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Contents

Abstract

In our analysis, we examine the effects of emigration from Hungary on the labour market and its other economic implications. Since 2008 the number of emigrants has been rising significantly faster than the previous trend, and thus it is important to assess the possible consequences of higher mobility in the Hungarian economy. We focus primarily on the effects on wages, for which it is indispensable to give an overview of the productivity effects as well. To that end, we need to gain a deeper insight into the characteristics of emigrants. As the information in the database available to us is limited to a single segment of those working abroad, namely cross-border commuters, this is the only group for which we can provide a detailed description. We find that the number of cross-border commuters is growing especially rapidly among skilled workers with secondary qualifications and among those employed in the sectors of construction, accommodation and food service activities. As regards age groups, younger generations account for a dominant portion of commuters. Based on the individual characteristics of commuters we assume that cyclical reasons may have contributed significantly to the rise in emigration. At this time, it is difficult to gauge the full impact of emigration on wages, productivity, growth and sustainability, as these factors depend partly on future growth rate of emigration and on the extent to which those working abroad return to the Hungarian labour market.

JEL: E24, E6, F22
Keywords: emigration, labour force survey, labour market

1 Introduction

Following the enlargement of the European Union in 2004, migration from newly joined EU Member States to old EU Member States increased drastically, despite the labour migration restrictions in force in several countries. Hungary, where emigration remained moderate despite the gradual elimination of labour migration restrictions across the EU, was an exception. Since 2008, however, the trend has changed, and Hungary has seen a steep rise in the number of people working abroad. This affects several segments of the economy, including the labour market, savings, the budget balance, social cohesion, actual growth and growth prospects. Consequently, all institutions involved in economic policy must examine the reasons, consequences and expected evolution of emigration as top priorities. From the central bank's perspective, the subject of emigration is particularly interesting because of the impact it exerts, through various channels, on inflation and economic growth.

The literature on international migration is extremely rich and identifies a multitude of effects both in the home and host countries. However, few analyses have been published so far on emigration from Hungary. This may be due to the fact that the phenomenon has only recently grown to the extent that has a material impact on the economy. In addition, analysis is hindered by data problems. Owing to the nature of data sources, international migration is generally easier to examine in the host countries and similarly, most of the literature concentrates on migration's effects on host countries. Fewer studies have been devoted to the effects perceived in home countries, in particular, in the Central and Eastern European states, although more recently, an increasing number of analyses has been published on the subject.

Our analysis is intended to address the possible reasons, characteristics and consequences of emigration from Hungary. It focuses on the Hungarian labour market, but various other channels are also examined. Due to the data problems mentioned above, at this time we only address workers employed abroad based on the records of the Labour Force Survey. This covers employees who work abroad, but still have a permanent home address in Hungary and are considered members of domestic households. They are referred to as commuters. The channels summed up on the basis of the literature, however, do not tend to distinguish between commuting and other types of emigration and as such, include all possible effects.

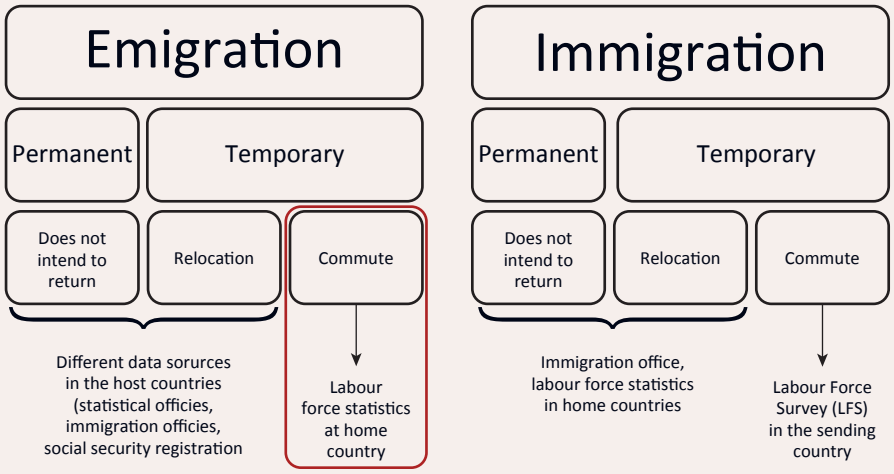
In the first part of our study, we address the different types of international migration. We explain the available data sources and specify the data we intend to elaborate on in our study. We then proceed to identify, based on the literature, the possible cyclical and structural reasons behind emigration, although we are unable to empirically analyse this particular issue. Next, we describe the characteristic features of commuters. The fact that, based on the methodology of the Labour Force Survey, commuters are included in total economy employment raises statistical questions. As presented below, by excluding cross-border commuters we can gain less distorted labour market indicators in respect of companies operating at domestic locations. Analysing the socio-demographical characteristics of commuters, we attempt to draw conclusions about the macroeconomic effects of emigration. In the last chapter of our analysis we provide an overview of the macroeconomic indicators affected by emigration. We focus primarily on wage implications, but we also include a brief description of additional channels. Finally, we provide a summary of our findings.

2 Types of international migration and data sources

Macroeconomic indicators and the behaviour of economic agents are influenced both by emigration and immigration; overall, the net effect of emigration and immigration is considered. Our analysis, however, is limited to emigration, which has increased markedly since 2008. At the same time, the number of permanent immigrants in Hungary has not changed significantly in recent years (Annex, Chart 12). Data are unavailable on commuters to Hungary with a permanent residence abroad as they are included in the Labour Force Surveys of sending countries and are not presented in the Hungarian LFS. Accordingly, this analysis does not address either the possible reasons for immigration to Hungary or its consequences.

Fundamental reasons behind international migration can be economic or other reasons (for instance, migration due to natural disasters, wars, etc.). Our analysis focuses solely on emigration caused by economic reasons. Within this, two groups can be distinguished: *temporary* and *permanent* migrants (Chart 1). Some temporary migrants move abroad but plan to return, while others still have a residence in the sending country and are counted among the members of domestic households. The latter group is referred to as commuters. The two groups can be distinguished precisely mainly on the basis of data sources. Permanent migrants settle down in a foreign country along with their households, planning to stay over the long term, with no plans to return to the sending country.

Chart 1
Types of international migration and data sources



Note: In the descriptive part of our analysis we address the part enclosed in the red frame box.

It is difficult to find reliable data on emigration involving relocation. Home countries do not register those moving abroad, and thus there is also no detailed time series on this group in Hungary. Records kept by host countries vary from country to country (for instance, some countries register arrivals, while others register the population living there at a particular point in time); data are published with different frequencies covering different periods. Furthermore, details on migrants' individual and labour market characteristics (such as education level, age, gender, the ratio of unemployed/economically inactive persons) are usually unavailable.[1] According to World Bank data derived from national censuses (World Bank, 2011), in 2011 462,000 Hungarians –

[1] Details on Hungarian migrants are included in the Labour Force Surveys of host countries; however, they are not available to us at present. Labour Force Surveys are focused on persons having residence in the given country.

4.6 per cent of the population – lived abroad, of which 400,000 people stayed in OECD countries (OECD International Migration Database). These databases do not or only partly include commuters, and the number of emigrants has probably increased since 2011 (Table 1); the current figure is therefore likely to be higher.

Table 1
Number of Hungarian citizens immigrating to main destination countries
thousand persons

Data type	Host country	2008	2009	2010	2011	2012	2013	Source, note
Stock	Germany	60.0	61.4	68.9	82.8	107.4	135.6	Central Register of Foreigners Nationals
	Switzerland	5.2	5.8	6.6	8.1	9.9		Swiss Federal Statistical Office
	Sweden	14.6	15.1	15.3	15.4	15.7	16.0	Statistics Sweden (SCB)
Flow	Austria	2.0	1.9	2.2	3.9	6.6	8.5	Address Registry (ZMR), net inflow
	United Kingdom	14.7	13.8	14.2	17.9	4.7*		National insurance number registrations (NINo), gross inflow *In 2012 data refer to first quarter

Based on the Labour Force Survey, at the end of 2013, the number of commuters is estimated to be around 100,000 persons. This database covers those who work abroad but are still members of domestic households – a member of which completes the survey – contributing with their income to the subsistence of the household. As a result, this database does not cover all commuters: amongst others, those living in Hungary in single person households and commuting abroad to work are excluded. At the same time, it may also include persons who are covered by other databases as well (e.g. those who have applied for a foreign social security number). Since we have detailed data available on the persons covered by the Labour Force Survey,[2] the descriptive part of our analysis addresses this segment. Since the characteristics of commuters may differ from those relocating abroad, based on the description of commuting we can only draw limited conclusions about the effects of emigration. Moreover, changes in the number of commuters do not necessarily reflect a similar change in the number of emigrants: for instance, a decline in the number of commuters may equally stem from a drop of total emigration or from the replacement of commuting with (permanent or temporary) relocation.

