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Contents

What is the role played by the Eurosystem during the financial crisis ?

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Introduction

For more than five years now, the world has been beset by a financial and economic crisis. In the euro area in particular, tensions have been running high since the sovereign bond markets of a number of countries have come under increasing pressure. As the financial situation of national governments in the euro area is closely linked to that of the resident banking sector, this sovereign debt crisis exacerbated the banks' problems concerning access to finance and the cost of funds in a number of euro area countries.

As a result of the financial crisis, euro area policy-makers therefore have been facing a segmentation of the financial markets along national borders. This meant a clear break in the trend towards increasing financial integration which, following the start of the third stage of EMU, had enabled economic agents to raise funds easily across national borders. This disintegration posed a threat to financial stability and was liable to disrupt the effective transmission of monetary policy in the euro area ; it forced the Eurosystem to adopt unprecedented liquidity provision measures. Those measures aimed to limit the adverse financial and macroeconomic implications – particularly the impact on price stability – of malfunctioning financial markets. This caused the Eurosystem to take on a key role as a financial intermediary for the banks and even – in view of this segmentation of the financial markets along national borders – for the national banking sectors.

This article is structured as follows. Section 1 offers a brief overview of the financial and economic crisis afflicting the global economy – and particularly the euro area – since the summer of 2007. It should enable the reader to understand the measures taken by the Eurosystem since mid-2007 to safeguard financial stability and thus achieve its price stability objective. Section 2 looks at the motives behind these measures, and examines in more detail the risks which this policy implies for the central bank, and the extent to which the Eurosystem's accommodative policy has adverse side effects. As a result of the close connection between the financial soundness of the government and that of the resident banking sector, financial markets have become segmented along national borders, and the Eurosystem is increasingly acting as a financial intermediary for countries, thereby providing a buffer so that they can gradually rectify their external imbalances, as explained in Section 3. The Eurosystem is thus offering the players involved the time to implement the necessary structural adjustments in an orderly way so as to minimise the detrimental macroeconomic repercussions of excessively rapid adjustments. The final section examines those structural adjustments which should enable the Eurosystem to phase out its – currently sizeable – role as an intermediary.

1. A financial crisis in three phases

This brief section offers an overview of the financial and economic crisis which has gripped the global economy for more than five years now[2]. This summary sheds light on the measures taken by the Eurosystem to help safeguard financial and macroeconomic stability, and more specifically price stability.

(1) The author would like to thank A. Bruggeman, H. Geeroms and I. Maes for their comments and suggestions concerning this article.

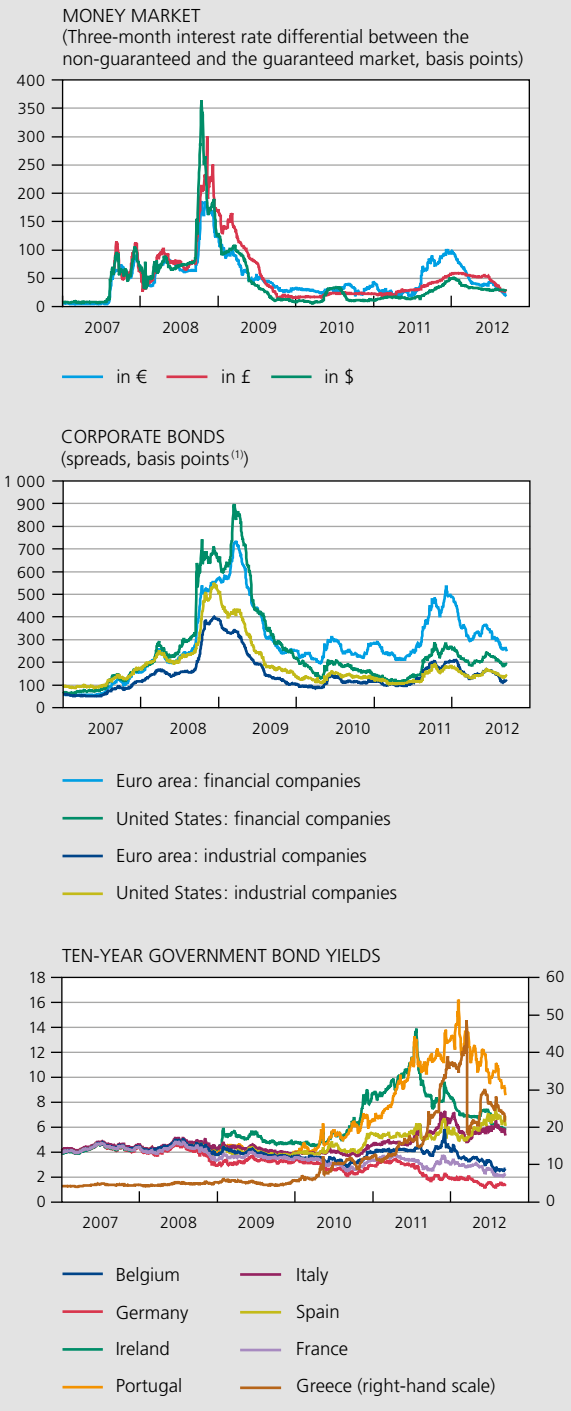
(2) For a more detailed description of developments over the past five years, see in particular the annual reports of the Bank for International Settlements (BIS, 2008, 2009, 2010, 2011, 2012b).

The first signs of the financial and economic crisis currently afflicting the world – and particularly the euro area – emerged in the summer of 2007 on the global money markets, following doubts about the soundness of certain market players, particularly those exposed to the struggling US property market. The uncertainty on the financial markets was reflected mainly in rapidly widening spreads between non-guaranteed and guaranteed interest rates which banks apply to interbank transactions.

The collapse of Lehman Brothers, in September 2008, heralded the second phase of the crisis, bringing an unprecedented increase in spreads on the money markets of the leading financial centres. The premiums that financial institutions had to pay in order to raise funds on the bond markets also continued to rise, a trend which was more pronounced in the United States, as the US was regarded as the epicentre of the financial turmoil. Moreover, the mounting financial tension was evidently also affecting the real economy, in view of the loss of confidence among economic agents worldwide and the slump in world trade. The ensuing severe recession therefore affected the funding costs of non-financial enterprises. During this period of financial panic and recession, radical conventional and unconventional monetary policy measures were adopted worldwide (for an overview, see for example Cordemans and Ide (2012)), while fiscal policy also took a decidedly counter-cyclical stance. Although this further impaired the already vulnerable position of public finances, it is generally acknowledged that the actions of the monetary and fiscal authorities throughout the world warded off a Great Depression and facilitated a relatively rapid global economic recovery (Ide, Boeckx and Cornille, 2009).

In the context of an albeit rather hesitant recovery of global economic activity and less acute financial market turbulence in the autumn of 2009 and during 2010, the euro area encountered new problems in the spring of 2010. The tensions which had emerged at the end of 2009 on the sovereign bond markets of certain euro area countries, especially Greece, became an outright panic in May 2010, ushering in the third phase of the financial and economic crisis, namely the sovereign debt crisis. In this phase, it was not just certain sovereign issuers that faced problems in raising funding at sustainable rates; certain banks were again encountering the same difficulties. Most of those banks were located in countries whose funding costs had come under increasing pressure, owing to the close links between the financial soundness of the government and that of the resident banking sector (see for example Merler and Pisani-Ferry (2012b) and Section 3 of this article).

CHART 1 A FINANCIAL, ECONOMIC AND SOVEREIGN DEBT CRISIS



Source: Thomson Reuters Datastream.
(1) Spreads relative to German and US government bonds respectively.

2. Financial stability: a necessary condition for price stability

2.1 Summary of the Eurosystem's measures

In the period between the first signs of the financial crisis in the summer of 2007 and the publication of this article, the Eurosystem deployed a range of measures to achieve its primary objective, namely the safeguarding of price stability in the euro area. A key consideration underlying those decisions was the belief that safeguarding financial stability is vital for guaranteeing price stability (Papademos, 2009). Indeed, a financial crisis also poses a threat to the availability of funding for the non-financial sector, exerting downward pressure on economic activity and therefore on price stability. In the euro area in particular, it was essential to ensure that supply factors did not have too serious an impact on bank lending, in view of the importance of this source of funding for households and non-financial corporations in the euro area (ECB, 2009).

The monetary policy stance was eased considerably as the crisis progressed. While the key interest rate still stood at 4.25 % in August 2008, it was cut in stages to 0.75 % by July 2012. In real terms, too, the monetary policy stance became much more accommodative since inflation expectations – as measured by the results of the ECB survey of professional forecasters, for example – remained very stable, despite the sizeable fluctuations in observed inflation, attributable largely to commodity price movements. The easing of the monetary policy stance helps to safeguard macroeconomic stability, but it also has a beneficial effect on financial stability, because the lower central bank interest rates are also reflected in lower financing costs for non-financial corporations and households (see for example Cordemans and de Sola Perea (2011)). In addition, a more stable macroeconomic environment means that banks are less frequently confronted by defaults, and that supports their profitability and their room for new lending.

The financial turmoil threatened to disrupt the transmission of this much more accommodative monetary policy stance to the real economy, so that the Eurosystem decided to progressively introduce policy measures referred to as "enhanced credit support" (Trichet, 2009). That policy consists of five elements which all help to support lending to the real economy. First, it was decided that in the liquidity-providing refinancing transactions all bids would be fully allotted at a fixed rate, so that the provision of liquidity was entirely demand-driven. A second element of the enhanced credit support policy was the extension of the list of eligible collateral, which means that solvent banks face no restrictions on their access to the necessary refinancing from the Eurosystem. Third, the maturity of the loans granted by the Eurosystem was lengthened in stages to a maximum of three years for the December 2011 and February 2012 operations. This meant that banks struggling to raise longer-term funding on the market could be sure of alternative longer-term financing. Since it had become excessively difficult if not impossible for some banks to access funding in foreign currencies, euro area banks were also given the opportunity to obtain foreign currencies from the Eurosystem via swap lines which the latter set up with other central banks. A fifth measure was the launch of two programmes for the purchase of covered bonds, which are an important financing instrument for euro area financial institutions. Since the sovereign debt markets play a crucial role in monetary transmission, it was also decided to purchase these securities on the secondary market, more specifically if the normal market functioning appeared to be seriously disrupted. Those purchases took place under the securities markets programme (SMP). For more details on these measures see ECB (2011a).

Following the meeting of the ECB Governing Council on 6 September 2012, a new programme was announced for the purchase of government paper on the secondary market, namely the Outright Monetary Transactions (OMT). The main differences in relation to the SMP concern the strict conditions which countries must comply with before the Eurosystem proceeds to purchase, the absence of *ex-ante* limits on the size of the transactions, and the clarification that these Eurosystem purchases will be treated in the same way as those of other creditors. Finally, more transparency will be provided on the government paper purchased.

2.2 The Eurosystem as an intermediary for the banks

The Eurosystem's measures described above aim to help resolve the problems which banks experience in raising funding from private sources. Owing to the uncertainty dominating the financial markets, market participants became reluctant to deal with one another, in marked contrast to the period preceding the financial crisis when financial institutions readily lent liquidity surpluses to one another via the interbank market. Furthermore, certain financial institutions were also finding it more difficult to raise funds via other private channels, e.g. by issuing debt instruments or attracting retail deposits.

Chart 2 shows a simplified system of financial accounts in the spirit of Bindseil and König (2011), which explains how a situation of heightened uncertainty regarding the soundness of some banks caused the Eurosystem to assume a greater role as an intermediary for the banks : on the one hand, the central bank becomes the lender of last resort for banks which the markets perceive as weaker, and on the other hand it absorbs surplus funds from banks which are considered to be stronger.

The example presents households, non-financial corporations, two commercial banks and the Eurosystem. The households have sold part of their real assets to the non-financial corporations and hold the equivalent of the assets sold in the form of banknotes and deposits with the commercial banks. The non-financial corporations pursue their business by using the real assets bought from the households for productive activities. They finance those asset purchases with loans from the commercial banks. The two banks active in this economy lend the same amount to the non-financial corporations. They both refinance themselves for the same (small) amount from the central bank, but bank A has a more substantial deposit base than bank B [(1)]. In the starting point of this example, showing the situation before the financial crisis, it is assumed that the interbank market is functioning smoothly and that bank A lends its surplus liquidity to bank B in the form of an interbank loan.

Since households hold banknotes, the banking sector in this economy faces a liquidity shortage which it can only refinance via the Eurosystem. The Eurosystem therefore refinances the banking sector for an amount that equals the banknotes in circulation, which – in this simple example – corresponds to the consolidated liquidity need of the banking sector. Indeed, this example disregards other factors which affect that consolidated liquidity need, such as the reserve requirements imposed on the commercial banks, or the securities held by the central bank. In the initial situation, the two commercial banks' current account holdings with the central bank are zero.

If bank A is worried about the financial soundness of its counterparty – e.g. owing to the quality of the assets which that counterparty holds on its balance sheet, or its heavy dependence on interbank borrowing – then it may decide to reduce its interbank lending to bank B, in this case by an amount *z*. Since the interbank financing suddenly dries up, bank B has to either reduce the asset side of its balance sheet or look for alternative funding.

(1) In the example, both bank A and bank B obtain refinancing from the Eurosystem, although that is not strictly necessary for bank A since it has a sufficiently large deposit base to finance its assets. However, it is possible that bank B – unlike bank A – does not have sufficient suitable collateral to obtain more refinancing from the central bank. In that case, it can obtain funding on the unsecured interbank market from bank A, which can thus engage in a potentially profitable activity by acting as a money centre for bank B (see also Cassola, Holthausen and Lo Duca (2010)).

CHART 2 THE EUROSYSTEM'S INCREASED ROLE AS THE CENTRAL COUNTERPARTY FOR THE BANKS

Households			
Real assets	10	Net worth	100
Banknotes	20		
Deposits held with bank A	55		
Deposits held with bank B	15		
Non-financial corporations			
Real assets	90	Credit from bank A	45
		Credit from bank B	45
Commercial bank A			
Credit to non-financial corporations	45	Household deposits	55
Interbank loan to bank B	20 – z	Eurosystem credit	10 – min(z, 10)
Holdings with the Eurosystem	max(z – 10, 0)		
Commercial bank B			
Credit to non-financial corporations	45	Household deposits	15
		Eurosystem credit	10 + z
		Interbank loan from bank A	20 – z
Eurosystem			
Credit to commercial banks	20 + max(0, z – 10)	Banknotes	20
		Holdings of commercial banks	max(z – 10, 0)

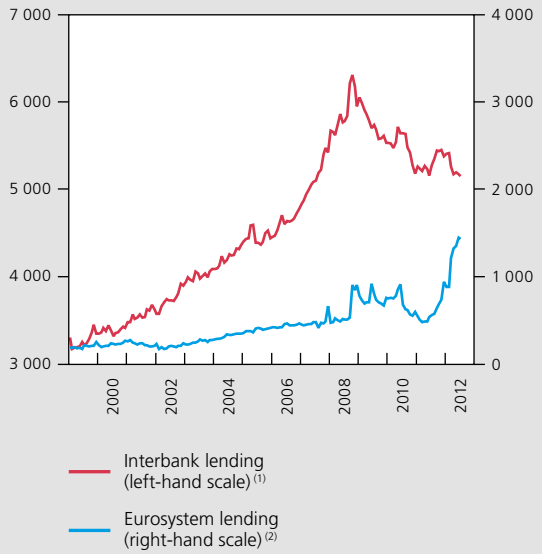
The first option may have substantial macroeconomic implications, since in that case the financial institutions are obliged to reduce their lending to the real economy – which is what would happen in the example – or sell securities. Such "fire sales" may generate heavy losses, since riskier securities generally trade at low prices in periods of financial panic. Moreover, this can trigger a vicious spiral in which mark-to-market revaluations of assets which have fallen in price can prompt renewed panic selling causing further price falls (see also Shleifer and Vishny (2011)).

To avoid such unwelcome effects on the macroeconomic environment, the Eurosystem provides bank B with extra credit during a financial crisis: in this case for an amount of *z*, the part of the interbank loan that bank A is no longer willing to renew. At the same time, bank A initially has surplus liquidity which allows it to reduce the refinancing which it obtains from the Eurosystem. So long as the reduction in interbank lending by bank A, amounting to *z*, is less than its refinancing from the Eurosystem, amounting to 10, the reduction in Eurosystem credit to bank A offsets the increased recourse by bank B to the central bank as a source of funding. In that case, the central bank balance sheet will therefore not be extended. However, if the interbank loan is cut by more than 10, then (even after totally ending its recourse to central bank refinancing) bank A has surplus liquidity which it will place with the central bank. In the example, this is reflected in increased commercial bank holdings with the Eurosystem, taking the form of current account holdings in excess of the required reserves, or recourse to the deposit facility. Up to 11 July 2012, that facility still offered a limited return in contrast to the excess reserves on the current account which are unremunerated (see also Boeckx and Ide (2012)). At the meeting on 5 July 2012, the ECB Governing Council decided to cut the key interest rates by 25 basis points, reducing the rate on the deposit facility to 0 %. This meant that there was no difference between the current account and the deposit facility in terms of yield.

This example – which can easily be extended to include other shocks in private financing, such as problems with the issuance of debt securities or an outflow of retail deposits, which have similar repercussions on the central bank's balance sheet – shows how financial turmoil can lead to the Eurosystem playing a greater role as intermediary for the banks. If the liquidity shocks affecting individual banks are large, this may also result in an enlarged central bank balance sheet, with the Eurosystem providing more liquidity for certain banks and at the same time offering banks with a surplus the opportunity to place that surplus with the central bank.

CHART 3 INTERBANK LENDING IN THE EURO AREA AND EUROSYSTEM LENDING

(in € billion, monthly data)



Sources: ECB, Thomson Reuters Datastream and own calculations.

(1) Interbank lending is calculated as the difference between, on the one hand, deposits held with MFIs (excluding the Eurosystem) by other MFIs (including the Eurosystem) of the euro area and, on the other hand, the sum of the items "Eurosystem lending to euro area credit institutions denominated in euro" and "other claims on euro area credit institutions denominated in euro" in the Eurosystem's consolidated weekly statement.

(2) The series indicates the sum of the items "Eurosystem lending to euro area credit institutions denominated in euro" and "other claims on euro area credit institutions denominated in euro" in the Eurosystem's consolidated weekly statement.

Aggregated balance sheet data for the monetary financial institution (MFI) sector of the euro area (excluding the Eurosystem) do indeed show the turnaround in interbank lending in the autumn of 2008[1]. Between the first quarter of 2006 and the third quarter of 2008, lending by MFIs to other MFIs had increased by an average of around 11% per annum, but since then interbank lending has fallen by an average of around 3% per annum despite some – rather brief – periods in which banks became a bit more willing to lend liquidity to one another. The steady decline in interbank lending is therefore due to the persistent lack of confidence among financial institutions.

The corollary to this malfunctioning interbank market – but also to the difficulties experienced by certain banks in raising funding via other private channels – is the increased recourse to Eurosystem refinancing, which surged strongly in the aftermath of the Lehman Brothers bankruptcy. The total of the amounts lent via the main

(1) These aggregated MFI data should be interpreted with caution since these loans between MFIs also include transactions within banking groups, so that major bank restructurings, for example, may influence the statistics (ECB, 2010).

and longer-term refinancing operations, of recourse to the marginal lending facility and of other euro-denominated Eurosystem claims on resident banks (in particular ELA) increased from an average of € 503 billion in the first nine months of 2008 to € 883 billion in the final quarter of that year. Once the first one-year refinancing operation matured in June 2010, recourse to the Eurosystem as a source of funding began to decline. However, the resurgence of the sovereign debt crisis from mid-2011 brought a renewed rise in Eurosystem lending, notably following two longer-term refinancing operations in December 2011 and February 2012 whereby the euro area banks secured funding totalling € 1.1 billion for a three-year period. That effectively enabled the banks to fund their activities for the coming three years on attractive terms. Following the allotment of these two longer-term refinancing operations, the outstanding total of interbank loans declined again, since the banks used those funds partly to reduce their dependence on interbank financing. This made them less dependent on the sometimes volatile interbank market conditions, and bought them the time to make the necessary adjustments to their balance sheets.

2.3 What are the risks associated with these central bank measures?

The Eurosystem measures described above entail a number of risks, just as is the case for many other central banks which have undertaken similar actions – albeit geared to the specific needs of their respective economies. On the one hand, the increased provision of liquidity to the financial sector inevitably implies greater financial risks for the central bank, while on the other hand, the greater role which the central bank takes on in order to support macroeconomic and financial stability may generate a number of undesirable side effects with inherent social costs in the longer term.

2.3.1 Financial risks for the central bank

Bindseil (2011) states that a central bank faces a trade-off between the comfort that it offers financial institutions in providing liquidity and the limiting of the financial risks which it takes onto its balance sheet. By acting as the central counterparty between banks in a financial crisis, and thus ensuring that financial institutions have sufficient liquidity, the central bank takes financial risks onto its balance sheet which the private sector is – at least temporarily – unwilling to accept. That point had already been made by 19th century writers such as Bagehot (1873). However, in a financial crisis, a central bank has good reason to offer banks sufficient liquidity support and thus tolerate more financial risks on its balance sheet (Bindseil, 2011).

Owing to the financial crisis, the private sector is no longer willing to accept certain risks. If, in that situation, the central bank were equally unwilling to take more risks onto its balance sheet in order to limit possible losses, then the economy would most likely tend towards a bad equilibrium, in which the eventual losses would be greater for all parties, including the central bank. Even in the less extreme case, the liquidity problems of financial institutions may have substantial negative externalities – e.g. fire sales or an excessively abrupt reduction in lending to the real economy – making it impossible for the central bank to achieve its target. In the case of the Eurosystem, a widespread financial panic caused by liquidity problems in some part of the banking sector would have a serious adverse impact on economic activity and would therefore be accompanied by downside risks to price stability. In addition, the central bank is the only economic agent which cannot suffer liquidity problems, since it has a monopoly on the issuance of the most liquid payment instrument, namely base money. That is why it makes sense for a central bank to make more liquid resources available temporarily, in exchange for less liquid assets, if the private sector suddenly prefers to reduce its exposure to less liquid assets.

Furthermore, the Eurosystem applies a number of risk control measures. First, all transactions must be covered by appropriate collateral from which haircuts are deducted. For example, a 10 % haircut means that banks presenting collateral with a market value of € 100 obtain only € 90 in refinancing. In addition, via the system of margin calls, banks have to make extra collateral available when, during the term of a transaction, there is a decline in the market value of the collateral pledged. Finally, there are also limits on the use of unsecured debt instruments. It should be noted that more stringent financial risk control measures are accompanied, in principle, by less flexible conditions for the provision of liquidity. It is therefore up to the central bank to choose the combination of financial risks and liquidity comfort which it prefers, within the possibility set, according to its preferences and parameters (Bindseil, 2011).

In this connection, it should be noted that the Eurosystem has adjusted its collateral framework in various ways since the start of the financial crisis. In general, it can be said that since the financial crisis intensified in September 2008, the Eurosystem has extended the already long list of eligible collateral, but at the same time it applied substantial haircuts to certain assets regarded as more risky. That should enable the Eurosystem to make subtler

adjustments to its risk exposure and thus achieve the optimum combination of liquidity support and risk exposure.

2.3.2 Adverse side effects of a persistently accommodative monetary policy

The increased role which central banks throughout the world have adopted in the form of low interest rates, which have been in place for a long time now, and as prominent financial intermediaries in the economy, may also imply other risks than the purely financial risks mentioned above. A number of authors and policy-makers (see for example Hannoun (2012)) state that the capacity of monetary policy to resolve the current problems is not unlimited, and that radical monetary policy measures may have undesirable side effects. In the longer term, the result could be that not only central banks but other economic agents, too, face new, potentially more serious problems than those confronting them today. In particular, the central banks risk damage to their reputation if economic agents expect too much of central bank action, so that those expectations cannot be fulfilled.

Cordemans and Ide (2012) mention a wide range of potential risks which may accompany a protracted accommodative monetary policy. It is possible to identify a number of risks specific to the banking sector which are more or less directly attributable to the low interest rate policy and expanded central bank balance sheets. First, there is the risk of insufficient consolidation of the balance sheets of financial institutions. Although the Eurosystem's actions are aimed at avoiding excessively abrupt deleveraging of the commercial banks' balance sheets, the necessary adjustments still need to be phased in. In particular, banks must strengthen their own funds so that they become more shock-resistant and less dependent on volatile debt financing. Yet the low interest rates and easy access to central bank credit entail the risk that banks will postpone this increase in capital, especially as bank capital is expensive in a context of low market prices for financial shares.

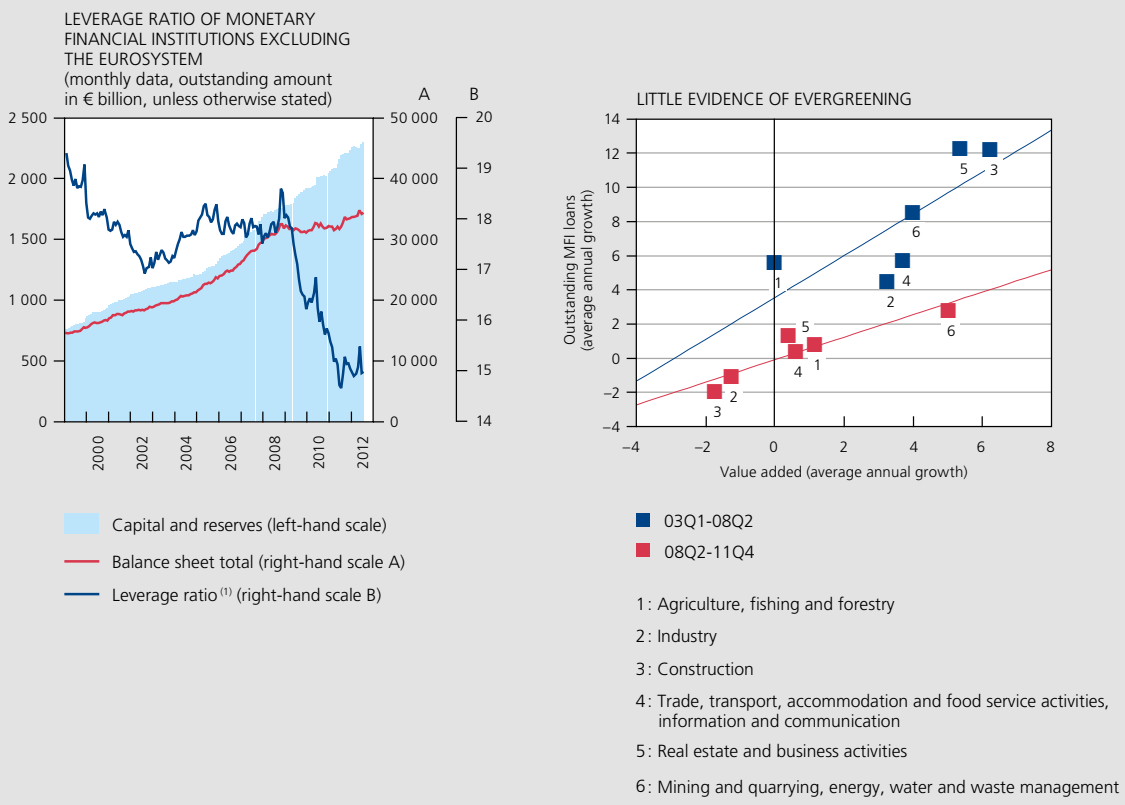
However, the data up to mid-2012 suggest that this risk has not so far materialised. The leverage ratio of the euro area's banking sector has fallen from around 18.5 in the last quarter of 2008 to around 15 in the first six months of 2012. According to this criterion, the euro area banking sector's dependence on debt financing has never been so low since the start of the third stage of EMU. This decline in the leverage ratio is due to a less marked increase in the aggregated balance sheet total of the banking sector, but primarily to the raising of new capital. That was also stated in the recapitalisation plans which banks submitted to the EBA in January 2012, and the results of the recapitalisation round published in July 2012 therefore show that approximately 76% of the increase in the capital ratio of the large European banks is due to measures to boost their capital, so that measures concerning the banks' assets made a much smaller contribution (EBA, 2012). Moreover, these last measures had only a limited impact on asset prices or lending, since other financial players took over at least some of the banks' financing activities (BIS, 2012a).

