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# Selected Views on Fixed Assets in the Czech Economy

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## Abstract

Gross fixed capital formation (investment) in the Czech economy has been remaining the significant component of gross domestic product (GDP) from expenditure side during last roughly decade – in spite of the modest decrease in its share in GDP in nominal terms (from less than one third in 1995 to just about one quarter in 2008). In real terms its share in the GDP shows more likely stagnation (from 29% in 1995 to 28% in 2008). But correlation between GDP and investment in the Czech Republic is weaker compared to EU27. The increases of the various types of fixed assets in the Czech economy in constant prices of the year 2000 show clearly more dynamic growth in machinery and equipment in comparison with the dwellings and other buildings and structures. NACE K Real estate, renting and business activities participated most in the total state quantity of the gross capital formation. Although the state of the gross fixed capital formation was growing on average by about 2%, y-o-y, the investment in dwellings in constant prices of the year 2000 only stagnated. The article describes the reasons for that. The tangible assets in the households sector are mentioned, as well. The last part analyses current problems of investment in the Czech economy during economic crisis of 2009. Nevertheless, the fall of gross fixed capital formation in that year should not influence negatively the convergence of the Czech economy towards EU27 level.

## Keywords

*gross fixed capital formation, GDP, EU27, industry, households, dwellings*

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## INTRODUCTION

Gross fixed capital formation (investment) in the Czech economy has been remaining the significant component of gross domestic product (GDP) from expenditure side during last roughly decade – in spite of the modest decrease in its share in GDP in nominal terms (from less than one third in 1995 to a quarter in 2008). In real terms its share in the GDP for the mentioned period shows more likely stagnation on the level between 28 to 30%<sup>1</sup>. The article describes development related to gross fixed capital formation and its states in the Czech

economy and its institutional sectors. In the context of briefly mentioned development of investment in the EU27 countries, the main attention is paid to the area of investment and states of gross fixed capital in the economy of the CR in general (primarily tangible assets) and further in main institutional sectors and industries. From the point of view of material breakdown of assets, bigger attention is paid to the development of investment in dwellings (acquisition of multi-dwelling buildings, family houses and flats) and changes in states of gross fixed capital with the character of a dwelling

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as they are defined in the national accounts statistics. With regard to the strength of the share of the households sector in the material item of fixed assets, we analyse possible reasons for some surprising findings and there is also a view on profits and losses from holding of non-financial assets in the households sector and the entire economy. The last part deals with the necessity to finance investment from external sources at lower formation of gross national saving and there is also an attempt to deduce from the development of gross fixed capital formation in the year of crisis (2009) what impacts it will have on the future growth of the Czech economy.

The article has not been written with the intention to capture the issue of fixed assets and gross fixed capital formation in the economy of the CR in a whole extent. It focuses on some areas related to the topic.

#### Methodological bases:

- The term “Investment” in this text always means the item from the ESA95 classification: Gross fixed capital formation. Unlike this flow quantity, state quantities are mentioned as States of gross fixed capital.
- Industries in the article are observed according to the Industrial Classification of Economic Activities (*i.e. the national version of NACE Rev. 1*) valid until the end of the year 2008. Conversion of time series of national accounts items to the new Classification of Economic Activities (CZ-NACE, *i.e. the national version of NACE Rev. 2*) is assumed in the year 2011.
- Households sector consists of the segments: Households-individuals and Households-entrepreneurs. Major part of volumes of non-financial assets (fixed assets and inventories) belongs to the segment of Households-entrepreneurs.
- Data are primarily mentioned in prices of the year 2000; the nominal view results from current prices. Wherever growth rates data are

given in prices of the preceding year it is mentioned in the text or graphs. Reference periods are years 1997 to 2007 if not stated otherwise (state quantities are available with some delay). In the last part observing the crisis year of 2009, data of the CZSO and Eurostat are updated as at 22 June 2010.

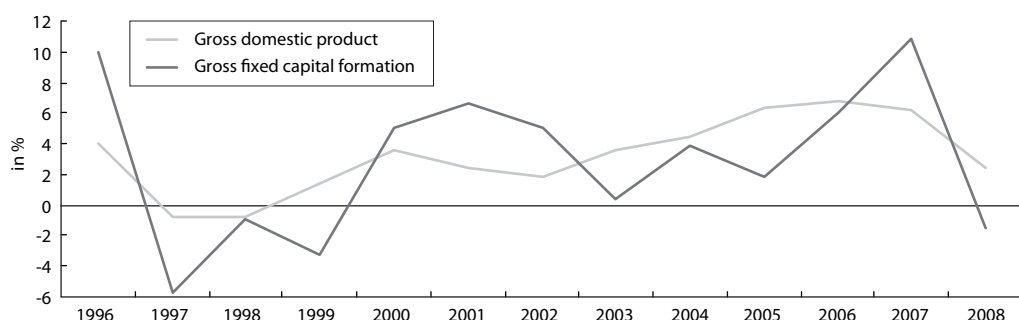
### 1 DEVELOPMENT OF GROSS FIXED CAPITAL FORMATION IN THE CR AND EU27

Gross fixed capital formation as a flow quantity reported in real terms (starting in the year 1995, from when CZSO time series are available, until the year 2008) a more volatile development than the gross domestic product (Graph 1). It is generally characteristic for growth rates of both features in most of the countries. The growth rate of investment as a growth multiplier reported for the period of 1996 to 2008 in real terms in the CR a lower correlation with the growth rate of the gross domestic product (correlation coefficient 0.66) than the correlation for the same period in the EU27 (0.85). A rather lower closeness of the dependence between GDP dynamics and dynamics of gross fixed capital formation was obvious in the mentioned period also in Slovakia (0.61), while it was higher in Germany (0.78) or Ireland (0.83).

In the Czech Republic during 1996–2008 a double-digit year-on-year increment of investment was reached only in 2007 (+10.8%). In 2008, gross fixed capital formation decreased by 1.5% compared to 2007, which was more than the actual stagnation for the EU27 on average (−0.3%). On the contrary, for the year 2009, in which the world financial crisis struck by transforming to an economic crisis with full power, Eurostat estimated for the EU27 economy a very marked drop of investment in the amount of −11.4%. The Czech Republic, according to this estimate, would have a lower fall of gross fixed capital formation than that average (−7.2%); however, in any case, it would be the deepest fall of year-on-year investment since 1995.

<sup>1</sup> However, this result is stated in the knowledge that structural shares in chained volumes do not have to be absolutely correct.

**Graph 1 Gross domestic product and gross fixed capital formation in the economy of the CR**  
(year-on-year changes in %, from data in prices of the year 2000)



Source: CZSO

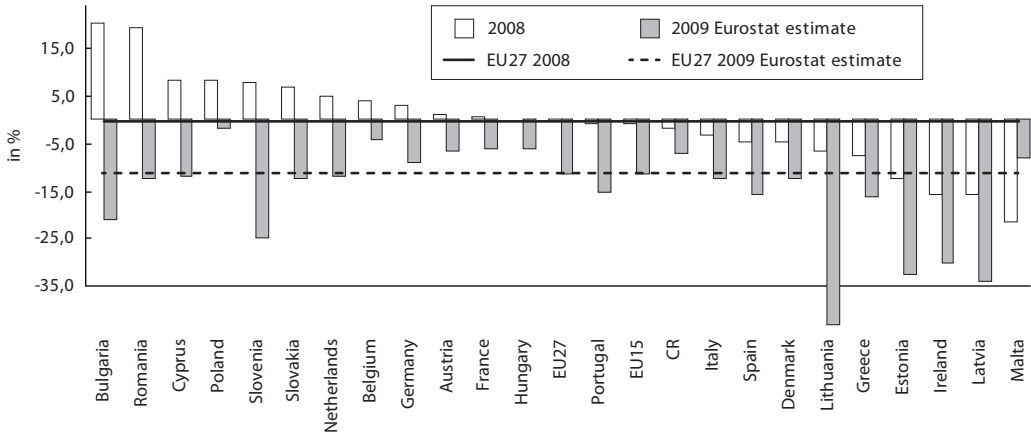
As it is depicted by Graph 2, marked decreases of investment for the year 2009 were expected primarily in the Baltic States, but also in Slovakia, Bulgaria, and, most of all, in Ireland. Since investment is somewhat under-dimensioned in the aforementioned countries, strong increase in gross fixed capital formation especially in the second half of the 1990's to the first years of the new millennium can be attributed namely to that circumstance.<sup>2</sup> For the year 2009 Eurostat's estimate for the fall of investment in each of the three Baltic States was more than 30%, y-o-y (Estonia -32.8%, Latvia -34%, and Lithuania even -43%). However, very surprising investment cycle is in Ireland (Graph 3), in which after a strong investment wave in the second half of the 1990's there was another one – much weaker already – in the first years of the new decade, and then in the time of European economic boom in 2004–2007 the pace of investment in Ireland already slowed down markedly and for the year 2009 Eurostat expected their fall also by more than 30% (-30.4%), which was a year-on-year decrease comparable to the drops in the Baltic States. Therefore, in some sense, we can speak about a “tiger's disease” affecting economies with extreme GDP growth, in which volatility of investment is proportional – and conditioning – to the economic cycle development.