[2] The survey does not provide specific data on the place of employment.

3 Reasons for emigration

The dynamics of cross-border employment accelerated at the beginning of the crisis. Starting from 2004, the obstacles to the employment of Hungarian workers in the EU were gradually removed,[3] although it was not until 2008 that a significant expansion of cross-border employment began. This suggests that it was not exclusively due to administrative barriers that emigration from Hungary was not significant before the crisis. The crisis is likely to have increased the relative benefits of cross-border employment compared to domestic work; however, for the time being it is unclear whether this is a cyclical development or a trend. Based on the data currently available, we are unable to find a definitive answer to this question; nevertheless, we provide an overview of the possible reasons behind economically motivated migration.

According to the literature, migration can have a vast number of reasons. They can be classified into different categories (for instance, macro-micro, push-pull factors). In our paper, we summarise the cyclical and structural effects. Distinguishing between these motives is important for two reasons: on the one hand, we would like to gauge whether cross-border workers return to the Hungarian labour market as economic activity picks up; on the other hand, in view of our future accession to the euro area, it is important to examine the extent to which migration serves as a form of adjustment in times of crisis.

Cyclical reasons:

- unemployment rate, differences in employment opportunities in sending and receiving countries. Job opportunities play a key role in migration decisions. Unemployment rises during times of recession which, as a push factor, increases the probability of emigration, while low unemployment rates and high job-finding rates in host countries are perceived as pull factors.

Structural reasons:

- wage differentials: according to neo-classical theories, wage differentials (which reflect the differences between the relative amount of capital and labour and thus their productivity in home and host countries) have a significant impact on migration decisions. The international migration of labour may contribute to the equalisation of wages between countries. However, the wage gap should be high enough to cover the costs of relocation and integration.

- similarities between languages and the number of home country individuals in the destination country: the probability of migration is increased by similarities between the languages of the home and host countries and the number of immigrants in the host country. Several analyses pointed out (e.g. Massey et al. [1993]) that the positive impact of the latter factor works only up to a level; in other words, at some point there may be a saturation level.

- administrative obstacles: the easing of the administrative burdens of migration between countries has a positive effect on international migration.

- differences in welfare expenditures between the home and the host countries, welfare system, education system: the level of welfare expenditures, the generosity of the welfare system and a well-developed education system may be particularly relevant in the case of permanent emigration.

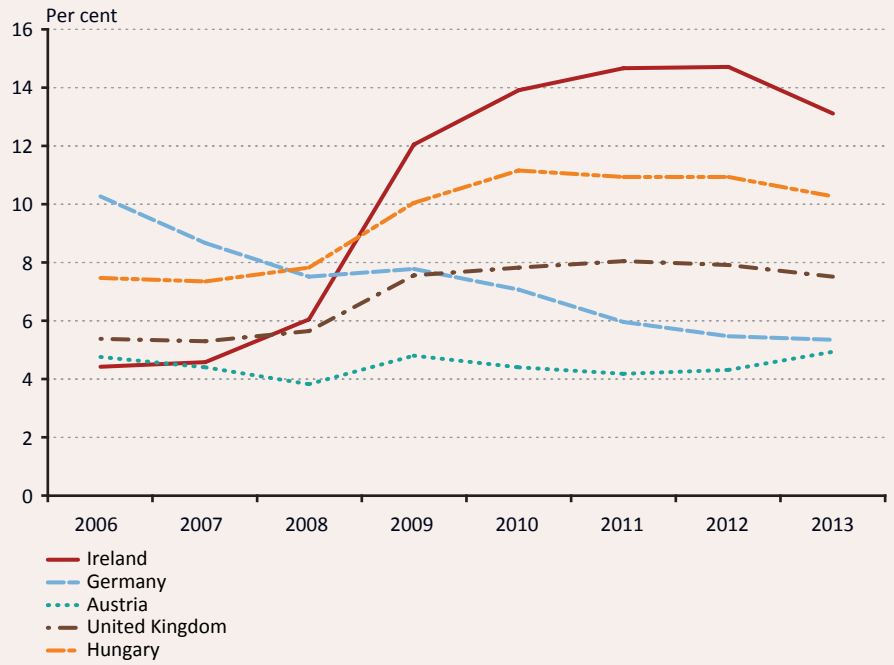
- cultural environment: the general political climate, instability or cultural exclusion may heighten the probability of emigration, while host countries can typically offer better conditions in this regard.

[3] In 2004, Ireland, the United Kingdom and Sweden opened up their labour markets to migrants completely; Austria, Denmark, the Netherlands, Italy and Portugal restricted migration to selected professions, while the rest of the Member States banned migration flows from new Member States altogether. From 1 May 2006, all restrictions were lifted in the labour markets of Finland, Greece, Portugal and Spain, while Belgium, Denmark, France, Luxembourg and Italy began to remove restrictions gradually. From 2011, the entire European labour market was opened up. See also: Hárs (2008).

Since the onset of the crisis unemployment rose in Hungary, and the cyclical reasons stimulating emigration strengthened. At the same time, pull factors may have weakened with simultaneously rising unemployment in the economies serving as destination countries for post-2004 Member States (Austria, Ireland, the United Kingdom, Germany, Italy and Spain), especially in periphery countries (Ireland, Italy and Spain). Labour flows from Central-Eastern European countries to the United Kingdom, Germany and Italy increased nevertheless after the beginning of the crisis (Galgóczi – Leschke, 2012).

Among the CEE countries, emigration increased particularly rapidly from Romania and Bulgaria (both joining the EU in 2007), from the Baltic States (which were hit especially hard by high unemployment) and from Hungary. Poland – from where many people emigrated following EU accession and where GDP has not contracted since the beginning of the crisis – also recorded significant levels of return migration (OECD, 2013). A similar trend emerged in Slovakia: although emigration increased steeply after EU accession, return migration also began with the outbreak of the crisis (Kahanec – Kureková, 2014); the Baltic States also experienced significant return migration a few years into the crisis.

Chart 2
Unemployment rates in Hungary and main destinations of emigration



Source: Eurostat.

Besides data problems, the complexity of individual emigration/return decisions makes it difficult to assess the cyclical nature of employment abroad. For the most part, employment-oriented emigration is temporary (Dustmann-Weiss, 2007) because, for example, the term of the contract determines the length of stay at the outset, or emigration is motivated primarily by a desire to gain experience or accumulate human capital that is applicable in the home country. At the same time, emigration originally planned as temporary may become permanent, or emigrants may return to their home country sooner than expected. Migrants' decisions are influenced, among other things, by the difference between the economic position of the home and the host country, the applicability of the accumulated human capital in the home country, the immigration policy of the host country and the prospects of integration.

Immigrants are usually hit harder by rising unemployment in the host country. This was exacerbated by the 2008 crisis, which, in several host countries, particularly affected sectors with a high ratio of immigrant workers. This may have increased the probability of sooner-than-expected returns to the home countries in general (OECD, 2009; Rodríguez-Planas – Farré, 2014), or may have reduced the level of emigration. There are some sectors, however, where the ratio of immigrant workers is high in developed countries, and employment responds less strongly to changes in the business cycle. Such sectors include healthcare, social work and education. Employment in these sectors, where demand is also heightened by the problems arising from the

aging of the society, is less influenced by the cyclical factors that support temporary emigration. A considerable percentage of Hungarian healthcare workers seek employment abroad (Girasek et al. 2013); in their case, the non-cyclical reasons of emigration may be more dominant.

For the time being, only limited data are available on return migration to CEE countries since the beginning of the crisis. Workers returning to Poland had higher activity rates than their non-migrant peers; however, the unemployment rate is also higher in this segment, especially among those who only spent a short time abroad. It was mainly return migrants who had relocated abroad without any previous job experience in Poland and those deemed overqualified in the Polish labour market (OECD, 2013) who were negatively affected. The unemployment rate of return emigrants in Slovakia was lower than that of the entire population (Kahanec – Kureková, 2014). According to Zaiceva – Zimmermann (2012), emigrants returning to Central and Eastern European countries are more likely to emigrate again than the rest of the population. This means that, despite return migration, the ratio of the internationally mobile population in source countries may remain higher than pre-crisis levels, and another negative shock would heighten the probability of further emigration.

