Formation of Aggregate Demand and Supply in the Czech Republic

Lukáš Kučera[1] | *Czech Statistical Office; University of Economics, Prague, Czech Republic*

Abstract

Great changes were happening in the economy of the Czech Republic during the last twenty years (1990–2011). One of the biggest was a huge increase of the foreign trade importance. The growing foreign trade then formed an aggregate demand as well as aggregate supply. If the economy in the beginning of the 90´s faced mostly the volatility of domestic demand, in 2011 the effect of domestic and foreign factor was comparable. As the economy in the 90´s was not capable to produce sufficient amount of products to satisfy domestic demand, at the end of last decade it had no problem to do so – the surplus of domestic supply over domestic demand was then situated to the foreign market.

Keywords	JEL code
Aggregate demand, aggregate supply, domestic demand, domestic supply	*E20, E29, F41, O11*

INTRODUCTION

Macroeconomic development can be analyzed from different perspectives. The most often used indicator is gross domestic product and further analysis of its expenditure items. Much less attention is paid to gross national income or real gross domestic income. Almost none is paid to aggregate demand and supply, their development in time or their mutual relations.

The aim of this paper is to analyze the way of formation of aggregate demand and aggregate supply with respect to their structure in the economy of the Czech Republic since 1990 till 2011.[2] Thus, the aspect of domestic and foreign demand/supply, their decomposition into individual items and their development in time – all with respect to factors standing behind, were subject to discussion.

1 METHODOLOGY

On the site of GDP use – the purposes of use of GDP generated in a certain time period are analyzed. Specifically, European system of accounts ESA 1995 (CZSO, 2000) distinguishes final consumption expenditure, gross capital formation and the difference between export and import. According to Hronová et al. (2009), we are able to describe the GDP use in the form of:

---

[1] Czech Statistical Office, Na padesátém 81, Prague, Czech Republic; University of Economics, W. Churchill Sq. 4, Prague, Czech Republic. E-mail: kucera-lukas@email.cz, phone: (+420)274052254.

[2] Data for 2012 were not available at the time of completion of this paper (export and import; annual national accounts).

$$GDP = FCE + GCF + EX - IM, \tag{1}$$

where:

FCE	final consumption expenditure,
GCF	gross capital formation,
EX	export,
IM	import.

Final consumption expenditure can be decomposed into final consumption expenditure of households, government and non-profit institutions serving to households (NPISH). Gross capital formation can be decomposed into gross fixed capital formation (investment), change in inventories and net acquisition of valuables. So, equation (1) can be rewritten in the form of:

$$GDP = FCE_H + FCE_G + FCE_{NPISH} + GFCF + CHII + NAoV + EX - IM, \tag{2}$$

where:

FCE_H	final consumption expenditure of households,
FCE_G	final consumption expenditure of government,
FCE_{NPISH}	final consumption expenditure of NPISH,
GFCF	gross fixed capital formation,
CHII	change in inventories,
NAoV	net acquisition of valuables.

Domestic demand is formed according to Spěváček (2006) by the sum of final consumption expenditure and gross capital formation. Mandel and Tomšík (2006) call this sum an absorption. Therefore, domestic demand equals to:

$$D = FCE_H + FCE_G + FCE_{NPISH} + GFCF + CHII + NAoV. \tag{3}$$

CZSO (2006) defines so-called domestic realized demand – it is domestic demand without change in inventories and net acquisition of valuables:

$$D = FCE_H + FCE_G + FCE_{NPISH} + GFCF. \tag{4}$$

Counterpart of domestic demand is domestic supply. Spěváček (2006) defines this supply as GDP. CZSO (2006) adjusts GDP by change in inventories and calls it domestic effective supply. When net acquisition of valuables is not included in domestic realized demand, we have to incorporate it into domestic effective supply. Therefore, domestic effective supply can be expressed as follows:

$$S = GDP - CHII - NAoV. \tag{5}$$

We identify domestic demand in this paper according to equation (4), domestic realized demand. Domestic supply is identified according to equation (5), domestic effective supply. We consider, therefore, that the negative change in inventories increases volume of offered value with respect to GDP and, therefore, it increases domestic supply. On the contrary, when change in inventories is positive, there is a decline of offered value with respect to GDP – created value is partly allocated into inventories.

So, foreign demand equals to export of goods and services, foreign supply to import of goods and services. *"The difference between domestic demand and domestic supply equals to the balance of foreign demand and foreign supply with the opposite sign"* (CZSO, 2006, pp. 15). If domestic demand is higher than domestic supply, foreign demand will be lower than foreign supply. And vice versa. If we sum domestic and foreign demand, we will get so called aggregate demand; if we sum domestic and foreign supply, we will get so called aggregate supply (CZSO, 2006).

Individual segments of aggregate demand and supply are analyzed between 1990 and 2011. We have two options of analysis – to use data at current prices or data at constant prices. Due to the intertemporal comparability we use constant prices (prices of year 2005).[3] However, we have to solve the problem of non-aditivity of equation (2) – this non-aditivity appears when chaining aggregates at current prices into aggregates at constant prices. Because every aggregate is chained by its relevant index (deflator), the equality at constant prices is not ensured according to equation (2) (see for example Fischer, 2005a or Široký, 2004).

For example Sixta et al. (2011) use data at constant prices to calculate an investment ratio – yet, according to them *"the information capability should not be negatively affected"* (Sixta et al., 2011, pp. 603). For this paper, there has been made a slight approximation of values at constant prices which eliminates the non-aditivity problem (similarly to Kučera, 2012).

At first, volume of change in inventories in every year is calculated using GCF, GFCF and NAoV. One can expect that using this approach, residuum originating from chaining of GCF, GFCF and NAoV is contained in CHII. Nevertheless, CHII value obtained in this way is more accurate, than in the case when it would be calculated as it is made at current prices – it partly balances GDP acquired by production approach and expenditure approach (Fischer, 2005b) – in this case, full residuum originating from chaining aggregates presented in equation (2) would be contained in CHII.

To establish aditivity in terms of equation (2), residuum between left side of the equation and right side of the equation in every particular year is calculated. Finally, this residuum is distributed into individual aggregates according to their weights. Obtained values using this approach are aditive according to equation (2) whereas mutual volume position of adjusted aggregates is not distorted.

2 RESULTS

Data of national accounts are used (CZSO, 2013b). Original volumes of GDP expenditure items and their balanced volumes are attached in the Annex (Table 1 and 2). Acquired data of aggregate demand and supply including domestic demand/supply and foreign demand/supply are attached in the Annex (Table 3). In follow-up analysis, exclusively balanced volumes are discussed, if not stated otherwise.