The next point is that an accommodative monetary policy – as regards both the monetary policy stance and the conditions governing the provision of liquidity – may encourage commercial banks not to write off non-performing loans but instead to offer borrowers the chance to roll-over their loans at low interest rates (BIS, 2012b). Low rates in fact enable them to refinance their outstanding loans at modest interest charges and with low principal repayments. This enables banks to delay the recognition of losses, boosting their profitability in the short term. There are at least two drawbacks to this practice. First, there is the risk of an inferior credit allocation in the economy, resulting in efficiency losses. Second, if counterparties doubt the quality of the bank's assets if there is little transparency over the extent of such loan renewals for borrowers who are not solvent, banks may be cut off from private funding.

The empirical literature on the scale of this "evergreening" phenomenon in the euro area during the current financial crisis is limited, in contrast to that on the protracted period of low nominal interest rates in Japan. For instance, Caballero, Hoshi and Kashyap (2008) show that insolvent firms have continued to receive credit, depressing the profitability of sounder businesses, and thus also hampering market access, investment and job creation. In regard to the euro area, Albertazzi and Marchetti (2010) state that evergreening of loans by smaller, less strongly capitalised Italian banks may have played a role during the six months following the collapse of Lehman Brothers. The OECD (2012) finds that, for a number of European economies, the share of non-performing loans in the total outstanding loans in 2009 was comparable to that at the start of the 2000s, despite a significantly better economic situation in the latter period. That may be due to better risk management, but could also suggest that banks are reluctant to take losses on bad loans.

Four years after the intensification of the economic crisis, it makes sense to conduct a simple exercise to investigate whether there are any signs that the accommodative monetary policy has led to lending continuing to be channelled into badly performing branches to the detriment of

CHART 4 STRUCTURAL ADJUSTMENTS FOLLOWING THE ONSET OF THE FINANCIAL CRISIS



Sources : ECB, Eurostat, Thomson Reuters Datastream and own calculations.
(1) The leverage ratio is calculated as the ratio between the balance sheet total and the capital plus the reserves.

faster growing branches. That exercise involves examining the link between the average annual growth of value added for a sample of six branches of activity and the average annual growth of the loans granted to those branches, both for a period of about five years before the crisis began and for a three-year period following the collapse of Lehman Brothers. That analysis reveals that before the crisis there was a strong, positive link between the economic growth recorded by a branch of activity and the loans granted to that branch. Particularly in the construction industry and in the branch comprising real estate and business activities, both variables increased strongly. However, during the crisis period, the situation in those branches was reversed : the average annual growth of the branch comprising real estate and business activities slowed to around 0.4 %, while the construction sector actually recorded a decline in value added between the second quarter of 2008 and the end of 2011. There is little evidence of evergreening in that period, since the loans granted to these branches also declined, or expanded much less rapidly. It was the faster growing sectors that were granted more loans. However, the regression coefficient and the constant are smaller than before the crisis period, in line with a supply effect on lending in the euro area.

Third, there is the risk that the greater reliance on the central bank as a source of finance may exacerbate the problem of asset encumbrance (ECB, 2012c). From early on in the financial crisis, there was a shift from unsecured to secured transactions on the interbank market (ECB, 2012b). Although this enabled banks to continue raising funding on the market, there is a danger that this increased recourse to secured funding may make it difficult to return to the unsecured market. Indeed, secured funding leads to a larger proportion of the financial institution's assets being encumbered, which leaves fewer assets to compensate unsecured creditors if the financial institution defaults. The Eurosystem's actions exacerbate this problem, because all refinancing which the banks obtain from the Eurosystem has to be covered by collateral. In addition, the Eurosystem set up

two programmes for the purchase of covered bonds; this stimulated the market in covered debt instruments. The ensuing rise in primary issues of these instruments (ECB, 2012b) in turn also means that more of the banks' assets are blocked as collateral. Indeed, the IMF (2012b) states that the proportion of banks' assets encumbered as collateral increased from around 8 % to 10 % between 2007 and February 2012 in the euro area, with significantly bigger increases in some countries which were hard hit by the crisis.

Finally, it is evident that some banks have used the liquidity provided by the Eurosystem to finance purchases of government paper, especially debt instruments issued by the domestic government (IMF, 2012a). That was certainly the case following the two three-year operations at the end of 2011 and in early 2012. This could potentially lead to even greater contagion between the government and the resident banking sector.

3. The role of the Eurosystem as a buffer in the correction of the external imbalances in the euro area

3.1 A crisis moving from banks to countries

In a number of euro area countries, both the resident banking sector and the government were in a vulnerable financial position when the financial crisis began. There is clearly a connection with the macroeconomic external imbalances which those countries had built up in the first ten years of Monetary Union. In the decade preceding the financial crisis, several euro area countries saw a deterioration in the gross debt position of the government sector, the private sector, or both, depending on the country. That made those countries heavily dependent on foreign financing [1], a process in which the resident banking sector played a major role.

Against the backdrop of worsening competitiveness – reflected, for example, in a faster rise in unit labour costs – and a strong expansion in domestic demand, some euro area countries – such as Portugal and Greece – faced a persistently negative current account balance and a deteriorating net international investment position (De Prest, Geeroms and Langenus, 2012). Other countries – such as Ireland – had smaller current account deficits but also became heavily dependent on external funding. That was due to the sizeable cross-border capital flows reflecting a large financial sector engaging in international activities. In the remainder of this article, all euro area countries which are heavily dependent on international funding – i.e. including Ireland – will be referred to as deficit countries. Conversely, some other euro area countries saw a marked improvement in their competitiveness, so that – partly thanks to very subdued growth of domestic demand – they were able to record substantial current account surpluses and build up a strong net creditor position.

During the initial years of the third stage of EMU, there was considerable progress in the financial integration of the euro area, and the deficit countries had no difficulty in raising funding via the international financial markets. This was because excess savings in the surplus countries were readily transferred to the deficit countries. The increasing financial integration took various forms (ECB, 2012b). There was growth in the cross-border holding of shares and other securities, while banks also stepped up their lending to the non-financial sector of other euro area countries, although this was a rather limited phenomenon [2]. Finally, the banks also increasingly raised funding from counterparties in other euro area countries, e.g. via interbank deposits or by the issuance of bank debt. However, foreign direct investment – generally a stable source of foreign financing – represented only a small proportion of the deficit countries' funding (EC, 2006).

As the financial crisis dragged on, however, the financial integration of the euro area began to crumble. Market participants began to question the sustainability of the debts of some countries, and especially sovereign debt, because the financial crisis had an impact on the public finances of some euro area countries which were already vulnerable before the financial crisis erupted. In response to the severe recession following the collapse of Lehman Brothers, they not only adopted a counter-cyclical fiscal policy, but were also forced to provide financial support for their resident banks. Indeed, in the absence of any European structure for that, the resident banking sector was heavily dependent on the national government for financial support. Consequently, problems in the national banking sector may threaten the financial soundness of its sovereign.

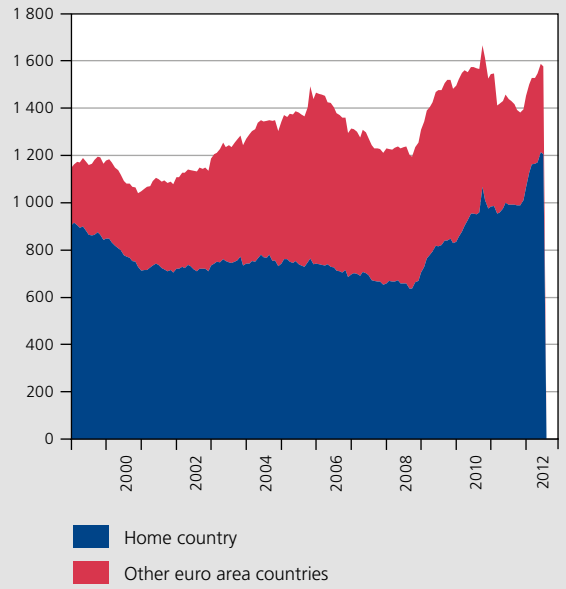
These two sectors also influence one another. Government securities generally make up a large proportion of the assets held by banks, because this asset category was

(1) Of course, in the event of shocks or in a catching-up phase, ready recourse to external funding is welfare-enhancing. The absence of any exchange rate risk, which had a positive impact on financial integration, was therefore an important reason for setting up EMU. More financial integration should in turn offer economic agents the opportunity to diversify the risks in a larger market and optimise the intertemporal allocation of consumption. However, the inflow of capital was evidently not used only to cope with temporary shocks or to effect productive investment, but was also driven by less favourable factors (EC, 2006).

(2) During the first quarter of 2009, the proportion of cross-border loans by MFIs to non-MFIs in the euro area peaked at just 5.4 %.

CHART 5 DEBT INSTRUMENTS ISSUED BY GOVERNMENTS IN THE EURO AREA AND HELD BY MFIS IN THE EURO AREA (EXCLUDING THE EUROSYSTEM) (1)

(monthly data, in € billion)



Source : ECB.

(1) The chart shows respectively the debt instruments held by a country's banking sector and issued by that country's government, and the debt instruments held by the sector and issued by governments of other euro area countries.

regarded as safe, as indicated by the low risk weighting which regulators and market participants assigned to it. After the financial crisis intensified in the autumn of 2008, the euro area banks increased their exposure to government paper in view of its low-risk profile, in contrast to the trend in previous years. Moreover, in the initial phase of the crisis, they increased the share of their own sovereign in their holdings of securities (ECB, 2012b). As a result, the resident banking sector became directly vulnerable to a deterioration in the government's financial soundness, since the falling prices of government paper caused the banks to incur losses and made it more difficult for them to raise funding on the secured market, where government bonds are in fact an important type of collateral. In addition, there is the possibility of more indirect contagion from the government to the resident banking sector. If investors consider – purely on the basis of the government's precarious fiscal position – that the financial institutions of a particular jurisdiction are less sound, that can trigger a self-sustaining and self-fulfilling process, threatening the access of those institutions to market finance. Merler and Pisani-Ferry (2012b) find, on the basis of CDS contract prices, that the link between the perceived risk of default by banks on the one hand, and governments on the other, has increased in the euro area since the beginning of 2011, in contrast to the situation in the United States.

The close link between the government and the resident banks implies that it is no longer individual banks that are vulnerable, but national banking sectors. The sovereign debt crisis was therefore accompanied by an intensification of the banking crisis, with foreign lenders increasingly questioning the financial soundness of a number of national banking sectors. Those doubts over bank solvency were further fuelled by the key role which the banks performed in a number of deficit countries in the international financing of the debts accumulated by the private sector. The banking crisis therefore gradually developed into a crisis concerning particular countries, in which the distinction which market participants made between banks regarded as financially sound and those seen as less sound increasingly came to coincide with the national borders.

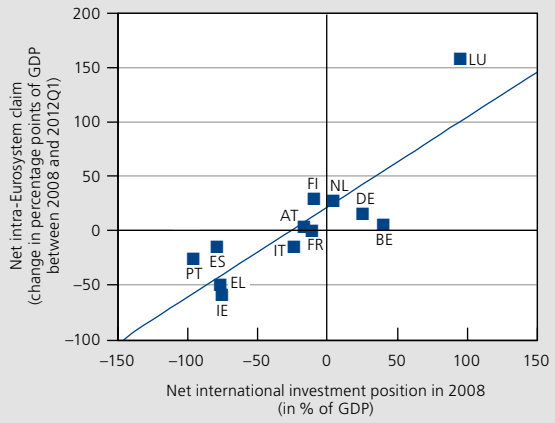
The financial integration therefore went into reverse, and that trend accelerated when the sovereign debt crisis intensified in 2011 (ECB, 2012b). Economic agents wanted to reduce their exposure to the vulnerable countries, and that became apparent relatively quickly since foreign financing had to a large degree taken the form of – often short-term – interbank lending or marketable debt instruments. A number of authors therefore label the sudden and unusually sharp reversal of the capital flows within the euro area as a balance of payments crisis (Ifo, 2012) or sudden stops (Merler and Pisani-Ferry, 2012a).

3.2 The Eurosystem as an intermediary for countries

As a result of this segmentation of the financial markets along national borders, the banking sectors of several countries were increasingly forced to resort to Eurosystem financing, to replace the private funding which was drying up. A good many financial institutions in countries with stronger economic fundamentals were no longer willing to renew their loans to vulnerable countries ; they preferred to place the repatriated liquidity safely with the central bank and to bear the opportunity cost of doing so (1). As explained in the box, the NCBs thus accumulated sizeable liabilities and claims within the Eurosystem, as a corollary of, on the one hand, the expansion of lending to the resident banking sector to make up for the scarcity of private financing in the deficit countries, and on the other hand, the role of the central bank as a safe counterparty

(1) Commercial banks' current account holdings with the Eurosystem in excess of their required reserves are not remunerated, while the use of the deposit facility also yields only a small rate of return (Boeckx and Ide, 2012). That remuneration was actually cut to zero from the seventh reserve maintenance period of 2012, which began on 11 July.

CHART 6 NET INTERNATIONAL INVESTMENT POSITIONS AND INTRA-EUROSYSTEM POSITIONS



Sources: Eurostat, Thomson Reuters Datastream and own calculations.

for placing surplus liquidity which the banks accumulated in the surplus countries and which they did not wish to lend to banks in the deficit countries.

In this way, the Eurosystem – in parallel with the greater segmentation of financial markets along national borders – is increasingly positioning itself between the national banking sectors, instead of between individual banks which are scattered at random across the euro area, as was the case during the initial phase of the financial crisis. Just as for individual banks, that intermediation role avoids a situation in which countries experiencing a sudden shortage of private capital flows are obliged to scale down their foreign transactions abruptly, causing – possibly severe – macroeconomic and financial turmoil. In addition, the Eurosystem has thereby supported financial stability in the surplus countries, since they have been able to reduce their exposure to the deficit countries in a comfortable way, namely without encountering repayment problems on the part of financial institutions suffering liquidity shocks.

Box – Claims and liabilities within the Eurosystem during the financial crisis

During the crisis, the claims and liabilities accumulated by the NCBs vis-à-vis the Eurosystem formed the subject of intense debate (see for example Ifo (2012) or Bindseil and König (2011)). That debate focused mainly on the NCBs' substantial TARGET2 balances. This box explains what TARGET2 is, how individual NCBs accumulated these substantial positions, and how those balances can be interpreted.

TARGET2 is the payments system maintained by the Eurosystem. It enables financial institutions in the euro area to effect cross-border payments in central bank money. Although market players are not obliged to use TARGET2 for all transactions, the system has a very large market share because of its user-friendliness and its advantageous cost structure.

In the euro area, the implementation of monetary policy is decentralised, which means that banks turn to the NCB of the country where they are located – and not the ECB – for refinancing or for placing surplus liquidity. To balance the balance sheets of the individual NCBs in this context, claims and liabilities are created in TARGET2. Although the NCBs' claims and liabilities vis-à-vis the ECB cancel one another out for the euro area as a whole, some NCBs accumulated large net positions during the financial crisis.

The diagram below, based on the example discussed in Section 2 of this article, shows how the drying up of interbank financing leads the NCBs to accumulate TARGET2 claims or liabilities. In the initial situation in this example, owing to the deposits held by residents with the resident banks, the banking sector of country A has surplus liquidity which it lends to banks in country B, which rely less on funding via retail deposits. In the event of doubts over the financial soundness of the banking sector in country B – as in the case of some euro area countries during the sovereign debt crisis – country A's banks no longer renew their interbank loans and country B's banks have to repay the interbank debt. In the example, the interbank loan is reduced by an amount equal to *z*. When the interbank debt is repaid, country B's banking sector's holdings with the NCB of country B are reduced by *z*, while the banks in country A record an inflow of central bank money, and their holdings with the central bank

TARGET2 BALANCES ON THE BALANCE SHEETS OF THE NCBS IN THE EURO AREA

Country A's banking sector			
Credit to non-financial corporations	45	Household deposits	55
Interbank loan to country B's banking sector	20 – z	Credit from country A's NCB	10 – min(z, 10)
Holdings with country A's NCB	max(z – 10,0)		
Country B's banking sector			
Credit to non-financial corporations	45	Household deposits	15
		Credit from country B's NCB	10 + z
		Interbank loan from country A's banking sector	20 – z
Country A's NCB			
Credit to country A's banking sector	10 – min(z, 10)	Banknotes	10
TARGET2 claim	z	Holdings of country A's banking sector	max(z – 10, 0)
Country B's NCB			
Credit to country B's banking sector	10 + z	Banknotes	10
		TARGET2 liability	z
Eurosystem (consolidated)			
Credit to commercial banks	20 + max(0, z – 10)	Banknotes	20
		Holdings of banking sector	max(z – 10,0)

increase by the same amount. However, that is not the end of the transaction, since the balance sheets of the respective NCBs no longer balance.

In order to balance the central bank balance sheets, the Eurosystem provides for offsetting balance sheet items covering the claims or liabilities of the respective NCBs vis-à-vis the ECB : these are the TARGET2 balances. The ECB therefore acts as a central counterparty through which all transactions are channelled. Country A's NCB therefore records a TARGET2 claim on the ECB, offsetting the increase in the resident banking sector's holdings with the NCB. Conversely, country B's NCB enters a TARGET2 liability to offset the decline in its liabilities towards the resident banking sector in the form of holdings on the current account or the deposit facility.

After repayment of the interbank financing which was not rolled over, country B's banking sector will apply to the Eurosystem for refinancing in the sum of z[(1)]. Country A's banking sector is able to reduce its recourse to central bank refinancing thanks to the inflow of liquidity. However, that is possible only until the refinancing is reduced to zero ; after that there is no more scope for such reshuffling. If z is greater than 10, the banks of country A will hence see an increase in their holdings with the central bank.

The above example – which can be extended to include retail deposit movements between countries or other shocks in cross-border funding – shows how electronic payments between countries within the Monetary Union give rise to TARGET2 balances for the NCBs. However, it should be noted that these TARGET2 balances take no account of payments effected by means of banknotes, so that a – potentially relevant – channel for cross-border payments is disregarded (Jobst, Handig and Holzfeind, 2012). That is precisely why Boeckx and König (2012) also

(1) An alternative would be for country B's banking sector to reduce its assets in order to generate a new inflow of liquidity. However, that would imply a risk of excessively abrupt sales of securities or a sudden contraction in the supply of credit, which would have adverse macroeconomic consequences. That is why the Eurosystem offered banks the possibility to refinance themselves with the central bank, thus avoiding a disorderly shrinking of their balance sheets (see also Section 2 of this article).

argue that it makes sense for the intra-Eurosystem balances arising from banknote issuance to be included in the analysis of the financing needs of certain banking sectors[1].

At the same time, they draw attention to various other reasons why the intra-Eurosystem balances which the NCBs accumulated vis-à-vis the ECB are not a perfect indicator of the financing needs of the national banking sectors. There is a significant distorting factor in the form of large international banking groups which generally centralise their cash management in a single jurisdiction, with potentially considerable implications for the pattern of intra-Eurosystem claims and liabilities of individual NCBs. That applies, for example, to Belgium. Moreover, the NCBs' balances may also be influenced by payment flows in non-central bank money or by foreign exchange transactions by residents. Nonetheless, there is an – albeit imperfect – connection between the more difficult access to market financing, increased recourse to the Eurosystem as an alternative source of funding, and the increased intra-Eurosystem liabilities in countries suffering financial turbulence.

(1) See Krsnakova and Oberleithner (2012) for more details on the method of recording banknote issuance by the NCBs of the euro area.

This is also reflected in the balance of payments recording transactions between a country's residents and non-residents. If a country faces outflows of private external financing – e.g. a cross-border interbank loan which is repaid on the due date via an electronic transfer, as explained in the box – that reduction in the private sector's net external liability to the rest of the world is offset by an increase in the TARGET2 liability of the resident NCB vis-à-vis the ECB. Since the ECB is regarded as a non-resident, these changes in the NCB's positions vis-à-vis the ECB are also recorded in the balance of payments[1]. Conversely, a repatriation of the interbank loan to the country of the lender is recorded there as a reduction in the private sector's net claim on the rest of the world, with the corollary of an increase in the foreign net claim for the central bank in the form of a TARGET2 claim. The financing programmes set up by the EU and the IMF are likewise recorded in the balance of payments, since they are a source of capital inflows for the countries receiving finance via these programmes and they imply an increase in net liabilities towards the rest of the world. If these official capital flows are considered in conjunction with the private net capital flows – calculated as a residual category – it is therefore possible to examine the extent to which the official sector in the euro area has taken over financial intermediation between the euro area countries[2].

Before the first signs of the financial crisis emerged, Greece and Portugal had no difficulty in attracting sufficient inflows of private capital to finance their growing current account deficits. In contrast, Ireland – with a smaller current account deficit – had more limited net recourse to foreign financing. However, that conceals substantial gross capital flows which also made its banking sector vulnerable to a sudden drying-up of funding. At the first signs of the financial crisis, these three countries had problems in raising funding on the market ; during the period between the collapse of Lehman Brothers and the end of 2011, that was reflected mainly in a contraction of the inflows of private capital, essentially portfolio investments by foreigners and, to a lesser extent, cross-border bank loans and deposits (EC, 2012). That forced the banks in those countries to make greater use of refinancing via the Eurosystem, which was facilitated by the measures mentioned above in the context of enhanced credit support. The Eurosystem thus made a substantial contribution towards financial and macroeconomic stability.

As a result, Greece and Portugal, for example, were not obliged to make sudden reductions in their current account deficit in response to the sudden disappearance of private external funding. That was in stark contrast to the situation in Bulgaria, Latvia and Lithuania, for instance, which still had a current account deficit of over 15% of GDP in 2007, that was converted to a balanced position in the space of three or four years despite a stable bilateral exchange rate against the euro (Merler and Pisani-Ferry, 2012a). However, this speedy recovery of the external balance came at a high price in terms of unemployment and private consumption[3]. It can therefore be assumed that such an abrupt adjustment in the programme countries

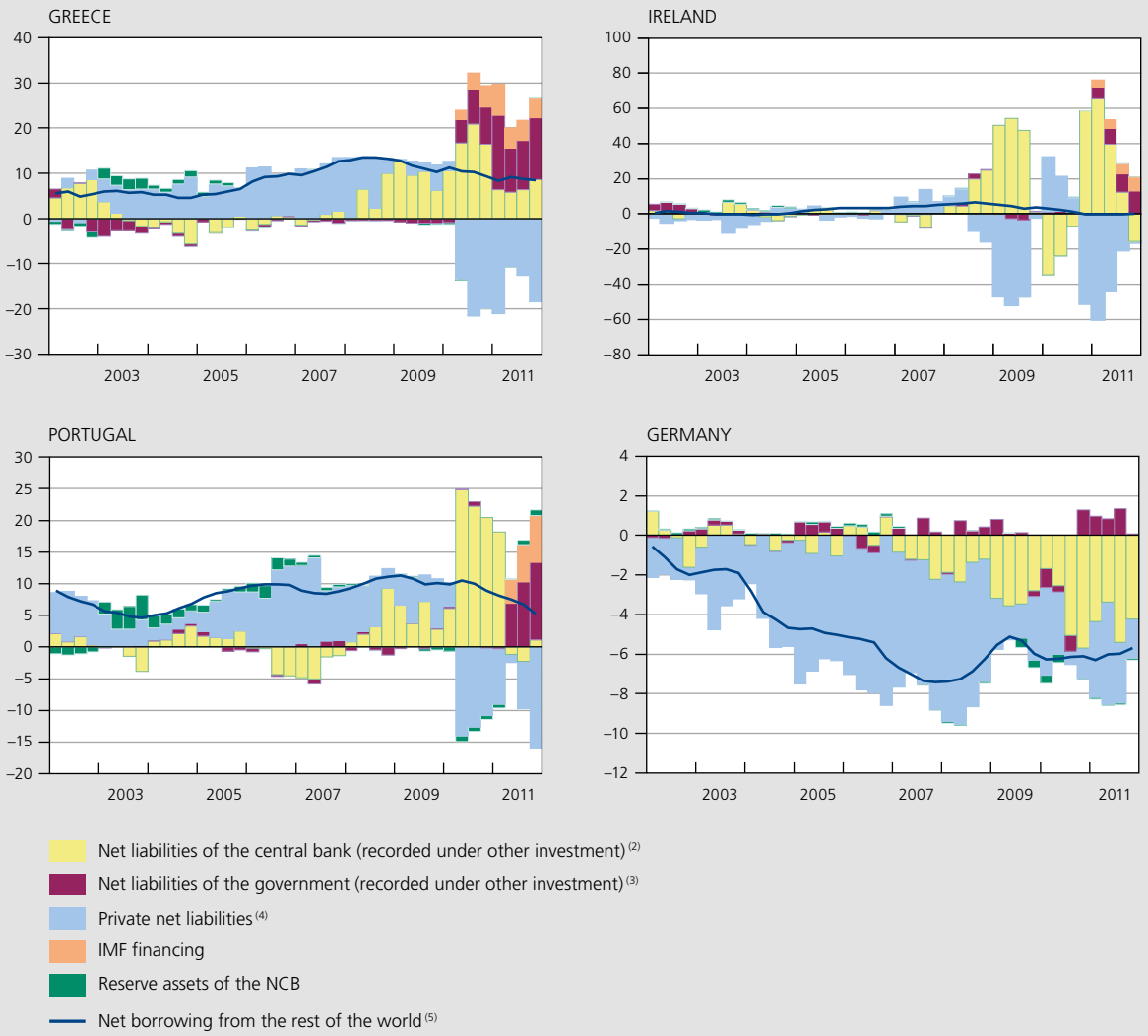
(1) Changes in the net positions held by NCBs vis-à-vis the ECB are recorded in the balance of payments as "other investment by the monetary authorities".

(2) This approach takes no account of purchases of government paper or covered bonds effected by the Eurosystem for monetary policy purposes. For example, if a resident sells a debt instrument issued by a resident to a non-resident NCB or to the ECB, that implies a TARGET2 claim for the NCB of the seller, but at the same time an increased liability vis-à-vis the non-resident NCB or the ECB. In the approach used here, only the TARGET2 claim is explicitly identified. Consequently, the private capital flows calculated here somewhat overestimate the actual private capital flows (see also Merler and Pisani-Ferry (2012a)).

(3) Unemployment in Bulgaria, Latvia and Lithuania increased from 6.9, 6.4 and 4.3 % respectively in 2007 to 10.2, 18.7 and 17.8 % respectively in 2010. Private consumption in those countries declined by 7.6, 22.6 and 17.5 % respectively in 2009.

CHART 7 NET BORROWING FROM THE REST OF THE WORLD [1]

(in % of GDP, average of the last four quarters)



Sources: Thomson Reuters Datastream and own calculations.

(1) Since the "errors and omissions" item is not shown, the sum of the financing flows is not equal to net borrowing from the rest of the world.

(2) Although this item covers more than just the positions in relation to TARGET2, the transactions under this item largely correspond to the change in the TARGET2 positions. The only exception to that seems to be Ireland: in that case it is therefore the TARGET2 positions that are used, and the data in this chart do not all come from the balance of payments.

(3) This item records the loans which countries conclude with the EFSF and the EFSM, plus the bilateral loans to Greece. In addition, this item also covers the deposits which the government holds in other countries.