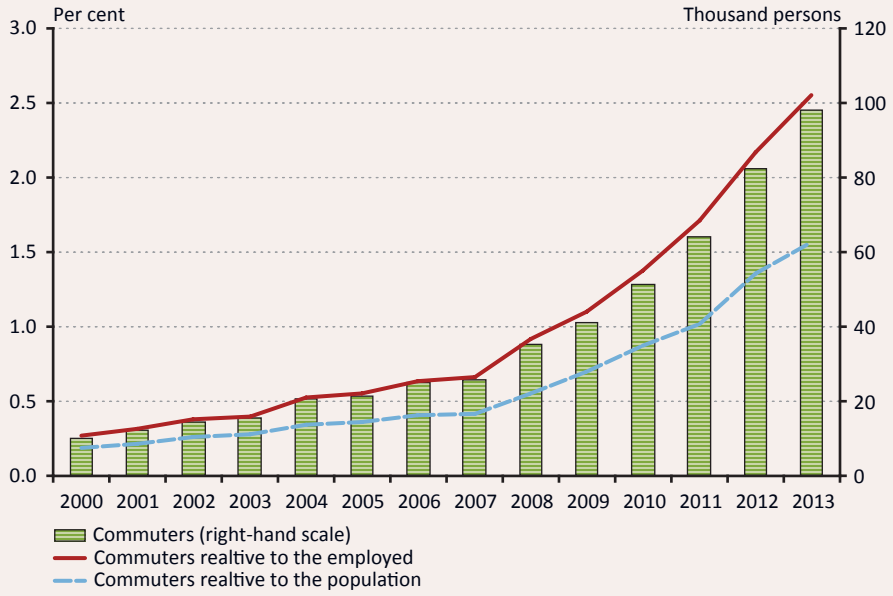
4 Magnitude, statistical characteristics

In the following section, we examine the magnitude and characteristics of cross-border commuters – i.e. those employed at companies with premises abroad – based on the data of the Labour Force Survey (LFS). As the LFS examines labour market status and individual characteristics among employees with a domestic domicile, it is a reliable basis for a detailed analysis of various labour market phenomena and the differences between employees working in Hungary and those working abroad. This allows us to estimate the extent to which commuting distorts labour market indicators, and to examine the individual and labour market characteristics of commuters.

4.1 MAGNITUDE OF CROSS-BORDER COMMUTE AND ITS EFFECT ON AGGREGATE LABOUR MARKET INDICATORS

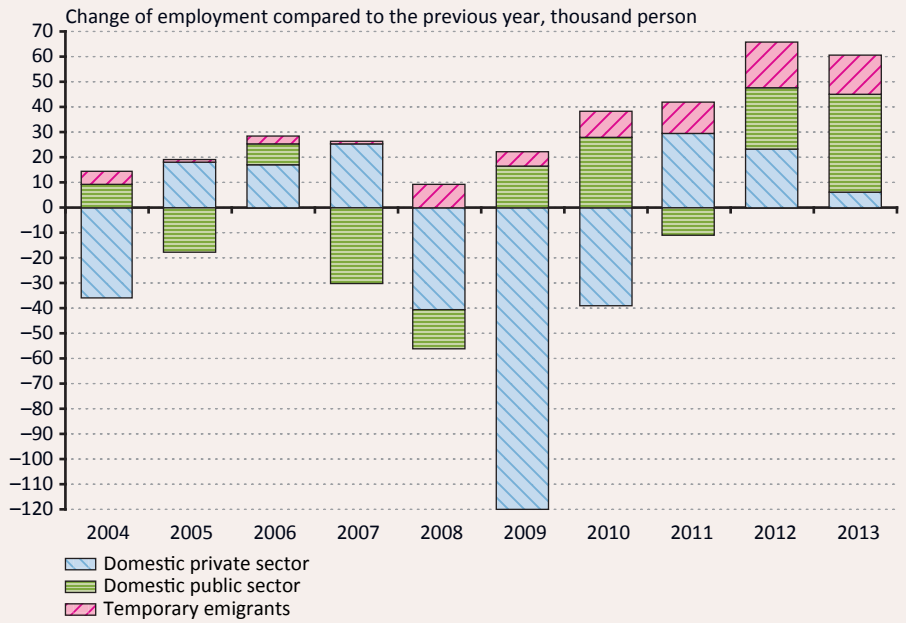
According to the LFS, the magnitude of cross-border commute as a percentage of the population or total employment cannot be considered high despite the dynamic acceleration observed since the beginning of the crisis. Based on the LFS, in 2013 the number of persons employed abroad was around 100,000, which translates into 2.5 per cent of the 3.94 million persons employed in total (Chart 3). This low ratio, however, conceals marked differences between individual groups, as will be shown below.

Chart 3
Magnitude of commute compared to various benchmarks



Source: Labour Force Survey.

Chart 4
Changes in national economy and cross-border employment compared to the previous year



Source: Labour Force Survey.

Changes in the number of commuting employees compared to those in total employment (i.e. within the flow) have gained increasing significance since the onset of the crisis. It is especially true when changes in the number of workers employed abroad are compared to the changes in domestic private sector employment (Chart 4). In other words, since the beginning of the crisis, the expansion of commuting has played a far more important role in the *change* in employment than in the *level* of employment.

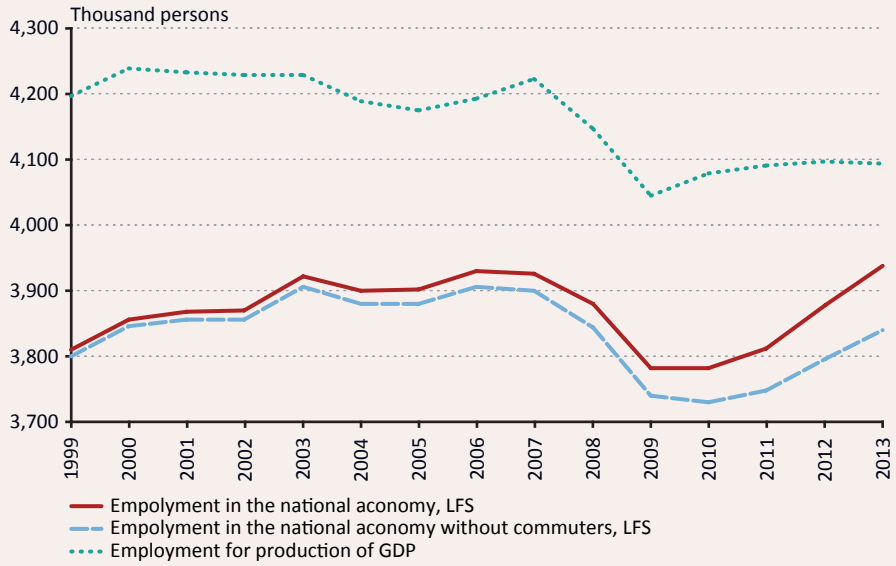
Since our labour market analyses are focused on companies operating in domestic premises in general and private sector enterprises in particular, we apply labour market indicators to this segment. The number of employees working at domestic sites is best reflected by the employment for production of GDP. The shortcoming of this indicator is that, being an annual figure, it does not indicate the short-term changes in employment. As the Labour Force Survey broken down by sector is available with a quarterly frequency, we use it as a basis for examining the short-term developments in employment. The differences between the two databases are shown in Table 2.

Table 2
Differences in employment data according to the LFS and according to GDP

	Employment based on the LFS	Employment for production of GDP
Resident workers aged 15–74, not living in institutions and working for resident producer units	X	X
Resident persons who work for non-resident producer units – CROSS-BORDER COMMUTERS FROM HUNGARY	X	
Non-resident persons who work for resident producer units – CROSS-BORDER COMMUTERS TO HUNGARY		X
Employed persons living permanently in an institution (social rehabilitation institutions, residential homes, hospitals, prisons, hotels, etc.)		X
Employees excluded from LFS because of the age limit		X
Specific estimates about the number of workers engaged in production undertaken entirely for their own final consumption or own capital formation, the number of domestic personnel employed at households as employees, employment in illegal activities		X

Source: HCSO.

Chart 5
Number of people in employment based on selected statistics



Source: HCSO, Labour Force Survey.

The number of employees included in the LFS is far lower than those contributing to GDP production, although the difference has decreased somewhat since the beginning of the crisis (Table 5). By extracting the number of commuters included in the Labour Force Survey, one of the differences between GDP and the LFS can be corrected, thereby reducing the distortion entailed by the use of the LFS. The reduction of the distortion is especially evident in the dynamics of employment.

The exclusion of commuters does not significantly change the level and dynamics of various aggregate labour market indicators and the corporate indicators derived from such, but this effect has been growing since the beginning of the crisis. Table 3 shows the direction of changes in selected labour market indicators after the exclusion of all cross-border commuters from labour market aggregates. For this exercise it is not enough to adjust the time series of employees; the time series of the unemployed, economically active persons and the population must be adjusted as well.[4] The specific indicators are presented in the Annex.

Table 3
Impact of the exclusion of commuters on labour market indicators and their annual dynamics

Indicator	Change	Indicator value in 2013 (per cent)	
		Unadjusted	Adjusted for the effect of commuters
Employment rate	⇩	51.6	51.1
Labour force participation rate	⇩	57.5	56.9
Unemployment rate	–	10.2	10.2
Productivity (annual index)	⇧	0.9	1.5
Profitability (level)	⇧	47.8	49.5

Source: Labour Force Survey, HCSO, MNB calculation.

