

# SHORT TERM UPDATE

# 4-14

## Quarterly Newsletter December 2014

### Headlines Belgian Economy

Special Topic in this issue

Domestic demand patterns  
in Belgium since the  
mid-nineties: more French  
than German?



# Quarterly Newsletter of the Federal Planning Bureau

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*Short Term Update (STU) is the quarterly newsletter of the Belgian Federal Planning Bureau. It contains the main conclusions from the publications of the FPB, as well as information on new publications, together with an analysis of the most recent economic indicators.*

## HEADLINES BELGIAN ECONOMY

*The FPB's latest short-term forecast dates from September (see STU 03-14). We projected, conditional on our traditional assumption of unchanged budgetary policy, a GDP growth rate of 1.1% in 2014 and 1.5% in 2015 for the Belgian economy. This forecast was established against the background of euro area economic growth amounting to 0.8% and 1.3% respectively.*

*Recent forecasts of the European Commission (October) and the OECD (November) took into account the most recent months' decline in European confidence indicators. As regards the Belgian economy, they incorporated the new regional governments' plans, which were not yet passed into law in September, as well as measures announced by the new federal government, which was formed in the first half of October. As a result, both institutions project a more subdued economic recovery for the euro area and for Belgium (see p. 5).*

*The FPB's next short-term forecast for the Belgian economy will be published in February 2015. In the meantime, we have revised our inflation estimate considerably downwards. Belgian headline inflation, as measured by the national index of consumer prices, should amount to only 0.3% in both 2014 and 2015. This mainly reflects lower oil prices, but also stems from measures of the federal government agreement that could influence (underlying) inflation in a significant way (e.g. the wage indexation jump and the continuation of wage moderation).*

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FPB activities are primarily focused on macroeconomic forecasting, analysing and assessing policies in the economic, social and environmental fields.



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All FPB publications, mentioned in this STU, can be obtained either by sending a fax (+32 2 5077373) or by filling in the necessary form on our Internet site (<http://www.plan.be>).

## Domestic demand patterns in Belgium since the mid-nineties: more French than German?

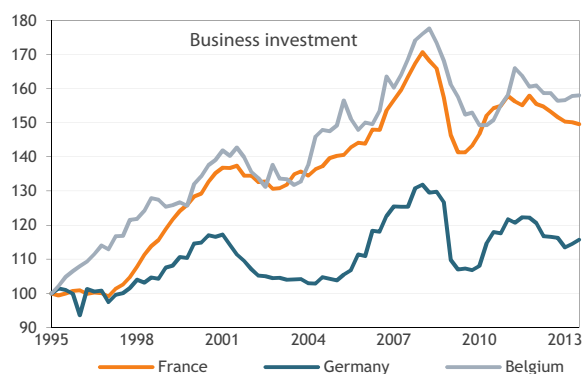
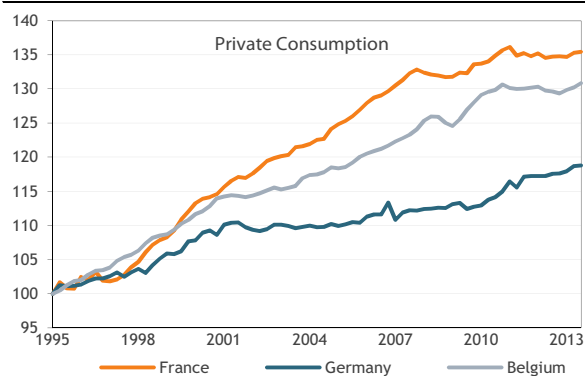
In a previous Special Topic (see STU 4-11), we examined the performance of Belgian GDP relative to its three main trading partners since the onset of the financial crisis. This time we put recent domestic demand patterns into perspective by comparing, over a longer period, the evolution of private consumption and business investment in Belgium to those in France and Germany. In addition to the purely descriptive analysis, we also try to identify, through the estimation of co-integrating equations, the underlying factors behind the developments of both demand components under scrutiny. We investigate in particular two sub-periods: the decade preceding the financial crisis (1998-2007) and the following five years (2008-2012).

### Evolution of private consumption and business investment<sup>1</sup>

Between 1995 and 1999, private consumption in Belgium and France grew on average at a very similar pace. It became more dynamic in France in the following years, reaching a cumulative growth differential of about 9% in 2007. This gap has been progressively reduced to around 5% since the financial crisis. In Germany, private consumption grew much more slowly until the outbreak of the crisis; however, the maximum differential of 16% with Belgium has been reduced by 4 %-points over recent years.