(4) Private net liabilities are defined as the difference between the balance on the financial account and the net liabilities of both the central bank and the government, as recorded under the other investment on the financial account.

(5) Net borrowing from the rest of the world is defined as the sum of the current account balance and the capital account balance, with the opposite sign.

would only have put even more stress on the macro-economic situation than is the case today. In regard to Ireland, the loss of external financing was very evident, and at an earlier stage in the crisis. Without alternative financing via the Eurosystem, the Irish banking sector would have had to reduce its foreign claims at very short notice, implying a significant risk of a fire sales scenario, with an impact on financial stability as well as macro-economic stability. During 2010, Ireland was able to attract new private foreign finance, in net terms, but when the sovereign debt crisis erupted these funding flows reversed again.

In the surplus countries, too, the Monetary Union – primarily an efficient payments system and the absence of any exchange rate risk – supported financial stability in times of financial turmoil. In Germany, for example, there was a marked decline in net outflows of private

capital, reducing the German private sector's exposure to the other euro area countries. Those repatriated funds returned to the Bundesbank which, as already mentioned, in turn records a TARGET2 claim on the ECB, so that the balance of payments is restored to equilibrium. Thus, market participants in those countries were able to reduce, quickly and easily, the funding granted to deficit countries in the years preceding the crisis. That is in stark contrast to a context of fixed – but adjustable – exchange rates in which creditors face a greater risk of exchange rate losses or defaults on their foreign claims in the event of sudden stops, as explained in Section 3.3.

The Eurosystem has thus positioned itself between the countries : on the one hand, banks in vulnerable countries increase their recourse to Eurosystem refinancing, while on the other hand, banks which have reduced their exposure to counterparties in those countries place the resulting liquidity with the national central bank in their home country. However, the Eurosystem is not the only official body which can take over the role of private markets in times of financial turbulence. In fact, Greece, Ireland and Portugal can all three fall back on a financing programme [1] set up by the EU and the IMF once they could no longer access market finance on sustainable terms. For those countries, these programmes are a source of capital inflows which make up for the shortage of private funding. Balance of payments data indicate that this official financing enables the Eurosystem to gradually reduce its role as a financial intermediary, despite a continuous outflow of capital from the countries in question. From the point of view of the balance of payments and cross-border capital movements, the intermediation function of the Eurosystem and that of the European stability mechanisms, such as the EFSF, are comparable. By issuing debt securities, this stability mechanism raises funds which it in turn lends on certain conditions to the programme countries. That situation is comparable to the position of the Eurosystem, which on the one hand receives liquidity placed with it by a number of counterparties and, on the other hand, grants loans to another group of counterparties. That therefore confirms the statement that a greater role for official financial support should allow a reduction in the major role which the Eurosystem currently performs in the intermediation of financial flows between countries. More important still, that official financial support is granted only on condition that measures are taken to restore sustainable access to market finance. That is a lever which is not available to the Eurosystem. On the contrary, there is the risk that greater intermediation by the central bank will give the countries in question insufficient incentives to make the necessary adjustments. That is why the ECB Governing Council continues to urge vulnerable countries to take the necessary measures to restore their economy's competitiveness and reduce their debts.

(1) On 25 June 2012, Cyprus applied for a financial aid programme, the details of which were still being worked out when this article went to press. On that same date, Spain also requested the Eurogroup's support for its banking sector. Although the support was promised, Spain had not yet officially requested a loan when this article went to press.

3.3 Monetary union : more than an irrevocably fixed exchange rate

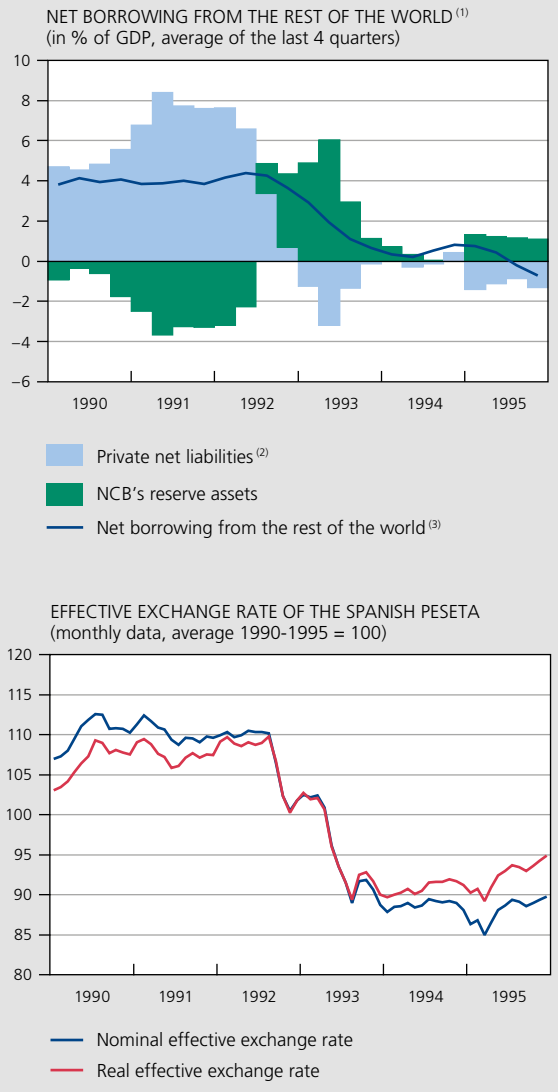
The implications of the sudden, drastic reduction in capital flows between countries in a monetary union are very different, in various ways, from the effects of sudden stops in a system of fixed but adjustable exchange rates. On the one hand, as already stated, a monetary union benefits financial and macroeconomic stability in the event of such sudden stops. On the other hand, in a monetary union, there are fewer incentives to make adjustments aimed at achieving a more sustainable external debt position. Finally, the available adjustment mechanisms are not the same in these two institutional environments.

If a central bank operates in a system of fixed but adjustable exchange rates, there is always the danger that its scope for providing liquidity will be constrained purely because its foreign reserves are finite (Bindseil and Winkler, 2012). Indeed, a fixed exchange rate can only be maintained so long as the central bank is not confronted by a sudden capital flight causing its external reserves to dry up. If that happens, it is forced to abandon the fixed exchange rate in order to attract a new inflow of private capital. In principle, that threat of a forced devaluation due to a lack of foreign reserves has the effect of imposing discipline and may encourage a macroeconomic policy aimed at external equilibrium. However, it is equally true that this inherent restriction on the provision of liquidity may prompt speculative attacks (Obstfeld, 1996), even if the macroeconomic fundamentals do not justify a balance of payments crisis. In these models, even the mere expectation that market participants will sell the currency – and that the central bank will therefore be forced to abandon its parity – is sufficient to prompt others to do the same, causing a genuine crisis.

Such speculative attacks on an exchange rate parity are a source of financial turmoil, not only in the country afflicted by a balance of payments crisis – where, for example, there has to be a substantial short-term interest rate hike – but also for the countries which have claims on that country. They may incur considerable exchange rate losses on those claims if the claims are denominated in the currency under pressure, or potential defaults on those claims if they are denominated in the appreciated currency and therefore imply a greater repayment burden for the debtor.

The EMS crisis in 1992-1993 illustrates the dynamics of a balance of payments crisis in a system of fixed but adjustable exchange rates. For example, Spain had joined the EMS in June 1989 and had no problems in financing its substantial current account deficit via the market, as is evident from the private net capital inflows which far exceeded the country's external financing need, so that the Banco de España was able to build up reserve assets [1].

CHART 8 SPAIN DURING THE EMS CRISIS



Sources: Thomson Reuters Datastream and own calculations.

(1) Since the "errors and omissions", "net liabilities of the central bank", "net liabilities of the government" and "IMF financing" items are not shown, the sum of the financing flows is not equal to net borrowing from the rest of the world. However, those items are negligible for the period in question.

(2) Private net liabilities are defined as the difference between the balance on the financial account and the net liabilities of both the central bank and the government, as recorded in the other investment on the financial account.

(3) Net borrowing from the rest of the world is defined as the sum of the current account balance and the capital account balance with the opposite sign.

That situation came to an abrupt end in the summer of 1992, when tensions surrounding the EMS and the accompanying speculative attacks on numerous currencies, including the peseta, triggered a sudden, massive capital flight from Spain. That capital flight exerted downward pressure on the peseta, obliging the central bank to intervene on a massive scale by selling its foreign reserves, while capital controls were also introduced [2]. That strategy proved untenable, and during 1992 and 1993 the Spanish central bank was therefore forced to devalue the peseta on several occasions. Between September 1992 and September 1993, both the nominal and the real effective exchange rate of the peseta thus depreciated by around 18%. It was only after that depreciation that the private capital flight diminished, while the current account deficit – and hence also the external financing need – also declined.

As stated by Obstfeld and Rogoff (1995), such a scenario can be avoided if all the central banks concerned are prepared to provide full support for the fixed exchange rate. Technically, that is perfectly possible if a system of bilateral loans is set up between the central banks, or if the central bank whose currency is under upward pressure also intervenes vigorously. From the economic point of view, it is therefore possible to draw a parallel here with the decentralised implementation of monetary policy in the euro area. The reduction of the external reserves of the central bank during a balance of payments crisis in a system of fixed but adjustable exchange rates implies a reduction in the claims of that central bank on the rest of the world, and can thus be compared to the increased TARGET2 liabilities that the NCBs of vulnerable countries accumulate vis-à-vis a non-resident, the ECB. However, there is an essential difference between the two systems: while external reserves may be exhausted, the TARGET2 balances are, in principle, unlimited – that applies to both claims and liabilities – so that the counterparties of banks need have no fear that a cross-border transfer of liquidity might be hampered by an NCB's balance sheet constraints. Partly on account of the absence of such potential restrictions on cross-border financial flows, a monetary union is therefore more conducive to financial stability than a system of fixed but adjustable exchange rates. In a system of fixed but adjustable exchange rates, if a country is struggling to attract external finance, it has a rapid adjustment mechanism: nominal devaluation. That enables it to restore its external competitiveness in the short term. Since it also reduces the current account deficit, there is less need for foreign financing, and the latter may also prove to be

(1) An increase in the central bank's reserve assets corresponds to a capital outflow, since claims are formed on the rest of the world.

(2) For more details on the subject, see Gros and Thygesen (1998).

more readily available in view of the improved outlook for the solvency of the country in question. For a number of countries in the current crisis, too, a substantial real depreciation is a crucial element in a strategy for regaining access to market finance. However, in the monetary union there is no rapid adjustment mechanism in the form of a nominal devaluation. The countries therefore have to resort to other measures to tackle their external imbalances. The options available to the countries for that purpose will be discussed in the next and final section of this article.

4. The Eurosystem "buys time" for structural adjustments

By acting as intermediary between banks and between countries, the Eurosystem took the place of a malfunctioning private market and ensured that banks and countries were not suddenly cut off from liquidity. That would have obliged them to make adjustments in a disorderly manner – e.g. in the case of the banks, by drastically limiting their lending to the non-financial sector or by fire sales, and for countries by significantly reducing domestic demand in the very short term – which would have had adverse financial and macroeconomic implications. Nevertheless, despite being able to make the necessary adjustments in relative comfort, the economic agents concerned must still actually implement those measures. Such structural adjustments – which will take time to produce their effects – are the only long-term solution to the current financial and economic crisis. Those adjustments must be implemented both by the financial sector and in regard to the macroeconomic imbalances.

The business model adopted by the financial sector in the period preceding the financial crisis turned out not to be sustainable. The banks' capital base must be strengthened, e.g. by retaining profits and attracting new capital, possibly with the support of the official sector. That stronger capital base should also restore their access to stable sources of market finance. During the period preceding the financial crisis, there was excessive recourse to financing via the interbank market, often with short maturities, a combination which made financial institutions very vulnerable to sudden stops.

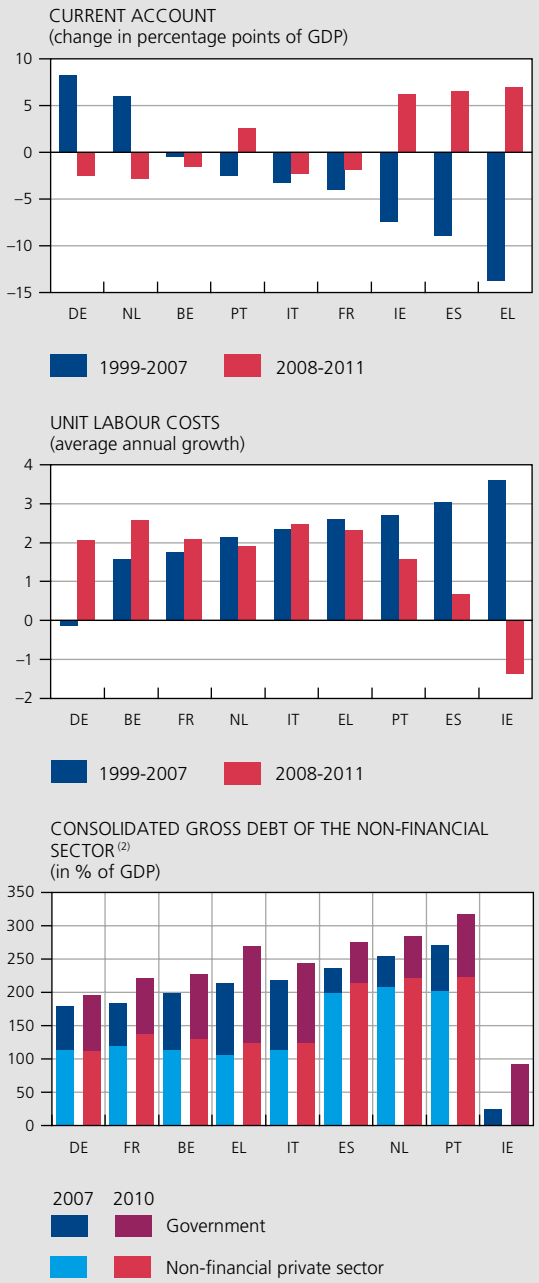
However, the macroeconomic imbalances also need to be addressed. That should in turn also enable countries to again raise funding on sustainable conditions on the capital markets. It is particularly the countries currently facing financing problems that need to make structural reforms to their economies in order to improve their competitiveness and reduce their excessive debt positions. Competitiveness cannot be durably restored without the moderation of domestic costs, which had risen significantly faster than productivity in a number of euro area countries in the years preceding the financial crisis. That moderation would significantly contibute to the necessary depreciation of the real exchange rate of a number of countries. Measures such as labour market reforms and improvements to the export product mix will also help to enhance the competitiveness of the vulnerable countries.

These actions should help the deficit countries to continue reducing their still sizeable current account deficits and bring their substantial net foreign debt positions down to a level which is more sustainable, and which therefore can be financed again. For most countries, further consolidation of public finances is likely to be very important, while in a number of euro area countries the private sector also needs to make an effort to reduce its debt burden to an acceptable level. These painful but necessary adjustments in the deficit countries will proceed more smoothly if the surplus countries were to encourage more dynamic domestic demand, e.g. by spreading the consolidation of public finances over a longer period or by gearing wage developments less strictly to cost moderation.

It must be said that part of the long road towards rebalancing has already been covered. In a number of euro area countries, the current account balances have improved compared to the 2008 levels. That is due not only to a rebalancing of domestic demand in the various euro area countries, but also to a more moderate trend in unit labour costs, which had exhibited widely divergent patterns in the pre-crisis years. Despite these encouraging developments, however, a number of countries had a higher debt ratio at the end of 2010 than at the start of the crisis, and that threatens to weigh on future economic growth. In many countries, that higher debt ratio is the outcome of both the expansion of non-financial private sector debts and a larger public debt.

Concerning the institutional framework, substantial progress has already been made in providing lasting support for financial stability. The current powers and resources of the EFSF, the EFSM and the permanent ESM form a strong safety net for the efficient support of financial stability in the event of Member States facing financial turbulence. Emergency funding on such a scale is possible only because the euro area as a whole has a strong fiscal position compared to the other advanced economies. Considerable progress has also been achieved in regard to the economic governance (including the fiscal rules) of the European Union, which should help prevent the recurrence of crises of the kind we are currently experiencing (De Prest, Geeroms and Langenus, 2012).

CHART 9 CORRECTION OF THE IMBALANCES IN THE EURO AREA [1]



Sources: EC and own calculations.

(1) The chart shows only the six countries with the largest GDP and the three countries which received financial assistance from the EU and the IMF in 2011. The countries are ranked according to the data for 1999-2007 (in regard to the current account and unit labour costs) or the 2007 data (for the gross debt).

(2) For Ireland, no figures are available for the consolidated gross debt of the non-financial private sector.

Nevertheless, the Economic and Monetary Union remains vulnerable to serious financial disruption if it is not underpinned by financial and fiscal union. In a context of increasing financial integration, the creation of EMU led to strong expansion of cross-border financial transactions in the pre-crisis years. However, that development was not reflected in a more cross-border approach to financial sector regulation, supervision and crisis management, as those policies were largely left to the individual countries, with the known consequences. Progress is therefore needed in this area, too. Unified, strengthened supervision of the banking sector should repair the damage to financial integration and safeguard confidence in the sector. A deposit guarantee system organised at European level together with a mechanism for the restructuring and – if necessary – resolution of insolvent banks should help to end the detrimental interaction between government solvency and that of the resident banking sector. Finally, it seems advisable for both systems to be funded with contributions from the financial sector so that the taxpayer should not have to bear the cost of rescuing financial institutions again.

All these measures should put an end to the damaging contagion between governments and banks, ensure that depositors no longer judge the security of bank deposits by the bank's nationality, and enable financial institutions and governments throughout the euro area to regain access to financing via the market. It is not until confidence has been restored that the Eurosystem will be able to phase out its role as a market maker of last resort, and the market will be able to resume its proper role.

Conclusion

Since the first signs of the financial crisis in 2007, the Eurosystem has faced unprecedented challenges. That applies, in particular, to the ever-widening cracks in financial integration within the euro area, which threatened to disrupt financial stability and the efficient transmission of monetary policy in a number of euro area countries. Since financial stability is a necessary condition for the maintenance of price stability, the Eurosystem therefore took a range of measures under the heading of "enhanced credit support", aimed at providing continuing support for the smooth financing of the euro area's economy.

In parallel with those measures, the Eurosystem acted as a financial intermediary, not only for banks but also for countries, since the mutual contagion between governments and resident banking sectors led to very severe constraints on access to market finance on sustainable conditions for some national banking sectors. In the vulnerable countries, recourse to the Eurosystem as an alternative source of funding therefore expanded considerably, while banks in countries with sound fundamentals increasingly placed their surplus liquidity with

the central bank, rather than lending it to banks with liquidity shortages. As a result, the Eurosystem's balance sheet expanded and the NCBs' TARGET2 positions grew to a record level.

The Eurosystem's non-standard measures are – by definition – temporary. The financial assistance which countries receive from the EU and the IMF also consists of temporary bridging loans, which give governments the time to take the structural measures necessary to regain access to market financing on sustainable terms. Not until those structural adjustments have been made by all the players involved – financial institutions, governments and, in a number of countries, the non-financial private sector – and the confidence of the financial market participants has been restored, will the official sector – and particularly the Eurosystem – be able to scale down its role as a financial intermediary. To that end, EMU needs to be strengthened too, e.g. by the development of strong financial safety nets, strict compliance with the rules on economic governance, and the construction of a fully-fledged financial and fiscal union.

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Belgian business investment in the context of the crisis

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L. Dresse

Introduction

For almost five years now, the Belgian economy has suffered a succession of exceptionally large shocks. Although the shocks are interrelated since they were all connected initially with the rapid development of the financial crisis and the severe global recession, and subsequently with the difficult – and not yet achieved – transition towards a new economic and financial equilibrium, those shocks have been felt at various levels. Late 2008 and early 2009 brought a slump in demand and global activity, severe tensions emerged on the financial markets – first in interbank transactions, then in respect of euro area sovereign debt –, the appetite for risk evaporated in a context of great uncertainty over short-term developments and the reappraisal of the long-term outlook, and a lengthy restructuring process began. That will need to continue in most economies, in order to rectify unsustainable debt positions of various sectors and/or competitiveness and growth potential in the long term.

All these developments had a direct impact on corporate investment decisions. In the short term, those decisions are strongly influenced by cyclical fluctuations in GDP, and the procyclical profile of investment in turn amplifies those fluctuations. Furthermore, long-term investment is decisive for the rate of increase in the capital stock, thus influencing the economy's growth potential. It is therefore essential to have a clear understanding of the factors which determine investment in order to assess macroeconomic developments in the economy. Against the backdrop of the most serious economic crisis since the Great Depression of the 1930s, it is therefore interesting to examine recent developments in business investment[1].

The first chapter of this article analyses the business investment picture since 2007, including from a historical and international perspective. Next, in order to explain recent developments, the second chapter considers why the decline in business investment in Belgium during the crisis, though significant, was nevertheless relatively moderate compared to other euro area countries. The third and final chapter sums up the main findings and sets out a number of points of attention for the future.

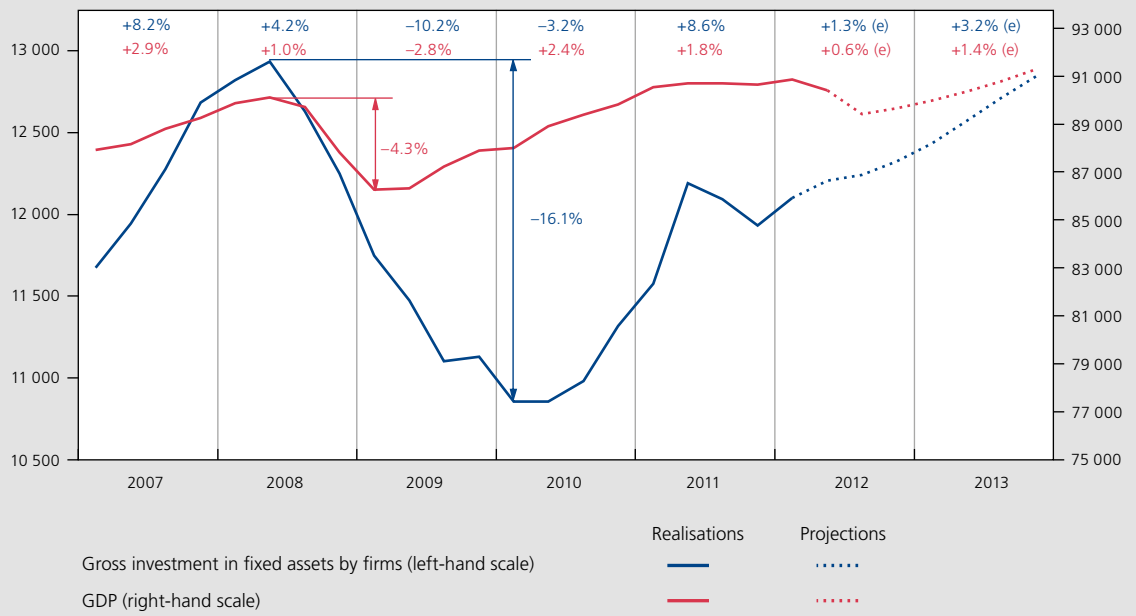
1. Recent developments in business investment

Just before the crisis, there was a strong surge in Belgian corporate investment. In 2007, it expanded by 8.2 % in volume, and that growth continued until it reached a peak in the second quarter of 2008. However, after the collapse of Lehman Brothers in September 2008, business investment slumped in the third quarter of 2008, and a steep decline ensued which persisted for more than a year. In the first quarter of 2010, investment was 16.1 % below the peak level seen in the second quarter of 2008. After stabilising briefly at a low level during the second quarter of 2010, investment began to pick up from the third quarter of 2010. That recovery

(1) In this article, unless otherwise stated "investment" is used in the sense of business investment. The "business investment" series concerns the gross fixed capital formation of firms, self-employed persons, and non-profit institutions in the national accounts. Government investment and household investment in housing are therefore disregarded.

CHART 1 DEVELOPMENT OF BUSINESS INVESTMENT AND GDP IN BELGIUM

(quarterly volume data, in € million, reference year: 2009, data adjusted for seasonal and calendar effects)



Sources: NAI, NBB.
Note: percentages in the upper part of the chart: real annual growth.

culminated in the second quarter of 2011, when investment was 12.3 % above the level reached in the same quarter of the previous year. However, within a few weeks the climate deteriorated again. The stabilisation since the third quarter of 2011 is due to renewed uncertainty over the growth forecasts and, according to the macroeconomic projections which the Bank published in June 2012, it is likely to persist throughout the current year. Only after that is investment likely to begin rising gradually again.

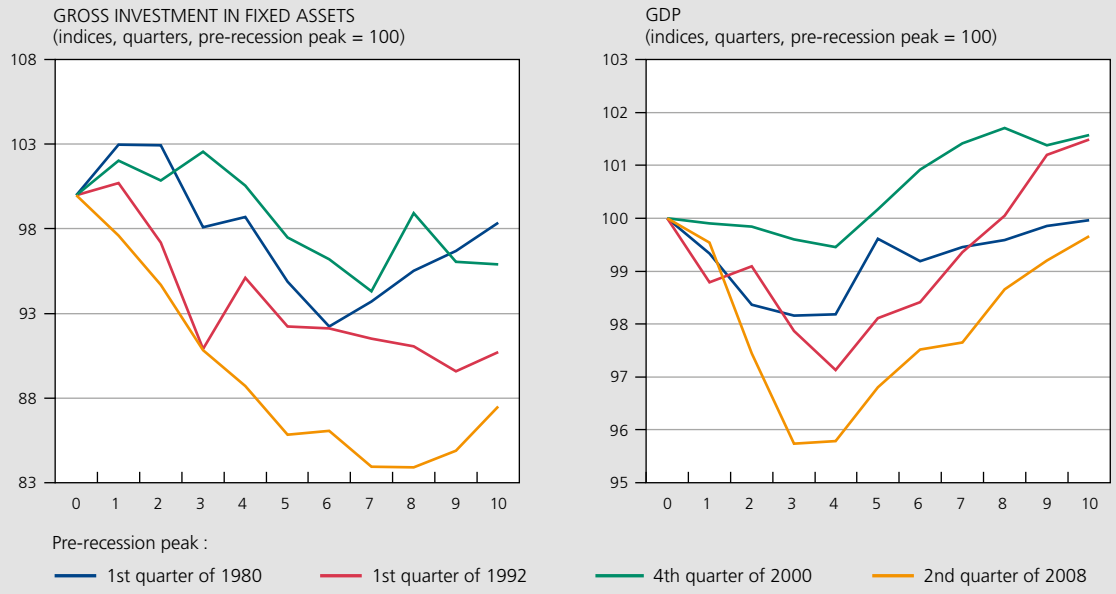
The trend in business investment can also be compared with the movements of GDP. It appears that investment and GDP follow a similar pattern, though investment fluctuates more widely. Between early 2007 and the second quarter of 2008 for example, both business investment and GDP rose strongly, but in 2007 the expansion of investment was triple the rate of GDP growth, and in 2008 it was four and a half times higher. The recession also occurred simultaneously: both variables dipped sharply from the third quarter of 2008. Here, too, investment proved more volatile than GDP: in 2009, investment dropped by 3.7 times as much as GDP. However, it took longer for investment to recover: while GDP had picked up by mid-2009, investment only began rising again in the third quarter of 2010.