[4] The Labour Force Survey also includes persons who have indicated that their place of work is abroad; however, their current status is unemployed or inactive (including persons currently studying abroad if the duration of the training is less than a year, as well as those who worked abroad a year ago but they are now in Hungary either on maternity leave or as pensioners). It is unclear whether they should be classified as unemployed or economically inactive persons residing in Hungary, or whether they should be included in the non-resident active or inactive population. In our calculations we assumed that everyone who currently works abroad or worked abroad in the past one year is a part of the non-resident population. In the case of people in employment this is certainly a valid assumption. As regards the unemployed and economically inactive persons the answer is unclear; however, they do not imply a substantial distortion in any case (the number of unemployed persons within this group was 4,000 before the crisis compared to 11,000 in 2013; while the number of inactive persons rose to around 10,000 from 1,000 before the crisis).

In the following, we present in detail the changes in specific indicators resulting from the exclusion of the effects of commuters:

- Labour force participation rate: Most commuters are employed, and a smaller part of them is unemployed or inactive. This means that economically active workers are overrepresented among commuters compared to the total population. The labour force participation rate (active population /population) is around 0.5 percentage point lower in the 15–74 age group after the exclusion of commuters; however, this does not change the increasing trend of the participation rate (Annex, Chart 13).

- Employment rate: The same is true for the employment rate (employed workers/15–74 age population); however, the difference here ranges between 0.5 and 1 percentage points. Even adjusted for commuters, the total economy employment rate has reached pre-crisis levels (Annex, Chart 13).

- Unemployment rate: The exclusion of commuters has no notable effect on the unemployment rate as the adjustment induces a similar change in the numerator (job-seekers) and the denominator (active population) of the unemployment rate (Annex, Chart 14).

- Productivity ratio in the private sector: Labour productivity is measured by per capita GDP (GDP/number of people in employment or GDP/total hours worked). While the indicators derived from total employment and those derived from the number of employees working on domestic sites are different in terms of level, they roughly correspond to each other as regards dynamics, although productivity has increased somewhat more dynamically since the trough of the crisis in case of the unadjusted indicator. In contrast, the decline in the number of hours worked per capita exerts a greater impact both on the level and the dynamics of the indicator than the increase in cross-border commute (Annex, Chart 15).

- Profitability ratio in the private sector: The exclusion of commuters changes the level of the corporate profitability ratio (value added minus wage costs/value added) as well. Since the calculation of wage costs is based on the number of employees, the level of the profitability ratio – which takes into account the number of those employed on domestic sites – is higher than the ratio derived from the total number of employees in the private sector. Nevertheless, the adjustment does not change the dynamics of profitability considerably (Annex, Chart 16).

4.2 DETAILED CHARACTERISTICS OF COMMUTERS

In this subsection, we describe the characteristics of the commuters covered by the Labour Force Survey. We examine their composition by age group, education level, sector, previous labour market status and residence. We performed the above examination not only in the absolute sense, but also for the relative ratio within the entire group (i.e. the total number of commuters and those employed at domestic premises). In addition, we compared the respective composition of employees working at resident and non-resident locations. This is important because the ratio of commuters may differ significantly within the individual groups, which may have different effects.

4.2.1 General characteristics

Commuters covered by the LFS are younger with less potential experience[5] and the ratio of employees with secondary qualifications is higher among them, compared to the resident Hungarian population. The average age, education level and potential experience of the economically active population follows a slowly rising trend. On average, commuters are 3–4 years younger and have 7 years less potential experience compared to the active domestic population, and the difference has increased somewhat since the outbreak of the crisis. The percentage of women within cross-border commuters is far smaller than within the total active domestic population, although the number of women migrants has also increased since the beginning of the crisis. In addition, the percentage of migrants holding a university or college degree also lags behind the corresponding domestic figure. The proportions based on education levels may be distorted by the fact that workers with higher education are more likely to relocate, temporarily or permanently, with their entire households; thus their percentage within the total number of employees shown by the LFS as working at foreign locations may be smaller than their ratio to all employees working abroad.

[5] Potential experience means the number of years elapsed since obtaining the highest level of education.

Table 4
Characteristics of active commuter population vs. domestic active population

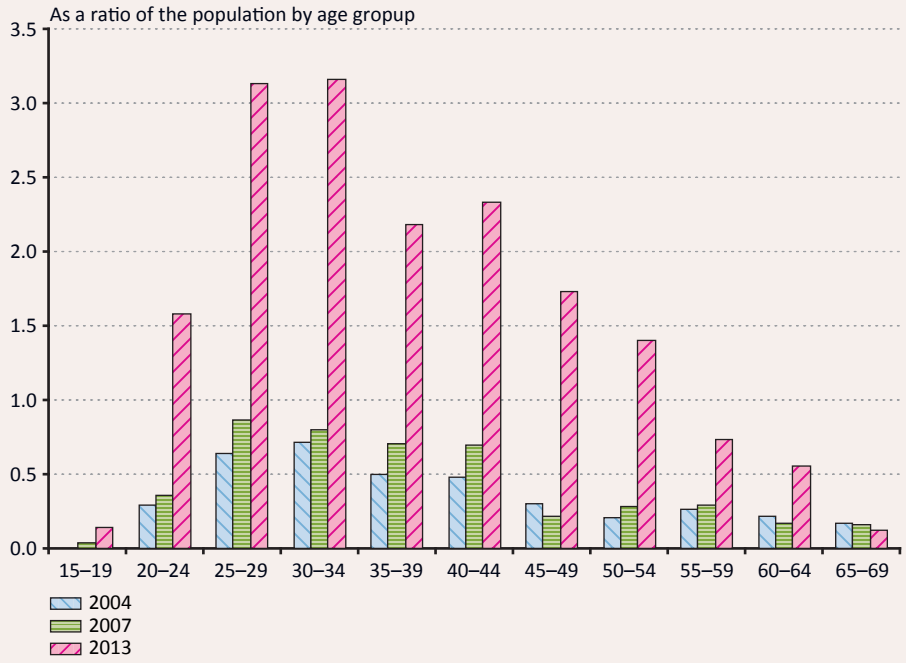
	2004–2007		2008–2013	
	Domestic active population	Commuters	Domestic active population	Commuters
Average age (years)	39.7	38.2	40.6	37.0
Average potential experience (years)	25.6	20.0	26.3	19.6
Ratio of women to active population (percentage)	45.8	23.4	46.3	25.4
Ratio of employees with primary education or less to active population (percentage)	14.8	5.6	13.3	8.2
Ratio of skilled employees with secondary education to active population (percentage)	56.1	70.2	54.1	66.0
Ratio of unskilled employees with secondary education to active population (percentage)	8.8	5.4	9.1	8.3
Ratio of employees with higher education to active population (percentage)	20.3	18.7	23.5	17.6

Source: Labour Force Survey.

4.2.2 Age composition

Most commuters are found in the age group of 25–40; however, as regards their number within the population and within the number of employed persons, the ratio of commuters is the highest in age group 25–35 (Chart 6). In the age group 15–25, the number of cross-border commuters is low in comparison to the population, but is high and rising fast compared to the number of persons employed.

Chart 6
Ratio of commuters to total population by age group

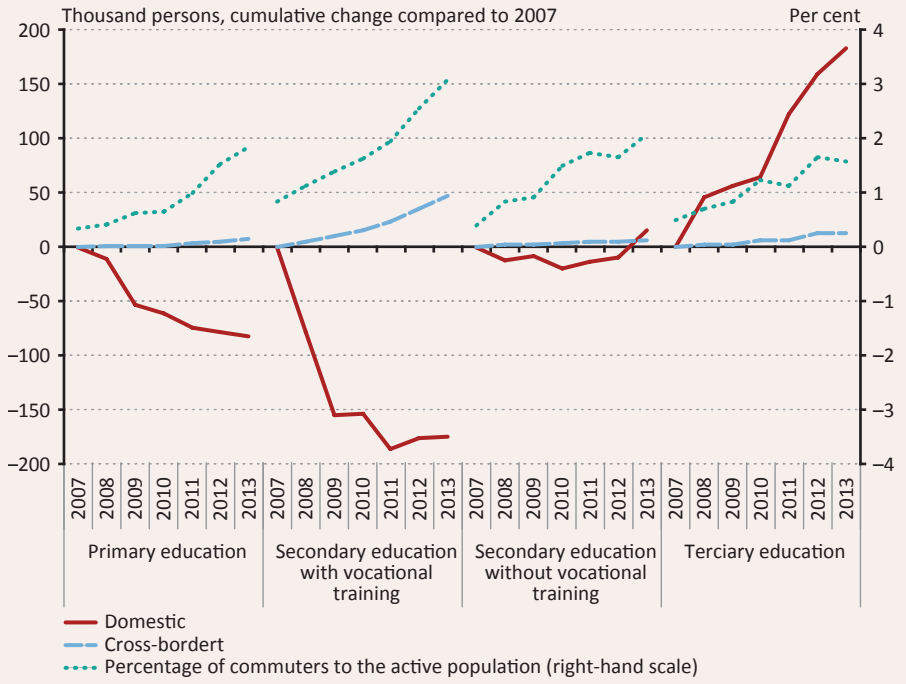


Source: Labour Force Survey.

