sector aside for the time being), but also separately for housing in the “privileged” and the “unprivileged” segments of the housing market. The results can only be employed while bearing in mind the fact that in some cases only model situations have been used. However, they show that there are important justifications for above mentioned division.

As Table 2 shows, the housing expenditures-to-income ratio differs substantially between the individual market segments. Although households living in owner-occupied flats in the “privileged” segment of the market show on average the same housing expenditures-to-income ratio as households living in rental flats in the “privileged” market segment, the housing expenditures-to-income ratio of households headed by a person under the age of 40 that purchased a flat in 2002 would be roughly 10 percentage points higher than that of housing owners in the “privileged” market segment, and if instead of buying a flat these households were to opt for market rental housing their average housing expenditures-to-income ratio would be roughly 8 percentage points higher than that of households in the “privileged” segment of the rental market. According to the adjusted housing expenditures-to-income ratio, 44% of tenant households in the “unprivileged” segment of the market (as opposed to 17% of tenant households in the “privileged” segment of the market), and 57% of households in owner-occupied flats in the “unprivileged” segment of the market (as opposed to 20% in the “privileged” segment of the market) would have, in such a theoretical case, a housing expenditures-to-income ratio that exceeds the affordability limit established in this analysis – that is, higher than 25%. This last piece of data in particular points to the immense difference between individual market segments, which has thus far been overlooked in official statistical data on housing affordability.

Table 2: Average housing expenditures-to-income ratio and the percentage of households above the affordability limit in the individual segments of the market (2002, 2003)

Type and segment of housing	Average housing expenditures-to-income ratio			Percentage of households above the 25% affordability limit		
	unadjusted	adjusted	diff.	unadjusted	adjusted	diff.
Privileged rental (2003)	21.9	18.3	3.6	32	17	15
Unprivileged rental (2002)	27.9	25.6	2.3	50	44	6
Privileged owned (2003)	21.6	20.0	1.6	30	21	9
Unprivileged owned (2002)	31.1	29.7	1.4	61	57	4

Table 2 clearly shows how significant the effects of the adjustments to the housing expenditures-to-income ratio might be – among households in the “privileged” rental segment of the market the adjustments described above lead to a reduction of the average housing

expenditures-to-income ratio by 3.6 percentage points and a reduction of the percentage of households whose housing expenditures-to-income ratio exceeds the affordability limit by 15 percentage points. The adjustments to the ratio are less significant in the owner-occupied housing and are much less significant in both “unprivileged” segments of the housing market (for housing expenditure-to-income ratio 1.6 and 1.4 percentage points respectively).

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