The trend of aggregate demand and supply was growing in 1990–2011. Average annual growth rate reached 3.8%. Volume of aggregate demand and supply increased from CZK 2,919 bil. in 1990 to CZK 6,341 bil. in 2011. Specific formation of aggregate demand (hereinafter only "AD") and aggregate supply (hereinafter only "AS") was influenced by domestic and foreign demand/supply development.

2.1 Long-term development
2.1.1 Aggregate demand

Domestic demand represented 79.3% of AD in 1990. The most significant part of AD was made up of the final consumption expenditure of households (42.2%); almost the same part was formed by final

---

[3] Singer (2013) proposes an alternative method, which is appropriate for an analysis of long-term performance of transformation and post-transformation economies. He suggests to switch an aggregate at current prices in domestic currency into an aggregate in currency of base economy (he suggests EUR) and than to adjust data for growth of prices in this area (thus, growth of prices in euro area). Singer (2013) uses this method to adjust GDP, calls it as "comparable real GDP" (Singer, 2013, pp. 9) and states, that performance of transformation or post-transformation economies is much higher using this "comparable real GDP" growth than in the case when one uses GDP growth at constant prices.

consumption expenditure of government (18.6%) and gross fixed capital formation (18.1%).[4] Remaining part of AD was formed by foreign demand (20.7%). It is obvious, that AD has been very vulnerable to changes of domestic demand in the beginning of the 90´s.

Domestic demand equaled to CZK 2,315 bil. in 1990 and CZK 3,333 bil. in 2011. This increase equaled to 44%. Foreign demand grew up from CZK 604 bil. in 1990 to CZK 3,008 bil. in 2011. This growth equaled to 397.9%. So, gradual increase in AD in the Czech Republic was determined by enormous growth of foreign demand due to the involvement of Czech producers-exporters on the foreign market.

In 2011, significant 47.4% of AD was formed by foreign demand while share of domestic demand fell to 52.6% only. Vulnerability of AD to changes of domestic demand rapidly decreased. On the other hand, the vulnerability of AD to external factors increased significantly. An example may be the financial recession in 2009, which broadly (and negativelly) affected AD through foreign demand.

As we decompose domestic demand further, we find out, that share of final consumption expenditure of households and government dropped the most – to 27.1% and 10.8%. Share of gross fixed capital formation decreased as well, but only to 14.3%.

In 1990, final consumption expenditure of government formed greater part of AD than gross fixed capital formation. In 2011, however, it was vice versa. The break happened already in 1995, the change was affected by gradual transformation of Czech economy – due to the privatisation influencing growth of the investment activity.

With respect to the fact, that in this paper there are used balanced data at constant prices (due to the intertemporal comparability), the view of the AD structure development can be distorted. Thus, it is appropriate to mention, what was the AD structure development at current prices.

In 1990, AD was formed by 68.3% of domestic demand and by 31.7% of foreign demand. Therefore it is obvious, that foreign demand at current prices played more significant role in determining AD. In 2011, domestic demand formed 56.4% of AD, foreign demand formed the rest. In this year,

Figure 1 Aggregate demand and its components (constant prices, balanced, in bil. CZK)
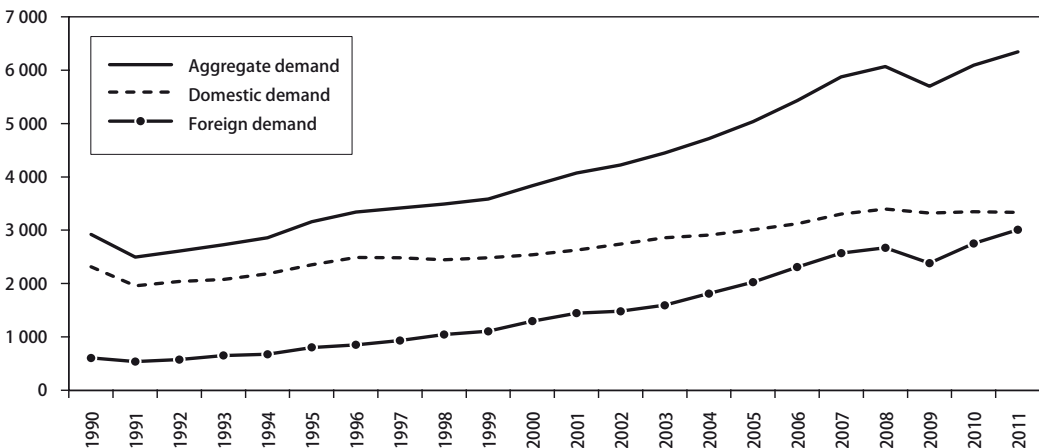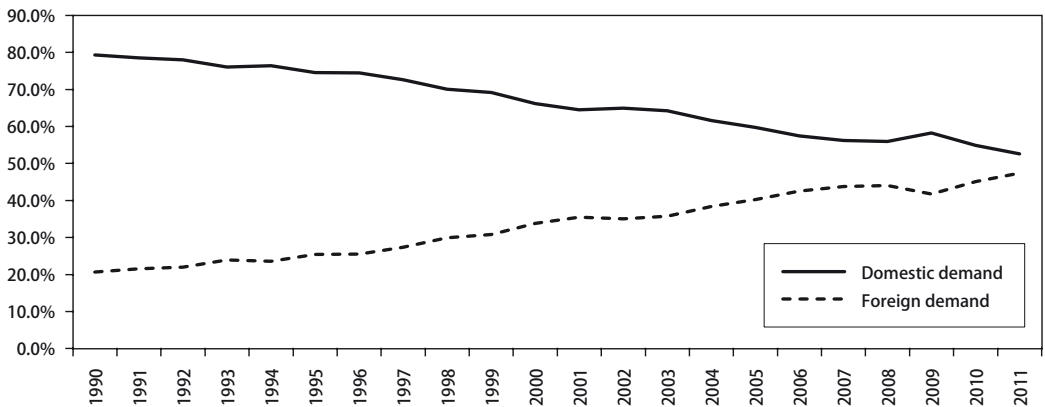
Source: CZSO (2013b), own calculations

---

[4] Final consumption expenditure of non-profit institutions serving to households formed since 1990 till 2011 only 0.4% of AD on average. So, this item is not considered in follow-up text.

on the contrary, balanced data at constant prices overestimate effect of foreign demand in forming AD. It is important, however, that in both approaches – balanced constant prices/current prices – there was apparent long-term increase of foreign demand significance at the expence of domestic demand.