4.2.3 Composition by highest educational qualification

Most commuters are skilled employees with secondary education. Two thirds of all commuters hold a vocational training qualification; employment abroad is rising fast within this group, and their ratio to employed persons with the same education level and to the population exceeds the average (in 2013, 3 per cent of skilled employees with secondary education worked abroad). The domestic employment of skilled employees with secondary education has declined significantly since the beginning of the crisis, which indicates the strengthening of the pull factors in this segment (Chart 7). The percentage of commuters among employees holding a university or college degree is low. Presumably, in this segment emigration entailing relocation is higher; at the same time, this is the only group where domestic employment has been steadily growing since the beginning of the crisis,[6] and therefore, pull factors are less prominent in their case.

Chart 7
Changes in the number of workers employed at domestic and foreign sites since 2007 by education level



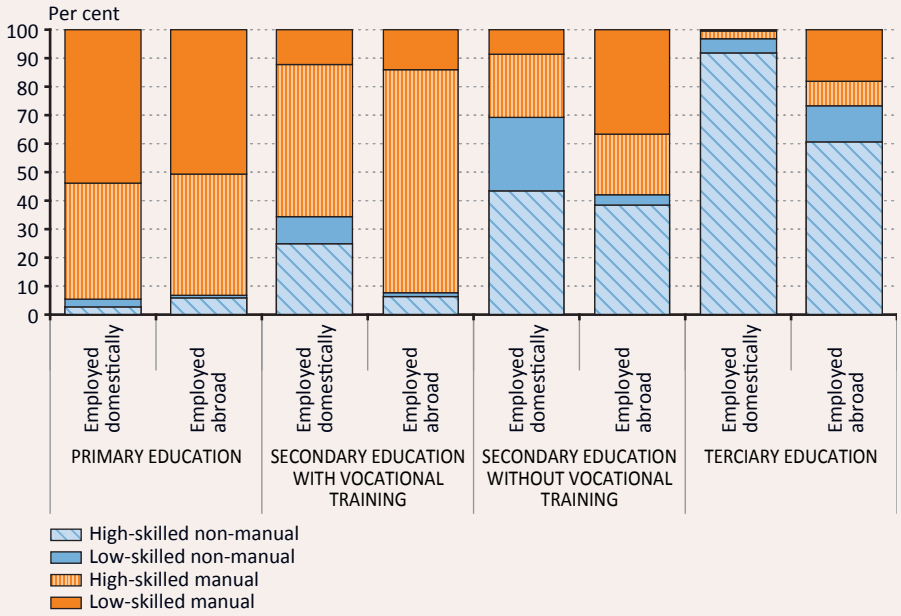
Source: Labour Force Survey.

A large number of cross-border commuters from Hungary find employment in positions requiring lower qualifications than what they hold. Since we have no detailed information on the distribution of host country employees by education level, we compare commuters to workers employed at domestic sites. We examined the distribution of employees by education level on the basis of the Hungarian Standard Classification of Occupations (Hungarian abbreviation: FEOR), which provides detailed information; however, owing to the low number of workers employed in foreign workplaces, the statistical error may be higher in this segment than in the case of all employees. Accordingly, among those working abroad, a higher percentage of employees find employment in jobs requiring a lower education level than among those working in Hungary (Chart 8). The percentage of employees finding employment in manual occupations is also higher among unskilled employees with secondary and higher education compared to domestic employees; they typically fill positions in the trade and services sectors or find unskilled manual occupations. At the same time, a higher percentage of skilled workers employed abroad find employment in the sectors of industry or construction compared to their domestic peers.

[6] This is because during a recession people with higher education levels are more likely to find employment in jobs requiring a lower qualification; consequently, their unemployment rate grows to a lesser degree than in the case of people with lower education levels. In addition, the phenomenon may be also explained by structural changes in labour supply and labour demand.

In the case of international migration, it often happens that migrants fill positions in the host country that require a lower education level than what they have. This may be attributed to migrants' lack of language or other skills required in the labour market, or they have lower skills or productivity than the employees of the host country. Another possible explanation is that even the occupations less preferred by domestic employees are more attractive to them than the positions available in the source country. Taking a lower position on the career ladder may be temporary, and migrants may advance to higher levels as their language skills and social assimilation improve over time. According to the literature on migration, the distribution of migrants by occupation may converge to that of the native population over time; however, it will not reach the same proportions even after several years (Fernández – Ortega, 2006; Alcobendas – Rodríguez-Planas, 2009; Bratsberg et al, 2014). Based on analyses addressing EU enlargement in 2004 and 2007, a part of Central and Eastern European migrants to Western Europe moved up on the career ladder, for example, in the United Kingdom (Kahanec – Kureková, 2014). In contrast, Granato (2014) found that lower-skilled Central and Eastern European immigrants were unable to advance to positions requiring higher experience in Germany, and similarly, Rodríguez-Planas – Farré (2014) found no convergence to native employees' occupation rates in Spain. In the case of commuters covered by the LFS, assimilation and advancement appears to be less typical than observed in the case of more permanent forms of emigration, and the probability of the partial erosion or loss of the human capital of overeducated employees is higher.

Chart 8
Positions filled by workers employed at domestic and foreign sites by education level
(2013)

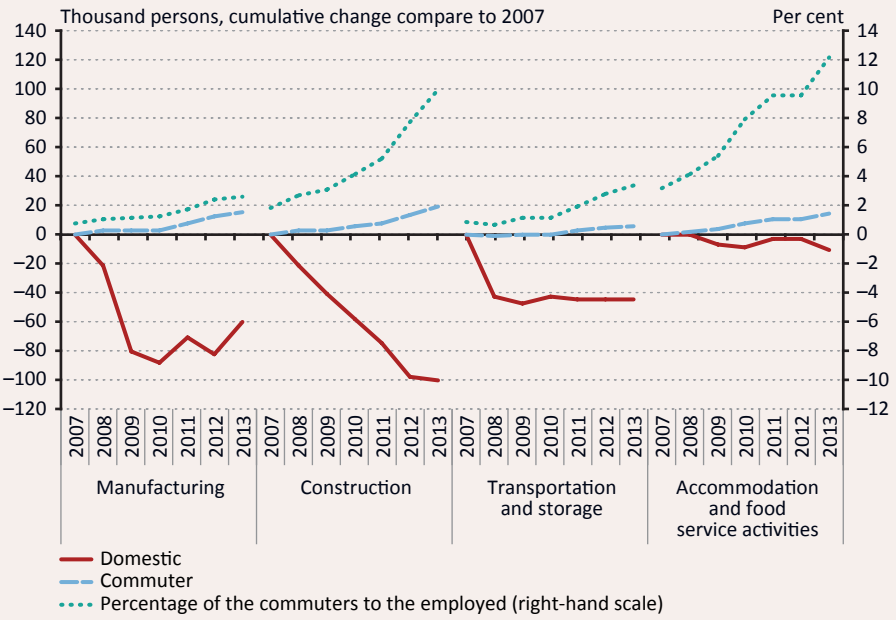


Source: Labour force survey. The highest qualifications of intellectual occupations include managers; positions requiring higher education with decision-making independence; and other positions requiring a university (college or equivalent) degree and other tertiary or secondary education (FEOR 1, 2, 3). Office and management (customer services) occupations are classified as intellectual positions requiring lower skills (FEOR 4). Highly skilled physical labour includes commercial and services occupations; industry and construction industry occupations; and machine operators, assembly workers and drivers of vehicles (FEOR 5, 7, 8). Unskilled physical labour includes occupations not requiring formal qualifications (FEOR 9).