Business investment had very similar evolution in France and Belgium until the crisis, but has stood up somewhat better in Belgium in recent times. Following the reunification boom, German business investment growth has been much more subdued over the whole period, with no recent signs of convergence despite the recovery.

**Graph 1 - Private consumption and business investment**  
Volume, 1995Q1=100



To be complete, note that the story for exports (not dealt with this Special Topic) is exactly the opposite, with France and Belgium both recording very low performances compared to Germany.

### Key factors behind these evolutions

In a recent working paper, we investigated econometrically the underlying factors behind private consumption and business investment developments<sup>2</sup>. More specifically, we estimated for the three countries under review a co-integrating equation postulating an equilibrium relationship relating both demand components to a selection of medium-term determinants.

According to our estimates, there is evidence of a strong link between consumption and real disposable income for the three countries. The income elasticity is slightly above 1 in Germany and stands at about 0.85 in France and Belgium. We found no indication that financial wealth has a statistically significant influence on consumption in Germany and it only has a small effect in France and Belgium. Real house prices play a (limited) role only in Germany and are negatively signed, which may be explained by the low levels of house ownership in this country. Higher house prices may also imply a larger mortgage debt service. Finally, a decline of 1 %-point in the German unemployment rate is found to improve consumption by about 0.3% in the medium-term.

As postulated by the accelerator model, business investment behaviour is largely driven by output developments. The medium-term elasticity to private value added is very similar in all three countries and stands at 1.4. While non-significant for Germany, both France and Belgium post elasticities to the cost of capital that are slightly below unity. The estimates suggest an almost

1. In this study, the quarterly national accounts used date back from Spring 2014, i.e. before the switch to the ESA 2010.

2. Lebrun I. and Pérez Ruiz E., "Demand Patterns in France, Germany, and Belgium: Can We Explain the Differences?", IMF Working Paper nr 165, September 2014.

one-to-one relationship between investment and firms' profit margins in France, but the effect on the former is clearly more limited in Germany (0.6) and even more so in Belgium (0.2). The ratio of total liabilities to equity is negatively signed in the three countries, suggesting that elevated corporate leverage is associated with weak investment. A 1% increase in this ratio dampens investment by 0.2% in France and Germany and up to 0.3% in Belgium. In addition to common determinants, other country-specific factors have acted as drags on investment in both Belgium and Germany, which are captured by a negative time trend.

### Contributions of explanatory variables

Multiplying the average annual growth rate of each explanatory variable by its regression coefficient allows its contribution to private consumption or business investment growth to be computed. The contributions presented below are divided into two sub-periods: the decade preceding the financial crisis (1998-2007) and the following five years (2008-2012).

For the period 1998-2007, differences in private consumption growth are mainly related to real disposable income, which increased significantly more in France and Belgium than in Germany. Financial wealth effects added somewhat to the positive growth differential of France and Belgium vis-à-vis Germany. During and after the crisis, private consumption growth amounted to around 1% per year on average in Belgium and Germany. They clearly outperformed France, which suffered from less dynamism in disposable income. Despite the higher elasticity in Germany, disposable income posted a higher contribution in Belgium. However, German consumption received an additional boost from the decline in its unemployment rate, while it was pulled down slightly by a negative income effect stemming from the rise in house prices.

**Table 1 - Contributions to private consumption growth (in percentage points, annual average)**

	Private consumption (growth in volume)	Contributions:			
		Disposable income	Financial wealth	House prices	Unemployment rate
<b>Belgium</b>					
1998-2007	1.6	1.6	0.1		
2008-2012	1.1	1.0	0.0		
<b>France</b>					
1998-2007	2.5	2.1	0.4		
2008-2012	0.5	0.4	0.0		
<b>Germany</b>					
1998-2007	0.8	0.9		0.0	0.0
2008-2012	1.0	0.8		-0.1	0.3

Contributions of equation residuals represent less than 0.1 %-point for each period average and are not shown here.

About half of the lower growth in business investment recorded in Belgium (3.7%) compared to France (4.8%)

during the period 1998-2007 can be explained by less robust growth in private value added (recall that elasticities in both countries are almost identical). The large negative investment growth differential experienced by Germany vis-à-vis both neighbours (respectively 1.1 and 2.2 %-points) cannot be explained by the variables included in our equations. One important factor put forward by several authors to explain the sluggish capital formation in Germany is that corporations started to redirect investment from the domestic economy to international locations, off-shoring production and creating supply chains, particularly in low-cost Eastern Europe upon the eastward expansion of the European Union.