In the estimate of a year-on-year change of gross fixed capital formation for the year 2009 Eurostat did not mention any increment for any single country of the EU27; the lowest drop was forecasted for Poland (-1.9%), which is the single country of the EU27, for which GDP growth was expected, and Belgium (-4%). The deepest fall of investment was predicted, as already mentioned, for Lithuania (-43%), at estimated fall of the economy by 18.1%.

As for the dynamics of gross fixed capital formation in the CR and EU27, synchronicity of curves for the years 1996–2008 is not clear (Graph 3). A very volatile development was reached by Slovakia; development of investment in Germany to great extent anticipates the curve of development of gross fixed capital formation in the entire EU27. In 2008, “old” countries of the EU (EU15) recorded a deeper investment fall than in the EU27 (-0.8% compared to -0.3%), for 2009 the estimate of the fall elaborated by Eurostat was roughly the same for both EU27 and EU15 (-11.5% in the EU15 compared to -11.4% in the EU27). What influences the deepness of the estimated fall is the double-digit loss of the pace of gross fixed capital formation in big countries, such as Italy (-12.2%) and Spain (-15.6%), but also in

<sup>2</sup> For example, in Latvia investment increased in 1998 by 61.4%, y-o-y, and grew with a double-digit growth rate until 2004 and 2005 (+23.8% and +23.6%, respectively).

**Graph 2 Gross fixed capital formation in the EU27 countries**  
(in real terms, year-on-year changes in %, 2008 reality, 2009 estimate of Eurostat)



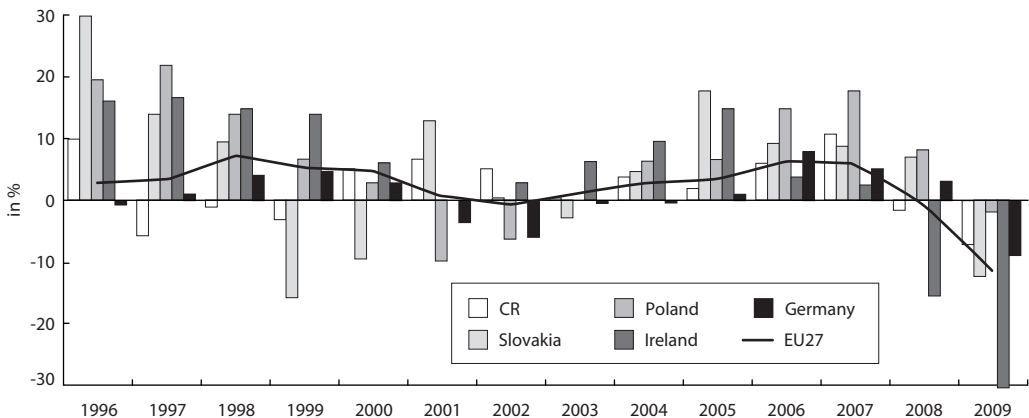
Source: CZSO

Germany (-8.9%). For Slovenia with the highest GDP per capita in the purchasing power parity from the ten countries that joined the European Union in May 2004, a very steep fall of investment was estimated (-24.8%), while in 2008 they still grew there by 7.7%, y-o-y. This fact would thus in 2009 significantly influence the development of Slovenian economy (-7.4%).

**2 STATES OF GROSS FIXED CAPITAL IN THE ECONOMY OF THE CR WITH REGARD TO INVESTMENT TO TANGIBLE ASSETS**

State of gross fixed capital in the economy of the CR in the end of the year 2007 compared to 1997 (not taking into account the influence of prices) increased for the mentioned period by about a fifth (+20.9%). In comparison to the year 1995 it was

**Graph 3 Dynamics of gross fixed capital formation in selected countries**  
(year-on-year changes in %, 1996-2008 reality, 2009 estimate of Eurostat)



Source: Eurostat

even by more than a quarter (+26.2%). In 2007 it thus reached CZK 20.610 trillion compared to CZK 17.045 trillion in 1997 or CZK 16.327 trillion in 1995 (in prices of the year 2000).

From those volumes, the vast majority are gross fixed assets<sup>3</sup>, the share of which moves in the long-term on the level of 99% of total volumes of the gross fixed capital in the economy of the CR. Their slight gradual decrease in state quantities in favour of intangible fixed assets (i.e. software and other intangible fixed assets), clear when expressed in percentage since 2001, however, takes place on the second place behind the decimal point: in 2001 tangible fixed assets made up 99.24% of the state of gross fixed capital in the economy of the CR and in 2007 it was 99.11%. This chapter analyses changes, which occurred in the period 1997–2007 in the structure of invested volumes of fixed capital, mainly at the item of dwellings and other buildings and structures, which are directly related to real estates development. Comparison with the year 1995 in some cases is to indicate that in the years 1995 and 1996 preceding to the monetary crisis there were rather massive investment increases with a strong differentiation by industry.

## 2.1 Differentiation of gross fixed capital by industry

CZ-NACE K “Real estate, renting and business activities” participated in 2007 in the total state of fixed capital in the CR by more than a quarter (27.9%); however, in 1995 it was still almost a third. For the period 1997–2007 states of gross fixed capital increased there with relatively low dynamics – the increment by 7.1% to CZK 5.743 trillion is the third lowest of all the industries of the CZ-NACE; however, there was an influence of high comparative basis. In absolute expression, during the years 1997 to 2007 the state of fixed capital increased by CZK 382 bn, which was more than a tenth of its total increment for the entire economy (CZK +3 565 bn) in the mentioned period.

The biggest increments of gross fixed capital were reached in the mentioned period in manufacturing

(CZK +1 111 bn) and also in “Transport, storage and communication” (CZK +626 bn), which is logical, because this industry includes also transport infrastructure investment that is highly financially demanding.

Thus, transport, storage and communication contributed with 16.4% to the total state of gross fixed capital in the Czech economy in 2007, manufacturing with 14.2%, and public administration and defence with 10%. Compared to the year 1995, real estate industry decreased its share (−4.8 p.p.), while the share of manufacturing increased by about the same amount (+4 p.p.). The share of transport and public administration and defence in the total state of gross fixed capital in the economy of the CR remained basically unchanged in the period of 1995 to 2007 (+0.3 p.p. and −1.6 p.p., respectively).

Besides that, representation of individual sectors in states of fixed capital in the economy of the CR was also changing.

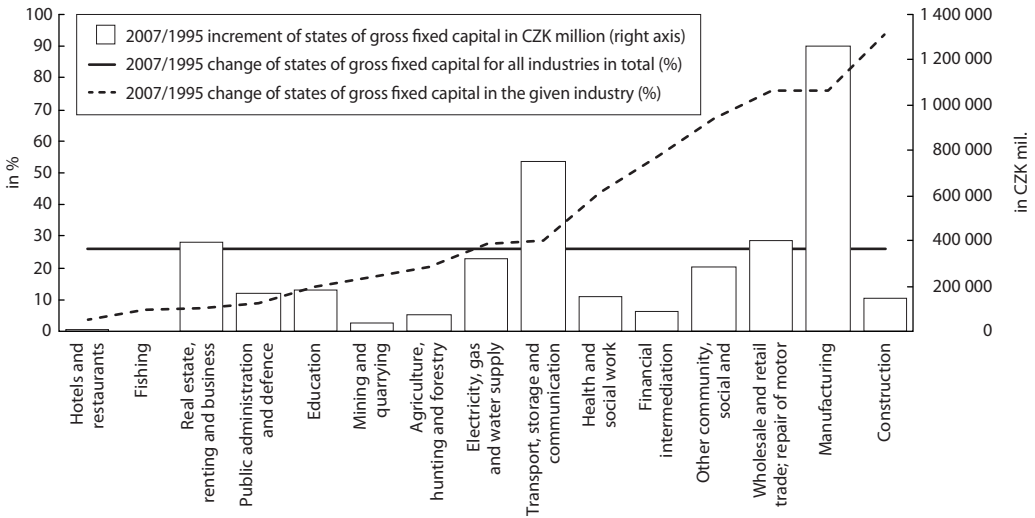
In addition to the already mentioned two industries, share of fixed assets in their total state in the economy decreased in industries of primary production, i.e. agriculture and forestry (−0.1 p.p.), although for the years 1995 to 2007 there was rather marked dynamics of fixed assets with the growth by a fifth). Also the share of mining and quarrying dropped (−0.1 p.p. as well, at the growth of states by more than 17%). Among other industries, rather significant losses in shares were recorded in education (−0.8 p.p.) and hotels and restaurants (−0.2 p.p.); in the latter case it was primarily due to slight dynamics in growth of fixed assets, because in hotels and restaurants the state of gross fixed capital increased in 2007 compared to 1995 only by 3.6%, which is the least of all industries of the Czech economy. Compared to the end of the year 1997, there is even an obvious fall by 0.5%.