4.2.4 Composition by industry

The increase in the number of commuters primarily affects the sectors of construction, and accommodation and food service activities. Both in terms of the composition of migrants and in terms of ratio to the total number of people employed, most commuters work in construction and the accommodation and food service activities industry. The steep decline in domestic employment may have contributed to the increase in the emigration of employees in both sectors (Chart 9). Domestic employment diminished in the construction industry to the largest degree, with no improvement seen since the trough of the crisis. Thus, the decrease in the denominator also contributed to the increase in the ratio of those working abroad. As regards the sector of accommodation and food service activities, domestic employment has dropped slightly since the beginning of the crisis. In this sector, the rise in the number of workers employed abroad has nearly matched the decline in domestic employment

Chart 9
Changes in the number of workers employed at domestic and foreign premises since 2007 in selected industries



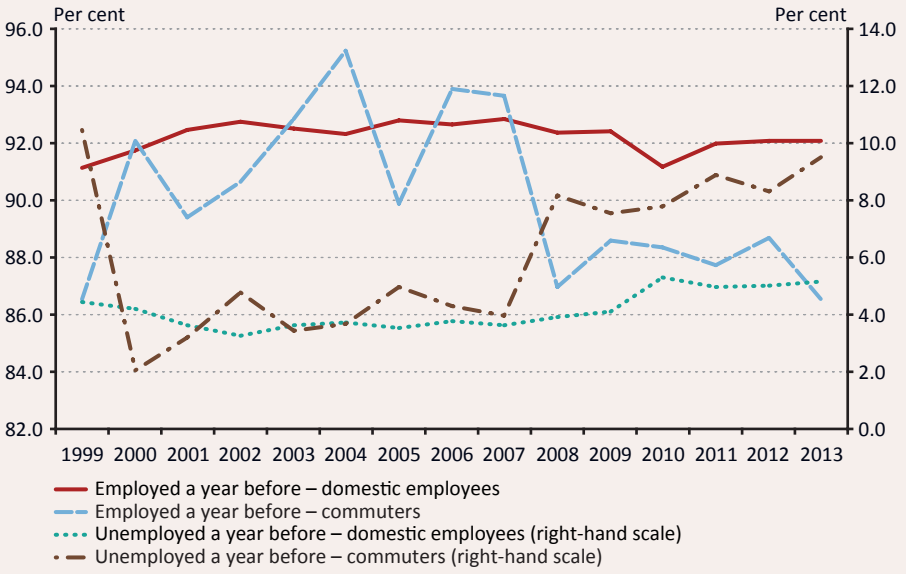
Source: Labour Force Survey, sectors with the biggest weight in foreign employment.

since the onset of the crisis. This sector therefore has the highest probability of facing a situation where emigration becomes an impediment to growth in domestic employment. At the same time, it is difficult to gauge the sectoral effects in the lack of information about whether emigrants find employment in the same sector abroad as in Hungary.

4.2.5 Activity in the same period of the previous year

Among commuters, the ratio of people who were unemployed previously is higher than among domestic employees (Chart 10). In order to assess the reasons and labour market effects of the increase in cross-border commuting, it would be important to

Chart 10
Activity of workers employed at domestic and foreign sites in the same period of the previous year



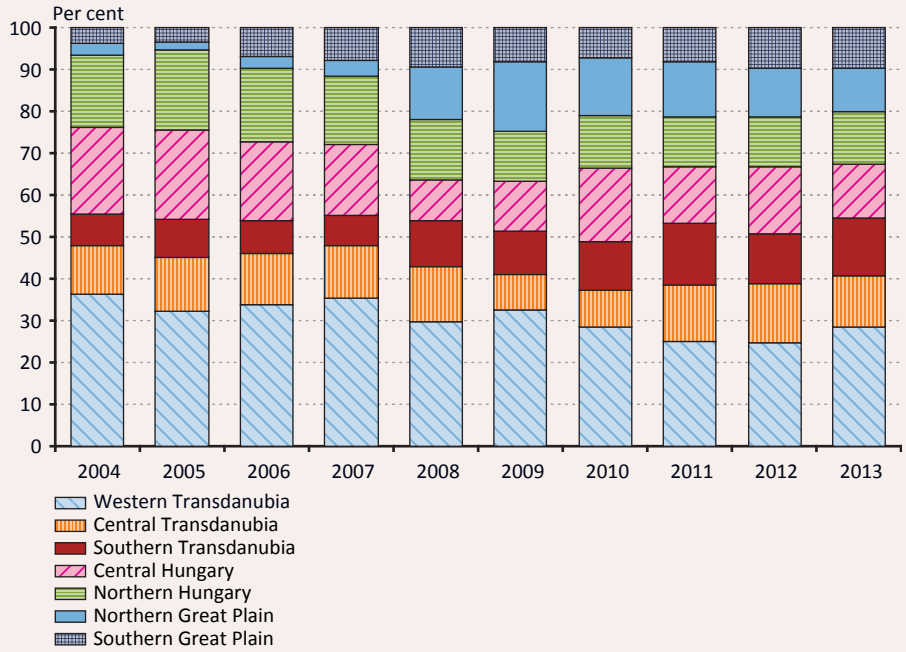
Source: Labour Force Survey, as a percentage of total domestic employment and employment abroad.

know whether it affects the unemployed or those in employment the most. One of the questions of the LFS inquires about the subject's activity one year preceding the survey, i.e. whether the subject was employed, unemployed or economically inactive at the time. However, we have no information about what happened to the respondents in the period between the date of the survey and the date one year earlier. Those who were employed earlier may have quit their previous jobs or may have been dismissed before finding their current employment. Therefore, this question provides only a relatively rough estimate on the labour market status preceding the foreign employment. At the time of the inquiry, the ratio of the previously unemployed to workers employed abroad was higher than their ratio to workers employed at domestic sites. This suggests that the acceleration of cross-border employment may have been driven by cyclical reasons.

4.2.6 Composition by residence

Cross-border commuting from the entire territory of Hungary has increased since the beginning of the crisis. Nearly one third of commuters live in Western Transdanubia; presumably, their main destination is Austria. Distribution between the rest of the regions is relatively level, and the weight of Western Transdanubia in the overall migrant population has declined since the beginning of the crisis (Chart 11); in other words, mobility has increased from the entire territory of Hungary.

Chart 11
Distribution of workers employed at foreign sites by region of Hungarian residence



Source: Labour Force Survey.

5 The effect of emigration on macroeconomic indicators

In this chapter we provide an overview of the other channels through which emigration affects macroeconomic variables beyond the statistical distortion effects. International migration across the European Union has increased in recent years, partly owing to the crisis, and partly thanks to the opening up of labour markets. As a result, both professionals and the public have paid increased attention in recent years to the effects of international migration both in the home and the destination countries. In this chapter we sum up the effects perceived in home countries.

Emigration exerts its effects through two key channels. On the one hand, emigration changes the *size* and the *composition* of the population in terms of activity, education level, experience, age, productivity and consumption behaviour. This affects the size and structure of the available labour force, average productivity and aggregate consumption and hence, payments to the central budget and transfers. On the other hand, emigration may also alter the *behaviour* of the non-migrant population and companies. The effects are complex and may vary across different time horizons. For the purposes of our analysis we concentrate on the wage effects; however, we also provide a brief overview of the other effects.

Table 5
Effects of emigration in the sending country

	Positive effects	Negative effects
Declining population and diminishing active population	Less unemployment due to the given labour demand and the emigration-induced decline in labour supply Lower social expenditures	Negative demographic effects (emigration of the youth; lack of regional cohesion) The sustainability of welfare systems (pension scheme, healthcare system) is jeopardised Wage pressures driven by the tighter labour market environment Declining tax revenues
Selective emigration	Average productivity may improve if less productive employees seek employment abroad Mismatches may improve if employees from occupations in excess supply leave the country	Average productivity may deteriorate if more productive employees seek employment abroad Mismatches may worsen if employees from occupations in excess demand leave the country
Remittances	Remittances may improve domestic living standards and may be used to finance investment projects and the development of education	Remittances may deteriorate domestic productivity
Movement of human capital	Workers employed abroad may pass on their experience and knowledge (brain gain)	Brain drain (loss of resources invested in education and training, lower competitiveness)
Miscellaneous	Strengthening trade relations	The movement of people may replace the movement of goods; thus emigration may lead to a contraction in external trade

5.1 THE EFFECT OF EMIGRATION ON WAGES

Examining inflationary pressures from the labour market is extremely important for the central bank. Emigration affects inflationary pressure through two channels. On the one hand, emigration exerts an impact on average productivity. The direction of this impact, however, is ambiguous. In the following, we present the channels through which average productivity may increase or decrease. Over the long run, wages increase in line with the growth rate of productivity and accordingly, changes in productivity influence wages. On the other hand, migration may tighten the labour market which generally puts upward pressure on wages. Productivity and tightness jointly determine wage dynamics. The inflationary effect depends on the relative changes in productivity and wages. Wage growth surpassing productivity growth fuels supply side inflationary pressures. Demand

side inflation, however, may rise even amid constant unit labour costs (ULC); i.e. even when improving productivity spurs an increase in wages.

Below we briefly summarise the channels through which emigration may affect productivity. We identified six channels, the net effect of which is ambiguous:

1. Emigration reduces the economically active population, the labour market becomes tighter and consequently, employees have to exert less effort to obtain or retain a position which, in turn, *reduces* average productivity.