While the negative investment growth in France (-0.8%) during the period 2008-2012 is entirely explained by the stagnation in value added and the deterioration in financing conditions and profitability, a similar performance for Belgium is only poorly described by the traditional determinants. Industry offshoring, for instance in the automotive industry, is likely to have weighed on Belgian investment during this period. We also found some empirical evidence that both confidence and uncertainty effects have contributed to the drop in the investment rate over 2009-2010 in Belgium (for details, see the working paper). According to the explanatory variables identified, German business investment should have stagnated since the outbreak of the crisis, but in fact it declined even more (-1.1% on average) than in France and Belgium.

**Table 2 - Contributions to business investment growth (in percentage points, annual average)**

	Business investment (growth in volume)	Contributions:				
		Private value added	Cost of capital	Corporate leverage	Gross operating surplus	Unexplained
<b>Belgium</b>						
1998-2007	3.7	3.2	0.3	0.5	0.1	-0.5
2008-2012	-0.8	0.6	0.7	0.0	-0.1	-2.0
<b>France</b>						
1998-2007	4.8	3.7	0.2	0.5	0.1	0.3
2008-2012	-0.8	0.0	0.4	-0.3	-0.8	0.0
<b>Germany</b>						
1998-2007	2.5	3.0		0.3	0.6	-1.3
2008-2012	-1.1	0.9		-0.2	-0.6	-1.2

The unexplained part includes the contributions of the equation residuals and of the time trend (for DE and BE).

To sum up, during the decade preceding the crisis, domestic demand patterns in Belgium were somewhat less dynamic than those in France but clearly more vigorous than in Germany. Since the crisis, similar weak performances in business investment have been recorded in all three countries, while Belgian and German private consumption have shown extra resilience due to more favourable developments in disposable income or on the labour market.

## Summary of Economic Forecasts

### Economic forecasts for Belgium by different institutes

	GDP growth		Inflation		Government balance		Date of update
	2014	2015	2014	2015	2014	2015	
Federal Planning Bureau	1.1	1.5	0.6 <sup>[1]</sup>	1.3 <sup>[1]</sup>	.	.	09/14
INR/ICN	1.1	1.5	0.6	1.3	.	.	09/14
National Bank of Belgium	1.0	0.9	0.6	0.8	-3.2	-2.5	12/14
European Commission	0.9	0.9	0.6	0.9	-3.0	-2.8	11/14
OECD	1.0	1.4	0.6	0.7	-2.9	-2.1	11/14
IMF	1.0	1.4	0.7	1.0	-2.6	-2.2	10/14
ING	1.1	1.5	0.5	0.9	-2.4	-1.8	09/14
BNP Paribas Fortis	1.0	0.8	0.6	0.7	-2.9	-2.4	11/14
Belfius	1.4	1.7	0.9	1.3	-2.2	-1.5	06/14
KBC	1.0	1.4	0.4	0.8	.	.	11/14
Deutsche Bank	0.9	0.7	0.6	1.0	-2.8	-2.9	11/14
Oxford Economics	1.0	1.2	0.4	0.9	-2.3	-2.2	11/14
IRES	1.1	1.6	0.4	1.1	-2.5	-2.8	10/14
Belgian Prime News	1.1	1.5	0.8	1.2	-2.5	-2.3	09/14
Consensus Economics	1.0	1.3	0.6	1.2	.	.	11/14
Consensus The Economist	1.1	1.2	0.6	1.0	.	.	12/14
Consensus Wirtschaftsinstitute	1.0	1.3	0.7	0.8	-2.6	-2.8	10/14
<b>Averages</b>							
All institutions	1.0	1.3	0.6	1.0	-2.7	-2.4	
International public institutions	1.0	1.2	0.6	0.9	-2.8	-2.4	
Credit institutions	1.1	1.3	0.6	1.0	-2.6	-2.2	

[1] In the meantime, inflation forecasts have been revised considerably downwards. See page 13 for further information.