## 2.2 Structure of tangible fixed assets

Industrial view in the part 2.1 does not capture a comparison how individual types of fixed assets

<sup>3</sup> I.e. in the methodology of national accounts dwellings, other buildings and structures, transport equipment, other machinery and equipment, and also cultivated assets.

**Graph 4 Change of states of gross fixed capital in industries for the years 1995 to 2007 (change of states in CZK mil. in prices of the year 2000, or changes of states in % of data in prices of the year 2000)**



Source: CZSO

– or rather more narrowly specified types of tangible and intangible assets (it means how much from the total states belongs to machinery or construction investment or cultivated assets) share in the total states of fixed capital in the economy of the CR. This view is provided by the total summary of tangible fixed assets and their structure including the share of intangible assets.

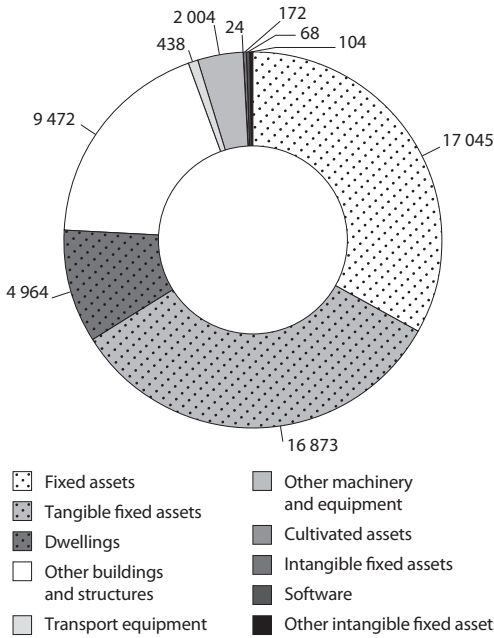
For the economy of the CR it is typical that there is almost a 100% excess of tangible fixed assets – software and other intangible fixed assets represented in the end of 2007 only 0.89% of the total volume of fixed capital (CZK 183.7 bn). This share was slightly growing during the time (0.76% in 2001), however, for example, in 1995 to 1997 it was over 1%.

Intangible fixed assets grew on average according to the states in the end of the years 1997–2007 or 1995–2007 only by 0.9% and 0.8%, year-on-year, respectively. Compared to other types of fixed capital, this growth rate is relatively low. Therefore, it can be concluded that the low share of intangible assets (as logics suggests) results from very high dynamics of investment to machinery – and lower in construction investment – from the period from the year 2000. It is related to a wave of investment

imports of companies belonging to foreign owners in the CR, who were equipping by them acquired production capacities.

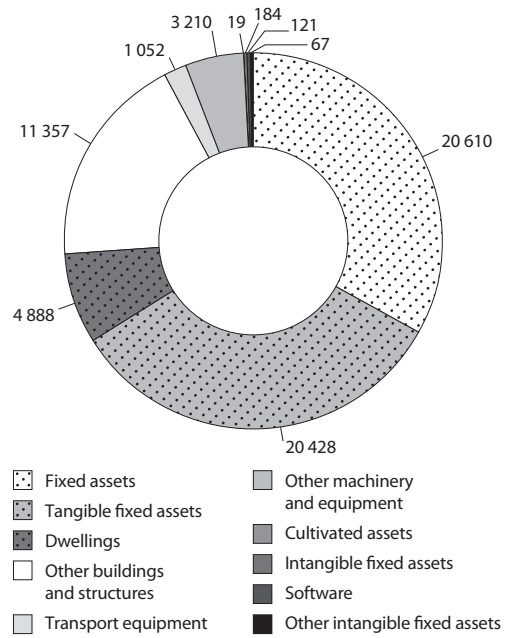
In the period of 1997–2007 (or 1995–2007), the fastest growing were the fixed assets observed in the system of national accounts as Transport equipment and Other machinery and equipment (besides them, tangible fixed assets comprise also Dwellings, Other buildings and structures, and Cultivated assets). Investment in transport equipment increased with the average annual growth rate of +8.3% (for the period of 1995 to 2007 even +9.2%). Investment to Other machinery and equipment were growing on average by 4.9% or 4.8% each year. Cultivated assets are the most volatile item of tangible fixed assets, which results from the character of commodities that are reported in this item. Their big increments in 1995 and 1996 resulted for the period 1995 to 2007 in an average annual increment by 2.5%; however, without that influence, i.e. for the period of 1997 to 2007, cultivated assets recorded a 2% y-o-y decrease on average. Graph 5 compares states of individual types of fixed capital in the CR in 1997 and 2007, which are the results of investment activity for that period.

**Graph 5a States of gross fixed capital by type of fixed capital in the year 1997**  
(in CZK bn, constant prices of the year 2000)



Source: CZSO

**Graph 5b States of gross fixed capital by type of fixed capital in the year 2007**  
(in CZK bn, constant prices of the year 2000)

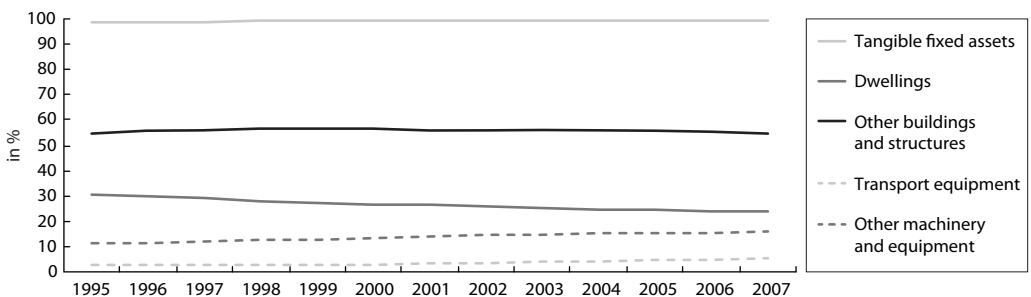


Source: CZSO

Despite strong growth of tangible fixed assets of the type of machinery and transport equipment, however, tangible fixed assets of the type of dwellings and other buildings and structures are still big as for their volume. Although there is primarily in the years 2005 to 2007 a strong construction-investment activity in the CR,

which is underlined by co-financing of the projects from the structural funds of the European Union, the share of tangible fixed assets of the type of construction investment in the total states of fixed capital in the case of dwellings is decreasing, among other buildings and structures it is stagnating (Graph 6).

**Graph 6 Share of individual types of tangible fixed capital in fixed assets in total**  
(in %, states in CZK bn, expressed in prices of the year 2000)



Source: CZSO

As for industries, strong dynamics of machinery investment and investment in transport equipment – i.e. much higher than average – is characteristic for manufacturing industry. There, thanks to the dynamics, the overall state of gross fixed capital increased in real terms in the year 2007 compared to 1997 by 62% (compared to 1995 even by 76%). This growth in manufacturing industry was during 1997–2007 three times faster than the growth for the entire economy (+21%).

Investment to machinery and equipment were, mainly in the first years after the year 2000, related to the inflow of investment from abroad. Their biggest recipient, manufacturing industry, participated in the year 2007 in the total volume of these external sources with 42.2%. The share of foreign investment directed to manufacturing industry moved during the period of 1997 to 2007 between 35 to 45%. A marked fluctuation in the year 2003 can be explained by the fact that by the influence of a steep decrease of the total volume of direct investment to the CR in the given year their inflow to the manufacturing industry was higher than the overall level for the CR (the volume of direct investment was influenced primarily by a buy-back of the stake in the joint stock company from the industry of telecommunications).

The manufacturing industry is a typical recipient of foreign investment primarily in “material” form, which can be with some simplification understood as fixed capital, while in some other industries it can have in major part the form of inputs to the registered capital of companies and thus strengthening of own sources of companies, which as a result does not need to have the form of tangible fixed assets.

### **2.2.1 Tangible fixed assets of the dwellings- and other buildings and structures type**

During the years 1997–2007, the share of fixed assets of dwellings type in the state of total fixed assets in the CR was reduced according to prices of the year 2000. In 1997, fixed assets related to dwellings participated in the overall state of fixed assets in the CR with 30.6%, while in 2007 it was already only 23.7%. In volumes (in prices of the year 2000) states of fixed assets of dwellings type decreased even to

CZK 4 888.3 bn in the year 2007, compared to CZK 4 963.9 bn from the year 1997. On the contrary, investment to other buildings and structures caused that their states increased for the mentioned period from CZK 9 471.7 bn to CZK 11 357 bn. How this development – paradoxical on the first sight – can be explained, when construction of houses and flats was experiencing mainly in the second half of the reference period an obvious boom?