Figure 2 Structure of aggregate demand (constant prices, balanced, in %)

Source: CZSO (2013b), own calculations

2.1.2 Aggregate supply

Domestic supply made 80.8% of AS in 1990 – 80.7% consisted of GDP produced, 0.1% of inventories decline.[5] Foreign supply formed 19.2% of AS. A short-term blip occured in 1991 – share of domestic supply increased to 84.7%, share of foreign supply dropped to 15.3%. However, the long-term development was the opposite.

Domestic supply was in 2011 only 53.7% higher compared to 1990, while foreign supply had grown in this time period by 383.8%. In 2011, domestic supply formed 57.1% of AS, foreign supply formed 42.9% of AS.

Due to this, we can say, that gradual growth of AS in the Czech Republic was driven primarily by foreign supply. The increase of foreign supply share was caused by higher demand for foreign products consumption and investment as well as by usage of imported products as inputs for production process of domestic producers-exporters. Regarding to AD, AS was getting more and more vulnerable to foreign changes as well.

Even in case of AS structure development, it is necessary to evaluate the structure development at balanced constant prices to the structure development at current prices.

AS at current prices in 1990 was formed by 70% of domestic supply and by 30% of foreign supply. Even in this case applies, that foreign supply at current prices played more significant role in forming AS in this year. Till 2011, the significance of domestic supply had fell to 58.9%, the significance of foreign supply had increased to 41.1%. Thus, data at balanced constant prices slightly overestimate the effect of foreign supply in 2011.

The fact, that there was apparent long-term increase of foreign demand share on AD and long-term increase of foreign supply share on AS as well, was not accidental. Gradual increase of foreign demand was connected to foreign direct investment flow in the Czech economy which led to production of goods

---

[5] Net acquisition of valuables formed since 1990 till 2011 approximately –0.1% of AS on average. So, this item is not considered in follow-up text.

with higher value added – these goods were highly demanded from abroad. However, producers-exporters needed (and still need) inputs for production, which cannot have been fully satisfied by Czech economy – therefore, a growth of foreign supply and an increase of foreign supply share on AS were monitored. It can be summarized, that one of the main reason of long-term increase of foreign demand share on AD and foreign supply share on AS was strong orientation of Czech economy on product transformation.

Figure 3 Aggregate supply and its components (constant prices, balanced, in bil. CZK)
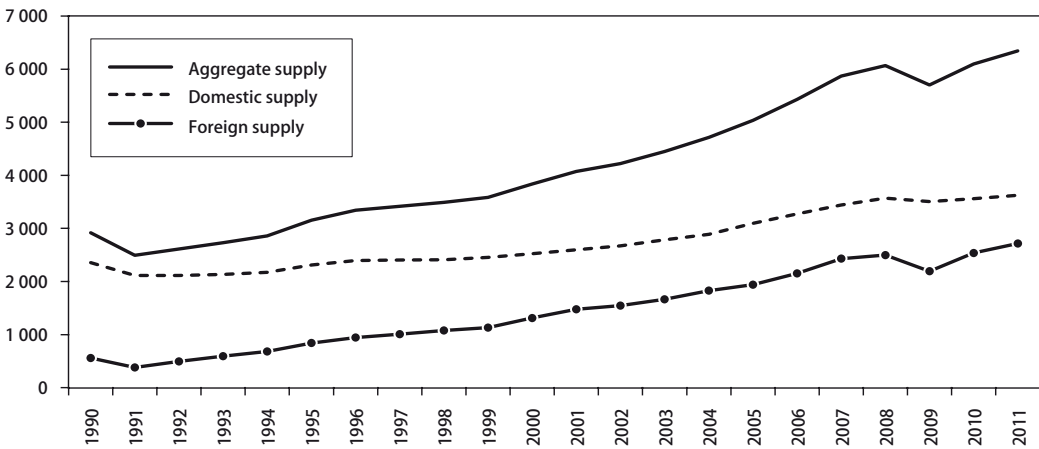
Source: CZSO (2013b), own calculations

Figure 4 Structure of aggregate supply (constant prices, balanced, in %)
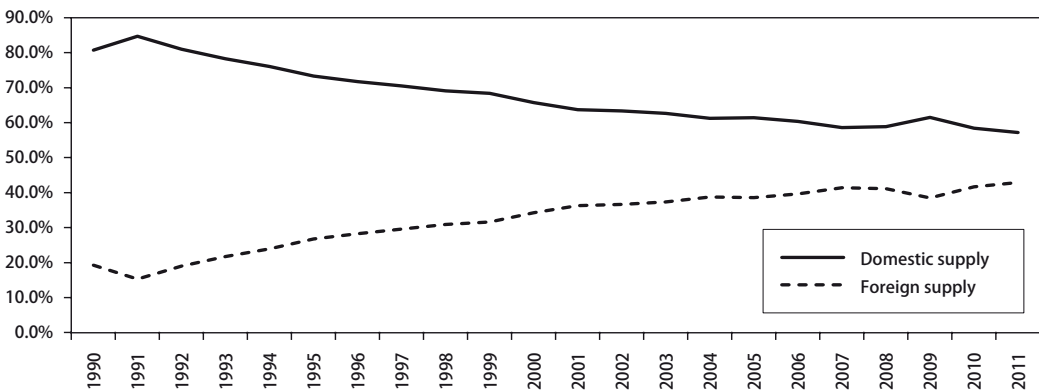
Source: CZSO (2013b), own calculations

2.2 Structural changes in the economy from the perpective of aggregate demand and supply
2.2.1 Shock of the transition to a market economy
Significant drop of AD in 1991 was mostly affected by reduction of domestic demand. AD decreased by 14.5%. Domestic demand contributed by −12.2 percentage points, foreign demand by remaining −2.3 percentage points.

All parts of domestic demand contributed to decline of AD. The most significant items were final consumption expenditure of households (–7.1 percentage points) and gross fixed capital formation (–4.3 percentage points). Causes of this negative development may be found in devaluation of CZK in 1990 as well as in liberalization of prices[6] due to the transition to a market economy. This brought about very high annual inflation in the amount of 56.6% in 1991 (CZSO, 2013a).

The inflation caused devaluation of savings of households but also increase in the cost of living. Therefore, households were forced to reduce their consumption. Enormous growth of prices had an impact on the investment activity as well. The activity was tampered by devaluation of national savings – therefore by lack of domestic resources for investment. But there may be found another reason – substantial growth of prices made impossible to plan future costs, sales, own prices as well as price relations between individual products by producers – these difficulties reduced their investment too.