### Economic forecasts for the euro area by different institutes

	GDP growth		Inflation		Government balance		Date of update
	2014	2015	2014	2015	2014	2015	
European Commission	0.8	1.1	0.5	0.8	-2.6	-2.4	11/14
OECD	0.8	1.1	0.5	0.6	-2.6	-2.3	11/14
IMF	0.8	1.3	0.5	0.9	-2.9	-2.5	10/14
ING	0.8	1.3	0.6	1.1	-2.5	-2.1	09/14
BNP Paribas Fortis	0.8	0.8	0.5	0.5	-2.6	-2.4	11/14
Belfius	1.2	1.7	0.8	1.2	.	.	06/14
KBC	0.8	1.3	0.4	1.0	.	.	11/14
Deutsche Bank	0.7	0.8	0.5	0.8	-2.6	-2.5	11/14
Morgan Stanley	0.8	1.2	0.6	1.2	-2.7	-2.3	09/14
Oxford Economics	0.8	1.2	0.5	0.7	-2.5	-2.1	11/14
Consensus AIECE	0.8	1.4	0.7	1.1	-2.5	-2.2	11/14
Consensus Economics	0.8	1.1	0.5	0.9	.	.	11/14
Consensus The Economist	0.8	1.1	0.5	0.8	.	.	12/14
Consensus Wirtschaftsinstitute	0.8	1.1	0.5	0.7	-2.7	-2.5	10/14
<b>Averages</b>							
All institutions	0.8	1.2	0.5	0.9	-2.6	-2.3	
International public institutions	0.8	1.2	0.5	0.8	-2.7	-2.4	
Credit institutions	0.8	1.2	0.6	0.9	-2.6	-2.3	

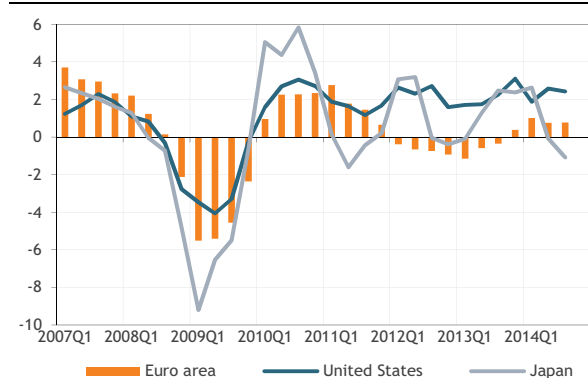
## General economic activity

**Table 1 - GDP growth rates (in %) [1]**

	2012		2013		YoY growth rates, in %					QoQ growth rates, in %				
	2012	2013	2013Q3	2013Q4	2014Q1	2014Q2	2014Q3	2013Q3	2013Q4	2014Q1	2014Q2	2014Q3		
Germany	0.6	0.2	0.3	1.1	2.3	1.4	1.2	0.3	0.5	0.8	-0.1	0.1		
France	0.4	0.4	0.3	0.8	0.8	0.0	0.4	-0.1	0.2	0.0	-0.1	0.3		
Netherlands	-1.6	-0.7	-0.6	0.8	0.1	1.1	1.0	0.2	0.6	-0.3	0.6	0.2		
Belgium	0.1	0.3	0.6	0.6	1.2	1.0	0.9	0.4	0.2	0.4	0.1	0.3		
Euro area	-0.7	-0.4	-0.3	0.4	1.0	0.8	0.8	0.1	0.3	0.3	0.1	0.2		
United States	2.3	2.2	2.3	3.1	1.9	2.6	2.4	1.1	0.9	-0.5	1.1	1.0		
Japan	1.5	1.5	2.5	2.4	2.6	-0.1	-1.1	0.6	-0.4	1.6	-1.9	-0.4		

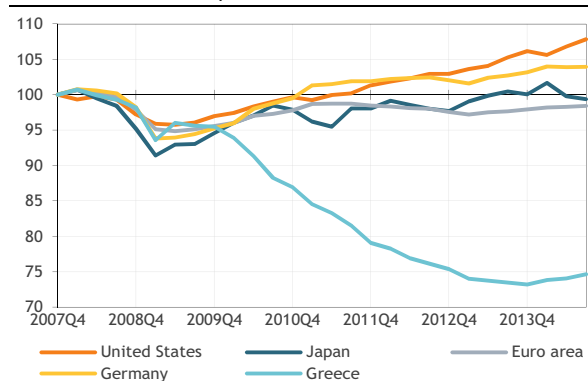
[1] Adjusted for seasonal and calendar effects  
Source: INR/CN, National sources, Eurostat