Rather surprising development of states of gross fixed capital of dwellings type can be partly explainable by movements in the dwelling stock of the Czech Republic and its evaluation. As for the breakdown by institutional sector, this period is characteristic by a relatively big increment of states of fixed assets in the households sector (privatisation); however, on the contrary, in the remaining two institutional sectors, i.e. non-financial corporations and government sector they were decreasing. In total, tangible fixed assets of dwelling character report virtually stagnation for the period of 1997–2007 (expressed in prices of the year 2000). Life span of buildings of dwellings type is calculated for 80 years and after such structure exceeds the limit it is eliminated from the statistics, which is a methodological influence, related to gradual depreciation.

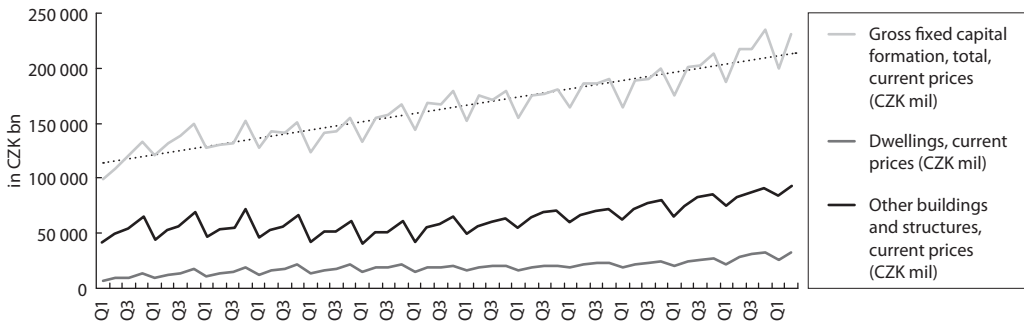
Another result follows from the data in current prices. States of fixed assets of dwellings type in nominal expression report on average for years 1995 to 2007 an average annual change of +5.6% with stronger dynamics in the period from the second quarter of 2005 to half-year of 2008 (+6.7%). Tangible fixed assets of dwellings type reached stronger nominal increments for the period from the beginning of the year 2000 until the end of the first half-year of 2002 and the highest average increments were recorded in the period with high inflation (nominally +17.5% in the year 1996).

Total fixed assets in the CR grew on average by 2%, y-o-y, for the years 1996 to 2007; states of fixed assets of dwellings type, on the contrary, decreased on average by 0.2%, year-on-year (calculation from constant prices of the year 2000).

Increments of individual types of fixed assets in conditions of the Czech economy expressed in prices of the year 2000 clearly point at more dynam-



**Graph 7 Development of tangible fixed assets (by quarter, 1995 to 2008, CZK bn in current prices)**



Source: CZSO

ic growth of investment in machinery and equipment compared to construction investment.<sup>4</sup> In total, states of total fixed assets in the CR increased for the years 1996 to 2007 on average by 2%, year-on-year; at transport equipment this growth was 8.3% and at other machinery and equipment on average by 4.9%.

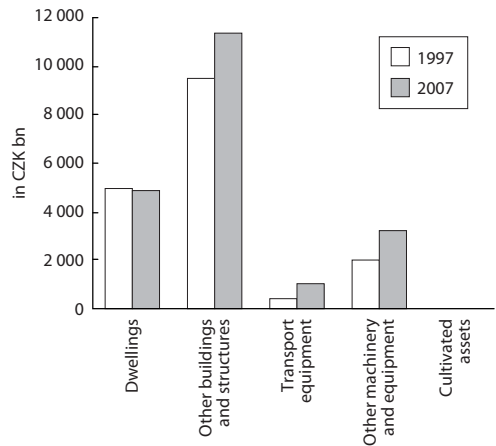
On the contrary, states of fixed assets in the case of other buildings and structures grew on average by 2%, i.e. roughly the same as states of fixed assets for the economy as a whole. As for fixed assets of dwellings type, however, there was reported a decrease by 0.2% in the year-on-year growth rate; for the period of 1998 to 2007 it was by 0.1%. Year-on-year decrease of states of investment to dwellings occurred (again in prices of the year 2000) in 1997 to 1999 and further in the years 2002 to 2004.

**2.3 Tangible fixed assets in the households sector**

Czech households accelerated their investment in new dwellings (according to calculations from current prices) starting from the year 2001. Nominally, development of investment of households to dwelling (housing)<sup>5</sup> in the CR during the years 1995 to 2006 was not closely related to the development of investment to dwellings for the economy as a whole

(according to net acquisition of tangible fixed assets) – households pushed the growth of investment to dwellings for all institutional sectors approximately since 2003, when the development curve in both cases is almost the same. However, a closer mutual dependence can be found in investment to new dwellings (Graph 9). It is clear from the graph, that

**Graph 8 States of fixed assets in the end of 1997 and 2007 (in CZK bn, in prices of the year 2000)**



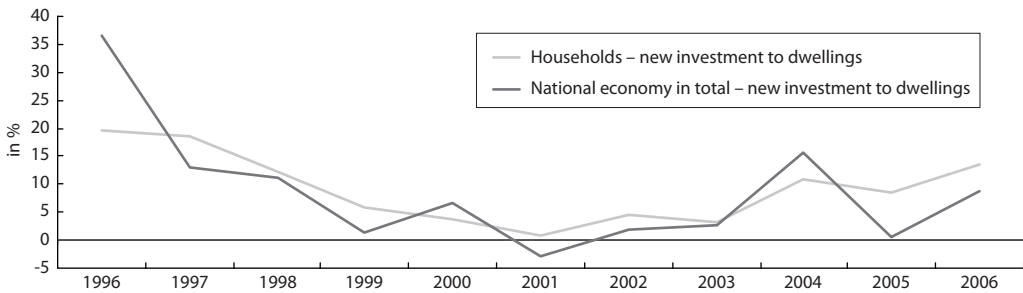
Source: CZSO

<sup>4</sup> Nevertheless, depreciations could relativize this deduction.

<sup>5</sup> In this part of the article, in relation to acquisition of tangible fixed assets – focused by type of fixed capital on the Dwellings item – we use a simplified term “investment to dwellings”.

**Graph 9 Investment to new dwellings**

(acquisition of new tangible fixed assets, year-on-year changes in % from the data in current prices)



Source: CZSO

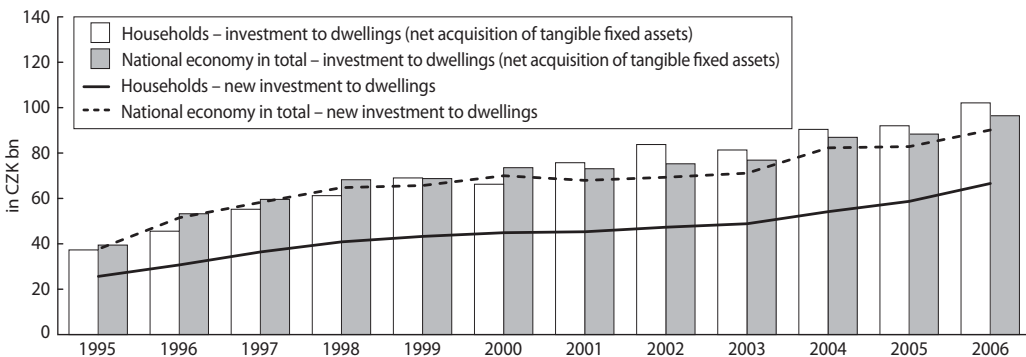
acquisition of new tangible fixed assets was slowing down the growth in the period from 1995 to 2001, year-on-year; however, since that time an increase can be recorded mainly in investment of households to dwellings, i.e. new fixed assets of the type of houses and flats. Nevertheless, the decreasing dynamics during individual years in the mentioned period can be partially explained by a price development of real estates (year-on-year changes are calculated from the data in current prices).