To place the current conditions in context, it is also instructive to examine what happened to investment during previous recession periods[1]. Apart from the episode from mid-2008 to early 2009, there have been three other recessions since 1980, namely the one in the early 1980s[2], the 1992-1993 recession and the 2001 recession. The 2008 crisis was clearly more severe than the previous episodes. First, both GDP and investment were more seriously affected during the recent crisis than in previous recessions. Moreover, recovery was much slower. Ten quarters after the peak which immediately preceded the crisis, GDP and investment were still below pre-crisis levels. Investment actually remained at more than 12 % below the pre-crisis peak. In each of the three previous crises, GDP had already recovered after ten quarters and, in the case of the 1993 and 2000 crises, GDP had already exceeded its pre-crisis peak after ten quarters. Although the 2009 decline in investment was therefore the most marked since 1980, that extreme movement needs to be viewed in perspective by comparing it with the evolution of GDP.

(1) A recession is defined as two consecutive quarters of declining GDP.
(2) In the early 1980s, formal recessions occurred in 1980-1981 and in 1983; in 1982, GDP growth was positive, but weak (0.6 % year-on-year). This article refers to this period as "the crisis of the early 1980s".

CHART 2 EVOLUTION OF GDP AND INVESTMENT COMPARED TO PREVIOUS CRISIS PERIODS

(indices, pre-recession peak = 100, quarters since the peak on the horizontal axis)



Sources: NAI, NBB.

CHART 3 INVESTMENT RATIO

(gross fixed capital formation by firms in % of GDP, adjusted for seasonal and calendar effects)

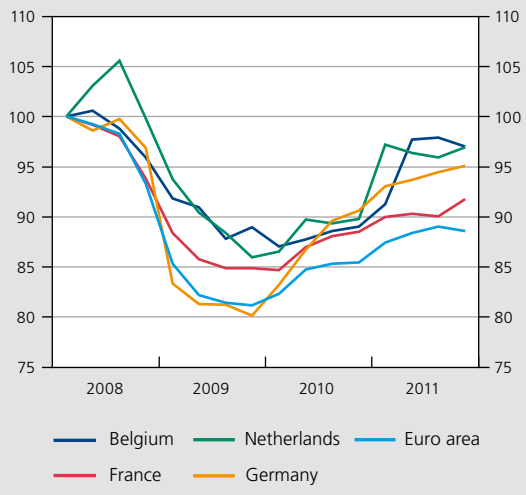
Sources: NAI, NBB.

Another way of demonstrating the link between investment and economic activity is to examine the investment ratio. The real investment ratio, defined here as the ratio between real business investment and real GDP, has risen since 1980, though the trend was interrupted during recessions. On the one hand, one reason behind that trend might be price effects: during the period examined, the investment deflator was structurally less dynamic than the GDP deflator, and that difference contributed to the upward trend. On the other hand, the Belgian economy faced structural competitiveness problems in the early 1980s which led to a very low investment ratio. That effect is also evident from the nominal investment ratio, which likewise recorded a marked rise at the end of the 1980s, once those structural problems had been resolved. Subsequently, from 1990 onwards, the nominal investment ratio hovered continuously around an average of 13.3 % of GDP.

The cyclical fluctuations in the investment ratio reveal that Belgian business investment withstood the recent recession fairly well. In relation to the pre-crisis peak (second quarter of 2008), the investment ratio only dropped by 2.4 percentage points in nominal terms, and just 2.1 percentage points in real terms. At the time of the 2001 recession, it fell by 2.1 percentage points in nominal terms and 1.2 percentage points in real terms. During the current crisis, the decline in business investment was therefore not much greater in relation to GDP than during previous recessions. The order of magnitude of the decline in investment during the crisis therefore appears normal, in view of the very large and unexpected fall in GDP, the high degree of uncertainty and the unstable expectations.

CHART 4 COMPARISON OF BELGIAN BUSINESS INVESTMENT WITH NEIGHBOURING COUNTRIES AND THE EURO AREA

(indices, first quarter of 2008 = 100)



Source: OECD.

Belgium also seems to have been relatively resilient to the recession from an international perspective. In neighbouring countries, investment fell more sharply than in Belgium during the crisis. However, in the Netherlands and Germany, the post-crisis recovery was stronger and faster. From the end of 2009, both countries saw a robust revival, while Belgian business investment still remained stable. However, since the beginning of 2011, the growth of business investment has slowed in both countries, whereas in Belgium that did not happen until the second quarter of 2011. French business investment largely mirrored the Belgian picture, except for the acceleration in 2011, which does not seem to have occurred in France.

2. Explanation for the recent pattern of investment

In this chapter, the Bank's quarterly model[1] for the Belgian economy – which is also used for the Bank's macroeconomic projections – will serve as a guide for a general explanation of the pattern of business investment over the past five years. Next, we look for an explanation for two apparently contradictory findings of the descriptive analysis in the previous chapter, and examine a number of variables which may account for the steep decline in investment in the wake of the crisis. We also consider factors which may explain why the decline in business investment was nevertheless limited.

2.1 Recent profile of business investment examined via the Bank's econometric model

The production of goods and services requires an optimum allocation of capital and labour, described in the econometric model by a CES production function with constant returns to scale. The optimum demand for both capital and labour can be simultaneously deduced from the model. The relevant determinants of the equilibrium demand for investment in this model are: total demand for goods and services from the private sector; the real capital cost of investment, i.e. the capital cost measured against the total production cost of firms; the constantly rising efficiency of the production factors capital and

(1) Cf. Jeanfils, Ph. and K. Burggraeve, May 2005, Noname, *A New Quarterly Model For Belgium*, Working Paper Research n° 68.

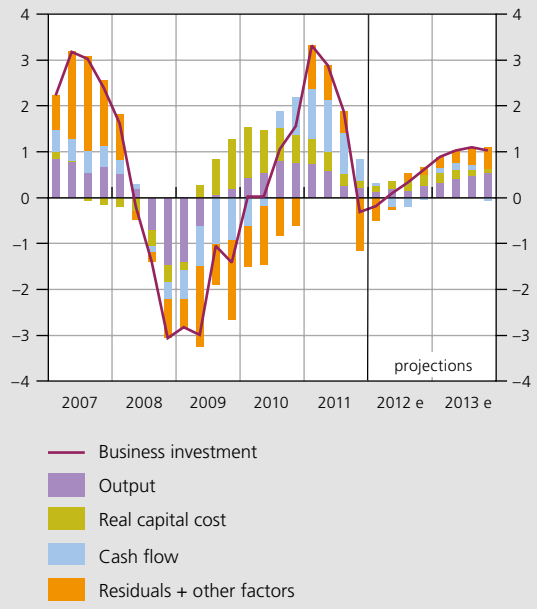
labour, whereby the same quantity of goods and services can be produced with a constantly declining amount of production factors; the rate at which past investment is written off; the elasticity of substitution between labour and capital, plus the distribution parameter which compares the relative proportions of labour and capital; and the variable mark-up used by firms.

Effective demand for investment is incorporated in an error correction model whereby deviations from optimum investment demand in the previous period are gradually adjusted in the direction of equilibrium demand. Attention is also paid to typical delays in the investment process. An additional determinant is introduced in the equation via the cash flow channel, which only influences investment demand in the short term: the bigger the firms' cash flow, the less their need to resort to external funding – which may entail greater uncertainty over the outcome of the decision-making process – and therefore the easier it is to actually implement new investment projects.

Analysis of business investment according to the above determinants shows that the largest contribution to the drop in investment following the outbreak of the financial crisis came from the negative development of demand[1].

CHART 5 PATTERN OF INVESTMENT AND ITS DETERMINANTS

(contributions to quarter-on-quarter growth[1] of investment according to the Bank's quarterly model, in percentage points)



Source : NBB.
(1) Smoothed series: centred moving average over three quarters.

From the second half of 2009, the demand outlook improved again, thus boosting investment demand. Business cash flows and the associated operating profits, which had made a rather modest negative contribution to investment growth in 2008, seriously curbed investment demand in 2009. These disappointing business profits were evidently caused by the marked deterioration in demand combined with an initially rather inelastic total wage bill. It was only after firms were able to reduce their demand for labour (aided by recourse to the system of temporary lay-offs) that they gradually managed to restore their profitability. However, it was not until the second half of 2010 that these cash flows again made a positive contribution to investment growth. The marked fall in short-term interest rates (and, to a lesser extent, in long-term interest rates) in 2009 and its transmission to the rates on business loans and the total cost of business capital certainly bolstered business investment in the second half of 2009 and in 2010. When interest rates ceased to decline in 2010 and the rise in hourly wages in the private sector began to weaken, the contribution of the real cost of capital to investment growth gradually diminished.

In Belgium, the period prior to the collapse of Lehman Brothers featured decidedly favourable forecasts for growth and investment. The positive contribution of the residuals therefore shows that, during that period, investment grew faster than can be explained by the model's determinants. However, after the eruption of the financial crisis, the contribution of the residuals was reversed and became negative. The greatly heightened uncertainty and loss of confidence in the international and financial markets seriously dampened the expansion of investment, driving it down well below the level which can be explained by the classic determinants of the model.

From the second half of 2010, the lack of business confidence slowly improved and Belgian firms again reported positive investment growth figures. During much of 2011, investment again grew faster than can be explained by the classic determinants.

The renewed uncertainty at the end of 2011 and the beginning of 2012 was accompanied by a new dip in investment growth. According to the Bank's macroeconomic projections, the gradual easing of uncertainty on the domestic market – resulting from the clarity created by the government measures in favour of fiscal consolidation, the much smaller rise in long-term interest rates in Belgium compared to the southern euro

(1) To smooth out erratic fluctuations in quarter-on-quarter investment growth, use is made of a centred moving average for growth in the current quarter, the previous quarter and the following quarter. Of course, the same filter was used to calculate the contribution of the individual determinants to total investment growth.

area countries, and the expected steady improvement in the euro area's business climate – will form the basis for the expected slow recovery of investment growth during the period 2012-2013. Initially, that growth rate is likely to be supported mainly by demand expectations, but the real cost of capital and, to a lesser extent, the cash-flow effect, will also make a positive contribution to growth. Since the effective investment demand is set to remain constantly below the equilibrium demand during that period, a gradual convergence towards that equilibrium will also provide additional support for growth.

2.2 Why has investment declined since mid-2008 ?

2.2.1 Demand and economic activity

The accelerator theory offers a clear explanation of the importance of macroeconomic demand for business investment. According to that theory, on which the investment modelling in the Bank's quarterly model is based, if demand for a firm's production increases, the firm must increase its capital input in order to realise that additional production. In principle, the basic assumption is therefore a production function with constant returns to scale (1).

The accelerator model is based on an unchanged capital-output ratio in which the capital input increases/decreases in proportion to the change in economic activity. Since the level of investment reflects the change in the capital stock, and the changes in investment reflect the acceleration or deceleration of growth or decline in the capital stock (second derivative), in percentage terms the change in investment is therefore a multiple of the percentage change in the capital stock and economic activity. That is what is known as the accelerator effect.

The accelerator effect seems to apply to Belgian investment, as investment does follow a pattern similar to that of GDP, but is much more volatile. Between 1980 and 2011, the correlation between GDP and investment was 0.98; investment was therefore highly pro-cyclical. The standard deviation of the investment growth percentage was roughly 4.3 times greater than that of GDP. This theory could therefore explain why Belgian business investment slumped from the third quarter of 2008, when business leaders saw a deterioration in the economic climate.

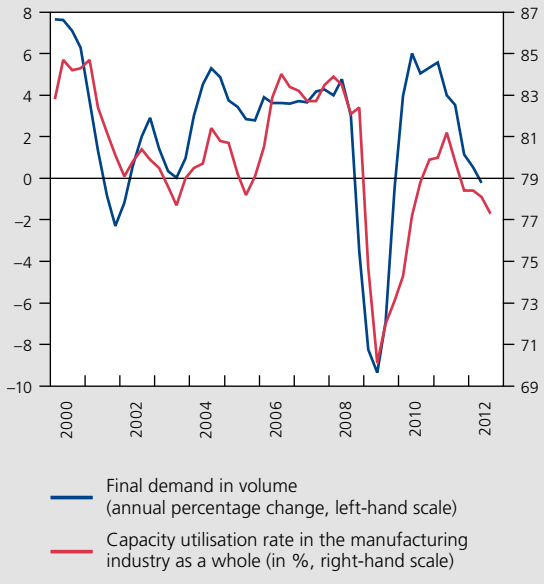
In contrast, if the correlation between GDP and investment is calculated only for the period 2007-2011, it is clearly much lower: in that case, it is only 0.4, and the standard deviation is only 3.1 times as great. Taking into account that this correlation is based on far fewer observations, it may nevertheless indicate that during that period factors other than the assessment of demand may have played a role in the determination of business investment.

However, the fall in demand following the economic and financial crisis which erupted in 2008 had both short- and long-term repercussions. In the short term, the sharp and unexpected decline in demand and economic activity had an impact on capacity utilisation rates. In the longer term, it led to a downgrade of potential growth forecasts. Since potential growth forecasts may reflect firms' expectations regarding future demand and the capital stock needed to meet it, the downward revision of potential growth also affected investment decisions in the longer term.

Short-term impact: adjustments to capacity utilisation rates

A fall in demand does not have an immediate influence on investment, as in the short term firms can adjust the capacity utilisation rate in order to absorb initial fluctuations in demand. For example, when demand increases firms will make better use of existing production capacity in the first place and wait and see whether the trend

CHART 6 FINAL DEMAND AND CAPACITY UTILISATION RATE



Sources: NAI, NBB.

(1) An increase in the production factors labour and capital will thus generate a proportional increase in output.

persists before committing resources which will be tied up for longer periods in an investment project. Investments in fact entail considerable adjustment and opportunity costs. In Belgium, the pattern in the capacity utilisation rate is closely linked to the pattern of final demand. The period preceding the financial and economic crisis featured very strong final demand and a high capacity utilisation rate. When final demand declined from the second quarter of 2008, mainly on account of the steep fall in demand for exports, the capacity utilisation rate showed a similar fall. Both these variables continued to decline until mid-2009, after which they both picked up.

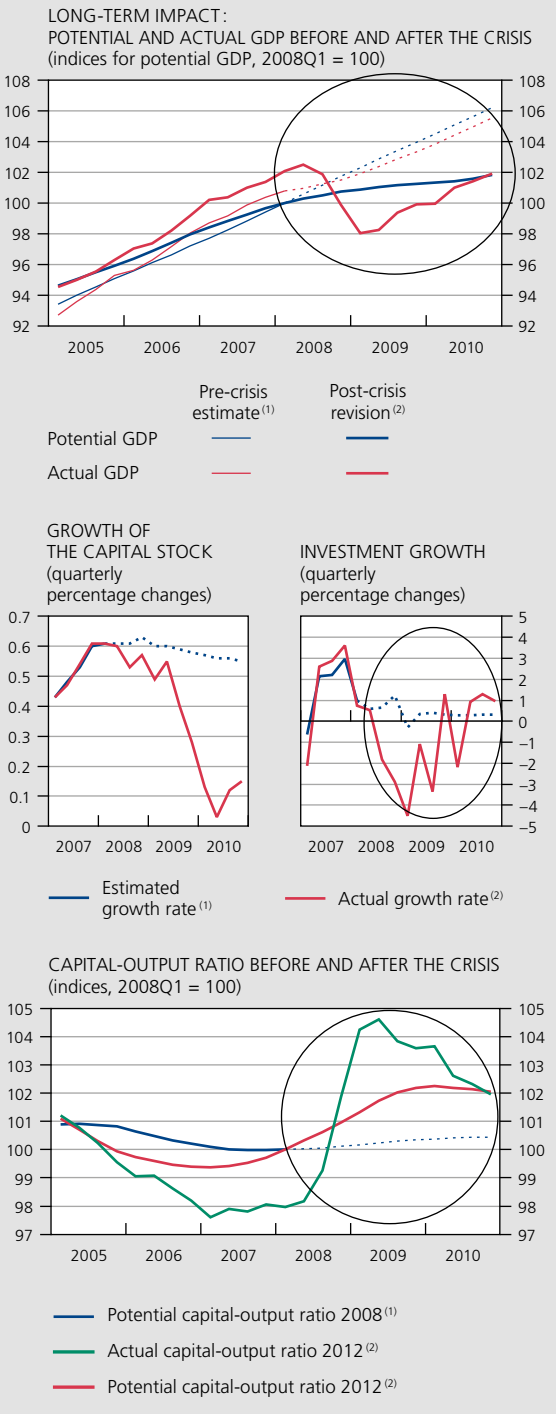
The capacity utilisation figures in 2011 also provide a good indication of the interaction between capacity adjustments and investment decisions. Up to the second quarter of 2011, capacity utilisation increased, before a decline set in. Following a sharp rise in the first two quarters of 2011, business investment began falling from the third quarter of 2011. That finding shows that, between the second and third quarters of 2011, firms initially adjusted their capacity utilisation rates and only later cut their investment once it became clear that the slowdown in activity would persist. After stabilising in the first quarter of 2012, the capacity utilisation rate declined further in the second quarter, against the backdrop of the persistent deterioration in economic activity in the euro area.

Long-term impact: adjustment of investment decisions

The crisis had a significant and unexpected impact on the Belgian economy. While the Bank's June 2008 macroeconomic projections were still predicting real activity growth of 1.6 % in 2008 and 1.5 % in 2009, the actual figures were well below those forecasts, at 1 % and –2.8 % respectively. The decline in GDP affected the estimate of potential GDP, which also underwent a marked downward revision compared to the June 2008 forecasts. The reason was that the adjustments on account of the loss of activity due to the crisis were so abrupt that they generated frictions, and hence temporary losses of efficiency (TFP), or had the effect of discouraging potential workers (decline in the number of hours worked) or raising the structural unemployment rate. These factors had, at the very least, a temporary influence on potential growth. Although the latter is expected to revert eventually to a growth rate comparable to the pre-crisis figure, it is assumed that the effect of the level shift during the crisis is irreversible.

Potential output reflects the growth that an economy is capable of generating without causing disequilibria on the market in goods and services and on the labour market. Although potential GDP cannot be measured and can therefore only be estimated, it implicitly reflects the assessment made by the economic agents, including

CHART 7 POTENTIAL GROWTH, CAPITAL STOCK AND INVESTMENT



Source: NBB.

(1) Actual figures and estimates obtained from the June 2008 estimate of potential growth; estimates shown as a dotted line from the first quarter of 2008.

(2) Actual figures obtained from the June 2012 estimate of potential growth.

firms, of future demand and their need for production factors in the longer term. Since potential growth was unexpectedly adjusted downwards, the same applied to the capital stock needed to generate output. The revision of the required capital stock in turn led to a downward revision of the investment needed to reach that capital stock. Here, too, the slower investment growth and slower growth of the capital stock were unexpected, since they were not indicated by the Bank's June 2008 estimates. The deceleration in the growth of the capital stock was particularly marked from mid-2009 to mid-2010. It was not until investment began rising again in the third quarter of 2010 that the growth of the capital stock picked up. The presence of the accelerator effect is also clearly confirmed in this case: while the growth of the capital stock dipped by only just under 0.6 percentage point on account of the crisis, the investment growth rate dropped by 5 percentage points. Despite the downward adjustment of the capital stock, according to current estimates the ratio between the capital stock and potential output is still significantly higher than was expected in 2008.

2.2.2 Profitability and internal financing scope: gross operating surplus of Belgian firms

Another possible cause of the sharp fall in gross fixed capital formation by Belgian companies in 2009 lies in the changes in their gross operating surplus. Since that surplus is the main source of income for a company, it is in fact an indicator of the scope for internal funding. Moreover, the gross operating surplus is also regarded as an indicator of the profitability of businesses and of investment.

The gross operating surplus of Belgian companies remained relatively stable in 2008, before falling sharply in 2009. The stagnation during 2008 was due mainly to the massive rise in companies' costs, which in fact outpaced the rise in the selling prices of their products so that corporate margins were seriously squeezed. Although the margins increased again in 2009 – as costs fell more steeply than the selling prices of Belgian firms' products – it is evident that the marked contraction of demand nevertheless dented the gross operating surplus. Belgian companies ended the year 2009 with a reduction in their gross operating surplus, eroding the scope for internal financing. However, the year 2010 brought a vigorous though temporary recovery in the growth of the gross operating surplus, the main reason being a revival in demand for products, especially on the export markets. Although demand weakened again in 2011 and the margin remained unchanged, the gross operating surplus continued to expand. The rise is expected to be modest in 2012, on account of a deteriorating final demand. Both domestic demand and demand for products for export are expected to decline steeply this year. In 2013, there should be a slight improvement, due mainly to a revival in

TABLE 1 GROSS OPERATING SURPLUS OF COMPANIES

(percentage changes compared to the previous year)

	2003-2007 Annual average	2008	2009	2010	2011	2012 e	2013 e
Gross operating surplus of companies	7.9	0.1	–5.3	12.6	3.8	1.1	2.8
Gross operating margin per unit of sales	4.3	–2.1	1.7	6.4	0.0	5.7	0.1
Unit selling price	2.2	3.9	–3.9	3.7	4.0	7.5	1.5
On the domestic market (1)	2.6	4.4	–2.4	2.5	3.3	6.4	1.5
On the export market	1.9	3.4	–5.3	5.0	4.6	8.5	1.4
Costs per unit of sales	1.9	5.0	–4.8	3.7	4.8	7.8	1.7
Imported goods and services (1)	2.3	6.0	–8.5	6.1	6.2	10.3	1.4
Domestic costs per unit of output	0.7	1.9	2.6	–0.4	1.5	3.4	1.3
of which: Unit labour costs	0.8	3.5	3.3	–0.9	2.1	2.9	1.5
Final sales, in volume	3.4	2.2	–6.9	5.8	3.8	–4.4	2.7
On the domestic market (1)	2.5	2.3	–2.3	2.1	2.0	–2.8	0.8
On the export market	4.2	2.1	–11.1	9.6	5.5	–5.8	4.5

Sources: NAI, NBB.
(1) Including change in inventories.

export demand, while domestic demand would continue to be modest. Overall, the gross operating surplus of companies is likely to grow more slowly than in the years preceding the economic and financial crisis, in a general environment of moderate economic growth and high uncertainty.

2.2.3 External financing costs of companies

Apart from economic demand and variations in the scope for internal financing, there are other factors which may be behind the slump in corporate investment. For example, firms' financing costs increased sharply from January 2008. Although yields on euro area corporate bonds had already been rising for some time, they recorded a further significant increase from the beginning of 2008 [(1)]. Only the cost of bank loans did not really seem to gather pace at the beginning of 2008, keeping to the same upward trend that it had maintained since 2005. The marked increase in the cost of equity financing in a context of falling stock markets was a decisive factor behind the sharp rise in the weighted funding cost of non-financial corporations from May 2008 on. The increase in the cost of funding, even before the crisis, was due partly to the counter-cyclical monetary policy impulses. These adjustments to the key interest rates are progressively reflected in the interest rates charged to companies. This mechanism is part of the reason why, in boom periods, expanding corporate investment coincides with a rise in the cost of financing. After the eruption of the crisis, however, financing costs continued to rise, as banks and financial markets increased the risk premium included in the nominal interest rates they charged to companies to allow for the severe uncertainty and unstable expectations.

Although the financing cost had peaked in December 2008, it remained higher than before the crisis up to May 2009. The high financing costs during the economic and financial crisis therefore most certainly encouraged firms to delay or cancel some investment projects which could no longer be guaranteed viable. However, the cost of funding corporate investment subsequently declined to a historically low point, thus contributing towards the recovery. Yet the persistence of the historically low level of nominal financing costs cannot explain the slackening pace of investment expansion from mid-2011, which indicates once again that the cost of funds is only one of the investment decision determinants.

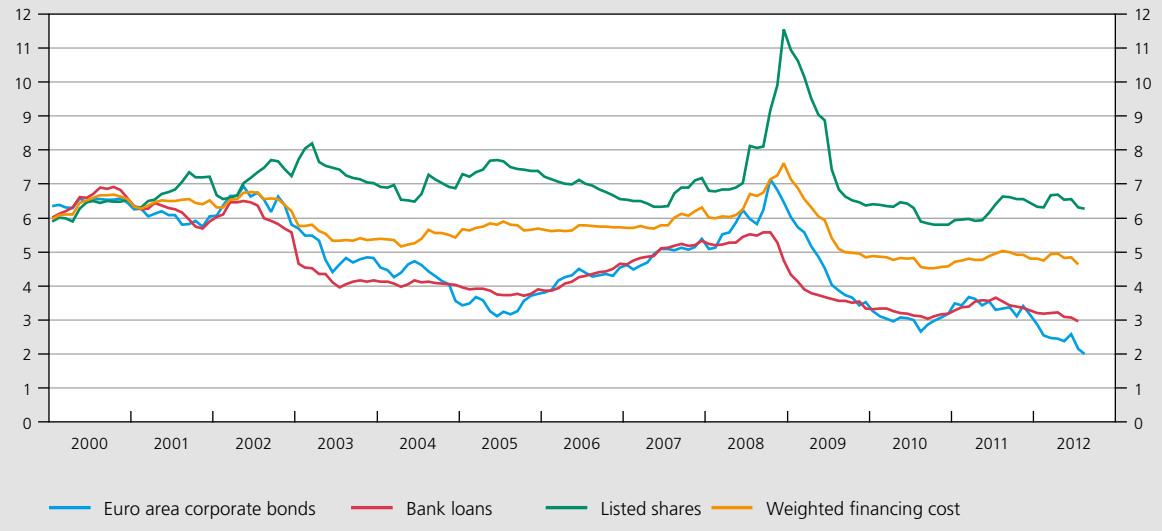
2.2.4 Credit conditions

Changes in credit conditions may also have played a role in the decline in investment following the financial crisis. In Belgium, the credit conditions on lending to non-financial corporations by financial institutions were systematically

(1) The same applied to Belgian corporate bonds. However, it was decided to base the analysis on euro area corporate bonds, since that market is deeper and more liquid.

CHART 8 EXTERNAL FINANCING COSTS OF NON-FINANCIAL CORPORATIONS

(in %)



Sources: NBB, Thomson Reuters Datastream.

tightened from mid-2007, reaching an absolute maximum at the end of 2008. Some Belgian banks continued to tighten their credit conditions up to mid-2009. In September 2008, following the collapse of Lehman Brothers, the interbank market also dried up for the first time. That event had a direct impact on many banks which were dependent on the operations of the interbank market to fund their lending. The resulting uncertainty prompted many institutions to maintain their more stringent credit conditions, or even to tighten them further in order to avoid problems, both because they were themselves having increased difficulty in raising finance and because they doubted the solvency of some of their borrowers.

However, with the exception of the second quarter of 2012, Belgian banks kept their criteria constant from the second quarter of 2009. In contrast, in the euro area the tightening of credit conditions continued unabated. In the final quarter of 2011, for example, the net percentage of European banks stating that they had tightened their credit conditions remained at 20 % [1]. For the second quarter of 2012, though, a tightening of credit conditions was recorded on the Belgian market. This tightening was in particular applied to mortgage loans, and to a lesser degree, to loans to non-financial corporations and to consumer credit. Despite the recent unfavourable developments, this tightening of credit conditions surely is no indication of a credit crunch in Belgium. The sharp contraction of corporate investment in 2009 could therefore also be partly attributable to the tightening of the criteria for obtaining bank loans for investment purposes. On the other hand, the unfavourable business cycle influenced the demand for loans during the crisis, so that the tightening of credit conditions ultimately only had a limited impact on investment decisions.

The Bank's half-yearly survey of investment in the manufacturing industry confirms the conclusions set out above. That survey explicitly questions companies about the factors determining their investment. The participants are presented with a range of determinants which they have to tick if they consider them important. On average, barely three out of ten firms state that they consider credit costs to be a significant investment determinant, whereas eight out of ten regard a reduction in production costs as important, and seven out of ten cite the introduction of new production processes.

In addition, it is important to note that, for certain types of companies, credit conditions may nevertheless have played a more significant role in the decline in investment during the crisis. Thus, in general, the credit utilisation rate is in inverse proportion to the firm's size. Small companies are assumed to be more dependent on bank credit and to have greater difficulty in raising finance than larger firms. It is therefore possible that, for these small companies, credit conditions may have been a more significant factor influencing their investment decisions.