**Graph 1 - GDP growth (YoY growth rates, in %)**



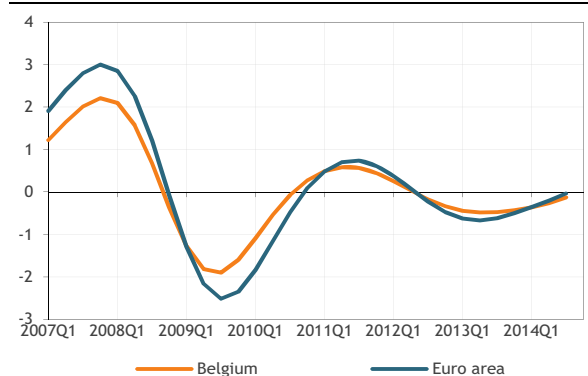
Source: Eurostat, National sources

**Graph 2 - GDP since the onset of the financial crisis (indices, 2007Q4=100)**



Source: Eurostat, National sources

**Graph 3 - GDP business cycle (deviation from trend in %)**



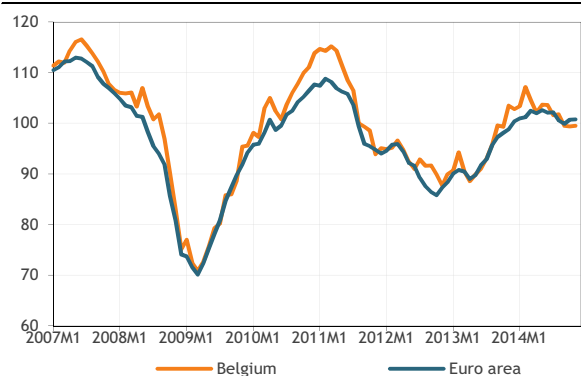
Source: INR/CN, Eurostat, FPB

Except for a dismal 2014Q1, when the exceptionally cold winter weather temporarily depressed economic activity, the US economy has been growing at a robust pace since mid-2013. Following a rise of 1.1% in the previous quarter, economic growth amounted to 1.0% in 2014Q3. Private consumption, business investment, government consumption and net trade contributed positively to economic growth, while inventories weighed on GDP growth in the third quarter of 2014. Considering the steady decline in the unemployment rate (now below 6%), positive wealth effects (from rising house and stock prices), high levels of confidence in the manufacturing and services sectors and a continuous improvement of consumer confidence (to its highest level since 2007), the GDP growth outlook for the US economy remains quite favourable. For the US economy to accelerate further and to become an engine of global growth, wage growth (which has remained subdued so far) ought to accelerate and firms ought to become more willing to invest. Consensus estimates bank on an acceleration of US GDP growth to 3% in 2015, following 2.2% in 2014.

In 2014Q1, the Japanese economy soared by 1.6% (qoq) on the back of a surge in private consumption, as Japanese consumers frontloaded their purchases ahead of a sales tax increase (from 5% to 8%) on April 1st. The carry-forward of consumption led to a stronger than expected decline in 2014Q2 (-1.9%). The subsequent decline of GDP in 2014Q3 (-0.4%), however, came as a complete surprise as the tepid recovery in private consumption (following April's tax rise), exports and public spending was offset by feeble capital spending and a huge cutback in inventories. The stimulus package to mitigate the downward effect of the VAT rate hike on economic activity clearly proved insufficient to avoid the fourth recession since 2008. It now seems likely that the planned increase of the VAT rate (to 10%) will be postponed. GDP growth expectations for this and next year remain accordingly very subdued (at about 1%).