During the years 1995–2006 about two thirds of the value of acquisition of new flats and houses

for the CR as a whole<sup>6</sup> belonged to households – the lowest share in acquisition of new houses and flats belonged to households in 1996 (59%), the highest in the period of a boom on the market with flats in 2006 (73.9%). In total, for new and used flats and houses, in nominal expression, investment of this sector to dwellings increased in 2006 three times compared to 1995 according to data in current prices on net acquisition of tangible fixed assets of dwellings type. While in 1995 the value of houses and flats acquired by households was CZK 37.3 bn in current prices, in 2006

**Graph 10 Investment to dwellings and from that to new dwellings**

(net acquisition of tangible fixed assets, from that of new fixed assets, in CZK bn, current prices)



Source: CZSO

<sup>6</sup> The rest of the acquired value belonged, first of all, to developer companies and real estate agencies.

it was CZK 102.1 bn. Starting in 2001, the value of net acquisition of tangible fixed assets of dwellings type for the households sector began to even exceed the value for all sectors, i.e. for the entire Czech economy. The reason for that was the reported negative value of net acquisition of tangible fixed assets related to dwellings at non-financial corporations, in which the value of acquisition of the new and used was lower than the value of sales (privatisation).

### 3 REVENUES FROM NON-FINANCIAL ASSETS

It can be said in general that even without a transaction taking place the value can change also thanks to a change in evaluation of an asset or liability. Thus, a profit or loss of a business or sector from holding of them can be quantified. For example, holding of assets in the form of real estates itself (provided that the real estate does not serve to own usage, i.e. housing or doing business) can generate profits in the form of a rental, but in every case also profits (or losses) resulting from simple holding of a given real estate (non-financial asset). Generally, in the national accounts system it has to be distinguished whether the changes in the volume of assets and liabilities take place due to transactions or because of other changes. The account of other changes is further broken down to the account of other changes in the volume of assets and the account of revaluations. On the account of revaluations the change of the volume of a given asset caused by the change of its price is captured; thus, a nominal profit (or nominal loss), which results from holding of the given asset by a business can be quantified.

Changes of prices of assets and liabilities at all businesses influence their wealth. From the aforementioned it results that this change occurs also on condition that businesses or households

(or government or financial sector, but also non-residents) do not make any transactions with their assets or liabilities, i.e. they do not purchase or sell them. Thus, by a mere change of prices, “value” of these assets and liabilities changes, which has an impact on the level of wealth of the mentioned businesses.

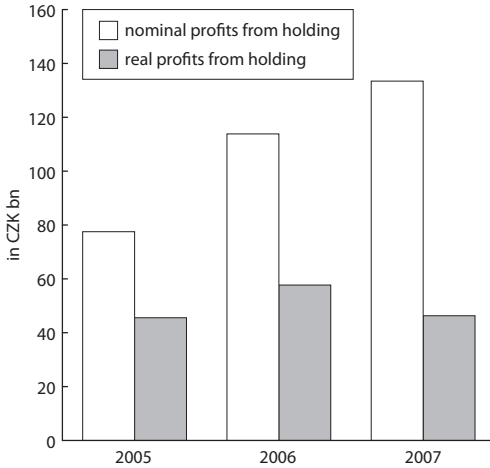
If a household or a business or any other entity (in the national accounts terminology: institutional sector or sub-sector) acquires some type of an asset (i.e. it acquires a real estate, deposits money in a bank, saves in a pension fund or on an account of a life assurance, purchases allotment certificates or invests in shares, buys someone’s receivable, and the like) we speak about transactions. If, for example, they borrow money, conclude a leasing contract, and others – they thus undertake an obligation, it is also a transaction. The value of assets, both financial and non-financial, the same as the value of liabilities, can be quantified. Nominal profit or loss from their holding is generated also by the price development.

As it is stated in the results processed by the Annual National Accounts Department of the CZSO<sup>7</sup> published in October 2008 and capturing the period of 2005–2007, real profits or losses from holding (assets and liabilities in general) can be calculated. When there is faster growth of prices of a given asset (as for the subject dealt with in our article it is mainly a non-financial asset) in comparison to the growth rate of the price level<sup>8</sup> – the holder of the asset reaches in such case a real profit (i.e. a profit from holding). On the contrary, if a price of a given asset is growing slower than the overall price level in the economy (or in the relevant price range), then the holder of the asset is losing or records a real loss (i.e. a loss from holding). The Graph 11 shows nominal and real profits from holding of non-financial assets for households sector in 2005–2007. It is clear

<sup>7</sup> See [http://czso.cz/csu/redakce.nsf/i/zisky\\_ztraty\\_z\\_drzby\\_dopady\\_pohybu\\_cen](http://czso.cz/csu/redakce.nsf/i/zisky_ztraty_z_drzby_dopady_pohybu_cen) published on 14 October 2008 by the Annual National Accounts Department of the CZSO (Czech only).

<sup>8</sup> Expressed by an implicit deflator of final national uses excluding changes in inventories, which contains price change of expenditure for final uses and gross fixed capital formation. This deflator is recommended by the ESA95 methodology (paragraph 6.45).

**Graph 11 Nominal and real profits of the households sector from holding of non-financial assets (in CZK bn)**



Source: CZSO

from the graph that while nominal profits from holding of non-financial assets in this sector for the mentioned three years were growing, the real profits from their holding in 2007 decreased, year-on-year. It can be expected that data for the year 2008 and, primarily, for 2009 will be brought with regard to the decrease of prices of houses and flats as fixed assets of dwellings type another fall of profits from holding or even losses from holding.

An important feature of profits from holding is that they strengthen the net worth, i.e. they increase wealth of businesses (analogically, losses from holding are reducing that wealth). Real profits from holding of non-financial assets consist of the difference between nominal and neutral profits from their holding. Results for the years 2005–2007 show that non-financial assets in the Czech economy strengthened the total net worth in the national economy in a dynamic trend – in 2005

thanks to the profits from non-financial assets the wealth was strengthened (as expressed by growth of the net worth in the economy) by CZK 315 bn; in 2006 it was by CZK 457.8 bn.

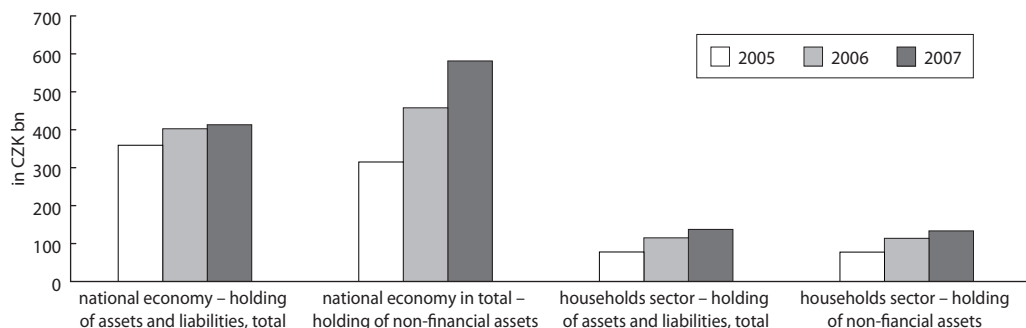
Individual institutional sectors differ not only as for the volume of nominal profits from holding, which is logical, but also in their dynamics. While in the year 2006, for example, the net worth of the households sector increased faster (thanks to nominal profits from holding of assets and liabilities) compared to 2005 than for the entire national economy, namely for non-financial assets and all their assets and liabilities (Graph 12), in 2007 it was not valid any more. For example, non-financial assets of corporations recorded in the year-on-year comparison by a third higher nominal profits from holding and the Czech economy as a whole an increase by 27%. Nevertheless, in the households sector the nominal profits from holding of non-financial assets increased only by 17% in 2007 compared to 2006.

It is different when looking at real profits (or losses) from holding of assets and liabilities, i.e. with depreciation by changes in the price level in the economy, namely via the already mentioned implicit deflator of final uses<sup>9</sup>. According to the calculations of the Annual National Accounts Department of the CZSO, real profits from holding of assets and liabilities in 2007 compared to 2006 in the economy as a whole significantly decreased – from CZK 148.3 bn to CZK 58.6 bn. There was a drop already in the preceding period (however, not that big) because in 2005 real profits from holding of assets and liabilities for the entire economy were CZK 214.8 bn.

At non-financial assets, the decrease of real profits from holding for the entire national economy in 2007 compared to 2006 was only small (from CZK 186.8 bn to CZK 172 bn) – in the year 2006 compared to 2005 these profits even increased (CZK 160.6 bn). With the exception of the financial sector and the government sector, other insti-

<sup>9</sup> However, it may not always reflect the actual amount of the profits or losses for individual institutional sectors and a better result could be reached by calculation for changes of price levels in price ranges pertaining to those institutional sectors – i.e., for example, at non-financial corporations via changes of production prices, at households by change of the consumer price index. Those calculations, however, are not available now.

Graph 12 Changes of net worth thanks to nominal profits and losses from holding (in CZK bn)



Source: CZSO

tutional sectors recorded a decrease of the profits from holding.