2. If the productivity distribution of workers finding employment abroad deviates from that of those remaining in the domestic labour market, the composition of the active population will change. The departure of more productive workers reduces average productivity, while the departure of less productive workers increases average productivity; *the effect is ambiguous.*

3. Migrants frequently support their relatives by remittances. The effect of remittances on productivity is *ambiguous.* Chami et al. (2003) examined 113 countries and found that immigrant remittance flows reduced home-country employees' willingness to work and hence, deteriorated economic performance. Le (2009) analysed the data of developing countries to assess the role of remittances – in addition to trade and the institutional system – in economic development. Based on the data of more than 30 countries, the findings of the research suggested that remittances had a negative impact on growth. Meanwhile, Ziesemer (2012) analysed 52 poor countries and concluded that remittances not only had a positive effect on per capita GDP growth, but also enhanced savings and expenditures on education. Catrinescu et al. (2006) found that remittances exert a weak positive impact on long-term economic growth. According to the IMF World Economic Outlook (2005), remittances represent the largest source of external funds for certain transition economies, ahead of working capital inflows and export revenues. The report found no significant correlation between per capita output growth and remittances.

4. When emigration is high or on the rise, domestic employees may perceive that more jobs are available to them, which dampens their efforts to find or keep a domestic position (Budnik, 2012). This gives rise to a *deterioration* of motivation and average productivity.

5. The free option of employment abroad increases the propensity of workers to invest in the development of their human capital. If they eventually opt for staying at home, their improved human capital will be harnessed in the domestic economy, thereby *increasing* average productivity (Beine et. al., 2001; Beine et. al., 2011). Several authors pointed out that the mere option of emigration facilitates a greater accumulation of domestic human capital as opposed to countries where employment abroad is prohibited. They argue that the propensity to pursue a higher education with a view to finding employment abroad is greater in countries that permit the free movement of labour, and only a part of those obtaining the education will actually emigrate. Consequently, with adequate proportions, the accumulated knowledge of the society is greater than it would be if the movement of labour was restricted. Similarly, a number of questionnaire-based surveys confirmed that the possibility of working abroad played a role in school selection and the propensity to obtain a higher degree (e.g. surveys polling Indian physicians working in the United Kingdom [Kangasniemi et al. (2007)]; university graduates in the Philippines [Lucas (2004)], and households in Cape Verde [Batista, (2012]).

6. Emigration also influences the level and development of human capital and knowledge available in the economy. The net result of negative (brain drain) and positive (brain gain) effects is *ambiguous.* Beine et al. (2011) provide a summary of the theories developed heretofore on the brain drain. According to the study, the general consensus from the 1970s was that migration further exacerbates inequality across poor and rich nations. It is particularly true if brain drain is concentrated in some strategic occupations (e.g. healthcare), and the skilled migrants were trained in their country of origin. Since the mid-1990s, however, a new wave of research has emerged, pointing out that skilled migration generates beneficial effects for sending countries. These effects can partly or fully compensate the negative implications of migration (costs of education and training, non-generated income, unpaid taxes, etc.). Among the positive effects, the authors mention remittances, benefits from the diaspora (e.g. researchers or teachers employed abroad teaching in sending countries) and the brain gain circulation spurred by return migrants. Agrawal et al. (2011) examine a specific case. The authors attempt to identify the impact of high-skilled emigration on local research and development activity in India. They found overall, that, in terms of research and development, poor countries will be better off if their highly skilled workers stay at home rather than importing new technologies or innovation from abroad.

Brain gain effects are also influenced by the positions available to migrants in the host country. As we noted earlier, in the host countries migrant labour tends to fill positions that are inferior to their education level or experience. This may lead to the erosion of their knowledge and no positive effects will be perceived upon their return. If, however, the knowledge obtained abroad can be harnessed in the domestic labour market, by passing on their experience return migrants may facilitate the improvement of productivity.

Emigration may increase the tightness of the labour market which, *ceteris paribus*, points to higher wage dynamics. In a tighter labour market, fewer job-seekers compete for the same position, and thus the bargaining power of employees improves, which may result in higher wage growth. Emigration may improve or deteriorate mismatches. If the occupation of emigrants is in high demand in the domestic labour market, the match will deteriorate, putting upward pressure on wage dynamics. In certain groups a labour force shortage may emerge. At the same time, mismatches may ease if there is an excess supply of the emigrants' skills in the home country.

Empirical studies usually find evidence of emigration-related wage increases in the sending countries. Dustmann et al. (2012) examined the Polish labour market between 1997 and 2007. Emigration from Poland was the largest among workers with secondary education, and wages for this category increased the most. Emigration led to a moderate increase in wages overall, but the wages of workers at the low end of the skill distribution dipped slightly. Mishra (2007) found evidence of a similar effect in Mexico during the period between 1970 and 2000. The author concluded that emigration had a strong positive effect on wages in Mexico: emigration increased wage inequality. A 10 per cent emigration-related decrease in the number of Mexican workers in a skill group (defined by schooling and experience), increased the average wage in that skill group by about 4 percent. Using data pertaining to Lithuania (which saw the largest flow of emigrant workers to Western European Member States after Lithuania's accession) Elsner (2010) found that emigration had a significant positive effect on the wages of men who stayed in the country, but no such effect was visible for women. A one percentage point increase in the emigration rate increased the real wage of men by 1 per cent on average.

The effect of emigration on Hungarian wages is hard to quantify. On the one hand, the information available covers only a part of the emigrants (commuters); on the other hand, these effects were primarily perceived during the recovery of the economy, pertaining to which wage data are currently unavailable. Having said that, based on the literature and the detailed characteristics of workers employed abroad, we can already draw some conclusions about the possible wage effects. The factors listed below suggest that emigration may have increased wages:

- emigration is on the rise; although its exact magnitude is underestimated due to the methodology of the Labour Force Survey, we do not presume any significant return flows. Questionnaire-based surveys found that a growing number of workers envisage employment abroad – at least on a temporary basis – in the near future.

- among commuters, skilled employees represent the highest weight. Although the potential experience of commuters is lower than that of the workers employed at domestic sites, the difference is not significant; there is a high percentage of experienced workers among emigrants as well.

- labour market indicators suggest that the labour market is less slack than before; production is impaired to a slightly greater extent by the shortage of suitable professionals than earlier. As a result – and also due to long-term unemployment – labour market mismatches may have strengthened since the beginning of the crisis, which may have been reinforced further by emigration in certain groups. During the recovery this may push wage indices upward.

At the same time, this effect is mitigated by the following factors:

- the number of commuters increased significantly only in certain sectors and skill categories. Based on temporary emigration data, the construction industry and accommodation and food service activities have the largest number of workers employed abroad. Having a moderate weight, these sectors are not expected to influence the aggregate wage index significantly, although, due to a lack of information about a part of the emigrants, this effect may well be underestimated.

- as the labour market remained extremely slack throughout the period of large migrant outflows, without emigration we presumably would have observed higher unemployment and the same employment rate. Some of the workers temporarily employed abroad may have decided to leave for cyclical reasons and may return as domestic labour demand recovers, increasing the free workforce of Hungary. However, the extent to which temporary emigration may become permanent is unclear.

5.2 THE EFFECT OF EMIGRATION ON OTHER MACROECONOMIC INDICATORS

In this subsection, we briefly describe the possible effects of emigration on selected economic indicators in addition to those mentioned above.

- Unemployment, labour force participation rate: the fact that migration reduces the labour force available in the economy increases the employment opportunities of those staying in the domestic labour market. This may even have a positive effect on activity in groups currently inactive because of scarce job opportunities (discouraged workers). In other words, the unemployment rate would be higher, and the labour force participation rate would be lower without emigration. This effect may be subdued if emigration gives rise to labour market mismatches; i.e. if the loss of emigrants' knowledge and experience cannot be replaced in the domestic market. In that case the unemployment rate may get stuck at high levels despite increasing migration.

- Savings: the emigration of high-productivity (and therefore, highly paid) employees may reduce the volume of aggregate savings significantly. This may be offset by remittances, although a part of those will be spent on consumption. The remittances of permanent emigrants may fall short of the level of savings that would have been accumulated in case of domestic employment.

- Sustainability of welfare systems: youth emigration may deepen the problems of ageing societies. The group of contributors and average payments to the social insurance system may both decrease, with a parallel increase in the retirement age population. Taken together, the sustainability of welfare systems becomes precarious. This poses a particularly great risk to Hungary as, looking forward, the number of economically active workers declines, and emigration only reinforces this process.

- Fiscal effects: social expenditures may decrease in the context of lower unemployment and higher labour force participation rates. However, tax revenues and the balance of welfare systems are negatively affected by the emigration of highly skilled and highly paid employees, as well as those with improving wage prospects. The overall effect on the budget balance is expected to be negative, rather than positive over the long term.