AS equals to AD – due to the balance equilibrium which is valid always. So, AS faced the same decline as AD.

The drop of AS was caused mainly by reduction of domestic supply. This contributed to decrease of AS by –8.3 percentage points. Very deep fall affected GDP – it decreased by CZK 264 bil. (–11.2%) and contributed to reduction of AS by –9 percentage points. Only a slight compensation was a decline of CHII – it contributed by 0.7 percentage points.

Source of domestic supply drop can be found in considerable reduction of domestic demand, which decreased by CZK 355 bil. Domestic producers lowered their production due to weaker domestic demand for their products. Nevertheless, domestic supply decrease was less pronounced – it was reduced by CZK 243 bil. only. Thus, Czech economy increased surplus of domestic supply over domestic demand and allocated it on the foreign market – even despite the negative development of foreign trade in the Czech Republic in this year.

The role of foreign factor in forming AD/AS in 1991 was stronger with respect to AS. Foreign supply decreased by 31.9%, foreign demand by 11.1%. Despite the fact that both foreign demand/supply dropped, decline of foreign demand was shallower. This was highly influenced by mentioned devaluation of CZK in 1990 which increased the price competitiveness of domestic exporters in the foreign market. Nevertheless, competitiveness of domestic producers was still considered as weak – firms still used old machinery and production technology which limited them in producing products with higher added value.

2.2.2 Gradual transformation of the economy (till 1996)

AD was growing till 1996 very fast – by 6% annualy on average. The highest growth-rate was achieved in 1995 (growth in the amount of 10.4%, the highest growth over the whole time period 1990–2011). Major role in rapid growth of AD till 1996 may be accounted for domestic demand (it contributed by 3.8 percentage points on average).

Households´ resources were growing so households may have increased their consumption. Growth of final consumption expenditure of households was driven by not saturated consumption due to unavailability of many products in previous period of centrally planned economy (see for example Dubská, 2013). Increase in domestic demand was attributed to a significant growth of investment activity as well, which was probably supported by the privatisation – private entrepreneurs were interested in renewal of old machinery and other production equipment – the highest growth of investment was observed in 1995 (by almost one quarter). Finally, foreign demand contributed to AD growth by 2.3 percentage points on average.

Growth of AS till 1996 was caused mainly by the increase in foreign supply – contribution of foreign supply was higher than contribution of domestic supply in every particular year. The highest con-

---

[6]   Liberalization did not affect administered prices, electricity, rent, medical service etc. (Singer, 2007).

tribution of foreign supply was observed in 1995 (+5.5 percentage points) – moreover, the amount of this contribution was, except year 2010 (due to low comparative base in 2009), the highest contribution of this part of AS over the whole time period 1990–2011. It seems, that domestic producers were not able to satisfy consumption and investment requirements forming domestic demand yet (due to persistent underdeveloped production technology and low ability to produce products with high added value) – so, domestic requirements had to be satisfied mainly by foreign supply.

2.2.3 Monetary policy disturbances

Years 1997 and 1998 brought about significant changes in the economy. External imbalance (in terms of current account) was deepening and exchange rate of CZK was no longer sustainable. Czech National Bank was forced to abandon fixed rate regime and started to use managed floating. The inflation targeting was chosen as the transmission mechanism of monetary policy, which subsequently led to reduction of inflation rate.

However, realized changes adversely affected investment activity (gross fixed capital formation decreased in the amount of 6.5% in 1997) – entrepreneurs were probably not capable to assess future economic development and due to uncertainty they cut down their investment. Drop in investment activity reduced domestic demand by 0.4%. However, foreign demand continued in positive development and inflicted AD growth even in this year by +2.2%.

The fall in domestic demand in 1998 deepened and reached 1.4%. Decline in investment activity continued. However, in 1998, even consumption of households weakened – this fall was influenced by significant growth of rate of unemployment from 4.8% in 1997 to 6.5% in 1998 (CZSO, 2013c; methodology of Labour Force Survey) resulting in lower households´s revenue.[7] It is worth mentioning, that the decline of final consumption expenditure of households appeared only twice since 1991 till 2011 (in already mentioned 1991 – by dramatic 16.8%, and in 1998 by 1.2%).

Final consumption expenditure of government lowered in 1998 by 2.8%. It seems, that cut in planned government expenditure in 1997 (Páral, 2001) took effect a year later.

So, in 1998 all major items of domestic demand contributed to its decline. However, even in this year foreign demand growth was capable to compensate decline of domesic demand – AD increased the same rate as in 1997.

Although neither domestic/foreign supply in those years declined, growth-rates of both were much lower with respect to previous years – due to reduced domestic demand. GDP fell in both years, only decline of CHII slightly increased domestic supply. It seems, that large part of stored products were sold abroad.

If AS growth till 1996 was driven mainly by foreign supply growth, this fact was even deepened in 1997 and 1998 – foreign supply affected growth of AS by 86% and 94%.

2.2.4 Growth of foreign trade importance (till 2008)

Since 1999 (including), growth of AD was mainly a result of growth in foreign demand. Contributions of foreign demand outweighted contributions of domestic demand in every particular year except 2002 and 2003. In strong years 2004–2006 (after joining the European Union), contributions of foreign demand were several times higher.

Although it should be noted, that even domestic demand contributed to growth positively – households increased their final consumption expenditure annualy due to still not saturated consumption. Gradual flow of foreign direct investment in the Czech Republic initiated another investment growth. Even households contributed significantly to growth of investment in years 2005–2007 – they highly purchased own housing.

---

[7] In real terms – nominal values were deflated by CPI.

Growth of AS was still initiated primarily by increasing foreign supply. Only exceptions were years 2002, 2005 and 2008.

According to data of Czech National Bank (2013), there was a very high flow of foreign direct investment in the Czech Republic in years 1998 till 2002. This may have been partly accounted for the introduction of incentives in 1998. As Říman (2008) states, however, the effect of incentives was not that strong as one may expect – he argues, that foreign direct investment flow was mostly affected by political stability, good infrastructure, cheap and well-educated labor force and other; not by incentives themselves.

While Tomšík (2008) states that this inflow of foreign direct investment did not bring only positives – which we agree – it helped the Czech Republic in turning into a more open economy – due to these investment, Czech producers were able to produce products with higher added value which could be sold abroad. This has been increasing foreign demand. However, Czech producers were forced to produce these products using foreign inputs - this resulted in foreign supply growth.[8] As a whole, in the Czech Republic, the relationship between foreign demand/supply, which is a typical atribute for small open economies, had been depening.