#### 4 SOME TOPICAL PROBLEMS OF THE INVESTMENT DEVELOPMENT IN THE CZECH REPUBLIC AND EU27

The crisis development of the Czech economy in 2009 entailed – similarly as in all European countries except for Switzerland – a slow-down of investment activity. Decisive for that was an anxiety of companies to focus on development at a decrease in the demand, in the time of existential problems, credit tightness and decrease of production capacities utilization. At the same time, in reaction to the crisis, during individual quarters of 2009, gross saving was falling, year-on-year, in absolute majority of European economies.

##### 4.1 Gross fixed capital formation and gross national saving

In 2009, gross fixed capital formation in the Czech economy markedly decreased for the first time since 1995; however, already in 2008 there was a year-on-year decrease. It has been up to now the third year-on-year decrease of investment since 1995 (in 1999 the gross fixed capital formation also dropped, however, with an absolutely low volume of CZK 148 million, which is characteristic rather for

a y-o-y stagnation). Compared to the year 2008 with the volume of investment of CZK 883.2 bn in current prices,<sup>10</sup> gross fixed capital formation in 2009 dropped to CZK 822.1 bn, i.e. by 6.9%. The y-o-y drop of investment in 2008 was 0.8%.

An international comparison shows that the pace of investment according to year-on-year growth dynamics is the highest among countries on the lower level of economic development. According to data of Eurostat, the average growth rate of gross fixed capital formation for 2001–2009 in the Czech Republic (+7.1%) was roughly three times higher than in the EU27 (+2.2%) or EU15 (+1.8%). Even higher dynamics was recorded, for example, in the Baltic States (Estonia +9.6%, Latvia +10.6%, Lithuania +9.8%), Romania (+18.9%), Bulgaria (+17.9%) or Slovakia (+11.8%) – data are provided in nominal expression with regard to the need of other comparisons in this chapter, real growth rates are analysed above in Chapter 1. The need of investment in those countries corresponds to the fact that they are generally under-dimensioned for a long-term. On the contrary, negative average annual dynamics of investment in current prices was reported for the years 2001–2009 by United Kingdom (–1.1%), Portugal (–0.5%) but also, for example, Germany, in which, however, the average result should be interpreted rather as a stagnation

<sup>10</sup> Values at current prices are used in this sub-chapter to compare investment and gross national saving, which is stated only in nominal expression (difficult possibility to deflate).

(−0.1%). The average decrease was in general significantly influenced by y-o-y falls in the year 2009 (in the case of United Kingdom even by 23.1%). Even in a much higher extent, the average drop of investment was recorded for the years 2001–2009 by big world economies (the United States −3%, Japan −5.5%), in which, however, during much of that period, year-on-year decreases occurred. Especially in Japan, with its deflation conditions, there was y-o-y growth of investment only in two years of the mentioned period.

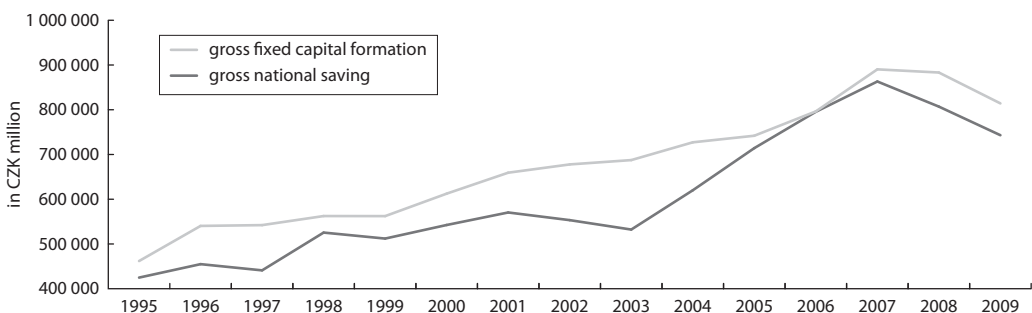
The start of a distinctive slowdown of the growth rate of the Czech economy resulting in a technical recession (the economy of the CR was decreasing quarter-on-quarter from the fourth quarter of 2008 to the second quarter of 2009) was preceded by a decrease of investment. Both in real and nominal expression, there were year-on-year decreases of gross fixed capital formation (also by the influence of the comparison basis after big investment actions) starting already in the second quarter of 2008 (−1.2% or more precisely −0.9%) with continuing marked falls until the third quarter of 2009 (−11.7% or more precisely −10.8%), which then started to mitigate. The GDP dropped both in real and nominal terms from the fourth quarter of 2008 or rather the first quarter of 2009. However, also the comparison basis had an influence on the “sooner” y-o-y fall of investment according to the annual data in comparison to the GDP dynamics, because the year 2007 was, on the contrary, very “strong” as for investment – the gross fixed capital formation increased in it by

10.8% in real terms, by 11.8% in nominal terms, i.e. with the highest rate for the reference period of 2001–2009.

The ability of an economy to finance gross fixed capital formation from gross national saving points at the extent of dependency on external financing of investment, which is then reflected in the balance of national current transactions with the rest of the world. The years 2008 and 2009, as it is clear from Graph 13, brought a decrease of gross fixed capital formation as well as fall of gross national saving in the economy of the Czech Republic.

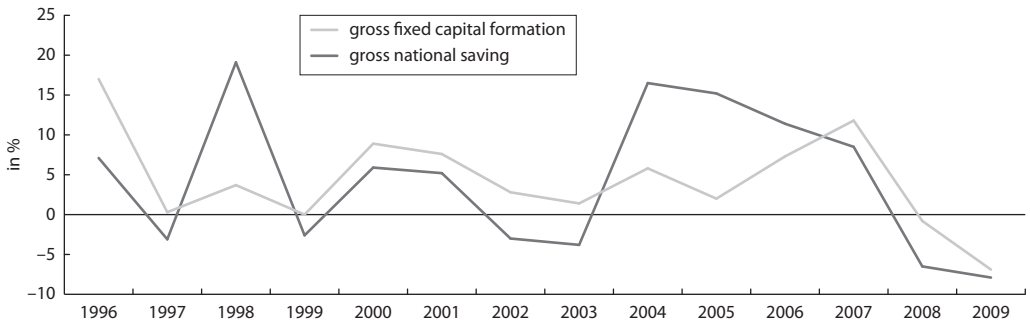
The necessity to finance investment from external sources in those years – with the beginning and further continuation of the economic crisis – thus again soared. A decrease of gross national saving was logical in relation to the year-on-year drop of gross disposable income in the year 2009; at the same time, final consumption expenditure continued to grow, although with very reduced dynamics compared to the rates of the previous years. In 2008, still, final consumption expenditure increased with the highest growth rate of the new decade (+7.6% in nominal terms), while the gross disposable income in the Czech economy lost already much of its dynamics in that year and, compared to the increments from the time of boom, it grew only with a half pace (+3.9%). The decrease of gross national saving in the Czech economy in 2008 and 2009 can be explained namely by different dynamics of both quantities. Thus, in combination with the dynamics of investment (Graph 14), the need to finance investment again in a larger extent

**Graph 13 Gross fixed capital formation and gross national saving (in CZK million)**



Source: CZSO

**Graph 14 Dynamics of gross fixed capital formation and gross national saving**  
(year-on-year changes in %, from data in current prices)



Source: CZSO

from external sources arose (Graph 15), namely already in the year 2008, when the crisis has not been fully developed, yet.

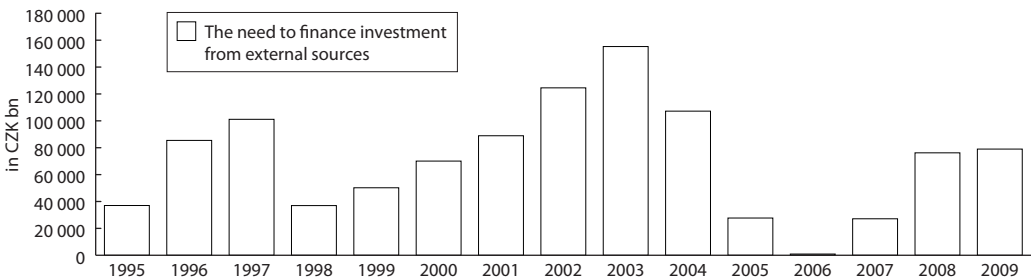
Although in the years 2008 and 2009 both the gross fixed capital formation and gross national saving were decreasing in their dynamics (the latter even faster than the investment) – the need to finance investment from external sources in the crisis year 2009 remained almost the same as in 2008.

Therefore, it seems that the Czech economy is able to reach balance in the sphere of investment and gross national saving exclusively in the periods of extreme growth – the top of the boom in the year

2006 and virtually balanced financing of investment thanks to gross national saving in the mentioned year, as well as decreasing of the need of external sources in 2004 and 2005 clear from Graph 15 are confirming that fact.