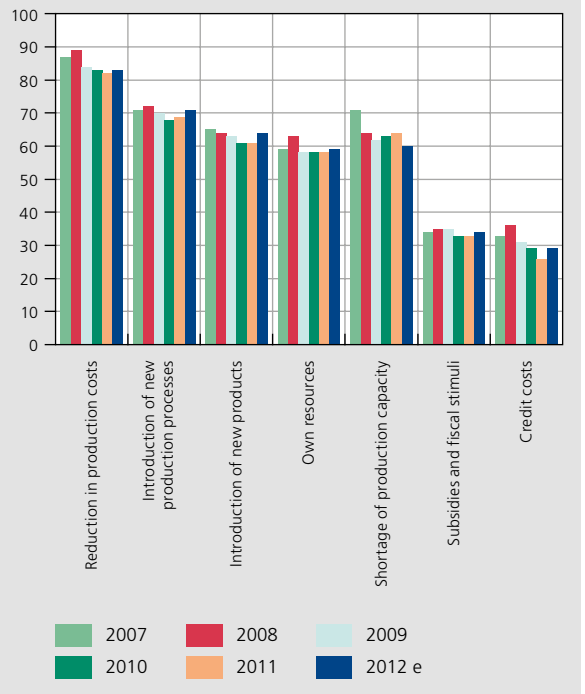
2.2.5 Uncertainty and expectations

Regarding the recent pattern of investment, it has already been said that analyses based on the classic investment determinants do not always identify all the factors which influence investment decisions. Yet it has emerged that, in some circumstances, these residual factors had a major impact on investment decisions. Uncertainty and expectations are two examples of such factors which played a key role during the crisis.

For firms, uncertainty is an everyday phenomenon which operates at various levels. In view of the period over which an investment extends and the fact that an investment project often entails many lags and adjustment

CHART 9 INVESTMENT DETERMINANTS ACCORDING TO THE BANK'S SURVEY OF INVESTMENT IN THE MANUFACTURING INDUSTRY

(percentage of firms [1] ticking the determinant)



Source : NBB.

(1) Firms can tick more than one determinant.

(1) Weighted net percentage of banks reporting a tightening (–) or an easing (+) of credit conditions in the past three months.

costs, firms in fact take account not only of current economic activity but also of future activity when deciding on their investments. Although a company thus expresses expectations regarding future demand and economic activity, those factors are always subject to change. Moreover, companies face uncertainty over future prices and financing costs of financial instruments. In such a context, uncertainty over the stated expectations may depress investment. If a firm cannot be certain about future demand and economic activity, it is hard to assess the viability of an investment project. Companies therefore have to take account both of the possible return on the investment and of the risks entailed in making those profits. In the context of the crisis, it is therefore possible that the uncertainty increased the return required of an investment project for risk-averse investors. Uncertainty would thus have lowered the maximum financing cost beyond which investments would be regarded as too expensive, and would therefore not have been carried out, thus reducing the amount of investment.

2.3 Why was the decline in investment nevertheless relatively limited during the crisis ?

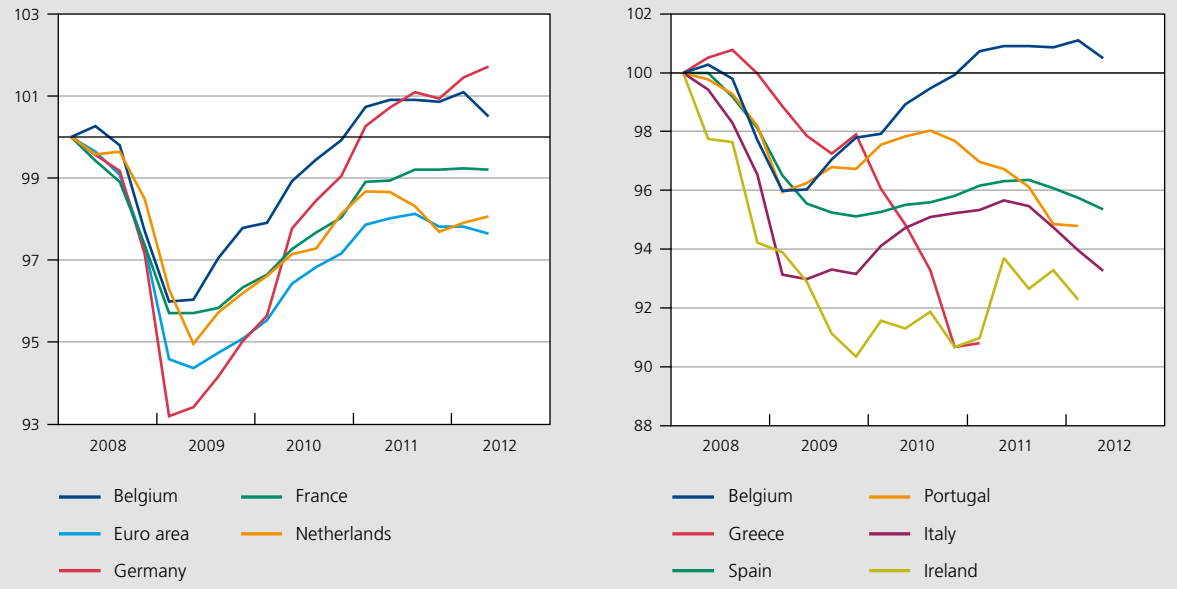
Even though the fall in the volume of investment by Belgian firms was the steepest since 1980, the decline in Belgian corporate investment was limited in an international perspective. This section examines the factors which helped to restrict the decline in investment by Belgian firms during the crisis.

2.3.1 Relative resilience of the Belgian economy against the global crisis

In this context, it is important to note that, in comparative terms, the fall in GDP during the crisis was less marked in Belgium than in the neighbouring countries and in the euro area. Since the decline in macroeconomic demand was modest overall in Belgium, firms were able to uphold a slightly higher level of production than their counterparts in neighbouring countries, and felt less need to make drastic cuts in their investments. Moreover, GDP recovered more rapidly in Belgium as well : on the basis of an index of 100 for the first quarter of 2008, it is evident that Belgian GDP regained its pre-crisis level at the beginning of 2011, whereas that was clearly not the case in the euro area, France and the Netherlands. Only Germany recorded a similar picture, but starting from a deeper fall so that its GDP did not regain its pre-crisis level until a little while after Belgium. The difference is even more marked in relation to the peripheral countries which suffered severe problems during the crisis (Greece, Spain, Portugal, Italy and Ireland). Even now, in none of those

CHART 10 BELGIAN GDP FROM AN INTERNATIONAL PERSPECTIVE

(indices, first quarter of 2008 = 100)



Sources : NBB, OECD.

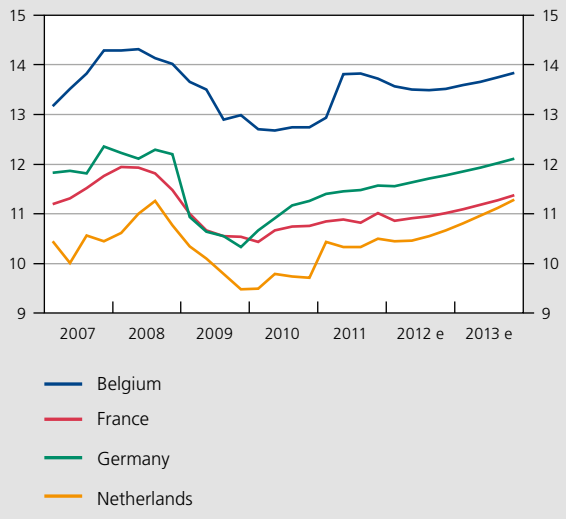
countries has GDP reached anything like its pre-crisis level. The severe contraction of GDP in all those countries also depressed the GDP growth of the euro area, which was significantly weaker than Belgian GDP growth.

Even taking account of the differences in the severity of the recession, Belgium seems to have withstood the crisis well in international terms. The investment ratio in fact declined less sharply in Belgium than in the euro area and in neighbouring countries, because – over the period from the second quarter of 2008 to the fourth quarter of 2009 – the fall in investment in relation to the decline in GDP was not abnormally high compared to previous recessions [1]. While the investment ratio in Germany had, in contrast, risen steadily from the end of 2009, the stabilisation of the Belgian investment ratio in 2010 was followed by a gradual recovery, and then an acceleration in the first two quarters of 2011. Investment therefore recovered more slowly in Belgium than in the neighbouring countries, with firms deciding to "wait and see" in 2010; nevertheless, a period of strong growth ensued in the first half of 2011. After that, stabilisation set in.

Apart from cyclical fluctuations in the investment ratio, the above chart also shows that the level of the investment ratio is structurally higher in Belgium than in neighbouring countries. However, these differences must be interpreted with great caution, as they may equally be due to differences in the underlying structure of the economy. The higher investment ratio is reflected in a larger share of capital in production in Belgium, which also leads to a higher level of apparent labour productivity.

CHART 11 INVESTMENT RATIO FROM AN INTERNATIONAL PERSPECTIVE

(fixed capital formation by firms in % of GDP, quarterly data)



Source: OECD.

2.3.2 Financial soundness

The sound financial position of Belgian firms is another factor which may explain why Belgian investment contracted less sharply in 2009 than investment in all the neighbouring countries. That soundness is reflected, in particular, in the level of the gross operating surplus and the net financing balance.

The reduction in the gross operating surplus of Belgian companies recorded in 2008 and 2009 was smaller than in neighbouring countries, and the surplus recovered more quickly. Thus, in the second quarter of 2010, it had already regained its pre-crisis level whereas in the other countries (except for the Netherlands) it remained below its pre-crisis level. That performance is due partly to the resilience of activity and demand, already mentioned, but also partly to higher inflation in Belgium. In the longer term, however, that situation implies risks, since it impairs firms' competitiveness.

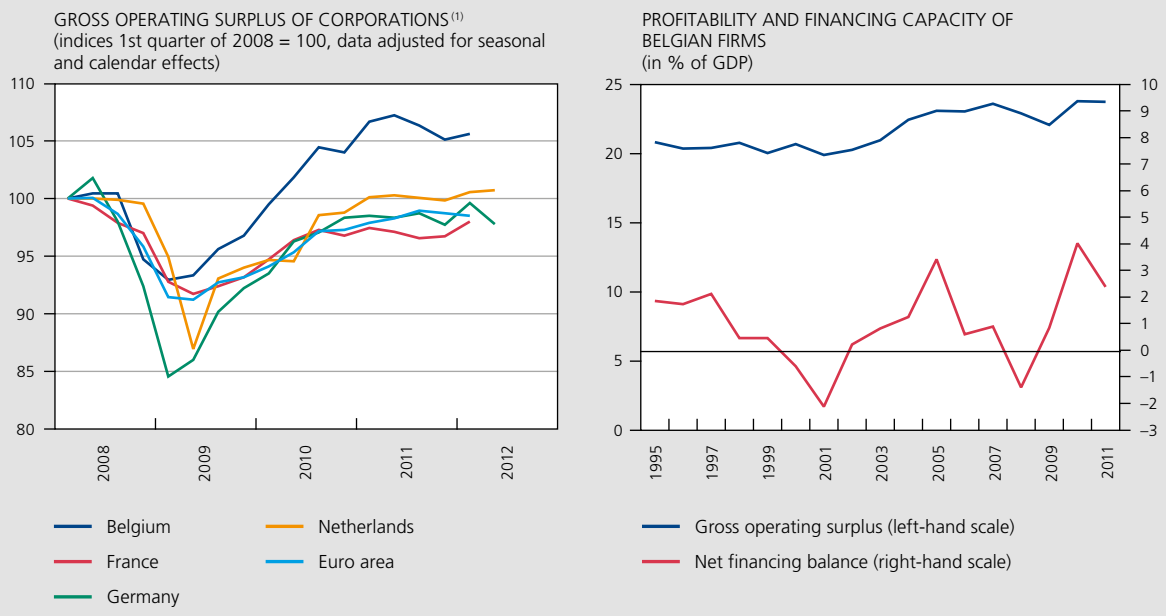
Overall, the gross operating surplus dropped from 24 to 22 % of GDP between 2007 and 2009, but that figure is still above the historical average. Between 1995 and 2011, the gross operating surplus in fact amounted to an average of 21.7 % of GDP. Moreover, it almost reached 24 % again in 2010 and 2011, a level comparable to that in the years immediately before the crisis, and higher than in the second half of the 1990s and the first years of the new millennium.

The net financing balance of Belgian firms as a whole also recorded only a temporary decline during the financial crisis. The balance was only negative in 2008, after which it made a very rapid and strong recovery, peaking at 4 % of GDP in 2010. Despite the macroeconomic difficulties, it remained at a substantial level in 2011. Leaving aside the year 2005, when the figure of 3.4 % of GDP was influenced by a purely statistical effect [2], the financing capacity achieved by

(1) Examination for each country of the percentage fall in the investment ratio from the pre-crisis peak to the absolute low point (occurring in different quarters, depending on the country) shows Belgium in second place, after France, on the list of the smallest reductions in the investment ratio.

(2) The peak of 3.4 % of GDP which the net financing balance reached in 2005 should be interpreted with the greatest caution. The figures for that year were distorted by the absorption of the major part of the SNCB's debt by the Railway Infrastructure Fund (whose assets were automatically transferred to Infrabel in 2008), which is a part of the general government sector (amounting to € 7.4 billion). The other capital transfers received from the government were therefore exceptionally high that year. The net financing balance had also been slightly distorted in 2003: in that year, the capital transfers payable to the government were extremely high owing to account being taken of the Belgacom pension fund amounting to € 5 billion.

CHART 12 GROSS OPERATING SURPLUS AND NET FINANCING BALANCE OF BELGIAN FIRMS



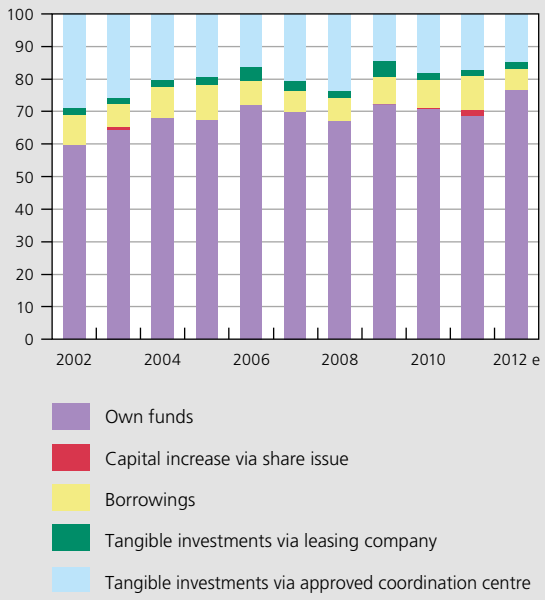
Sources: NAI, ECB, NBB.
(1) Data adjusted for seasonal but not calendar effects in the case of France, Germany and the Netherlands.

companies in the last two years is the highest since 1997. Apart from good profitability, that also reflects firms' prudent approach to investment.

The importance of the internal financing scope is indicated by the firms themselves in the Bank's survey of investment in the manufacturing industry, as they are explicitly questioned about how they fund their investment. In the investment survey, firms from the manufacturing industry report that they financed 70 % of their investment out of their own funds in 2011. That figure is expected to rise to 77 % in 2012. Although it has always been high, it increased by 10 % between 2002 and 2011, demonstrating the growing attraction of internal financing for firms. The notional interest allowance, which attempted to eliminate the disadvantage of using own funds for financing rather than resorting to borrowing, may be part of the reason. Tangible investment via approved coordination centres is the second most important financing instrument. Although there is undeniably a downward trend in this form of funding – it declined from 29 to 17 % of the amounts invested between 2002 and 2011 – owing to the abolition of the favourable regime for coordination centres, it is still playing a major role for the time being. The share of investment financed by borrowing continues to

CHART 13 SOURCE OF INVESTMENT FUNDING ACCORDING TO THE BANK'S SURVEY OF INVESTMENT IN THE MANUFACTURING INDUSTRY

(in % of total amounts invested)



Source : NBB.

hover around 10 %, while financing by capital increases is insignificant (2 %), despite the steep rise in 2011. For 2012, financing by capital increases is expected to revert to zero.

3. Points for future attention

As is usually the case owing to the highly pro-cyclical character of business investment, the recent period of economic recession and financial crisis brought wide fluctuations in that investment. However, given the severity of the shocks, the decline in investment in 2008-2009 – like the slump in other economic variables, such as activity, employment or demand for private consumption – can be considered relatively moderate in Belgium, an outcome due notably to the sound financial position of non-financial corporations. The investment revival at the end of 2010 and in the first half of 2011, lagging slightly behind the improvement in demand conditions, was undermined in the second half of the year owing to the rapidly growing uncertainty caused by the worsening sovereign debt crisis in the euro area and a sharp deterioration in economic activity.

These findings are a reminder that various factors need to be present to stimulate investment demand : a positive outlook for demand, a stable macroeconomic environment – without excessive uncertainty – and a fundamentally sound, balanced situation in terms of the profitability and financial position of firms.

In a context of gradually strengthening activity and demand in Belgium and in partner countries, and taking account of the low level of interest rates, a modest investment recovery is generally expected in the medium term.

However, that recovery is subject to various risks and potential fluctuations in activity. First, the corporate investment recovery is susceptible to risks resulting from uncertainty over the future economic situation in Belgium's main partner countries, in a context of severe tensions within the euro area. Next, once demand for bank credit starts to increase again, the ability of the financial institutions to play their full role in funding the economy at a time when they need to continue to reorientate their business model and adjust to the more stringent prudential rules to be imposed in the future, may have implications for investment financing and, more generally, for the ease of obtaining credit. Moreover, changes have been approved and could yet be introduced in the taxation of companies or in the granting of investment subsidies by the government, in a context of essential fiscal consolidation. Those changes could potentially influence firms' investment decisions.

In the long term, business investment is one of the decisive factors permitting a strong, balanced and therefore sustainable long term development of the potential for creating value added and hence for generating income in the economy. The capital raised complements the labour, facilitating an increase in labour productivity (and hence higher pay), by the capital-deepening effect. Investment is also a way of incorporating technological progress and innovation, permitting not only improvements in the goods and services produced but also more efficient production methods, particularly with regard to the use of raw materials and energy.

In addition, the production potential also depends on the general efficiency with which the production factors labour and capital can be employed, and on an appropriate allocation of the available financial resources in the economy. In that regard, a stable macroeconomic environment is necessary to ensure that avoidable uncertainty is not added to the normal uncertainty inherent in all medium-term economic forecasts.

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Euro area labour markets and the crisis

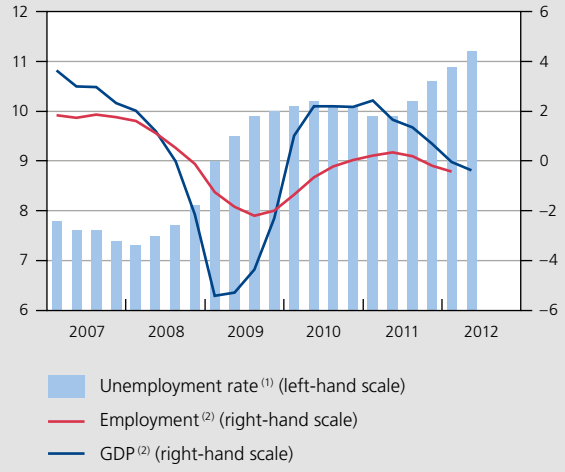
J. De Mulder
M. Druant

Introduction

Between the start of the economic and financial crisis in 2008 and early 2010, almost 4 million jobs were lost in euro area labour markets. Employment resumed an upward path in the first half of 2011, but declined again at the end of that year and remains around 3 million workers below the pre-crisis level. However, given the severity of the fall in GDP, employment adjustment was relatively limited, mostly due to the significant labour hoarding in several euro area countries. Indeed, while euro area GDP decreased by 5.5 % from peak to trough, employment dropped by 2.5 % and total hours worked came down by 4.5 %. Nevertheless, the unemployment rate in the euro area has risen by 3.6 percentage points since the start of the crisis, reaching 11.3 % by July 2012, its highest level since 1999. While the crisis has had a more limited or shorter-lived impact in some euro area countries, in others dramatic changes in employment and unemployment rates have been observed and recent data tend to show the effects of a re-intensification of the crisis.

This article summarises the main findings of the Eurosystem's 2012 Structural Issues Report (SIR). When illustrative, specific aspects for Belgium are highlighted. The report, entitled "Euro area labour markets and the crisis" [(1)], was prepared by a Eurosystem task force in which the NBB took part. Its main objectives were to understand the notable heterogeneity in the adjustment observed across euro area labour markets, ascertaining the role of different shocks, labour market institutions and policy responses in shaping countries' labour market reactions, and to analyse the medium-term consequences of these labour market developments. The article is structured accordingly. The first part describes the main developments in the euro area labour markets since the start of the crisis and the second part looks at the impact of the crisis on mismatches between labour supply and demand and on long-term unemployment. Finally, the main policy conclusions are listed.

CHART 1 GDP, EMPLOYMENT AND UNEMPLOYMENT IN THE EURO AREA
(quarterly data)



Source : EC (national accounts and LFS).
(2) Percentages of the labour force of 15 years or over.
(3) Percentage changes compared to the corresponding quarter of the previous year.

(1) ECB (2012).

1. Main developments in euro area labour markets since the start of the crisis

1.1 Different reactions across countries

Despite the relatively muted employment response to the intense fall in activity for the euro area as a whole, the labour market impact of the crisis has varied substantially across countries. Accumulated employment losses from peak to trough ranged from –16 % in Estonia and Ireland to –0.4 % in Germany and Luxembourg. Belgium falls among the countries that were least hit by the crisis: employment declined by only 0.8 % and although the unemployment rate rose to 8.5 % in the second quarter of 2010, it later returned to its pre-crisis level of about 7 %. As in Germany for instance, short-time working schemes were widely used in Belgium, which made the employment decline smaller than the reduction in total hours worked.

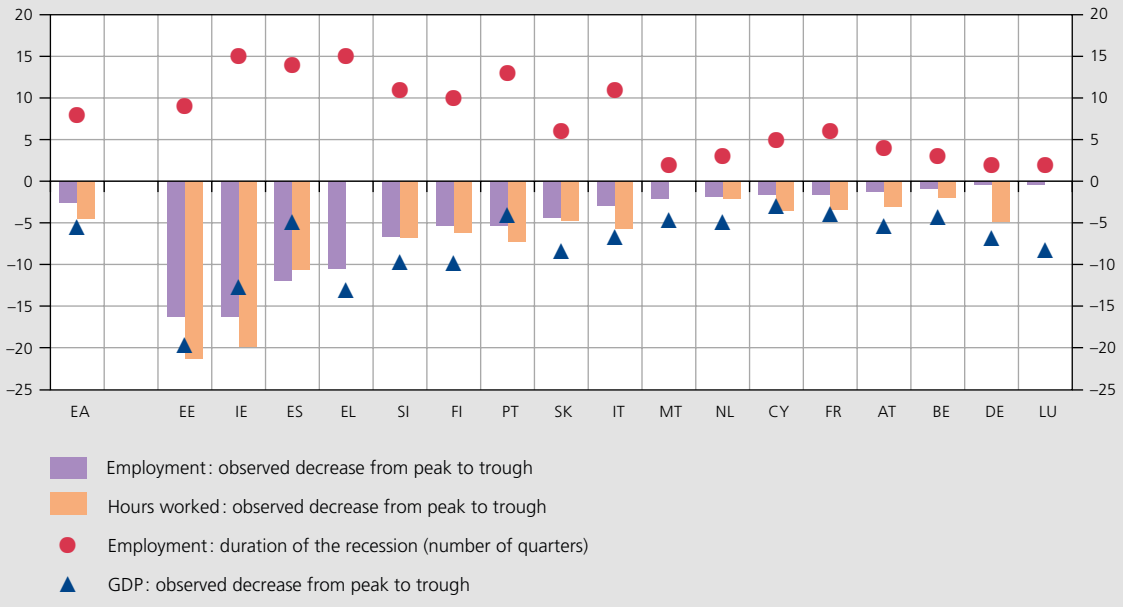
The wide divergences in labour market adjustment are only a partial reflection of differences in the severity of the crisis and its impact on GDP. Employment and unemployment elasticity to GDP indeed differed markedly in the euro area countries during the recession: the labour market reaction was mild in countries like Germany and Luxembourg but very strong in Spain. The heterogeneity of responses partly reflects the nature of the shocks hitting euro area economies and the presence of imbalances – such as previous booms in the construction sector or accumulated competitiveness losses – in the run-up to the crisis. Countries in which the downturn was driven by a decline in domestic demand experienced a relatively stronger rate of job destruction; the moderate labour market adjustment in countries in which a fall in exports was observed was supported by the temporary nature of the global trade downturn. Other country-specific factors also had an impact. For instance, labour markets characterised by higher shares of temporary contracts prior to the crisis exhibited considerable higher employment losses and increases in unemployment. This was especially the case in Spain.

1.2 Different reactions across worker groups

Significant divergences were observed across worker groups in euro area countries. The impact of the crisis was strongest on manufacturing and construction, with substantial differences between countries. Partly as a result

CHART 2 EMPLOYMENT ADJUSTMENT TO THE CRISIS (1)

(percentage changes from peak to trough, unless otherwise stated)

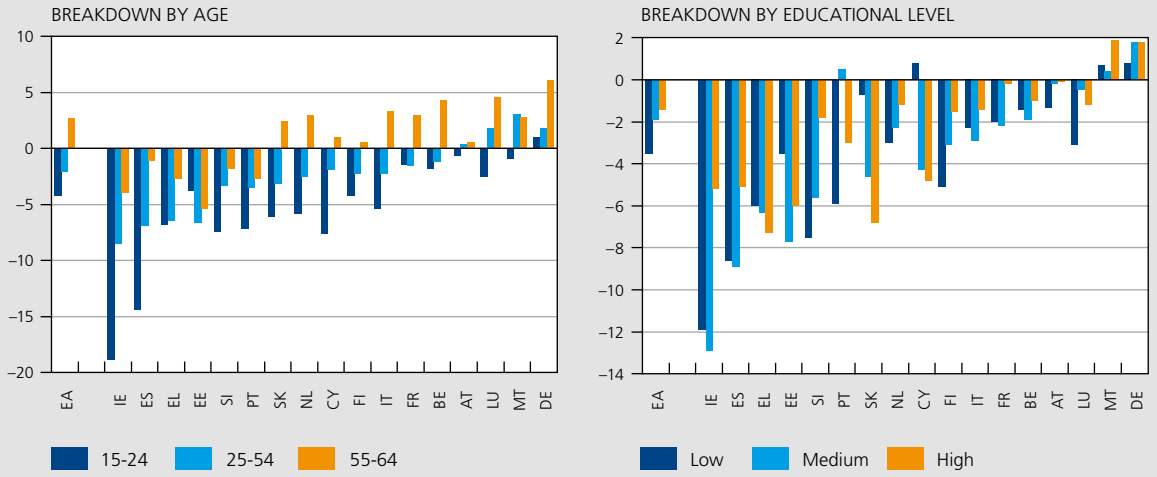


Source: EC (national accounts).

(1) No quarterly national accounts data are available concerning total hours worked in Greece, Malta and Luxembourg. NBB estimate for Belgium. Country-specific peaks and troughs are considered.