2.2.5 Impact of financial crisis

AD faced second significant drop in 2009 (after decline in 1991). It fell by 6% compared to 2008. Despite the decline of AD in 1991, drop in 2009 was affected mostly by reduction of foreign demand (it contributed by –4.7 percentage points). Negative development of foreign demand was primarily influenced by lower performance of main foreign partners of the Czech Republic[9] due to financial crisis impacts. These countries among others reduced imports which negatively affected foreign demand for goods and services in the CR.

Domestic demand contributed to decline of AD by –1.3 percentage points. The reason may be found in decreasing investment activity. Domestic producers were afraid of future development of foreign demand (whether it will recover or not), households cut down expenditure for purchasing a housing (mainly due to a strong demand in previous years). Limited investment activity contributed to decline of AD by –1.8 percentage points. While final consumption expenditure of government tampered drop of AD by 0.5 percentage point (government acted countercyclically), final consumption expenditure of households nearly stagnated.

Drop of AS was primarily affected by foreign supply which contributed by –5 percentage points. As one can note, almost the same contribution was found out regarding the effect of foreign demand on AD (–4.7 percentage points). This was done by significant connection of foreign demand and supply, when domestic producers-exporters used imported products as inputs for another production. This phenomenon, however, could not be observed in the case of AD/AS drop in 1991 – at that time the Czech Republic formed a part of the international market only for a short time period with significant restrictions – full convertibility of CZK did not exist, economy almost did not possess of foreign direct investment from abroad which may have participated in higher production of products with high added value demanded from abroad (increasing demand for foreign inputs). Thus, connection between export and import in 1991 was not created yet.

Remaining share of AS decline in 2009 fell to domestic supply (–1 percentage point). Specifically, it was the decline of GDP (–2.8 percentage point). As in 1991, drop in CHII tampered reduction of AS (it contributed by 1.7 percentage points) – the volume the economy did not produce was partly provided from inventories again.

---

[8] Foreign supply was growing due to relatively strong domestic demand as well (products were imported for consumption and investment). However, we can deduce, that the weight of inputs for production in import volume gradually increased.

[9] Main foreign partners of the Czech Republic regarding export are Germany, Slovakia and Poland (CZSO, 2012).

2.2.6 Recovery of foreign trade in 2010 and 2011

Growth of AD after 2009 was influenced almost exclusively by foreign demand. AD increased in the amount of 6.9% in 2010 and by 4% in 2011. Contribution from the site of foreign demand reached 6.5 and 4.2 percentage points, respectively. Contribution from the site of domestic demand equaled only 0.4 percentage point in 2010, in 2011 it was even negative (–0.2 percentage point).

It is obvious, that domestic demand was very weak in these years. It was caused primarily by fiscal restrictions – according to Vintrová (2012), the government did not distinguish between current and capital expenditure. Therefore, fiscal restrictions did not reduce final consumption expenditure of government only, but it also tampered their investment activity. However, austerity measures negatively affected even final consumption expenditure of households – on the site of revenue, households faced decline.[10] On the site of expenditure, there was a decrease of savings, however, not deep enough to enable growth of consumption of households as before 2009. According to Zamrazilová (2012, pp. 11) *"weakening of consumption of households was a combination of worse revenue situation and more significant risk perception".*

Growth of AS after 2009 was also mostly affected by foreign factor. Foreign supply contributed to growth of AS by 6 percentage points in 2010 and 3 points in 2011. So, even in these years one could have observed significant connection between export and import (foreign demand and supply).

Domestic supply contributed to AS by 0.9 percentage point only in 2010 and by 1.1 point in the next year. Czech producers adapted to weak domestic demand. As the main driver for a slight increase in domestic supply remained relatively strong foreign demand.

2.3 Domestic demand coverage

As mentioned before, AD equals AS and together make always the equilibrium. The difference, however, can be found between domestic demand and supply and foreign demand and supply. In this part, structure of AD and AS, but also difference between domestic supply and domestic demand, was discussed. Due to this fact, there are used data at current prices.

Figure 5 Domestic demand and domestic supply (current prices, in bil. CZK, left axis), surplus of domestic supply (current prices, in bil. CZK, right axis)
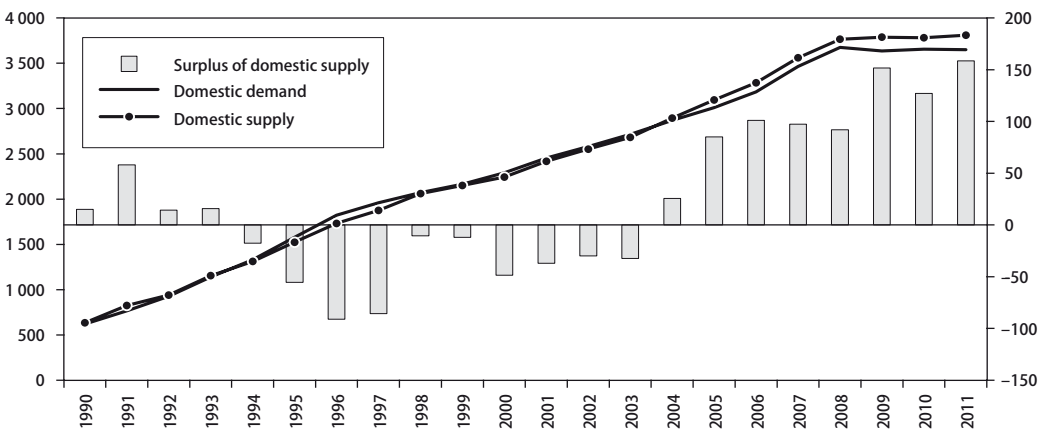
Source: CZSO (2013b), own calculations

---

[10] In real terms – nominal values were deflated by CPI.

Since 1990 till 1993 there was a surplus of domestic supply over domestic demand. The most significant difference was observed in 1991, when domestic demand was covered by domestic supply in the amount of 107.6%. Reasons may be found especially in the weak purchasing power of households and firms which did not have resources to buy foreign goods and services. Surplus of domestic supply was than allocated abroad.

Domestic demand coverage was decreasing with gradually enhancing economic situation of domestic subjects in later years. It dropped below 100% value in 1994 and reached 98.7%. Till 2003 (including), it did not exceed 100% threshold. Domestic supply was not able to satisfy the needs of Czech economy. Hunt for consumption and investment oppurtunities exceeded domestic supply capacity.