- Competitiveness, growth outlook: emigration changes average productivity through the channels described above. These channels, as well as the effects on the sustainability of the welfare systems also influence long-term growth prospects and competitiveness.

- Effects on trade: emigration may also alter trade relations. As emigration and trade may function both as alternatives or supplements, the overall trade effects are unclear. On the one hand, emigrants contribute to alleviating the linguistic, cultural, institutional and other obstacles of international trade; they appear as consumers in their own right and as such, they may influence the range of goods involved in international trade through their own preferences. On the other hand, as producers or providers of the goods and services, through their mobility they may replace or reduce external trade. Empirical studies usually find evidence of emigration's boosting effect on external trade (WTO, 2013).

On the whole, it is difficult to draw a clear conclusion in respect of the effects of increasing emigration. Indeed, during a period of recession it may have positive short-term effects; the long-term effects, however, largely depend on changes in competitiveness and long-term growth outlook. Higher international mobility could become an important source of growth for sending countries. At the same time, the steep rise in the number of emigrants poses a risk to the sustainability of welfare systems, which should not be overlooked, especially when the number of economically active persons declines.

6 Conclusions

In our analysis we provided an overview of the possible reasons, characteristics and labour market effects of emigration.

Emigration has been rising dynamically since the beginning of the crisis. Detailed information available is limited to the Labour Force Survey's data on workers employed abroad; they account for about 2.5 per cent of the total number of employees. As rising emigration can be attributed to cyclical or structural reasons, it is equally difficult to predict whether further emigration is to be expected during the period of recovery, or estimate the potential return flow.

Growing emigration renders it difficult to interpret economic indicators. A realistic view of domestic economic developments can only be gleaned from the indicators pertaining to employees participating in domestic production or the labour force that can be potentially involved in production, which warrants the exclusion of emigration from the indicators used in the examination of the labour market. While the steady rise of emigration does not change the dynamics of labour market indicators, it does change their level. However, even the dynamics may change in the case of the flow indicators of the labour market (changes in the number of employees, changes in the number of economically active workers). Due to the excessive level of distortion we prefer to use the adjusted indicator in our analyses.

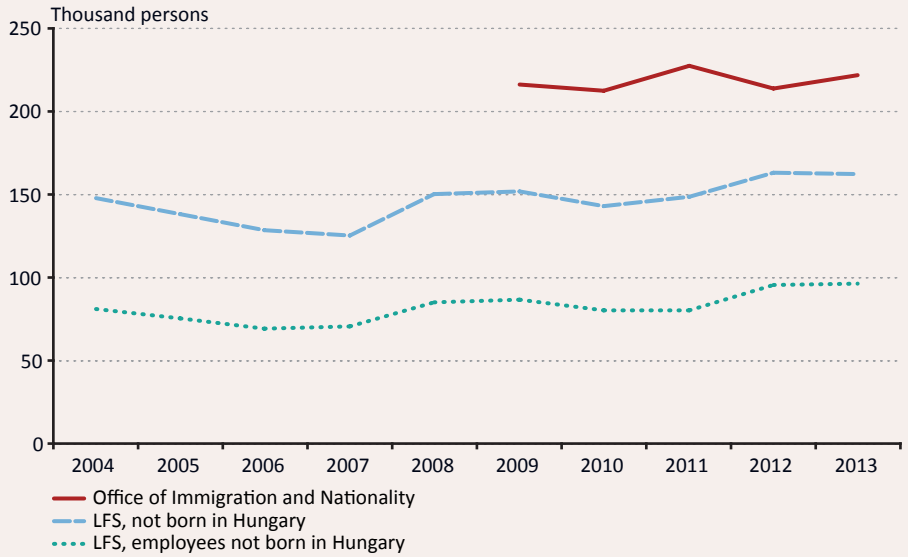
The Labour Force Survey provides detailed data on the socio-demographical characteristics of cross-border commuters. Based on the survey, the number of workers employed abroad is especially high and rising rapidly in certain categories. The percentage of emigrants is well above the average among skilled workers with secondary education, employees in the construction and accommodation and food service activities sectors, in the 25–35 age group and among those living in Western Hungary. In certain groups (skilled employees with secondary education, construction sector) this may be related to cyclical reasons, i.e. the decline in domestic employment.

Emigration changes the composition of the domestic population and labour force, and alters the behaviour of companies and the domestic active population. Wage effects, which are particularly important for the central bank, may materialise even in the short term. Wages are affected by emigration through changes in average productivity and labour market tightness. Although these channels may already be evident in Hungary, their effects may intensify during the recovery, especially if the growth of emigration continues.

In addition, emigration of labour force exerts its effects through other channels as well. The risk to the sustainability of the welfare systems, falling competitiveness and a decreasing budget balance are negative effects which are expected to materialise mainly over the longer term. These repercussions may be offset by a number of factors. As a short-term positive effect, in the context of lower labour demand during the crisis, emigration may have reduced the current level on unemployment while also curbing social expenditures. In the longer run, workers employed abroad may contribute to improving the competitiveness of Hungary through brain gain and remittances. By promising greater labour market flexibility, increased international mobility may be a positive development in and of itself from the aspect of Hungary's future accession to the euro area.

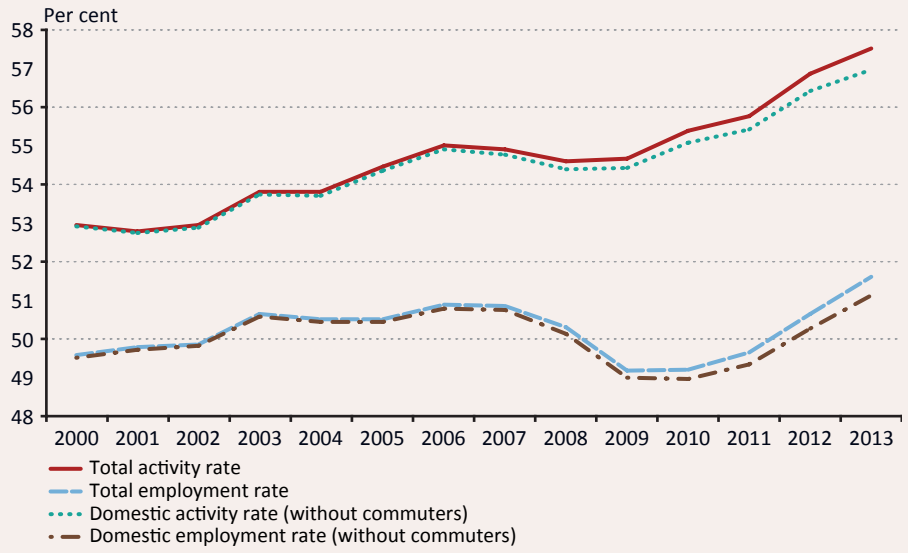
Annex

Chart 12
Number of immigrants to Hungary



Source: Labour Force Survey, Office of Immigration and Nationality.

Chart 13
Employment and labour force participation rates

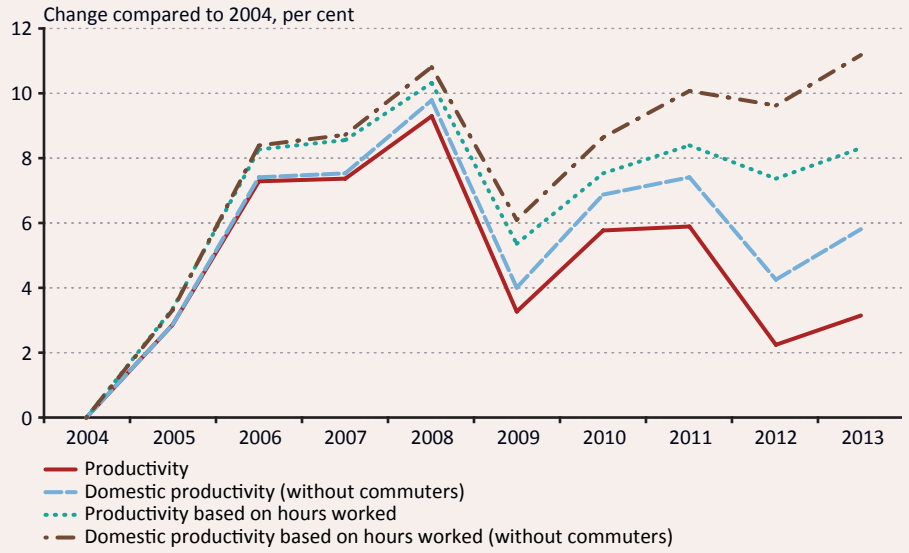


Source: Labour Force Survey.

Chart 14
Unemployment rates

Source: Labour Force Survey.

Chart 15
Productivity indicators in the private sector



Source: Labour Force Survey, HCSO, MNB calculation.

Chart 16
Corporate profitability in the private sector

Source: HCSO, MNB calculation.

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