CHART 3 EMPLOYMENT RATES: BREAKDOWN BY AGE AND EDUCATIONAL LEVEL

(changes, in percentage points, between the first three quarters of 2011 compared to the corresponding period of 2008)



Source: EC (LFS).

of the sectoral concentration of employment losses, the less-skilled and young workers were the hardest hit, again with significant variety across countries. In the euro area as a whole, the employment rates among low-skilled workers and people aged from 15 to 24 years old were in 2011 about 4 percentage points lower than before the crisis. But there was also a decline in higher-skilled jobs in almost all countries, apart from Malta and Germany[1]. So, although almost all worker groups were affected, older workers were the notable exception, as their employment rates rose, partly reflecting past institutional reforms (such as reforms to pension entitlements and increases in statutory retirement ages). These overall trends were also observed in Belgium: while the employment rates of all educational groups and of people aged 15-24 and 25-54 declined by 1 to 2 percentage points, the proportion of people aged 55 to 64 years old increased by some 4 percentage points.

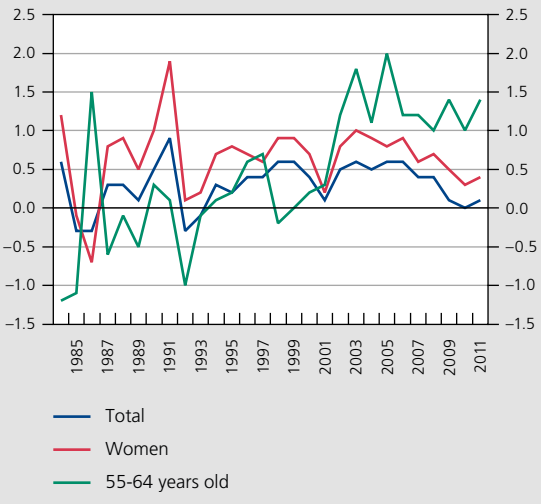
1.3 Impact on labour supply

Labour supply also slowed down in reaction to the downturn, but in a relatively muted fashion compared with previous cyclical adjustments. The overall labour market participation rate further increased, although at a slower pace. Once again, significant cross-country heterogeneity was found, and developments diverged considerably across population groups. Participation rates for females and older workers continued to evolve more favourably, probably reflecting added-worker effects resulting from the negative income and wealth effects of the crisis as well as reduced opportunities for early retirement. In Belgium, the participation rate of people aged from 55 to 64 years old kept rising too, but the increase in the female rate slowed down in line with the overall tendency.

(1) In both countries, the employment rate of all educational groups increased.

CHART 4 EURO AREA PARTICIPATION RATE

(population aged from 15 to 64 years old, unless otherwise stated, yearly data, percentage point changes compared to the previous year)



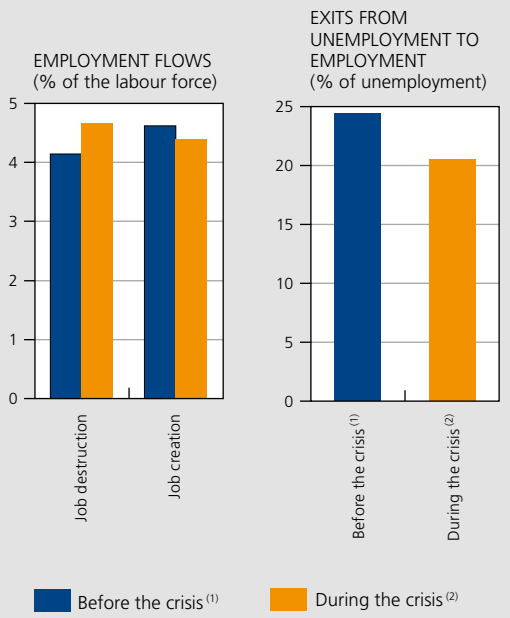
Source: EC (LFS).

There is also evidence of a reaction of migration flows to the current crisis in some of the euro area countries more severely affected. This is consistent with model results which show that the negative response of GDP to the recession could be amplified in countries with a large share of (more mobile) foreign workers in the labour force before the crisis. This phenomenon was most striking in Ireland, where a rapid and sharp rise of outward migration of non-Irish nationals – in particular Eastern European citizens – was observed in consequence of increasing labour market slack.

1.4 Impact on labour flows

Labour force survey (LFS) micro data – available for 13 of the 17 euro area countries[1] – have enabled quarterly individual labour market transitions between employment, unemployment and inactivity to be computed, thus providing a detailed analysis of the dynamic adjustment of euro area labour markets. Very large differences in the size of worker flows in individual euro area labour markets are evident, indicating substantially different adjustment dynamics to shocks across countries. Some labour market institutions, including employment protection and wage-bargaining institutions, seem to be associated with the observed cross-country differences.

CHART 5 WORKER FLOWS BEFORE AND DURING THE CRISIS



Source: EC (LFS micro data).
(1) Period from the first quarter of 2004 until the second quarter of 2008.
(2) Period from the third quarter of 2008 until the third quarter of 2010.

With respect to developments since the start of the crisis, the increase in job destruction rates is found to be responsible for the bulk of the extra unemployment, although a lower job creation rate also contributed. Exit rates from unemployment also declined, leading to a notable increase in the mean duration of unemployment and in the share of long-term unemployment or more precisely those out of work for more than one year (to around 46 %, which is 12 percentage points higher than before the crisis). The analysis of exit rates by duration of unemployment nevertheless shows a limited impact of the crisis on exit rates of long-term unemployed, but for those countries where more up-to-date worker flows are available, some additional decrease in exit rates tends to be found. In a number of countries, like Austria and the Netherlands, the exit rate from unemployment to employment remained stable for older workers during the crisis. By contrast, unemployed youths generally experienced a drop in exit rates; this trend was most pronounced in Finland.

1.5 Wage adjustment

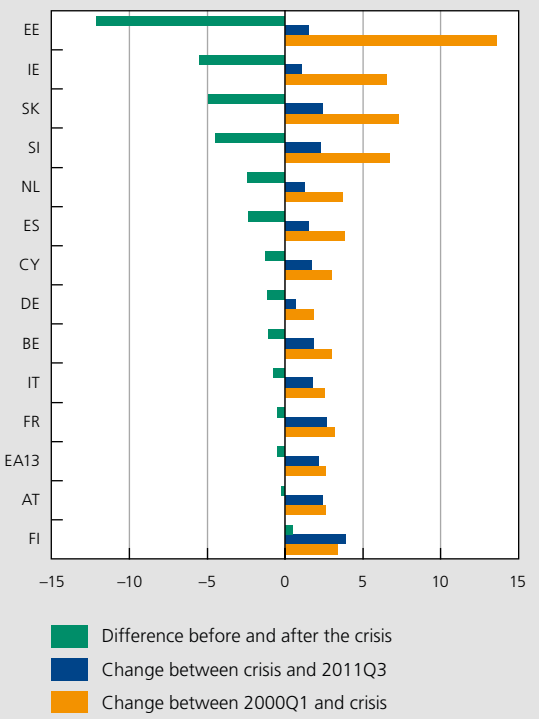
Despite the severity of the recession, a relatively limited wage adjustment in the euro area has been observed. At the beginning of the crisis, the presence of multi-annual contracts agreed in several countries prior to the crisis partly accounted for an initial delay in the adjustment. Public sector wages reacted faster and stronger to the crisis than private sector wages as a result of fiscal consolidation measures, while private sector compensation per hour continued its upward movement until the beginning of 2009. This, among other reasons, reflected the large downward adjustment in hours worked observed in some euro area countries and a less-than-proportional reduction in wages. When the decline of working time per employee stopped, hourly compensation growth started to slow down, reaching a trough at the beginning of 2010 and picking up afterwards. When a distinction is made between compensation per hour before and since the start of the recession, the turning point corresponding to the peak in employment for the euro area as a whole, average wage increases were almost similar in both periods in the euro area as a whole.

This apparent lack of adjustment corroborates evidence from wage equations, estimated with the objective of capturing the effect of rising unemployment on the evolution of wages over the crisis period. These equations confirm the negative relationship between compensation per employee and unemployment, presented by the slope

(1) The data are not available for Belgium, Germany, Luxembourg and Portugal.

CHART 6 PRIVATE SECTOR COMPENSATION PER HOUR[1]

(average annual percentage changes)



Sources: EC and SIR calculations.

(1) No data available for Greece, Luxembourg, Malta or Portugal. Turning points correspond to the peak in employment for each individual country and for the euro area as a whole.

of the regression line, and they point to a lower wage responsiveness during the 2008 – 2010 downturn, hence, providing additional evidence of downward wage rigidities in the euro area.

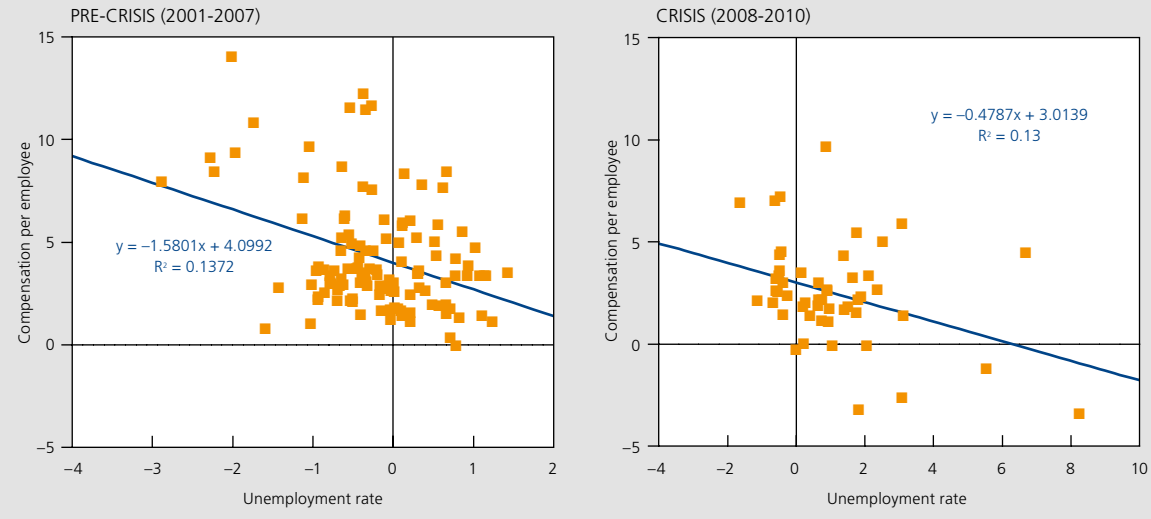
Even though wage adjustment was limited in the euro area as a whole, large cross-country differences were observed. Hourly wage increases slowed down since the start of the recession, when compared to the period from 2000 until the onset of the downturn, in all countries except Finland. The slowdown was most remarkable in Estonia, Ireland, Slovakia and Slovenia. In Belgium, hourly wage moderation was comparable to that in Germany, lower than the adjustment observed in the Netherlands and more pronounced than in France. This heterogeneous adjustment may partially reflect cross-country differences in exposure to the recession as well as differences in wage-bargaining institutions.

The results of an update of the Wage Dynamics Network (WDN) questionnaire on wage-bargaining institutions in the euro area, the conclusions of the first wave of this survey in 2008 having been analysed in a former edition of this Review[1], point to very limited changes in the institutional setting during and since the crisis. However, a move towards more decentralised wage bargaining has been observed, as evidenced by more intensive use of opt-out clauses or firm-level agreements in Germany, Slovenia,

(1) de Walque *et al.* (2010).

CHART 7 PHILLIPS CURVE FOR THE EURO AREA

(percentage changes compared to the corresponding quarter of the previous year)



Sources: EC and SIR calculations.

TABLE 1 DECOMPOSITION OF REAL WAGE CHANGES DURING THE CRISIS

(cumulated percentage changes)

	Males			Females		
	Observed wage change	Price effect	Composition effects	Observed wage change	Price effect	Composition effects
Portugal 2007-2009	5.23	2.05	3.18	6.85	3.29	3.55
France 2008-2009	1.65	–1.03	2.68	1.22	–0.44	1.66
Belgium 2007-2009	0.87	–2.92	3.79	6.81	1.23	5.58
Germany 2007-2009	0.43	–1.48	1.91	1.58	–3.99	5.57
Italy 2008-2010	–0.62	–2.34	1.72	0.95	–1.88	2.83

Sources: SIR calculations based on data from labour force surveys in France and Italy, German Socio-Economic Panel, Structure of Earnings Survey in Belgium and Quadros de Pessoal in Portugal. Net wages of full-time workers only, including bonuses and extra payments (except for Italy) and deflated by the HICP.

Greece, Italy, Portugal and Spain (although seldom used in the latter four countries). Moreover, two countries with an automatic wage indexation system, namely Luxembourg and Spain, deviated temporarily from the prevailing mechanism. The automatic adjustment of wages to inflation was maintained in Belgium and Malta, while it is currently under discussion in Cyprus.

While several pieces of evidence point to the existence of real wage rigidities, consistent with earlier WDN results, a decomposition of real wage changes reveals that wages did react to some extent to the crisis. This exercise was done for five countries and is based on earnings data of individual workers. It assumes that the skill distribution of workers has remained unchanged during the period considered. If the observed aggregate wage change is calculated net of the changes in the skill composition, presented as "price effect" in the table, real wages of male workers actually declined in four out of five countries (Belgium, Italy, Germany and France) and the wage increase was much lower in Portugal than before the correction for composition effects. Similar conclusions can be drawn for female workers. This implies that the decline in the share of low-skilled workers during the crisis has had an upward effect on average real wages.

2. The impact of the crisis on mismatches between labour supply and demand and long-term unemployment

This part of the article assesses the long-term consequences of the crisis, taking into account the large degree of heterogeneity observed in the labour market adjustment across countries described above. Growing mismatches between worker attributes and job requirements in euro area economies are observed.

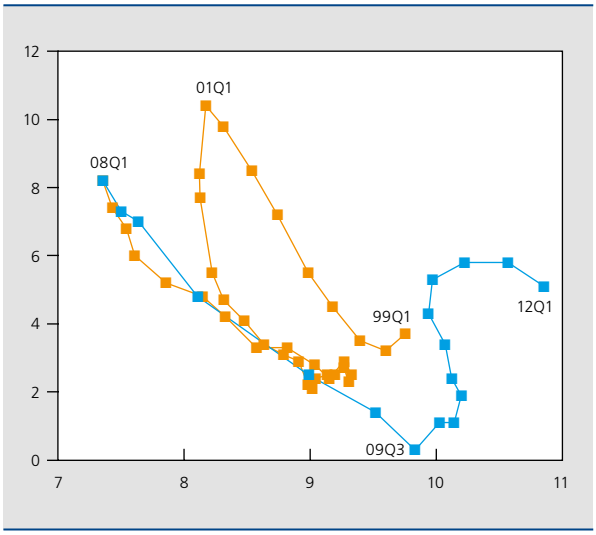
In terms of Beveridge curve analysis, from the onset of the crisis onwards, the aggregate euro area curve showed a typical movement down to the right explained by cyclical developments, with fewer labour shortages and rising unemployment rates. However, an outward shift has been

CHART 8 MOVEMENTS IN THE EURO AREA BEVERIDGE CURVE

(X-axis: unemployment rate, % of labour force)

(Y-axis: labour shortages, mean-adjusted diffusion index of EC confidence survey)

(orange lines: 1999Q1-2008Q1; blue lines: from 2008Q1 up to latest observation)



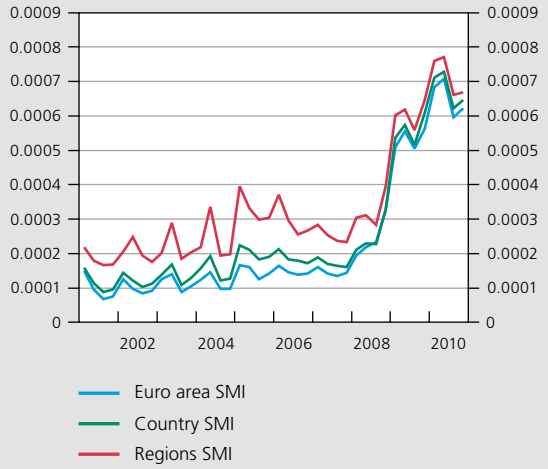
Sources: EC and SIR calculations.

CHART 9 EURO AREA SKILL MISMATCH INDEX[1]

(level)

(skill demand: educational level of the employed)

(skill supply: educational level of the labour force)



Sources: EC, IMF, OECD and SIR calculations.

(1) The euro area SMI is constructed by using the aggregate skill distributions of labour demand and supply at the euro area level. The country SMI is calculated by aggregating the sixteen country SMIs computed using country-level skill distributions.The regions SMI is the aggregation of SMIs computed at a regional level.

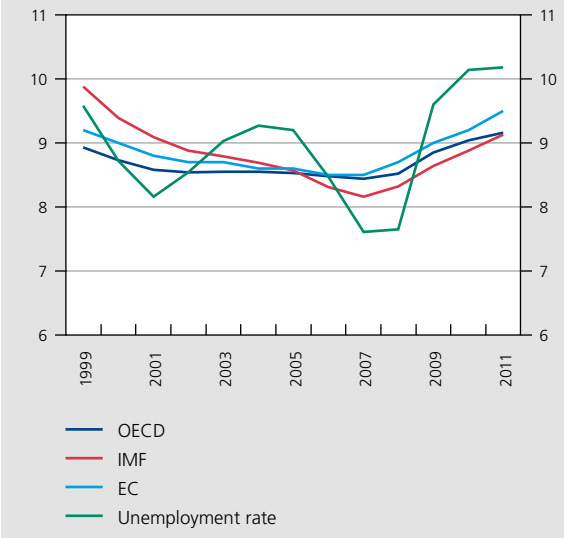
observed since the end of 2009, with stabilising high unemployment rates and increasing labour shortages and, as such, pointing to a deterioration of the matching process. Recently, a further increase in the unemployment rate has been observed, with a given level of shortages. Significant cross-country differences exist, partly as a consequence of the different exposure to the downturn and the institutional features of the labour markets. The recent outward shift of the aggregate curve is driven by countries like France, Greece and Spain. It is also observed in Belgium, as described in detail in the article entitled "Labour market mismatches" of this Economic Review[1]. In Germany, on the contrary, labour shortages are increasing while the unemployment rate has been declining slightly since the end of 2009.

The persistent downsizing of specific sectors in a number of euro area countries and the growing skill disparity between labour demand and supply have played a crucial role in explaining the outward shifts of the Beveridge curve. The latter is illustrated by the skill mismatch index (SMI), measuring the degree of disparity between the skill requirements of labour demand (i.e. the educational level of the employed) and labour supply (the educational level of the labour force). The evidence points to a significant increase in the skill mismatch since the start of the crisis in the euro area as a whole and more specifically in those countries more badly affected by the downturn. The recent SMI increase is found at all aggregation levels, namely for the euro area SMI, constructed by using the aggregate skill distributions of labour demand and supply, for the country SMI, calculated by aggregating the sixteen country SMIs, as well as for the regions SMI, which is the aggregation of SMIs computed at a regional level. This signals that the growing skill mismatch problem is of a structural nature and that, in view of the decreasing distance between the SMIs, the potential role of labour mobility in alleviating the mismatches is rather limited. The conclusion for Belgium is in line with that for the euro area, as explained in the "Labour market mismatches" article.

The growing mismatch is closely linked to higher structural unemployment. Estimates from international institutions such as the EC, IMF and OECD show a marked upward trend in aggregate euro area structural unemployment with increasing divergences across Member States as well. Most countries have faced an increase in structural unemployment, as in Belgium's case albeit to a very limited extent, while others like Germany and Slovakia have seen a decrease, or stabilisation as in Malta and Austria. The fact that the recent rise in the unemployment rate

CHART 10 ACTUAL AND STRUCTURAL UNEMPLOYMENT IN THE EURO AREA

(in % of the labour force)



Sources: EC, IMF, OECD and SIR calculations.

(1) Zimmer (2012).

has been mirrored by increases in the estimated structural unemployment rate, contrary to what happened in the period 2001-2005, suggests that some of the rise in unemployment has become structural and, hence, hysteresis effects could be present.

3. Policy conclusions

This article summarises the main findings of the Eurosystem's 2012 Structural Issues Report and reveals continued major differences between the labour markets of the euro area countries. There were already divergences in the labour market situation before the crisis, but these were accentuated by the Great Recession. The euro area Member States were hit by different kinds of shocks which varied in magnitude as well. Subsequently, the policy reactions diverged too, depending on the perceived shocks, (budgetary) possibilities and the labour market institutions, such as employment protection legislation or the wage formation process. As a result, varying labour market consequences of the crisis have been observed, ranging from almost no impact (for instance in Germany) to very severe adjustments (like in Estonia, Ireland, Spain and Greece). Because of the considerable use of short-time working schemes, the impact on the Belgian labour market remained rather limited. It should nonetheless be stressed that the crisis is not over yet and several countries are experiencing a further deterioration of economic conditions. The SIR was finalised in March 2012 and therefore does not include the most recent developments.

In a context of largely diverging situations at country level and the ongoing crisis, it has proved difficult to identify "best practices" to improve labour market functioning in the future. Nevertheless, several policy conclusions have been drawn.

The response of wages to the crisis has remained limited, pointing to the presence of downward wage rigidities, which are an impediment to restoring competitiveness – and thus employment – particularly in those euro area countries with previously accumulated external imbalances. In the presence of high unemployment, a flexible response of wages to labour market conditions should be a key priority. Moreover, it could also facilitate the necessary sectoral reallocation which underpins job creation and reductions in unemployment. In this respect, short-time working schemes, although successful in mitigating employment losses in some Member States, including Belgium, might hinder the reallocation of the labour force from declining sectors towards growing ones if they are maintained for too long. Also, in a context of growing mismatches in the labour market, higher wage differentiation across different types of workers and jobs is needed to contribute to a proper matching between labour supply and demand and will particularly benefit some of the hardest hit worker groups.

Given the abrupt impact of the crisis on some specific groups of workers and the increase in the structural component of unemployment, the main aim of active labour market policies (ALMP) should be to limit, as far as possible, the risks of significant hysteresis effects from the increase in unemployment, particularly given that almost half of the unemployed have been out of work for more than a year. In this respect, ALMPs should be designed to facilitate the return to work of young and less-skilled people especially, including appropriate training policies to close the gap between the labour skills supplied and those demanded, particularly in those countries more affected by the possible permanent downsizing of certain sectors. Such policies would also help to increase the downward pressure on wages exerted by the unemployed and limit the decline in potential output growth associated with higher structural unemployment.

Labour market segmentation tends to amplify employment adjustment to negative shocks and gives rise to a disproportionate burden of the adjustment process on specific groups of workers (those with temporary contracts, younger and low-skilled workers). The longer these groups are out of work, the greater the danger that their skills will deteriorate, making it harder for them to find work in the future and possibly leading to higher structural unemployment. Regulations on labour contracts should avoid wide differentiation across different worker types and instead focus on lowering employment adjustment costs across the whole economy. Meanwhile, labour market institutions which facilitate higher internal flexibility (e.g. in terms of hours and wages) can help firms to accommodate negative shocks at a lower employment cost.

Major labour market reforms are essential for the Member States in order to foster job creation, bring down unemployment and restore competitiveness while also lowering the risks of a permanent decline in potential output growth. A comprehensive reform strategy to increase labour market flexibility is a key ingredient for a solid economic recovery with additional positive spillovers on the correction and prevention of macroeconomic imbalances, fiscal consolidation and financial stability. In a monetary union such as the euro area, a flexible and properly functioning labour market can provide an economic environment which greatly facilitates the price stability-oriented monetary policy of the ECB.

Reforms which deliver greater flexibility in employment and wages will reduce adjustment costs associated with idiosyncratic shocks and enhance both the efficiency and effectiveness of the monetary policy transmission mechanism.

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Labour market mismatches

H. Zimmer[1]

Introduction

Belgium has both a significant pool of unfilled job vacancies and persistent unemployment. This observation raises the question of how labour supply matches up with labour demand. The reasons for a mismatch between the two can be cyclical, frictional or structural, for example when the educational level of job-seekers does not correspond with the profiles sought on the labour market, or when there is a lack of geographic mobility. This article focuses on these structural reasons for labour market tension.

A macroeconomic-style approach using a mismatch index for Belgium and its Regions reveals inbalances between the structure of labour supply and demand broken down by eductional level, meaning that job-seekers lack the qualifications that employers need. The lists of critical occupations drawn up by the Regions also help us discern the nature of the problem from a microeconomic angle: the diploma is not the only factor that determines one's chances of landing a job.

Matching labour supply with labour demand also has a spatial component, and it is worth asking whether increased mobility would partially solve companies' recruiting problems. An analysis of workers' commutes shows significant flows into Brussels from the two other Regions, but limited mobility between the North and the South of the country.

The article is split into three parts. The first catalogues the types of tension that can affect the labour market and presents a Beveridge curve for Belgium showing the relationship between the unemployment rate and the job vacancy rate. The second is devoted to the qualification mismatch, which is measured using mismatch indices at the national, regional and European levels. Apart from education level, this section also looks at the structure of labour supply and demand by occupation. In addition, examining critical functions supplies more detailed information on occupations facing recruiting problems. Lastly, the third part looks at the question of geographic mismatches by analysing the dispersion of unemployment rates and trends in commuting between the various Belgian provinces.

1. Matching labour with jobs

1.1 Types of labour market tension

At any time, the number of hires depends on the matching between labour supply and demand. For a given level of supply and demand, when workers perfectly match the jobs being offered and there is perfect information available, the number of hires is equal to the minimum of the supply and demand, and the labour market functions efficiently (Cahuc and Zylberberg, 1996). However, in reality, jobs and workers are heterogeneous (due to differences in the experience, knowledge and skills demanded and supplied) and information never circulates flawlessly. As a result, some workers risk not finding employment even though certain companies have vacant positions.

Labour market tensions have various causes, which may be cyclical, frictional and structural. In periods of economic upturn, demand for labour increases and the matching difficulties are felt by employers. In periods of slowing growth

(1) The author would like to thank Eurostat and the DGSEI for providing the labour force survey microdata used in this article. Eurostat and DGSEI are not responsible for the findings and conclusions derived from these data.

or recession, the effects are felt more by job-seekers, which causes an increase in cyclical unemployment.

Frictional unemployment and frictional job vacancies are temporary in nature: it takes some time to match up labour supply and demand (even when they correspond perfectly), partly because information cannot be transmitted perfectly or immediately. The use of overinflated selection criteria relative to the requirements of the vacant position or criteria based on personal characteristics, such as age or length of unemployment, which serve to disqualify candidates more than they reveal real ability to perform the vacant job, can unnecessarily prolong the recruitment process (without guaranteeing an optimal match). The recruitment process can also be prolonged by an insufficient number of applicants or a weak rate of acceptance, influenced notably by the intensity of the job search, the reserve wage [1], and the replacement income.

Labour market mismatches can also be structural in nature, for example because the educational level of the unemployed does not correspond to the skills demanded by the labour market, or because of a lack of geographic mobility. These types of labour market mismatches constitute both a social problem, due to the unemployment or inactivity that results, and an economic problem for companies as well as the country (due to the lower economic growth potential). The analysis that follows focuses on structural mismatches.

These various types of tension may also influence each other. For example, a low educational level (structural tension) can also slow the job search (frictional tension) [2], and cyclical recruiting difficulties can be exacerbated by problems of structural labour mismatches, which can give rise to problems of labour hoarding during periods of cyclical slowdown.