In 2004, domestic supply exceeded domestic demand in the amount of 0.9%. Domestic demand coverage has dropped below 100% threshold never again since this year. On the contrary, there was a gradual increase in the difference between domestic supply and domestic demand. In 2011, coverage reached 104.3%. Positive difference between domestic supply and domestic demand iniciated surplus of foreign demand over foreign supply – positive balance of goods and services.

However, the roots of surplus of domestic supply over domestic demand in these years where much different compared to the beginning of the 90´s. Households and firms could have purchased variety of goods and services for consumption or purchased investment on the foreign market for global prices – they had resoures to do so. This was the first difference in these years compared to the beginning of the 90´s. On the other hand, the economy passed during last twenty years considerable development and had a lot to offer on the foreign market. This was the second difference compared to the beginning of the 90´s. What is important, this factor prevailed and domestic supply had been exceeding domestic demand. The economy is producing surpluses.

CONCLUSION

Aggregate demand and supply describe macroeconomic development from a different perspective. While the method of gross domestic product use analyzes for what purposes GDP generated in a certain time period is used, theorem of aggregate demand and supply discusses a mutual interaction of forces of domestic and foreign environment in shaping the aggregate equilibrium.

This equilibrium was changing a lot in the Czech Republic. While the aggregate demand/supply was formed in the beginning of the 90´s (at balanced constant prices) by 79.3%/80.8% of domestic demand/supply, in 2011 it was only by 52.6%/57.1%. Vulnerability to the impact of foreign shocks of the economy increased significantly (more in the case of aggregate demand).

While aggregate demand equals aggregate supply always, domestic demand and supply does not. Their mutual position is determined by the dynamics of their components. In the beginning of the 90´s, domestic demand was fully covered by domestic supply (at current prices). This relation was gradually weakening and between 1994 and 2003 there was observed a surplus of domestic demand over supply. This was caused by a high growth of overall consumption and investment combined with an insufficient increase in domestic economy performance. This trend was interrupted in 2004 – domestic demand was fully covered by domestic supply since this year again. Performance of the economy surpassed domestic demand and created surpluses could have been situated on the foreign market.

References

CZECH NATIONAL BANK. *ARAD systém časových řad* (ARAD Data Time Series System) [online]. Prague: CNB, 2013. [cit. 1.7.2013]. <www.cnb.cz/docs/ARADY/HTML/index.htm>.
CZECH STATISTICAL OFFICE. *Česká republika od roku 1989 v číslech* (Czech Republic in Numbers since Year 1989) [online]. Prague: CZSO, 2013a. [cit. 1.7.2013]. <www.czso.cz/csu/redakce.nsf/i/cr_od_roku_1989#03>.

CZECH STATISTICAL OFFICE. *Databáze ročních národních účtů* (Database of Annual National Accounts) [online]. Prague: CZSO, 2013b. [cit. 19.6.2013]. <apl.czso.cz/pll/rocenka/rocenka.indexnu>.

CZECH STATISTICAL OFFICE. *Evropský systém účtů ESA 1995* (European System of Accounts ESA 1995) [online]. Prague: CZSO, 2000. [cit. 21.11.2013]. <apl.czso.cz/nufile/ESA95_cz.pdf>.

CZECH STATISTICAL OFFICE. *Zahraniční obchod České republiky 2011* (External Trade of the Czech Republic in 2011) [online]. Prague: CZSO, 2012. [cit. 19.6.2013]. <www.czso.cz/csu/2012edicniplan.nsf/p/6008-12>.

CZECH STATISTICAL OFFICE. *Zaměstnanost, nezaměstnanost – časové řady* (Employment, Unemployment – Time Series) [online]. Prague: CZSO, 2013c. [cit. 17.7.2013]. <www.czso.cz/csu/redakce.nsf/i/zam_cr>.

CZECH STATISTICAL OFFICE. *Zdroje HDP a jejich užití v letech 1995 až 2005* (Resources of GDP and Their Use between 1995 and 2005) [online]. Prague: CZSO, 2006. [cit. 27.6.2013]. <www.czso.cz/csu/2005edicniplan.nsf/p/1124-05>.

DUBSKÁ, D. *Domácnosti v ČR: příjmy, spotřeba, úspory a dluhy v letech 1993–2012* (Households in CR: Revenues, Consumption, Savings and Debts in years 1993–2012) [online]. Prague: CZSO, 2013. [cit. 7.7.2013]. <www.czso.cz/csu/2011edicniplan.nsf/publ/1159-11-n_2011>.

FISCHER, J. Ke čtvrtletním odhadům vývoje HDP (To the Quarterly Estimates of GDP Development). In: *Měříme správně HDP?* (sborník textů) (Do We Measure GDP Correctly? Texts collection), 2005b, 39, pp. 113–122.

FISCHER, J. Problémy měření HDP (Problems of GDP Measurement). In: *Měříme správně HDP?* (sborník textů) (Do We Measure GDP Correctly? Texts collection), 2005a, 39, pp. 11–20.

HRONOVÁ, S., FISCHER, J., HINDLS, R., SIXTA, J. *Národní účetnictví. Nástroj popisu globální ekonomiky* (National Accounts. A Tool for Describing of the Global Economy). Prague: C.H.Beck, 2009.

KUČERA, L. Změna stavu zásob a hospodářský cyklus (Change in Inventories and the Business Cycle). In: *The 13th Annual Doctoral Conference of the Faculty of Finance and Accounting, University of Economics, Prague* (sborník textů) (Texts collection), 2012, 13, pp. 435–446.

MANDEL, M., TOMŠÍK, V. Přímé zahraniční investice a vnější rovnováha v tranzitivní ekonomice: Aplikace teorie životního cyklu (Foreign Direct Investment and The External Balance in a Transition Economy: The Application of Live Cycle Theory). *Politická ekonomie*, 2006, 6, pp. 723–741.

PÁRAL, P. *Poslední muž v sedle* (The Last Man in the Saddle) [online]. Prague, 2001. [cit. 27.6.2013]. <euro.e15.cz/posledni-muz-v-sedle-817126>.

ŘÍMAN, M. Zahraniční investice ano, pobídky ne (Yes to Foreign Investment, No to Incentives). In: *Zahraniční investice. Cíl hospodářské politiky?* (sborník textů) (Foreign Investment. The Goal of Economic Policy? Texts collection), 2008, 65, pp. 11–16.

SINGER, M. *Hodnocení úspěšnosti transformace* (Evaluation of the Transformation Success) [online]. Prague: CNB, 2007. [cit. 27.6.2013]. <www.cnb.cz/miranda2/export/sites/www.cnb.cz/cs/verejnost/pro_media/konference_projevy/vystoupeni_projevy/download/singer_20070313_plzen_univerzita.pdf>.