Thus, it depends on the willingness and possibilities of external investors to finance investment in the Czech Republic, which depends on the intensity of flows based on the cyclical phase of the world or rather main European economies. In general, investment depends on income, which will be generated by the state of overall economic activity<sup>11</sup> – besides them also by the expense-revenue ratio (i.e. interest rates and tax policy)

**Graph 15 The need to finance investment from external sources (in CZK bn)**



Source: CZSO

<sup>11</sup> Samuelson, Nordhaus: "Investment bring income to a company only provided that it can sell more." *Ekonomie*. 1992, page 136.

and future expectations. It can be expected that the Czech economy small in its size, into which direct foreign investment was coming especially during the first five years after the year 2000 (besides others also in sales of the state's stakes in important companies) and the main recipient was manufacturing industry, can be saturated in the future by external sources of financing rather in the sphere of services.

#### 4.2 Development of investment in the time of crisis and influence on the potential GDP growth

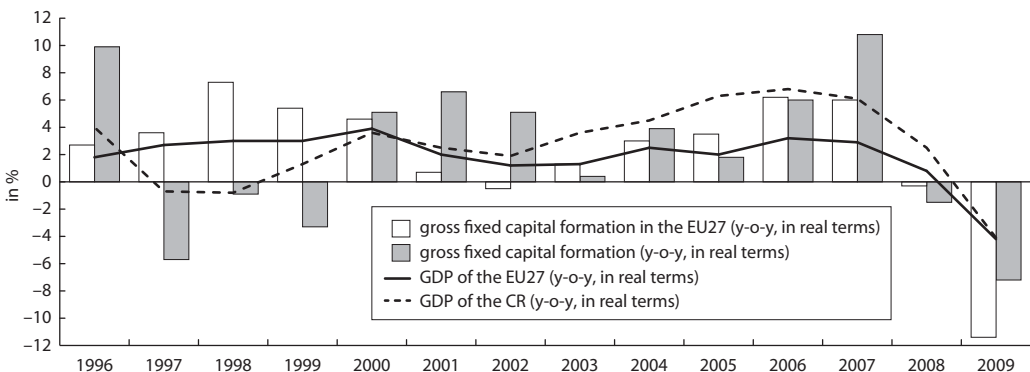
Can drops of investment in the years 2008 and 2009 have markedly negative influence on the potential GDP growth of the Czech Republic in the following periods? Will it slow down the real convergence of the Czech economy towards the European Economic and Monetary Union? Mutual relationship in real terms between the dynamics of economic growth and the rate of gross fixed capital formation in the Czech Republic compared to the EU27 (or rather countries of the Euro-zone) during the period, which can be labelled as an economic crisis – including quarters that were preceding to it – shows differences between both entities being compared for both the start of the crisis and depths of falls caused by that crisis.

From year-on-year changes according to data seasonally and working days adjusted (as well as

at data not seasonally adjusted) it results that in the CR compared to the EU27 drop of investment was clear already in the second quarter of 2008, i.e. by a quarter sooner than in the EU27 and according to the data available when this article was being elaborated, it lasted the same as in the EU27 until the fourth quarter of 2009. However, a huge difference was in the depth of the fall – during each quarter of that period investment in the EU fell deeper than their fall in the CR. While in the CR the gross fixed capital formation dropped by more than 10% only in the third quarter of 2009, in the EU27 as a whole falls deep like that were recorded in each quarter of 2009; they were pushed – besides small countries that were hit the most by the crisis – also by the development of some big economies (Italy, Germany).

The up-to-now strongest boom of the Czech economy in 2005–2007, however, was not clearly determined in GDP growth rates by increments of investment, but it was “spread” more largely also to other components of the expenditure side of GDP, primarily to external trade (net export). For example, expenditure for final uses of households including non-profit institutions serving households (NPISHs) has in the GDP volume a higher weight in the EU27 countries as a whole than in the CR (in the period of 2000–2009 the difference was from 6.2 p.p. in 2000 and 2004 up to 8.5 p.p. in the year 2007; the boom of the Czech economy was

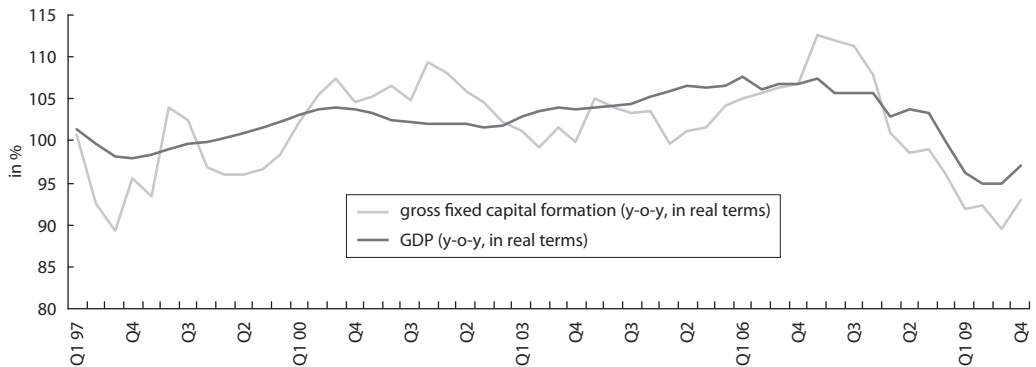
**Graph 16 Dynamics of GDP and gross fixed capital formation in the CR and EU27**  
(year-on-year changes in %, in real terms)



Source: Eurostat



**Graph 17 Dynamics of gross fixed capital formation and GDP by quarter**  
(year-on-year index, in real terms, seasonally not adjusted)



Source: CZSO

decreasing the mentioned share namely in favour of the higher share of net export).

The share of gross fixed capital formation itself in the economic performance of the country has distinctively decreased since 1996 according to calculations from average prices of the previous year – while in 1996 it exceeded a third (33.3%), in 2008 it made up almost a quarter (24.2%) and in the crisis year 2009 it further decreased to 22.6%. Also in price conditions of the year 2000 there was a clear drop, although not that significant as in the previous comparison (from 30.4% to 27.6% in the year 2008, and 26.7% in 2009). By this tendency, the CR was close to the proportions of most of the developed countries.

Despite gradual decreasing of the share of investment in GDP<sup>12,13</sup> the Czech economy in the context of Europe belongs to countries, where this proportion is higher than the average for the EU27 (19.7% in 2009). Nevertheless, it is interesting that the EU27 as a whole was affected by the crisis as for investment much more than the Czech Republic when comparing decrease of shares of gross fixed capital formation in GDP between 2008 and 2009 – while in the EU it dropped by 1.7 p.p. (at lower proportion than in the CR), in the Czech economy it was by 1.5 p.p.

From this point of view, the slowdown and drop of investment activity is a less endangering factor for the economic growth of the CR than in the countries, in which the investment dynamics is crucial for their economic growth.

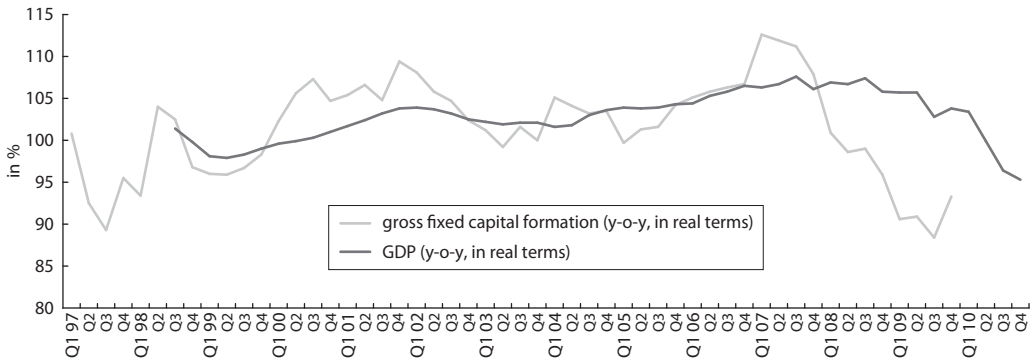
The answer to the question to what extent the GDP development of the Czech Republic is determined by the development of investment lies, among others, also in the weight, which the gross fixed capital formation has in GDP in individual years and on the multiplication effect of investment (2006, 3). The Czech economy has already seen an investment fall similar to that of the year 2009 in the second half of the 1990's.

A steep fall of investment during the year 1997, which was similar to the situation in 2009 as for its depth (Graph 17), however, was relatively soon replaced by a marked mitigation of the fall and following growth of investment (during mere four quarters by 18.9 p.p.). Together with that, also the real GDP got out of the decrease. However, at that time, there was an economic recession due to strong restrictions reacting on the monetary crisis, which had its origin in the Czech economy. The situation from the year 2009 was a consequence of a crisis “implanted” from

<sup>12</sup> According to data of Eurostat, shares calculated from national currencies in constant prices of the year 2000.

<sup>13</sup> See footnote 1.