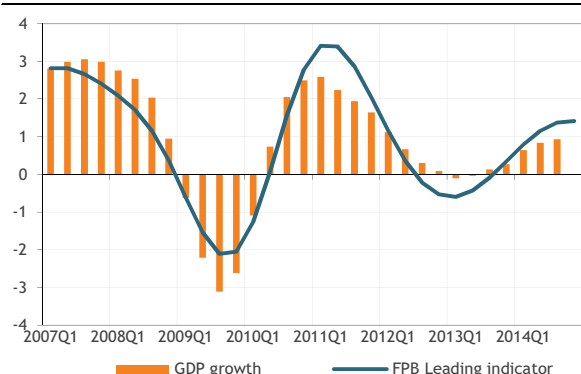


**Graph 4 - Economic sentiment indicator (indices, average 1990-2013=100)**



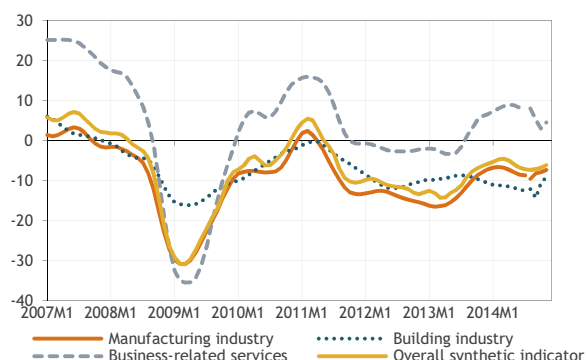
Source: European Commission

**Graph 5 - Belgian GDP growth and leading indicator (YoY growth rates of 4-quarter moving averages)**



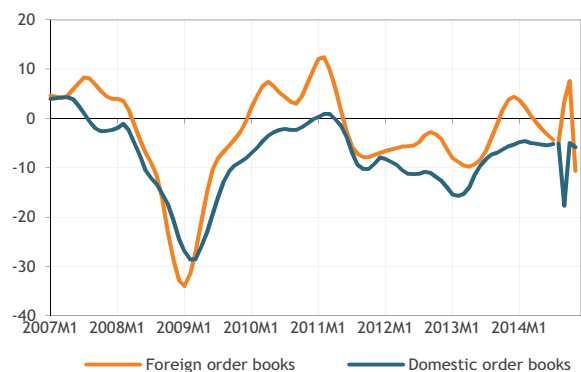
Source: INR/ICN, FPB

**Graph 6 - Belgian business cycle indicator (indices)**



Source: NBB

**Graph 7 - Manufacturing industry: order books (business survey indices)**



Source: NBB

Fears of a recession did not materialize in the euro area as GDP growth continued to grow at a sluggish pace in 2014Q3 (0.2% following 0.1% in the previous quarter). The figures show that the economy of the euro area continues to struggle to expand in the face of several headwinds such as high unemployment rates in many countries (albeit declining slightly), ongoing deleveraging (given high government and/or private debt levels) and a decline in confidence probably related to the geopolitical tensions in Ukraine. The core countries experienced weak growth rates. Germany barely grew by 0.1%, with particular weakness seen in exports and in investment. France's GDP increased by 0.3%, but this was largely the result of a 0.8% leap in government spending, which is unlikely to last. In the periphery, Spain (0.5%) and Greece (0.7%) registered the strongest rates. The strong rise in Greece should be relativized, as it comes in the wake of a cumulative decline of more than 25% in GDP since the financial crisis (see Graph 2).

The euro depreciation, the fall in oil prices and the easing in financing conditions should help propel a moderate growth acceleration of the economy in the euro area going forward. This seems to be tentatively confirmed by leading indicators, which appear to be bottoming out. In the latest forecasts of the European Commission, GDP growth in the euro area is expected to accelerate from 0.8% in 2014 to 1.1% in 2015.

Belgian GDP growth accelerated to 0.4% in 2014Q1. This was partly due to activity in the building sector, which benefited from the mild winter. Economic growth slowed down again to 0.2% on average in 2014Q2 and 2014Q3. This profile matches the development of the Economic Sentiment Indicator (ESI) for Belgium (Graph 4), which reached its highest level since 2011 by the beginning of 2014 and weakened afterwards. The decline in the ESI was due to the evolution of confidence of both company directors (Graph 6) and consumers (Graph 10). Graph 7 shows that business confidence suffered more from a lack of foreign demand than from weak domestic demand. Recently, however, confidence in the manufacturing industry, which is generally crucial for overall confidence, seems to be recovering. As this tentative improvement is mainly driven by demand expectations, the development of foreign demand will be crucial for economic growth during the coming quarters. The FPB leading indicator for GDP (Graph 5) points to an acceleration of economic growth in 2014 as compared to 2013, but it is too early to draw conclusions for 2015 as a whole on the basis of this indicator.

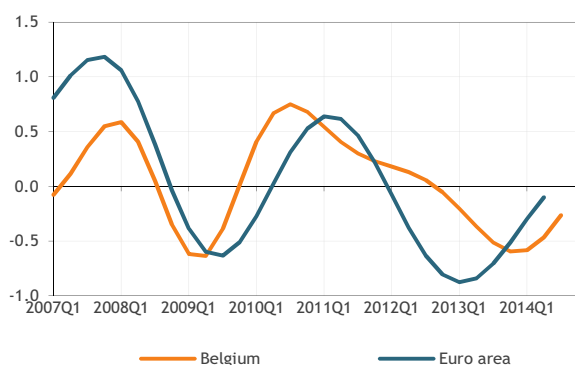
## Private consumption

**Table 2 - Private consumption indicators**

	2012	2013	2013Q4	2014Q1	2014Q2	2014Q3	2014M6	2014M7	2014M8	2014M9	2014M10	2014M11
New car registrations [1]	-14.9	-0.1	-3.4	-0.4	-1.0	0.7	-0.3	1.1	-4.1	4.3	-3.5	-7.1
Consumer confidence indicator [2]	-15.8	-14.4	-5.7	-5.3	-7.3	-10.7	-7.0	-10.0	-11.0	-11.0	-12.0	-14.0