SINGER, M. A Comparison of the Rates of Growth of Post-Transformation Economies: What Can(not) Be Expected from GDP? *Prague Economic Papers*, 2013, 1, pp. 3–27.

SIXTA, J., VLTAVSKÁ, K., ZBRANEK, J. Souhrnná produktivita faktorů založená na službách práce a kapitálu (Total Factor Productivity Measurement Based on Labour and Capital Services). *Politická ekonomie*, 2011, 5, pp. 599–617.

SPĚVÁČEK, V. Národohospodářská poptávka a makroekonomická rovnováha (Demand of the National Economy and the Macroeconomic Equilibrium). *Working Paper CES VŠEM*, 2006, 4.

ŠIROKÝ, M. *Řetězení stálých cen v národních účtech* (Constant Prices Chaining in the National Accounts) [online]. Prague: CZSO, 2004. [cit. 27.6.2013]. <www.mfcr.cz/cs/o-ministerstvu/vzdelavani/seminare/2004/rok-2004-podzimni-seminar-6690>.

TOMŠÍK, V. Zajistí přímé zahraniční investice prosperitu ČR? (Will Foreign Direct Investment Ensure the Prosperity of the CR?). In: *Zahraniční investice. Cíl hospodářské politiky?* (sborník textů) (Foreign Investment. The Goal of Economic Policy? Texts collection), 2008, 65, pp. 17–29.

VINTROVÁ, R. *Význam domácí poptávky v české ekonomice* (The Role of the Domestic Demand in the Czech Economy) [online]. Prague: Association of Regions of the Czech Republic, 2012. [cit. 27.6.2013]. <www.asociacekraju.cz/files/files/temata/Vyznam-domaci-poptavky26_3-RUZENA-VINTROVA.pdf >.

ZAMRAZILOVÁ, E. *Proč slábne spotřeba domácností? Pesimistický spotřebitel: světlo na konci tunelu* (Why the Consumption of Households weakens? Pessimistic Consumer: The Light at the End of a Tunnel) [online]. Prague: CNB, 2012. [cit. 27.6.2013]. <www.cnb.cz/cs/o_cnb/bankovni_rada/clenove_bankovni_rady/zamrazilova_projevy.html>.

ANNEX – TABLES

Table 1 Volumes at prices of 2005 (in millions of CZK)

Name	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
FCE (households)	1 215 809	998 970	1 043 921	1 057 426	1 096 216	1 146 311	1 230 786	1 250 154	1 233 845	1 261 629	1 272 973
FCE (government)	534 965	506 839	530 185	535 844	557 381	552 346	545 978	563 799	547 227	570 909	570 940
FCE (NPISH)	14 577	11 730	11 494	8 625	14 154	15 585	16 990	17 737	17 862	17 321	17 621
GFCF	521 629	393 324	434 066	465 255	519 922	641 227	699 570	654 121	647 511	634 198	675 357
CHII	-1 529	-22 579	-30 263	-17 164	17 153	12 921	38 150	8 790	-4 265	-5 843	24 496
NAoV	1 214	908	1 066	999	1 302	3 060	3 191	2 910	2 748	2 659	2 869
EX	596 871	523 702	569 158	649 508	674 382	801 809	853 765	936 442	1 045 373	1 104 835	1 295 868
IM	568 558	392 370	499 978	595 040	683 933	842 788	944 139	1 006 549	1 077 867	1 131 291	1 312 767
GDP	2 386 105	2 147 574	2 104 232	2 129 715	2 191 675	2 328 028	2 433 713	2 412 965	2 407 271	2 447 696	2 550 148
Residuum	**71 127**	**127 050**	**44 583**	**24 262**	**-4 902**	**-2 443**	**-10 578**	**-14 439**	**-5 163**	**-6 721**	**2 791**
Residuum/GDP	**3.0%**	**5.9%**	**2.1%**	**1.1%**	**-0.2%**	**-0.1%**	**-0.4%**	**-0.6%**	**-0.2%**	**-0.3%**	**0.1%**

Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
FCE (households)	1 315 419	1 356 289	1 427 673	1 472 666	1 515 680	1 581 021	1 645 963	1 695 423	1 698 399	1 714 924	1 723 883
FCE (government)	593 169	640 199	678 826	656 695	667 479	663 694	666 464	674 161	701 214	702 869	683 912
FCE (NPISH)	15 790	16 196	16 901	18 738	21 908	24 093	26 871	24 838	25 194	25 012	24 974
GFCF	705 428	732 560	736 940	758 808	804 594	851 276	963 948	1 003 509	892 622	901 714	904 928
CHII	29 772	12 059	-362	30 013	18 371	55 587	83 516	64 096	-42 000	-4 391	-455
NAoV	2 204	3 669	5 145	3 088	2 891	2 958	3 573	3 782	3 943	3 639	3 812
EX	1 446 283	1 481 239	1 594 027	1 811 639	2 025 872	2 309 507	2 570 441	2 671 441	2 381 014	2 751 106	3 012 290
IM	1 476 634	1 545 775	1 660 899	1 828 822	1 940 739	2 153 321	2 431 263	2 496 163	2 196 034	2 536 703	2 713 588
GDP	2 629 135	2 685 643	2 786 789	2 918 955	3 116 056	3 334 815	3 526 071	3 635 344	3 471 494	3 557 216	3 621 908
Residuum	**-2 296**	**-10 793**	**-11 462**	**-3 870**	**0**	**0**	**-3 442**	**-5 743**	**7 142**	**-954**	**-17 848**
Residuum/GDP	**-0.1%**	**-0.4%**	**-0.4%**	**-0.1%**	**0.0%**	**0.0%**	**-0.1%**	**-0.2%**	**0.2%**	**0.0%**	**-0.5%**

Source: CZSO (2013b), own calculations

Table 2 Balanced volumes at prices of 2005 (in millions of CZK)