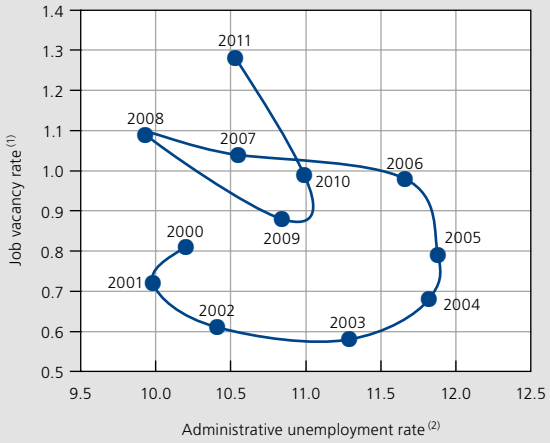
1.2 The Beveridge curve

The process of matching labour supply with demand and trends in the process can be shown by a Beveridge curve comparing the unemployment rate and the job vacancy rate. This establishes a negative relationship between the two variables, expressed as a percentage of the labour force. The underlying reasoning is intuitive: all else being equal, an increase in the number of job vacancies makes it easier for job-seekers to find a job, which lowers unemployment, and vice versa. Whereas cyclical factors determine the possible combinations of job vacancy rates and unemployment rates, i.e. the points on the Beveridge curve, structural and frictional factors explain the shifts in the curve: towards the outside when the matching process becomes more difficult, towards the origin when the process improves.

In determining the relationship between the unemployment rate and the job vacancy rate in Belgium, we are limited to statistics on job vacancies provided by regional public employment services (PES), i.e. job offers made through these that remain open at the end of the month (those neither filled nor cancelled). In addition, to use a concept that is comparable among the Regions and to avoid breaks in the series, we relied only on the normal economic channel excluding the temporary work sector (which includes double counting). The PES statistics used for this article only represent a portion of the job offers in the economy, as there are numerous other recruiting channels: newspapers, websites, public spaces, training centres, and also informal channels, such as internal announcements and personal contacts. Employers' use of PES can fluctuate over time, and it notably varies depending upon the size of the company and the type of candidates sought. In 2005, it was also noted that there are significant differences in "market share" between the regional PES [3].

CHART 1 BEVERIDGE CURVE IN BELGIUM

(in % of the labour force, yearly averages)



Sources: Actiris, FOREM, NAI, NEO, VDAB, NBB calculations.

(1) Job vacancies recorded by the regional public employment services, excluding job offers posted by temporary work agencies and those under subsidised programmes. Due to the lack of data available before April 2009 for Wallonia, the number of job vacancies at FOREM have been estimated based on flows for the period 2000-2009.

(2) Rate calculated using the number of unemployed job-seekers registered by the NEO.

(1) Level of wage below which the applicant will decline a job offer.

(2) Due to the potential weak wage perspective.

(3) According to a study conducted by Idea Consult at the request of Federgon (2006), the rate of usage of PES agencies as a recruiting channel by employers differs significantly from one Region to the next: 48% in Brussels, 71% in Flanders and 46% in Wallonia. Source: Federgon-Idea Consult (2006), *Radiographie de la politique de recrutement et des flux de travailleurs.*

In order to link the concepts of labour supply and demand, the unemployment rate is measured using administrative data, i.e. the share in the labour force of the fully unemployed receiving benefits and other job-seekers registered compulsorily or voluntarily with the regional PES[1].

During the economic slowdown of the early 2000s, the drop in the job vacancy rate went hand in hand with an increase in the unemployment rate. The recovery was visible, as expected, in the two variables reversing direction. The next episode of a drop in the vacancy rate combined with an increase in the proportion of job-seekers was observed between 2008 and 2009, during the Great Recession. However, the economic recovery, marked by a swift increase in the job vacancy rate – which reached 1.3 positions for 100 active persons – resulted on average in 2011 in only a modest reduction, to 10.5 %, of the administrative unemployment rate. As a result, the latter remained above its pre-crisis level. Here, we can speak of an outward movement of the Beveridge curve: for an unemployment rate identical to that of 2007, the corresponding job vacancy rate was higher.

When making historical comparisons, it is important to keep in mind the influence of regulatory changes which might have affected trends in the number of unemployed[2]. However, the same exercise performed with data from labour force surveys used for an alternative unemployment rate measurement – whose definition did not change between 2000 and 2010[3] – paints a similar picture.

With this being the case, it raises the question of the presence of and trends in qualification mismatches in the Belgian labour market, to which we devote the next chapter. It is important to examine to what extent job-seekers' qualifications have adapted to changes in the structure of the Belgian economy, and thus to employers' needs.

2. Qualification mismatches

2.1 Macroeconomic approach: mismatch index

2.1.1 Methodology

The approach adopted to measure the extent of the qualification mismatch in the labour market is based on that of Estevão and Tsounta (2011)[4]. It consists in comparing the relative share of each type of qualification in the labour supply and in the demand for labour respectively – or in other words, the distance between the qualifications' supply and demand – and aggregating the gaps to create a mismatch index. For the purposes of the above-mentioned study, the labour supply indicator corresponds to the distribution of the working age population according to educational level (low-, medium- and highly-skilled[5]), whereas the indicator for demand reflects the distribution of employment as a function of the educational level required. To create these indicators, the authors had to use various data sources. The calculation was performed for each state in the United States over the past 20 years[6]. The concept of labour supply is broad, as every individual of working age is considered a potential source of labour.

The formula used is as follows:

$$M_{it} = \sum_{j=1}^{3} (S_{ijt} - D_{ijt})^2$$

where S_{ijt} is the percentage of the working age population with educational level j in region i at time t, and D_{ijt} is the percentage of employed persons with educational level j in region i at time t.

It is important to distinguish between qualification mismatches and skill mismatches (Desjardins and Rubenson, 2011). The former are easier to measure[7], but they do not make it possible to take into account differences in the quality of diplomas of the same level, nor, more importantly, do they allow for the possibility that a worker's skills have improved or become obsolete since the diploma was obtained. Nevertheless, the level of education attained remains the principal signal of new labour market entrants' abilities.

(1) These registration and eligibility criteria are not among the characteristics of job-seekers that are counted in the harmonised labour force surveys at the European level: the harmonised unemployment rate only includes persons who were out of work during the reference week, were available to work, and were either actively looking for work during the previous four weeks, or had already found a job which will start within the next three months. On average in 2011, the harmonised unemployment rate was 7.2 %, whereas the administrative unemployment rate was 10.5 %.

(2) In particular, the progressive increase (since 2002) in the age above which older unemployed are no longer required to register as job-seekers from 50 to 58, which inflated the number of unemployed job-seekers from then on. The number of unemployed aged 50 and over rose from 33 000 in 2002 to 127 000 in 2011 (source: NEO).

(3) In Belgium, the wording of the survey question regarding the length of the job search was recently clarified, which affected the breakdown between job-seekers and inactive persons in 2011.

(4) Estevão, M. and E. Tsounta (2011), *Has the Great Recession raised U.S. structural unemployment?*, IMF Working Paper, May.

(5) Low-skilled workers did not finish secondary education, medium-skilled workers finished their secondary education but lack a diploma certifying higher education ("bachelor's degree" in the US, i.e. typically four years of higher education), and highly-skilled workers have at least a "bachelor's degree".

(6) The results indicate, on average, an increase in the mismatch index during the Great Recession, with divergences from one state to the next, notably depending on the characteristics of their economic activity.

(7) Certain large surveys, such as the Adult Literacy and Life Skills survey, or ALL, must limit their focus to literacy and numeracy skills, for example.

We have conducted a similar exercise for Belgium and each of its Regions. The harmonised labour force surveys contain the variables needed to calculate such an index at the provincial level [1] and allow avoiding the use of multiple data sources (for example, administrative data and surveys, whose covered populations and methodologies differ). Index calculations are based on the microdata of these surveys from 2000 to 2010 [2].

2.1.2 Structure of labour supply and demand

The distribution of the demand for labour may be approximated by the breakdown of the employment [3] performed in Belgium in each of the Regions by the educational level of the workers. The education levels correspond to the 1997 International Standard Classification of Education (ISCED). The three groups used are: low-skilled (having completed at least pre-primary, primary or lower secondary education – levels 0-2), medium-skilled (upper secondary and post-secondary non-tertiary education – levels 3-4), and highly-skilled (tertiary education – levels 5-6).

This measurement presents certain limits. For one, employment status assumes that the employer was able to find the candidates needed and so did not run into a mismatch. In attempting to discern to what extent the supply can fill unmet demand, using the employment variable assumes that the current structure of employer demand is the same as in the past (i.e. that which has already been met). However, the qualification structure of recently created positions may be different, and employers' requirements for new labour market entrants may have changed. In particular, older workers are less educated than the youngest workers, based on the highest level of diploma obtained [4]. Furthermore, it implicitly assumes that companies have not hired any workers with qualifications that exceed their real needs. And yet, it is estimated that in 2010, 22 % of persons employed in Belgium were overqualified [5].

In theory, the most reliable measure of employer demand would be that of job vacancies by level of qualification required. However, (administrative) data for Belgium are incomplete and give rise to interpretation problems, as numerous employers do not systematically indicate the level of diploma required for the job offered.

The labour force survey distinguishes the place of work (in Belgium or outside Belgium) from the respondent's place of residence (only in Belgium). In the case of Belgium – a small country with substantial internal commuting – the characteristic of the worker's place of work is more relevant for measuring gaps between employers' needs and the skills of locally available workers.

With respect to labour supply, it can be calculated in various ways depending on whether or not one considers employed and inactive persons as part of the supply. We have used a fairly restrictive approach limited to unemployed persons, who are in principle the most directly available to work. As in the case of employment, we have used the ILO definition of unemployment, i.e. persons who did not work during the reference week, were available to work, and who had either actively looked for work during the past four weeks or found a job that is done during the next three months.

The final index reveals nothing about the number of employed persons or those looking for employment, because it is based by definition on ratios (see the European comparison below). However, our starting point is the observation that Belgium has both a large number of job vacancies and a lot of unemployed job-seekers, and we endeavour to characterise labour supply and demand.

2.1.3 Mismatch index trends

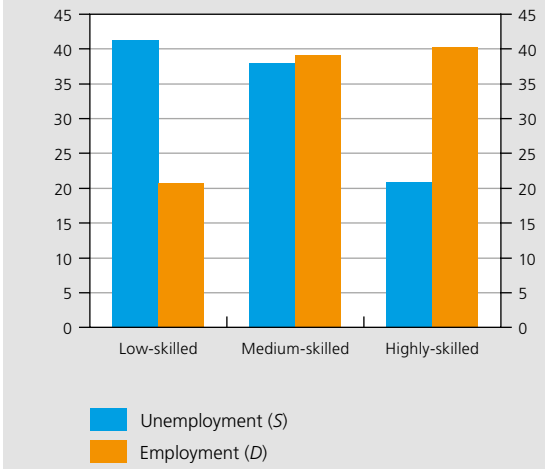
As explained above, the index measures the distance between the distribution of supply and demand of qualifications, represented respectively by unemployment and employment. Currently, around 80 % of the employment carried out in Belgium requires medium- and highly-skilled workers, whereas the available supply of labour, composed of job-seekers, is 80 % low- or medium-skilled. The level of the index is attributable to the weakness of the relative share of highly-skilled job-seekers in the labour supply and, conversely, by the high proportion of job-seekers having not completed their secondary studies, whereas there is little demand for these types of candidates among employers.

Between 2003 and 2007, the index calculated for Belgium experienced a slight upward trend that was halted in 2008. The index fell in 2009 owing to the decline in the relative share of low-skilled workers among job-seekers (with an increase in the proportion of highly-skilled unemployed persons). The index's marked growth in 2010 more than offset the decline observed in the previous

(1) However, only the results obtained at regional level are given, owing to problems of representativeness of the data at a more detailed geographical level.
(2) The last complete available year for microdata supplied by Eurostat for the EU and by the DGSEI for Belgium and its Regions at the time this article was written.
(3) People who worked at least one hour for wages during the reference week, or who did not work but normally have work from which they were temporarily absent due to illness, vacation, social conflict or training.
(4) This notion does not reflect the acquisition of new skills over the course of a professional career.
(5) Percentage of workers with a high level of education, i.e. those having completed tertiary education (ISCED 5 or 6), who occupy low- or medium-skilled positions (ISCO classifications 4 to 9, such as clerical support workers, agricultural workers, craft workers, etc.). Calculation based on data from the 2010 labour force surveys (EC).

CHART 2 BREAKDOWN OF EMPLOYMENT AND UNEMPLOYMENT BY EDUCATIONAL LEVEL IN BELGIUM IN 2010

(in % of total employment and unemployment of persons aged 15-64)



Source: DGSEI (LFS, microdata).

year. However, it is still too early to conclude that there was a worsening of the mismatch between labour supply and demand and, furthermore, changes in the index from one year to the next must be interpreted carefully due to survey data volatility.

The creation of a mismatch index for each Region makes it possible to analyse divergences that may exist within a given country. There is a considerable gap between the index level calculated for Brussels and those of the two other Regions: in 2010, the Brussels index was 3.5 times higher than that of Flanders and 2.5 times higher than that of Wallonia.

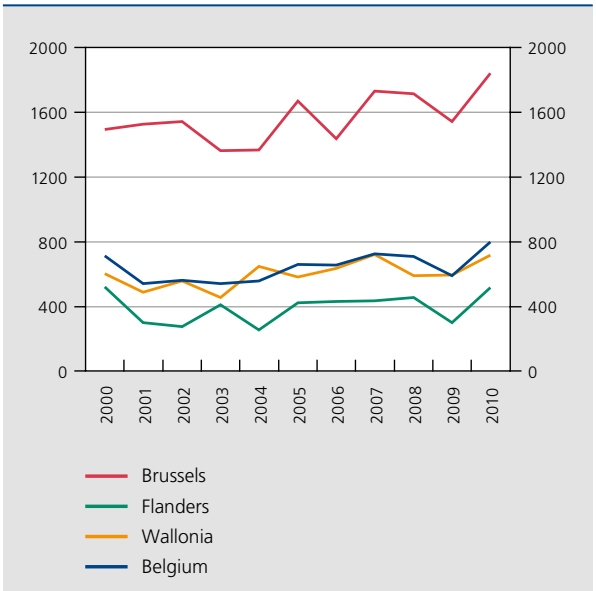
With their similar employment and unemployment structures, the levels of the Walloon and Flemish indices are fairly close. In these two Regions, the majority of jobs are held by medium-skilled persons (40 % on average), followed by highly-skilled persons (37 % on average). In both cases, the mismatch is caused by an over-representation of low-skilled job-seekers relative to the needs of employers and an under-representation of highly-skilled job-seekers. The labour force available in Wallonia, however, is even less able to meet the needs of employers due to the smaller weight of highly-skilled job-seekers in the labour pool compared with what is observed in Flanders.

In Brussels, a majority of jobs require highly-skilled workers – 55 % in 2010 – whereas barely 17 % of jobs call for low-skilled workers. Nearly half of job-seekers residing in the Brussels-Capital Region have not completed secondary studies, so the absolute level of the index is unsurprisingly much higher than those of the other two Regions.

As mentioned above, it is not possible to evaluate companies' new expectations by looking at the structure of total employment. To attempt to remedy this shortcoming, we can look solely at employment and unemployment among the young, for whom formal skill requirements have risen – and reflect the change in the structure of the economy – as indicators of labour supply and demand. The mismatch index calculated for ages 15-34 is higher than the broader index: the level of education for jobs performed by the young is generally above average, but there has not been enough improvement in job-seekers' education. This observation is not surprising considering the difficulty that young job-seekers are having finding work: the harmonised unemployment ratio [1] for persons aged 15 to 24, at 7.3 % in 2010, is 1.3 times higher than the average.

CHART 3 MISMATCH INDEX FOR BELGIUM AND ITS REGIONS

(level)



Source: DGSEI (LFS, microdata).

(1) The unemployment ratio is expressed as a percentage of the corresponding total population, whereas the unemployment rate is typically expressed as a percentage of the corresponding labour force, i.e. a rate of 22.4 % for youth in 2010, which is close to three times the average.

2.1.4 European comparison

It is possible to calculate mismatch indices for each EU country. Belgium has the highest index, followed closely by Sweden, where there is also a wide gap between the relative proportion of low-skilled jobs and the proportion of low-skilled job-seekers. Southern European countries still have an employment structure in which there is a high proportion of low-skilled workers (one-third in Greece and Italy, close to two-thirds in Portugal), and the distribution of unemployment is not fundamentally different from that structure. As the index does not give an indication of the volume of labour in question, the ranking by country can give a false idea of the relative ease of matching labour supply with demand: for example, whereas the Spanish mismatch index is lower than that of Belgium or Sweden, the harmonised unemployment rate there was 20.1 % in 2010, compared with respectively 8.3 % and 8.4 % in Belgium and Sweden, both of which were below the European average.

2.1.5 Supply and demand by occupation

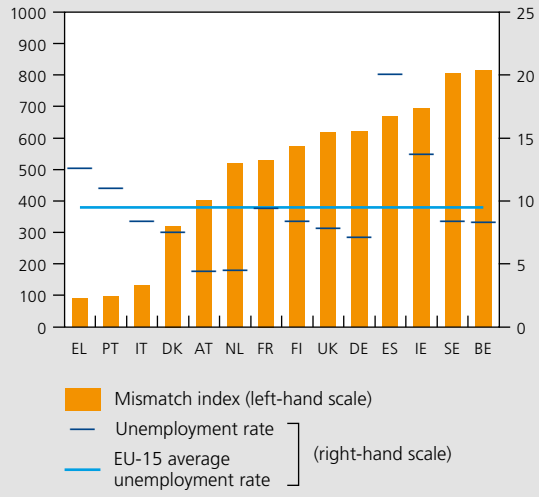
The criteria of the highest level of education attained masks very different profiles (profession, experience, course of study, etc.). Based on labour force surveys, it is possible to contrast the structure of demand (approximated by employment), according to occupation, with the structure of supply (approximated by unemployed persons), according to the most recent occupation[1]: this implies that persons coming out of the school system or university who are looking for their first job[2] – i.e. mostly young persons – are not included in the breakdown. Despite this limit, it is interesting to examine the relative weight of professional profiles among job-seekers compared with the requirements demanded by the labour market.

Some salient facts emerge from this approach. The proportion of professionals in employment is the greatest; it is substantially higher than the proportion of these profiles in unemployment, i.e. 23 % compared with 11 % in 2010. This group includes a wide variety of occupations, such as physician, university professor, engineer and lawyer, to give just a few examples. We find sizeable, but smaller gaps for other occupations requiring a high level of education – such as managers – and medium-level skills – such as technicians and associate professionals (various technicians, certain healthcare professions, teachers, etc.). The mismatch between labour supply and demand is at first sight limited with respect to clerical support workers (secretaries, office workers, cashiers, etc.). The proportional representation within employment and unemployment of service and sales workers diverges significantly, to respectively 12 % and 21 % in 2010, making this group of occupations the most prevalent among job-seekers. The relative supply of labour exceeds the relative demand in many other low- or medium-skilled professions: craft and related trades workers, plant and machine operators, assemblers, and elementary occupations.

A comparison over time between two years characterised by different economic conditions requires a prudent approach, as certain occupational categories are more sensitive to fluctuations in growth than others. Nevertheless, the sign of the gap between relative supply and demand for the various groups of occupations considered remained the same between 2000 and 2010, and the size of the gap did not fundamentally change (except in the case of elementary occupations, where it narrowed considerably[3]). The breakdown of employment, however, reveals an increased need for qualification: managers and professionals together accounted for 34 %

CHART 4 MISMATCH INDICES FOR THE EU-15 COUNTRIES AND HARMONISED UNEMPLOYMENT RATES IN 2010[1]

(level and percentage of the corresponding labour force, respectively[2])



Source: EC (LFS, microdata and Eurostat).

(1) Luxembourg was excluded because results for job-seekers were not representative. The Belgian index is a bit higher than in the previous chart because in this case, total employment was considered, including cross-border commuters, as it was for the other countries shown.

(2) Persons aged 15 and over.

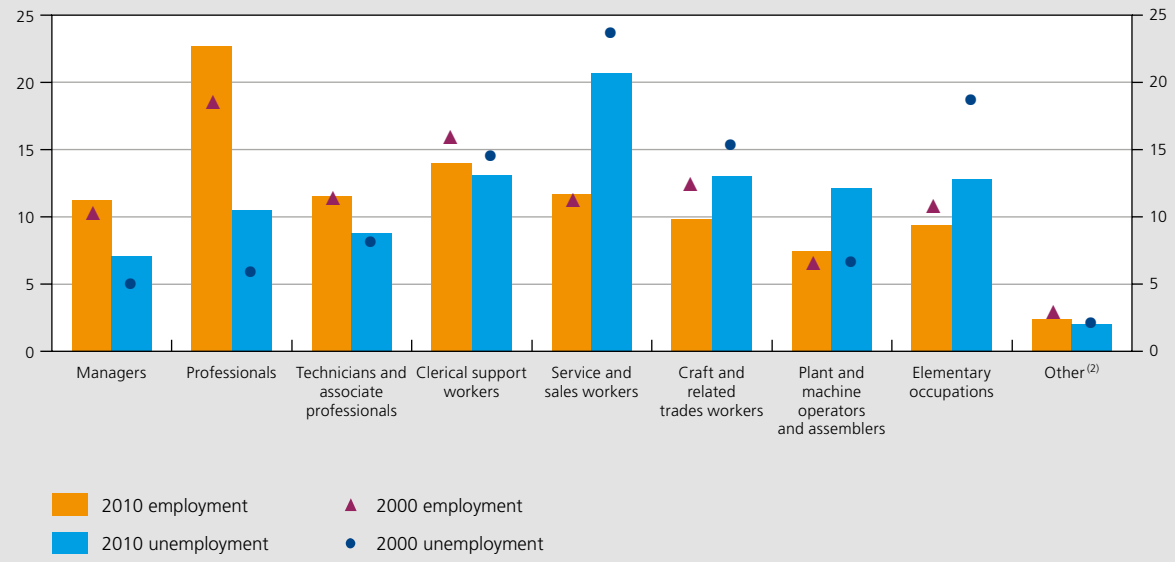
(1) According to the ISCO88 classification.

(2) In the survey, student jobs were not taken into account in the occupational classification. Furthermore, if the previous job was held more than eight years prior, the occupational question was not asked.

(3) The gap for plant and machine operators and assemblers widened, but is volatile from one year to the next due to the small size of the group in question.

CHART 5 BREAKDOWN OF EMPLOYMENT AND UNEMPLOYMENT BY OCCUPATION IN 2000 AND 2010 (1)

(in % of total employment and unemployment of persons aged 15-64)



Source: EC (LFS, microdata).

(1) Most recent occupation held by the unemployed person.

(2) Military occupations, and skilled agricultural, forestry and fishery workers.

of employment in 2010, compared with 29 % a decade earlier. In the meantime, craft and related trades workers, clerical support workers and elementary occupations fell from 39 % to 33 %. The make-up of the unemployed followed the same trend, with the proportion of job-seekers having most recently had a highly-skilled occupation rising between 2000 and 2010; the proportion of job-seekers having previously worked in an industrial, clerical or elementary occupation, on the other hand, was smaller in 2010 than it was in 2000.

While we cannot make a direct connection between the various occupational categories and the level of education required, this trend confirms the increase over time of the educational attainment of available workers. In 2000, half of the unemployed were low-skilled, a proportion that fell to 41 % in 2010.

2.2 Microeconomic approach: critical occupations

The measurement of mismatches was based principally on the degree of qualification certified by a diploma, regardless of the area of study or when it was obtained. However, job-seekers have other characteristics that play a role in their chances of finding employment, and even if the requirements stated in job ads are expressed in terms of level of education or field of study, companies' actual expectations go beyond these criteria, which are often designed to perform an initial sorting of applicants. Analysis of critical occupations, carried out annually by the regional public employment services (PES), underlines the recruitment difficulties encountered by certain employers.

With respect to critical occupations, the job-filling rate is lower and the vacancy lasts longer than for the total of job offers. In addition to this statistical analysis, testimony by PES counsellors and employers helps to confirm or disprove an occupation's "criticality" (and, if need be, to add new ones).

Job offers for critical occupations take longer to fill than the average. Employers have a harder time finding workers due to the scarcity of applicants, difficult working conditions, qualitative aspects (diploma required, experience needed, languages spoken) or a lack of mobility. Job offers for these functions are likely to remain open for several months in a row.

As indicated in table 1, critical occupations can be found in a variety of fields and do not refer exclusively to skilled positions. To simplify matters, the various problematic

TABLE 1 NUMBER OF JOB OFFERS RECEIVED BY THE PES FOR CRITICAL OCCUPATIONS BY CATEGORY IN 2011 (1)

	Flanders	Wallonia	Brussels
Management and communications	11 221	3 313	502
Teaching staff	9 510	– (2)	2 774
Medical and social sector	17 053	2 592	523
Administrative jobs	11 156	–	1 615
Commercial jobs	29 298	8 594	1 372
IT jobs	8 822	2 100	867
Technical jobs	25 199	15 393	763
Construction	13 328	4 940	96
Transport and logistics	9 579	–	75
Horeca and tourism	10 378	3 450	409
Small-scale/craft industry	2 882	881	52
Cleaning staff	24 189	4 870	–
Horticulture	896	–	–
Other	3 238	349	–
Total	**176 749**	**46 482**	**9 048**

Sources: Actiris, FOREM, VDAB.

(1) Occupational categories are based on those defined by Actiris in its analysis of critical occupations.

(2) A French Community government decree lists the functions affected by staff shortages for school year 2010-2011. Among the most sought-after candidates are pre-school and elementary school teachers and teachers in languages, maths, science, French and technical and vocational courses.

occupations have been regrouped into more general categories. This does not mean that all of the occupations that fit into these categories can be considered critical.

Even though not all of the job offers in a critical category are hard to fill, we note that in Flanders, it is the commercial and technical jobs (for example, maintenance mechanics, electricians) that have the largest volume of offers. In Wallonia, it is principally the technical jobs, and in Brussels, teaching occupations. Most of the time, there are multiple reasons why an occupation is considered critical (quantitative and qualitative aspects, working conditions). The fact that many occupations remain on the regional critical lists year after year confirms the structural nature of the recruitment problems employers face.

(1) At the NUTS2 level, which in Belgium corresponds to the provinces.

(2) Regional employment (source: NAI) and population census for 2010 (source: DGSEI).

3. Geographic mismatches

3.1 Dispersion of the unemployment rate

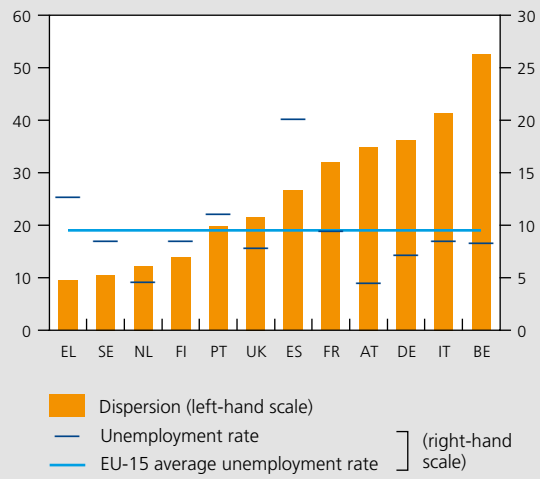
The indicator typically used to describe geographic mismatches in a country's labour market is the dispersion of regional unemployment rates. As we have seen, labour market conditions vary considerably from one Region to another, but also from one province to another. According to the results of labour force surveys, in 2010 Belgium had the highest unemployment rate dispersion (1) of any country in the EU. At the extremes, the harmonised unemployment rate was 17.3 % in Brussels compared with 3.8 % in West Flanders. This wide dispersion may indicate that jobs are not being offered in areas where job-seekers reside. But, based on this indicator, we do not know if the persons seeking employment (in Brussels, for example) have the skills needed to qualify for the jobs being offered (in Flanders, for example). If they do not, the mismatch between supply and demand is not a problem of geographic mobility. That said, given the noted dispersion in unemployment rates, it appears useful to perform an analysis of labour mobility (see below).