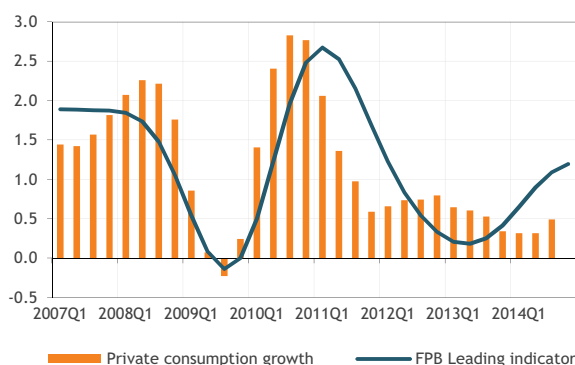
[1] Change (%) compared to same period previous year; [2] Qualitative data  
Source: NBB, Febiac

**Graph 8 - Private consumption cycle (deviation from trend, in %)**



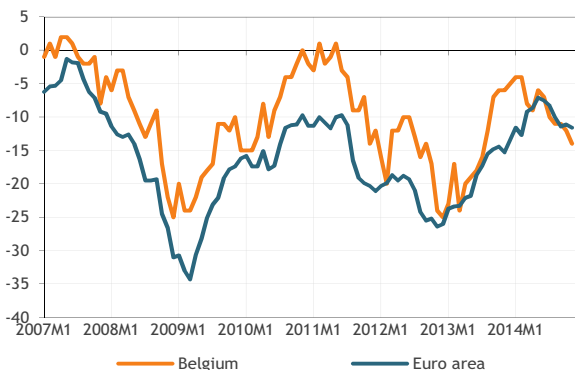
Source: INR/ICN, Eurostat, FPB

**Graph 9 - Private consumption growth and leading indicator (YoY growth rates of 4-quarter moving averages)**



Source: INR/ICN, FPB

**Graph 10 - Consumer confidence: international comparison (indices)**



Source: NBB, European Commission

The cyclical component of an economic series (e.g. the private consumption cycles in Graph 8) exhibits the deviation of the actual value of a series from its trend value, measured as a percentage of the trend value. This implies that an increase in the cycle of an economic series points to growth rates that are on average higher than trend growth and vice versa. The euro area private consumption cycle has been increasing since the beginning of 2013. During this period, the Belgian cycle declined and it only bottomed out very recently. However this does not necessarily mean that private consumption growth has been lower in Belgium than in the euro area, as private consumption growth amounted to 0.1% per quarter on average in both areas. The divergent development in both cycles is to be found in the longer-term average of private consumption growth, which can be seen as a measure for trend growth. Over the last six years, consumption has increased by 1.1% per year on average in Belgium, while it has decreased by 0.3% per year in the euro area. This growth differential is not only due to the fact that Belgium, being one of the euro area core countries, has suffered less from the Great Recession than many countries in the periphery of the euro area, but also to the stronger increases in real disposable income of households in Belgium (see also the Special Topic of this STU).

According to the national accounts published in September, Belgian private consumption grew by 0.3% in 2013. As private consumption on a quarterly basis did not increase in the course of the year, the (meagre) growth rate for 2013 as a whole was solely due to a positive carry-over from 2012. With a decrease in real disposable income in 2013 (-0.2%), private consumption was only supported by a decline in the saving rate, which was related to an improvement in consumer confidence.

Consumer confidence declined quite heavily over recent months. The loss of confidence was larger in Belgium than in the euro area, especially with respect to the evaluation of expectations for the economic situation in the near future. This does not bode well for private consumption during the next quarters, although the robust qoq growth rates (0.4% on average during 2014Q1-Q3) should lead to an acceleration in annual growth in 2014.

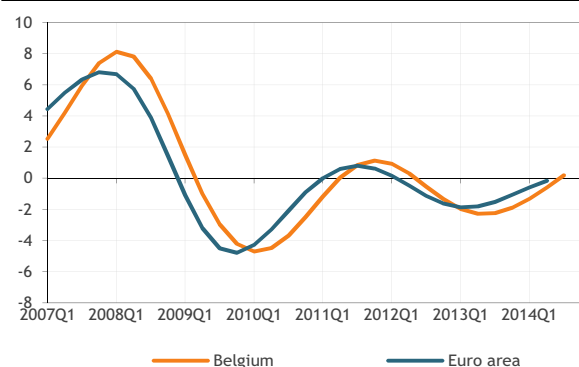
## Business investment

Table 3 - Business investment indicators

	2012	2013	2014	2013Q4	2014Q1	2014Q2	2014Q3	2014M7	2014M8	2014M9	2014M10	2014M11
Business survey, capital goods [2]												
Synthetic indicator	-8.7	-8.5	.	-2.7	-7.9	-10.3	-9.4	-8.1	-13.5	-6.6	-15.3	-14.2
Order book appraisal	-29.7	-23.7	.	-12.9	-14.0	-28.1	-22.5	-23.4	-26.2	-17.9	-35.0	-25.1
Demand forecasts	-4.0	-0.6	.	-0.3	-2.3	3.9	-4.9	-6.6	-10.7	2.6	-6.4	-7.4
Investment survey [1]	3.7	-1.9	21.0									
Capacity utilisation rate (s.a.) (%)	76.7	76.8	.	78.9	79.1	79.0	78.8					