**Graph 18 Dynamics of gross fixed capital formation and GDP in the shift by six quarters**  
(year-on-year changes in %, in real terms, seasonally not adjusted)



Source: CZSO

the outside via a steep drop of external demand, which decimated the Czech economy that is oriented on exports.

Time horizon of investment actions (clear mainly at construction investment) causes that the effect of investment does not have to be captured in statistics directly in an increment of the product in the given year but only (which is usual) in the future periods. An example, when investment was falling and GDP was further growing, monitored according to curves with GDP shift by six quarters (Graph 18) can be seen basically only in the beginning of 2004, 2005 and then in a massive way also in the beginning of the year 2008. Non-shifted curves according to data in real terms then show the contradictory development in the end of the year 1998, beginning of 2003, end of 2004, and in the first quarter of the year 2008.

The question from the introduction of this sub-chapter regarding a negative influence of the development of investment in 2009 on expected GDP can be answered from the following points of view:

- In the Czech economy the share of investment in GDP is higher than in the EU27, but during the entire decade of 2000–2009 it markedly decreased – the difference was two times higher in percentage points than in the EU27 (while in the EU the share of gross fixed capital for-

mation in GDP decreased in 2009 compared to the year 2000 by 0.9 p.p., in the CR it was by 1.8 p.p.). At the same time, however, the CR belonged to few European countries, in which this share decreased also in “non-crisis” years 2000–2008 (similarly as in Germany or Ireland). Nevertheless, here it has to be born in mind that the decrease of investment share was markedly influenced by an export boom that was started by the accession of the CR to the EU, which increased the share of net export in the economic performance of the country and thus suppressed the influence of investment. Should this factor survive, the 2009 investment fall should not have a significant influence on the future growth rates of the Czech economy in that sense that the real convergence of the Czech Republic to the level of the EU would be markedly decreased.

- Correlation between gross fixed capital formation and GDP was lower than in the EU27 during the period of 1995–2009, which is again a factor in favour of less important influence on the pace of convergence as well as
- year-on-year falls of investment during the 2009 economic crisis – and first of all at observing year-on-year changes by individual quarters of that year – that were again much weaker compared to the EU27.

From the mentioned development during the crisis it can be deduced that the dynamics of gross fixed capital formation in the CR in the future does not justify an assumption that the convergence of the Czech Republic to an average level in the EU27 should be markedly slowed down due to the development of investment.

## CONCLUSION

State of gross fixed capital in the Czech economy in the end of 2007 expressed in prices of the year 2000 increased in comparison to the year 1997 by more than a fifth, compared to 1995 even by more than a quarter. It reached CZK 20.6 trillion compared to 17 trillion in 1997. States of gross fixed capital in the CR consist in an overwhelming majority of tangible fixed assets the share of which moves in the long-term on the level of 99% of the gross fixed capital of the Czech economy.

From the point of view of industries, what is dominating to the states of gross fixed capital in the economy of the CR is the national economy industry, which includes besides services to businesses and research and development also activity in the area of real estate, renting and business activities (CZ-NACE K). In the end of the year 2007, it contributed to the states of gross fixed capital in the economy of the CR by almost 28% (CZK 5.7 trillion). In the mentioned year, real estate activities (CZ-NACE 70) had the share of almost three quarters of tangible assets of dwellings type in its gross fixed capital formation. The correlation between investment and gross value added formation in that industry (into which also stock of dwellings belongs) is higher than the closeness of dependency of both quantities for the economy as a whole.

For the years 1997 to 2007, states of total fixed assets in the CR expressed in prices of the year 2000 grew by 2%, y-o-y, on average. Investment in dwellings (multi-dwelling houses, family houses and flats), however, reported a real year-on-year decrease by 0.2%; year-on-year decrease of states occurred in 1997–1999 and also in 2002–2004. As a result, state of dwellings type fixed assets expressed in prices of the year 2000 in the end of 2007 remained almost unchanged in comparison

to the end of 1997 (CZK 4.9 trillion against 5 trillion). States of other buildings and structures – into which also infrastructure and non-residential houses belong – on the contrary, increased during that period by CZK 2.4 trillion to CZK 11.4 trillion. States of gross fixed capital in the form of machinery and equipment including transport equipment also increased (by CZK 2.1 trillion to 4.3 trillion). As it is obvious from the ratios, the gross fixed capital of dwellings type and other structures type exceeds significantly the gross fixed capital in the form of machinery and transport equipment. However, compared to the states of the gross fixed capital of other structures type and by its state it is less than a half.

Rather surprising actual stagnation of states of tangible fixed assets of dwellings type in the CR between 1997 and 2007 can be explained partly factually: tangible fixed assets in the households sector grew also due to privatisation; on the contrary, in the sector of non-financial corporations and in government sector their states were decreasing. Another explanation can be made by the methodology of reporting: life of the assets of dwellings type is set for 80 years and every year assets over this age limit are eliminated from the national accounts statistics. When investment (gross fixed capital formation) in dwellings in a given year exceed the value of those eliminated assets, their total states are increasing, in the opposite case they are decreasing. Actual stagnation in the 1997 to 2007 decade thus means that the value of multi-dwelling houses, family houses and flats eliminated from the statistics was replaced by gross fixed capital formation of dwellings type roughly in the same scope during that period.

Thanks to these changes, the share of fixed assets of dwellings type (that actually stagnated in real terms in the mentioned period or decreased by 0.2%, respectively) in total volume of fixed assets in the CR (that, on the contrary, increased by more than a fifth) decreased in real terms according to the states from the end of 2007 compared to the end of 1997. It was a logical decrease from 31% to 24%. However, in nominal terms (in current prices) investment to houses and flats in the period of 1996–2007 increased by 5.6%, y-o-y,

on average, with acceleration during the years of the boom of the Czech economy in the end of the observed period (from the second quarter of 2005 to the second quarter of 2008 the year-on-year growth was +6.7% on average).

Households have tripled their investment in dwellings – according to fixed assets of dwellings type in that sector – for the years 1995–2006 in nominal terms (from CZK 37 billion to 102 billion according to net acquisition of this type of tangible fixed assets). The households sector thus participated in the mentioned period with about two thirds in the total value of newly acquired houses and flats in the economy and its share in time was increasing (from 59% in 1996 to 74% in 2006 as a reflection of the beginning of the boom on the market with flats). Strengthening of the volume of tangible assets of households in the form of houses and flats – as one of the types of non-financial assets, which share in their total volume in the households sector by more than three quarters<sup>14</sup> – was reflected also in nominal and real profits of households from holding of non-financial assets. Thus, while nominal profits of households increased (from CZK 78 billion in 2005 to 133 billion in 2007), their real profits in 2007 decreased, year-on-year (from CZK 58 bn to 46 bn). For the Czech economy in total, non-financial assets strengthened the total net worth in the national economy in a dynamic trend – during the years 2005 to 2007 the influence of profits from these assets strengthening the wealth (expressed by growth of the net worth in the economy) was higher by 85% (between years 2006 and 2005 it was by 45%). In the year 2005 profits from holding of non-financial assets increased the net worth in the economy of the CR by CZK 315 bn; in 2007 it was by CZK 581.3 bn.

During major part of the period of the boom of the Czech economy in 2004–2006 gross national

saving grew faster than investment. It caused that in 2006 it even was not necessary to finance an increase of gross fixed capital formation in the Czech economy from other than national sources, as it was usual during the entire period from 1995. In 2008 and 2009, however, when gross national saving dropped faster than investment in 2008, the need of financing from external sources was again confirmed.

The crisis year of 2009 brought together with the drop of gross fixed capital formation also a question to what extent this circumstance will “harm” the future economic growth. Despite the up-to-now higher share of investment in economic performance of the country than the EU27 average, but at its gradual decreasing, at lower correlation of gross fixed capital formation and GDP in the Czech economy compared to the EU27 and also lower year-on-year falls of investment during the 2009 economic crisis compared to the EU – all that leads us to an assumption that those decreases in a medium-term horizon should not lead to significant losses in the GDP growth rate of the Czech Republic. Their decelerating influence – which is evident with regard to drop rates – however, together with slump of external demand that determined in 2009 in a decisive way the fall of the Czech economy to recession, became only one of the elements causing the length of duration of the recession. In relation to this, however, in the future development of especially the enterprise sector, it will be important that in the strong investment wave from the boom period enterprises probably set their forecasts of investment returns according to their income from the boom period, which might have been markedly corrected by the following development in the second half of 2008 and mainly the 2009 crisis environment. It might be a risk also for financial institutions giving credits for those investment projects.

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<sup>14</sup> Since the Households sector consists of the segment of Households-individuals and Households-enterprises, an important part of the volumes of non-financial assets (fixed assets and inventories) belongs to the segment of Households-enterprises.

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