Brussels is the Region where, compared with the working-age population, the supply of jobs is the most abundant, at nearly one position for each resident of Brussels (2).The labour market is thus unbalanced: many jobs, but high unemployment. This paradox is partly attributable to the fact that in Brussels, a large proportion of jobs are linked either directly (civil servants working for various levels of government) or indirectly (staff of companies with their headquarters in the capital or near central offices) to the city's status as a regional, national and European capital. These functions are filled mainly by highly-skilled workers, whereas much of the Region's population is low- or medium-skilled. In addition to the skill-level problem, there is a large foreign-born population in Brussels; these people may not meet the nationality or language skill criteria for vacant positions, and they may face greater discrimination in the recruitment process. These factors combine to make the mismatch between labour supply and demand in Brussels particularly acute (the Brussels mismatch index, which is higher than those of the other Regions, confirms this picture).

However, a smaller dispersion does not necessarily imply that labour market conditions are more favourable in general. Whereas Belgium stands out for the sizeable differences in unemployment rates between its provinces, the country's average unemployment rate is lower than that of many countries which have a more balanced dispersion of domestic unemployment rates. For example,

CHART 6 DISPERSION[1] AND AVERAGE[2] OF EU-15 UNEMPLOYMENT RATES IN 2010

(in %, persons aged 15 and over)



Source: EC (LFS, Eurostat)

(1) The dispersion indicator, expressed as a percentage, corresponds to the ratio between the square root of the variance (weighted by the share, by region, of the labour force in the total labour force) of harmonised regional unemployment rates at the NUTS2 aggregation level (which in Belgium corresponds to the provinces) and the total unemployment rate. Thus, it indicates the extent to which the unemployment rate varies between the administrative subdivisions of a given country. Data are lacking for Denmark, Ireland and Luxembourg.

(2) Unemployed persons (ILO definition) as a percentage of the labour force.

in 2010, Belgium's dispersion was 5.5 times higher than that of Greece, where the unemployment rate of 12.6 % was significantly higher than the 8.3 % rate in Belgium: Greek unemployment was high in every Region, whereas Belgium had areas of high unemployment close to areas of relatively low unemployment. These relative positions already prevailed – although to a less dramatic extent – in 2007, before the Great Recession.

3.2 Geographic labour mobility

Geographic mobility means physically travelling from one's residence to one's place of work. It can refer to daily, or at least regular, trips (commuting), or moving to a residence that is closer to the place of work. This section looks principally at workers' daily travels; these can help mitigate location and skill mismatches between labour supply and demand by offsetting shortages in one location with an excess in another.

(1) Weighted by labour force.

(2) For example, in a simplified context in which there are two regions, r1 and r2, and two types of qualification, q1 and q2, if both regions have an excess of q1 labour relative to demand, a rebalancing (by mobility within the country) is impossible at the national level.

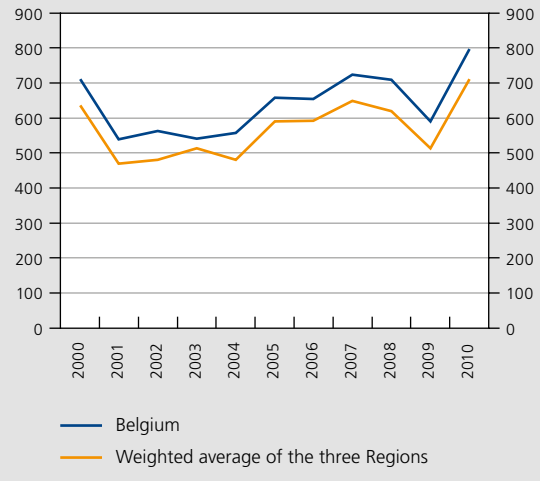
3.2.1 Mobility as a solution to recruitment difficulties

One manner of assessing whether a labour market mismatch stems more from a qualification problem or from labour pool mobility problem is to compare the country's total mismatch index with the weighted average[1] of its regional indices (ECB, 2012). The two indices thus calculated refer to the same level of aggregation (Belgium), but the first compares differences in the aggregated distribution of qualifications, whereas the second reflects disaggregated distributions of qualifications. If the mismatches are similar among the Regions (same types of imbalance), the two indices will give the same result[2]. But if there is a shortage of certain qualifications in certain Regions that is offset by an excess in others, the Belgian index will be lower than the weighted index. Whereas, in this theoretical case, the national index would show a limited mismatch, because the aggregate distribution of qualifications would mask the disparity, the weighted index would be higher because the mismatches are added together. This is why the gap between the two indices can be interpreted as the extent of the mismatch between supply and demand that results from a mobility problem.

The total Belgian index is at roughly the same level as the weighted index: the Flemish and Walloon mismatches are similar, and it is the weight (in terms of labour force) of these two Regions that influences the national average most. The similarity of the structure of employment and unemployment in the two Regions suggests that mobility

CHART 7 TOTAL AND WEIGHTED MISMATCH INDICES[1]

(levels)



Source: DGSEI (LFS, microdata).

(1) Overall Belgian index and weighted average (by labour force) of the regional indices.

(or greater mobility) is not the only solution to recruitment problems. This observation is reinforced by the fact that the lists of critical occupations in the North and in the South of the country are similar from one year to the next.

The same cannot be said of the Brussels-Capital Region, which is notable for its idiosyncrasy. Remember that the Brussels mismatch index is the highest of the three Regions, indicating that the local workforce lacks the formal skills to meet employers' needs. To see how this "deficit" is overcome, it is possible to use labour force surveys to measure the relative share of jobs performed in each province by residents and commuters, and to pinpoint the geographic origin of the latter.

3.2.2 Commuting

An initial observation based on table 2 comparing place of residence with place of work is that the share of jobs performed by residents in Brussels is much lower than in the other two Regions. On average, in 2010, 97 % of workers employed in Flanders lived there, and in Wallonia the figure was 96 %. By contrast, barely half of the jobs in Brussels were performed by residents: indeed, the capital attracts a large number of workers from the other two Regions.

The majority of incoming workers – around two-thirds, or 239 000 – were from Flanders, particularly the neighbouring province of Flemish Brabant, followed by East Flanders. The remaining workers – 19 %, or 132 000 in 2010 – reside in Wallonia, principally the provinces of Hainaut and Walloon Brabant.

Workers commuting into Flanders – relatively few in number (83 000 persons) – came half from Brussels and half from Wallonia. At the provincial level, Flemish Brabant is the exception: around 13 % of jobs there are performed by workers from Brussels or Wallonia, making it the Flemish province with the lowest proportion of resident workers.

We note a certain intra-regional mobility within Flanders. For example, the provinces of Antwerp and Flemish Brabant both attracted workers from neighbouring provinces in 2010: in Antwerp, more than 9 % of workers came from East Flanders and Flemish Brabant; in Flemish Brabant, 19 % of workers lived in the provinces of

TABLE 2 BREAKDOWN OF EMPLOYMENT PERFORMED IN EACH OF THE PROVINCES BY PROVINCE OF RESIDENCE IN 2010

(in % of total employment performed in each of the provinces, unless otherwise mentioned)

Place of work / Place of residence	Brussels	Flanders					Wallonia					Abroad
		Antwerp	Limburg	East Flanders	Flemish Brabant	West Flanders	Walloon Brabant	Hainaut	Liège	Luxembourg	Namur	
Brussels	**47.7**	0.8	n.r.	n.r.	8.2	n.r.	8.5	1.0	n.r.	n.r.	n.r.	6.3
Flanders												
Antwerp	4.3	**86.1**	3.2	2.3	8.4	n.r.	n.r.	n.r.	n.r.	n.r.	n.r.	13.4
Limburg	1.2	2.6	**91.1**	n.r.	3.7	n.r.	n.r.	n.r.	1.2 (1)	n.r.	n.r.	18.3
East Flanders	8.4	5.0	n.r.	**88.9**	6.8	4.8	n.r.	0.7 (1)	n.r.	n.r.	n.r.	3.5 (1)
Flemish Brabant	18.1	4.4	3.4	2.5	**67.4**	n.r.	5.1	n.r.	n.r.	n.r.	n.r.	3.0 (1)
West Flanders	1.7	0.6 (1)	n.r.	4.8	0.7 (1)	**93.4**	n.r.	1.1	n.r.	n.r.	n.r.	3.1 (1)
Wallonia												
Walloon Brabant	6.8	n.r.	n.r.	n.r.	2.2	n.r.	**59.0**	1.6	n.r.	n.r.	2.5	n.r.
Hainaut	7.2	n.r.	n.r.	n.r.	1.6	1.3	15.6	**89.2**	0.9 (1)	n.r.	7.3	8.3
Liège	2.3	n.r.	n.r.	n.r.	0.6 (1)	n.r.	2.9 (1)	0.7 (1)	**93.7**	3.8 (1)	6.1	14.6
Luxembourg	n.r.	n.r.	n.r.	n.r.	n.r.	n.r.	n.r.	n.r.	1.4	**86.8**	3.0	25.5
Namur	2.1	n.r.	n.r.	n.r.	n.r.	n.r.	6.9	4.8	1.5	7.3	**79.8**	n.r.
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
p.m. Absolute number in thousands	*709*	*743*	*325*	*545*	*410*	*480*	*139*	*387*	*363*	*80*	*160*	*109*

Source: EC (LFS, microdata).
(1) Unreliable data.

Antwerp, Limburg and East Flanders. Conversely, Limburg and East Flanders had only a modest number of incoming commuters.

In Wallonia, which attracted 45 000 commuters in 2010, the non-representativeness of the data that emerges when breaking down extra-regional commuters by province again speaks to the labour force's insufficient mobility. At the level of the Walloon provinces, however, we do see some differences: 59 % of those working in Walloon Brabant live there; the rest reside principally in Hainaut and Brussels. In the province of Namur, 80 % of jobs are performed by residents and the remainder are held by residents of neighbouring provinces, principally Hainaut. Elsewhere, between 87 % and 94 % of jobs are performed by residents of the province, with commuters rather spread out.

In conclusion, we can say that whereas many workers travel to Brussels, so far there is little mobility between the North and South of the country. Commuters from Brussels typically work in Flemish and Walloon Brabant. However, the stock of job vacancies remains high, particularly in Flanders, which would benefit from an inflow of labour from the other two Belgian Regions.

To encourage inter-regional mobility among job-seekers, a multilateral cooperation agreement in 2005 was signed with the three Regions, the Flemish Community, the German-speaking Community and the French Community Commission. This agreement contains several commitments, for instance to exchange information on labour supply and demand, promote language courses and organise transregional training. Since June 2006, job offers for critical occupations and job offers that are generally difficult to fill are automatically and reciprocally transferred by the PES. Given the structural labour shortage in numerous occupations in Flanders, the VDAB also searches for qualified personnel in the other Regions. This promotion of inter-regional mobility among job-seekers has taken the form of partnerships between the VDAB and its counterparts, the FOREM and Actiris[1], aimed at sharing, in addition to the automatic exchange, specific job offers and drawing the attention of job-seekers in Wallonia and Brussels to them.

3.2.3 Profile of commuters

The breakdown of commuters by educational level indicates that, as expected, low-skilled workers are less likely to travel from one Region to another to work owing to the relative cost of working far away from their home (because of transport or child care costs, for example) compared with the financial gain they stand to make.

In Brussels, a majority (59 %) of commuters from Flanders and Wallonia had higher education diplomas, in 2010. Much fewer low-skilled workers commuted to the capital; they represented 11 % of Flemish commuters and 12 % of Walloon commuters.

In Flanders, the breakdown of extra-regional commuters by educational level is more balanced: 43 % of those coming from Brussels in 2010 were highly-skilled, with the remainder split between those with a secondary school diploma and low-skilled workers. Of all the workers residing in Wallonia who travel to the North to work, 41 % are highly-skilled; one-third are medium-skilled and one-fourth lack a secondary school diploma. Several factors influence this different breakdown, including the structure of economic activity, less concentrated in services compared to the capital.

(1) "Job weeks", "job fairs" and "job dating" are other tools used to promote inter-regional mobility.

TABLE 3 BREAKDOWN OF WORKERS BY EDUCATIONAL LEVEL ACCORDING TO REGION OF WORK AND OF RESIDENCE IN 2010

(in % of the total corresponding number of commuters by Region of residence)

Place of work / Place of residence	Brussels			Flanders			Wallonia		
	Low-skilled	Medium-skilled	Highly-skilled	Low-skilled	Medium-skilled	Highly-skilled	Low-skilled	Medium-skilled	Highly-skilled
Brussels	**22.4**	**26.9**	**50.7**	29.3	28.2	42.6	13.5	25.5	61.0
Flanders	11.3	29.4	59.4	**20.3**	**42.6**	**37.1**	21.8	35.0	43.2
Wallonia	11.9	29.3	58.9	25.1	33.6	41.3	**23.9**	**39.2**	**37.0**

Source: EC (LFS, microdata).

In Wallonia, non-resident workers are principally highly-skilled, regardless of their Region of origin. More than 60 % of those living in Brussels who travel to the South of the country are highly-skilled, and around one-fourth are medium-skilled. The corresponding proportions of Flemish commuters are respectively 43 % and 35 %. These distributions differ starkly from the structure of residents' employment, which is much more balanced among education levels.

3.2.4 Factors that influence commuting

A multitude of factors can influence the decision to commute. As there is little literature and few statistics on the subject, our analysis must by default be limited to describing their potential influence.

The prevalence of commuting depends upon the level of economic activity and labour market situation in the Region of residence and in the Region of potential employment. The proof is that the majority of commuters go to work in Brussels, where there is a considerable number of jobs for both Dutch and French speakers. The same reasoning, given that economic conditions are relatively more favourable in Flanders than in Wallonia, probably explains why there is more commuting from Wallonia to Flanders than vice versa.

There is a negative relationship between the number of commuters and the distance between home and the workplace. This hypothesis is confirmed by the data available for Belgium, which show, for example, that a large proportion of workers commuting into Brussels live in Flemish Brabant, a neighbouring province. Infrastructure and the prices of the various transport options play an important role in workers' decisions to look for or accept a job in another Region.

All else being equal, the ability to earn a higher salary motivates workers to switch jobs. In this respect, differences in compensation between the Belgian Regions (wages being higher where economic conditions are more favourable) may increase geographic mobility[1].

Because mobility has a cost, for the commute to be financially appealing, there must be a sufficient difference in pay, but the salary must also be higher than social payments (this is the employment trap problem, which is especially significant for low-skilled persons). This calculation must take into account the costs of the commute in terms of transport, childcare, etc.

As we have noted, apart from commuting into Brussels, most travel is between provinces within a given Region. The number of Flanders residents who work in Wallonia, and vice versa, is thus relatively small, which indicates that language is still a barrier to commuting within our country. In fact, knowlegde of the second national language is generally limited (CSE, 2008).

Lastly, property prices are another factor that can influence commuting. A person who wants to live in an area where economic growth is stronger and/or unemployment is lower to increase his chances of finding employment will probably face, among other things, additional housing costs. This may be an argument in favour of not moving to the Region, but choosing to commute instead.

Some of these factors may weigh more strongly than others on the decision to work elsewhere, notably depending on the skill level of job-seekers and workers, as we showed in the section devoted to commuters' profiles.

Conclusions

Problems of matching between labour supply and demand in Belgium are visible from the Beveridge curve, which shows the relationship between the unemployment rate and the job vacancy rate. Despite a partial measurement of labour demand, it appears that, for the same unemployment rate as in the past, the corresponding job vacancy rate is higher today. Obstacles to matching supply with demand can be structural in nature, due to problems with the labour force's educational level or location.

By using a macroeconomic-style approach involving the creation of a mismatch index – as Estevão and Tsounta (2011) have done – we can evaluate the size of the qualification mismatch in Belgium and its Regions, as well as at the European level. This involves comparing the distribution of unemployment (labour supply) and employment (demand) by educational level – i.e. the highest level of education obtained by job-seekers and workers. This approach has its limits, but given the lack of complete and harmonised data on employers' needs, it is a good alternative and a jumping-off point for discerning long-term trends and training needs (initial and continuing).

The level of the index is attributable to the "shortfall" in the relative share of highly-skilled job-seekers in the labour supply and, conversely, the high relative share of job-seekers without a secondary school diploma, given

(1) In Belgium, collective bargaining is still, to a large extent, centralised and done at the sector-level, which limits regional wage disparities. That said, there are differences in wages between the Regions. This is not entirely due to the fact that the Regions specialise in different sectors: available data reveal wage differences between Flanders and Wallonia within the same sector of activity. These differences are notably attributable to the fact that wage increases may also be granted at the level of the companies themselves (CSE, 2006).

that companies' demand for these kinds of applicants is rather weak. At the country level, the index is highest in Brussels : employment there is concentrated in the services sector and requires primarily workers with a high educational level or specific skills due to the presence of public administrations and international institutions, whereas, for the most part, the job-seekers residing in the Region are low-skilled. From a European perspective, Belgium has the highest index of the EU-15 countries. However, a high index does not necessarily mean an above-average unemployment rate, as witnessed by the position of our country compared to the European average.

However, considerable mismatches do pose a problem, because they can cause job-seekers to lapse into long-term unemployment or inactivity, thus aggravating the problem. This can act as a drag on companies' growth. Low-skilled persons are a risk group among different categories of the population [(1)]. Employers are increasingly looking for medium-and highly-skilled candidates. This is also apparent from the breakdown of employment and unemployment by the (last) occupation held. Professionals represent the biggest share of employment – jobs to which most unemployed workers cannot aspire, at least without additional training. This does not mean there are no vacancies for job-seekers without higher education. Critical occupations comprise a wide variety of profiles, not all of which call for a specific diploma. Lack of experience, broadly applicable skills and foreign languages are some of the qualitative factors that can act as an obstacle to landing a job.

In general, a mobile labour force is assumed to reduce geographic mismatches in the labour market, because local vacancies can be filled by persons who have the needed skills but live elsewhere. The dispersion of unemployment rates at the regional level is high in Belgium compared with other European countries ; unemployment rate in one province can be up to four times as high as in another province. So, are Belgians mobile ? Whereas Brussels has roughly one position for every resident, jobs are held most of the time by residents of the other Regions. Conversely, jobs in Flanders and Wallonia are overwhelmingly performed by their own residents ; commuting between the North and South of the country is relatively rare, as is commuting by Brussels residents to the other Regions, with the exception of the Brabant provinces. The characteristics of (potential) workers play a role in how likely they are to commute, as witnessed by the small proportion of low-skilled workers among commuters. In addition, there are other obstacles, such as the language barrier, difficulty getting to the place of work and the costs of performing an occupation.

However, employers' recruiting difficulties on both sides of the language barrier, with analogous critical occupations, and the similarity of the mismatch indices calculated for Flanders and Wallonia show that the Belgian labour market's challenges stem not only from location mismatches, but also – and especially – from qualification and skill mismatches. This calls for structural solutions that can improve the job prospects of groups that are at risk.

(1) In Belgium in 2010, their rate of unemployment was close to five times higher than that of highly-skilled persons.

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Summaries of articles

What is the role played by the Eurosystem during the financial crisis?

Since the onset of the financial crisis, the Eurosystem has cut interest rates on several occasions and has assumed an increasingly prominent role as a financial intermediary. It stepped up its lending to liquidity-constrained banks and at the same time gave cash-rich banks the opportunity to place their liquidity surpluses with a safe counterparty, the central bank. The Eurosystem acts as an intermediary not only for individual banks, but increasingly for national banking sectors as well, especially as a result of the sovereign debt turmoil and the close link between the financial situation of sovereigns and that of resident banking sectors. As a consequence, the Eurosystem's balance sheet has expanded significantly and there has been dramatic growth in the TARGET2 positions of national central banks.

The Eurosystem's accommodative monetary policy is not without risks, however. The policy entails both financial risks for the central bank and possible negative macro-economic side effects. Nor do these actions offer a solution for all the challenges that the euro area is facing today. In order to tackle these challenges, structural measures and adjustments are needed. However, through its increased role as a financial intermediary the Eurosystem can buy the necessary time for the relevant actors to implement these measures in an orderly way.

JEL codes: E44, E58

Key words: Eurosystem, monetary policy, TARGET2, financial crisis

Belgian business investment in the light of the crisis

Against the backdrop of the worst economic crisis since the Great Depression of the thirties, the article analyses developments in business investment in Belgium.

Firstly, it should be noted that, in 2009, Belgian business investment witnessed the biggest slump since 1980. However, when this sharp fall is considered in relation to GDP, it appears that it was not of an exceptional magnitude, given the sheer scale of the fall in GDP during the recession. Investment in Belgium exhibits a pro-cyclical pattern, following GDP movements, albeit with a larger magnitude. Furthermore, Belgian business investment has done relatively well in an international context. During the recession, Belgian investment saw a smaller cumulative decline than in the neighbouring countries and the euro area as a whole.

The factors that lie behind the biggest decline in investment since 1980 include the huge slump in demand and economic activity during the recession, the sharp decline in the gross operating surplus of Belgian firms in 2009, the rise in external borrowing costs for businesses and the tightening up of credit conditions in the run-up to and throughout the financial crisis. The high degree of uncertainty and unstable expectations as a result of the crisis played a role here, too. The decline in investment nevertheless remained relatively small, especially in an international context and the Belgian economy's resilience to the crisis and the sound financial position of Belgian firms seem to be the main factors behind this.

Finally, given the importance of investment as a factor of innovation and technological progress, which contribute to balanced and sustainable economic growth, the article describes several factors that could become a threat to the gradual recovery of investment and, thus, to the Belgian economy's growth potential in the longer term.

JEL codes: E22, E32

Key words: investments, business fluctuations

Euro area labour markets and the crisis

The article summarises the main findings of the Eurosystem's 2012 Structural Issues Report (SIR) and highlights some specific aspects for Belgium. It describes the main developments on euro area labour markets since the start of the Great Recession and its impact on mismatches and long-term unemployment. The ensuing policy conclusions refer to detrimental factors like wage rigidities, hysteresis and labour market segmentation and aim at increasing labour market flexibility so as to facilitate the ECB's price-stability-oriented monetary policy.

JEL codes: J08, J21, J23, J24, J30, J64

Key words: Great Recession, labour market, wages, mismatches, labour flows, long-term unemployment

Labour market mismatches

The reasons for a mismatch between labour supply and demand can be cyclical, frictional or structural, which is typically when the educational level of job-seekers does not correspond to the profiles sought on the labour market or there is a lack of geographic mobility.

By using a macroeconomic-style approach involving the construction of a mismatch index, the size of the skill mismatch can be assessed by comparing the distribution of unemployment (labour supply) and employment (as a proxy for demand) by educational level, based on labour force survey data. The level of the index in Belgium suggests that job-seekers are proportionately not skilled enough to meet employers' needs. The index is highest in Brussels, where most jobs call for highly-skilled workers, while there is a shortage of them amongst Brussels residents. In a European context, Belgium has the highest index in the EU15, but this does not go hand in hand with an above-average unemployment rate. The nature of Belgium's recruitment problems can be discerned more precisely by looking at the distribution of labour supply and demand by profession, and especially through a regional analysis of critical functions, as a diploma is not the only factor determining the probability of getting a job.

Belgium has a relatively large dispersion of local unemployment rates. It is generally assumed that labour mobility helps reduce geographic mismatches on the labour market, because vacant positions

in one area can be filled by people with suitable qualifications who live elsewhere. In Brussels, posts are mostly occupied by people who live in other regions. By contrast, jobs in Flanders and Wallonia are overwhelmingly done by those who live in that region, and relatively few workers commute between the north and south of the country. Workers' characteristics play a role in the likelihood that they will commute, as witnessed by the small proportion of low-skilled workers amongst commuters. Other obstacles include the language barrier, difficulty getting to the workplace, and the costs entailed in exercising a profession. However, the fact that employers have trouble recruiting staff on both sides of the language boundary, where critical functions are similar, and that the mismatch indices for Flanders and Wallonia are alike indicates that the Belgian labour market not only has a mobility problem but also – and even chiefly – encounters qualifications and skills mismatches.

JEL codes : J21, J23, J24, J60, J61

Key words : mismatch, skill mismatch index, vacancies, Beveridge curve, commuting, labour demand, labour supply

Abstracts from the Working Papers series

225. Flemish maritime ports, Liège port complex and the port of Brussels – Report 2010, by C. Mathys, July 2012

The Flemish maritime ports (Antwerp, Ghent, Ostend, Zeebrugge), the Autonomous Port of Liège and the port of Brussels play a major role in their respective regional economies and in the Belgian economy, not only in terms of industrial activity but also as intermodal centres facilitating the commodity flow. Each year, an extensive overview of the economic importance and development of the Flemish maritime ports, the Liège port complex and the port of Brussels is made. The current edition covers the period 2005-2010, with an emphasis on 2010. Focusing on the three major variables of value added, employment and investment, it also provides some information based on the social balance and an overview of the financial situation in these ports as a whole. These observations are linked to a more general context, along with a few cargo statistics.

226. Dissecting the dynamics of the US trade balance in an estimated equilibrium model, by P. Punnoose Jacob and G. Peersman, August 2012

In an estimated two-country Dynamic Stochastic General Equilibrium model, the authors find that shocks to the marginal efficiency of investment account for more than half of the forecast variance of cyclical fluctuations in the US trade balance. Both domestic and foreign marginal efficiency shocks have a substantial impact on the variability of the imbalance. On the other hand, while traditional technology shocks can generate counter-cyclical trade balance dynamics, they matter very little for the overall forecast variance

Conventional signs

€	euro
£	pound sterling
$	US dollar
-	the datum does not exist or is meaningless
e	estimate by the Bank
n.r.	not representative

List of abbreviations

Region or country

BE	Belgium
DE	Germany
DK	Denmark
EE	Estonia
IE	Ireland
EL	Greece
ES	Spain
FR	France
IT	Italy
CY	Cyprus
LU	Luxembourg
MT	Malta
NL	Netherlands
AT	Austria
PT	Portugal
SI	Slovenia
SK	Slovakia
FI	Finland
EA	Euro area
SE	Sweden
UK	United Kingdom
EU-15	European Union excluding the countries wich joined after 2003
US	United States

Others

Actiris	Brussels regional employment office
ALL	Adult Literacy and Life Skills Survey
ALMP	Active Labour Market Policies
BIS	Bank for International Settlements
CCE	Conseil central de l'économie (Central Economic Council)
CDS	Credit Default Swap
CES	Constant Elasticity of Scale
CSE	Conseil supérieur de l'emploi (High Council for Employment)
DGSEI	Directorate General for Statistics and Economic Information Belgium
EBA	European Banking Authority
EC	European Commission
ECB	European Central Bank
EFSM	European Financial Stabilisation Mechanism
EFSF	European Financial Stability Facility
ELA	Emergency Liquidity Assistance
ESM	European Stability Mechanism
EMU	Economic and Monetary Union
EU	European Union
FOREM	Office communautaire et régional de la formation professionnelle et de l'emploi (Walloon job-finding and vocational training service)
GDP	Gross Domestic Product
HICP	Harmonised Index of Consumer Prices
ILO	International Labour Organisation
IMF	International Monetary Fund
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
LFS	Labour Force Survey
MFI	Monetary Financial Institutions
NAI	National Accounts Institute
NBB	National Bank of Belgium
NBER	National Bureau of Economic Research
NCB	National Central Bank
NEO	National Employment Office
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Cooperation and Development
OMT	Outright Monetary Transactions
PES	Public Employment Services
SIR	Structural Issues Report

SMI	Skill Mismatch Index
SMP	Securities Markets Programme
SNCB	Société nationale des chemins de fer belges (Belgian National Railway Company)
TARGET	Trans-European Automated Real-time Gross Settlement Express Transfer system
TFP	Total Factor Productivity
VDAB	Vlaamse dienst voor arbeidsbemiddeling en beroepsopleiding (Flemish job-finding and vocational training service)
WDN	Wage Dynamics Network

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