Name	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
FCE (households)	1 230 613	1 024 364	1 052 829	1 062 125	1 095 282	1 145 870	1 228 862	1 247 520	1 232 933	1 260 447	1 273 433
FCE (government)	541 479	519 723	534 709	538 225	556 906	552 133	545 124	562 611	546 822	570 374	571 146
FCE (NPISH)	14 754	12 028	11 592	8 663	14 142	15 579	16 963	17 700	17 849	17 305	17 627
GFCF	527 981	403 322	437 770	467 323	519 479	640 980	698 476	652 743	647 032	633 604	675 601
CHII	-1 510	-22 005	-30 005	-17 088	17 138	12 916	38 090	8 771	-4 268	-5 848	24 505
NAoV	1 229	931	1 075	1 003	1 301	3 059	3 186	2 904	2 746	2 657	2 870
EX	604 139	537 015	574 015	652 394	673 808	801 500	852 430	934 469	1 044 600	1 103 800	1 296 336
IM	561 635	382 396	495 711	592 396	684 515	843 113	945 615	1 008 670	1 078 664	1 132 351	1 312 293
GDP	2 357 050	2 092 982	2 086 275	2 120 251	2 193 541	2 328 924	2 437 518	2 418 049	2 409 051	2 449 988	2 549 226

Name	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
FCE (households)	1 315 051	1 354 561	1 425 836	1 472 066	1 515 680	1 581 021	1 645 488	1 694 629	1 699 462	1 714 790	1 721 458
FCE (government)	593 003	639 384	677 953	656 427	667 479	663 694	666 272	673 845	701 653	702 814	682 950
FCE (NPISH)	15 786	16 175	16 879	18 730	21 908	24 093	26 863	24 826	25 210	25 010	24 939
GFCF	705 231	731 627	735 992	758 499	804 594	851 276	963 670	1 003 039	893 181	901 643	903 655
CHII	29 764	12 044	-362	30 001	18 371	55 587	83 492	64 066	-41 974	-4 391	-456
NAoV	2 203	3 664	5 138	3 087	2 891	2 958	3 572	3 780	3 945	3 639	3 807
EX	1 445 879	1 479 352	1 591 976	1 810 901	2 025 872	2 309 507	2 569 699	2 670 190	2 382 504	2 750 891	3 008 053
IM	1 477 047	1 547 744	1 663 036	1 829 567	1 940 739	2 153 321	2 431 965	2 497 331	2 194 660	2 536 901	2 717 405
GDP	2 629 870	2 689 064	2 790 375	2 920 144	3 116 056	3 334 815	3 527 089	3 637 046	3 469 321	3 557 494	3 627 002

Source: CZSO (2013b), own calculations

Table 3 Aggregate demand and supply at prices of 2005 (in billions of CZK, balanced)

Name	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Aggregate demand in bil. CZK	2 919	2 496	2 611	2 729	2 860	3 156	3 342	3 415	3 489	3 586	3 834	4 075	4 221	4 449	4 717	5 036	5 430	5 872	6 067	5 702	6 095	6 341
y/y change in bil. CZK	N/A	−423	114	118	131	296	186	73	74	96	249	241	146	228	268	319	394	442	195	-365	393	246
y/y change in %	N/A	−14.5%	4.6%	4.5%	4.8%	10.4%	5.9%	2.2%	2.2%	2.8%	6.9%	6.3%	3.6%	5.4%	6.0%	6.8%	7.8%	8.1%	3.3%	-6.0%	6.9%	4.0%
Domestic demand in bil. CZK	2 315	1 959	2 037	2 076	2 186	2 355	2 489	2 481	2 445	2 482	2 538	2 629	2 742	2 857	2 906	3 010	3 120	3 302	3 396	3 320	3 344	3 333
y/y change in bil. CZK	N/A	−355	77	39	109	169	135	−9	−36	37	56	91	113	115	49	104	110	182	94	−77	25	−11
y/y change in %	N/A	−15.4%	4.0%	1.9%	5.3%	7.7%	5.7%	−0.4%	1.4%	1.5%	2.3%	3.6%	4.3%	4.2%	1.7%	3.6%	3.7%	5.8%	2.8%	−2.3%	0.7%	−0.3%
Foreign demand in bil. CZK	604	537	574	652	674	802	852	934	1 045	1 104	1 296	1 446	1 479	1 592	1 811	2 026	2 310	2 570	2 670	2383	2 751	3008
y/y change in bil. CZK	N/A	−67	37	78	21	128	51	82	110	59	193	150	33	113	219	215	284	260	100	−288	368	257
y/y change in %	N/A	−11.1%	6.9%	13.7%	3.3%	19.0%	6.4%	9.6%	11.8%	5.7%	17.4%	11.5%	2.3%	7.6%	13.8%	11.9%	14.0%	11.3%	3.9%	−10.8%	15.5%	9.3%

Source: CZSO (2013b), own calculations

Table 3 Aggregate demand and supply at prices of 2005 (in billions of CZK, balanced) – continuation

Name	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Aggregate supply in bil.CZK	2 919	2 496	2 611	2 729	2 860	3 156	3 342	3 415	3 489	3 586	3 834	4 075	4 221	4 449	4 717	5 036	5 430	5 872	6 067	5 702	6 095	6 341
y/y change in bil.CZK	N/A	−423	114	118	131	296	186	73	74	96	249	241	146	228	268	319	394	442	195	−365	393	246
y/y change in %	N/A	−14.5%	4.6%	4.5%	4.8%	10.4%	5.9%	2.2%	2.2%	2.8%	6.9%	6.3%	3.6%	5.4%	6.0%	6.8%	7.8%	8.1%	3.3%	−6.0%	6.9%	4.0%
Domestic supply in bil.CZK	2 357	2 114	2 115	2 136	2 175	2 313	2 396	2 406	2 411	2 453	2 522	2 598	2 673	2 786	2 887	3 095	3 276	3 440	3 569	3 507	3 558	3 624
y/y change in bil.CZK	N/A	−243	1	21	39	138	83	10	4	43	69	76	75	112	101	208	181	164	129	−62	51	65
y/y change in %	N/A	−10.3%	0.1%	1.0%	1.8%	6.3%	3.6%	0.4%	0.2%	1.8%	2.8%	3.0%	2.9%	4.2%	3.6%	7.2%	5.9%	5.0%	3.8%	−1.7%	1.5%	1.8%
Foreign supply in bil.CZK	562	382	496	592	685	843	946	1 009	1 079	1 132	1 312	1 477	1 548	1 663	1 830	1 941	2 153	2 432	2 497	2 195	2 537	2 717
y/y change in bil.CZK	N/A	−179	113	97	92	159	103	63	70	54	180	165	71	115	167	111	213	279	65	−303	342	181
y/y change in %	N/A	−31.9%	29.6%	19.5%	15.6%	23.2%	12.2%	6.7%	6.9%	5.0%	15.9%	12.6%	4.8%	7.4%	10.0%	6.1%	11.0%	12.9%	2.7%	−12.1%	15.6%	7.1%

Source: CZSO (2013b), own calculations