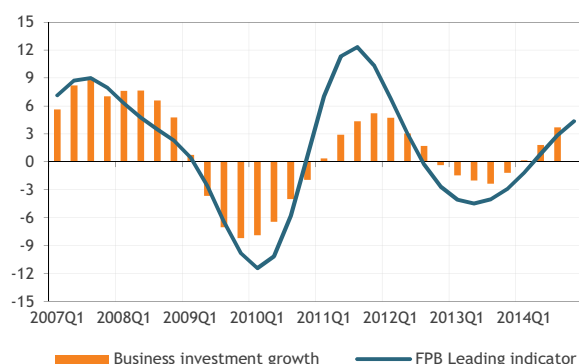
[1] Change (%) compared to same period previous year; [2] Qualitative data  
Source: NBB

Graph 11 - Business investment cycle (deviation from trend, in %)



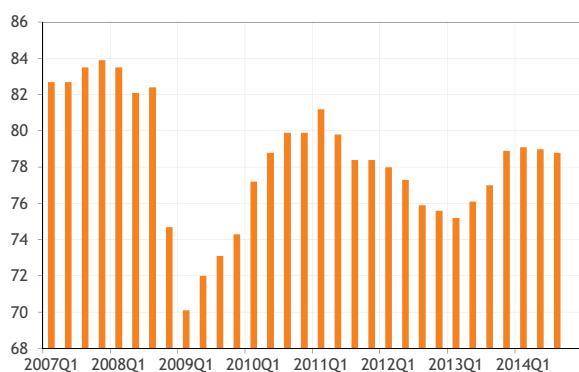
Source: INR/ICN, Eurostat, FPB

Graph 12 - Business investment growth and leading indicator (YoY growth rate of 4-quarter moving averages)



Source: INR/ICN, FPB

Graph 13 - Capacity utilisation in manufacturing industry (rate of capacity utilisation, in %)



Source: NBB

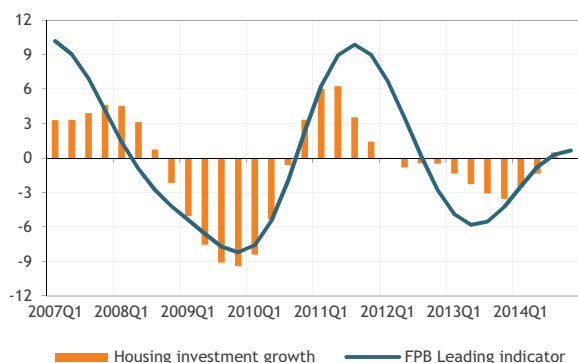
The Belgian and the euro area investment cycles have been very flat as compared to the pronounced cycles seen before and during the financial crisis. Since 2011 they have been close to zero, indicating that investment developed in line with its trend. In the case of the euro area, investment declined by 1.4% per year on average from 2011 to 2013, whereas Belgian business investment increased by 1.2% per year during the same period. This divergence is consistent with economic growth differentials as GDP grew by 0.2% and 0.7% per year on average in the euro area and Belgium respectively between 2011 and 2013.

According to the latest national accounts, Belgian qoq business investment growth accelerated from 0.3% per quarter on average in the course of 2013 to 2.1% per quarter during the first three quarters of 2014. These stronger growth rates are expected to continue during the next quarters as they are partially related to the investment programme of a Belgian tanker company that is significantly expanding its fleet. During the first two quarters of 2014, almost half of the quarterly increase of business investment was related to this company's acquisition of vessels. It should be noticed that this phenomenon has no impact on GDP as it goes hand in hand with an equivalent increase in imports. According to the tanker company, deliveries of vessels should continue until mid-2015.

Having recovered from 14.5% in 2010 to 15.2% in 2011, the Belgian business investment rate (business investment as a percentage of GDP at current prices) fell again to 14.8% in 2013. This was mainly due to a decline in business confidence and capacity utilisation rates, which were both stuck at rather low rates. Even if these indicators improved during the second half of 2013, their evolution since then has been hesitant of late, leading to the postponement of investment decisions. This is being felt in the capital goods sector, where indicators (see Table 3) have worsened significantly since 2013Q4. Moreover, the lack of dynamism in investment is seen throughout Europe.

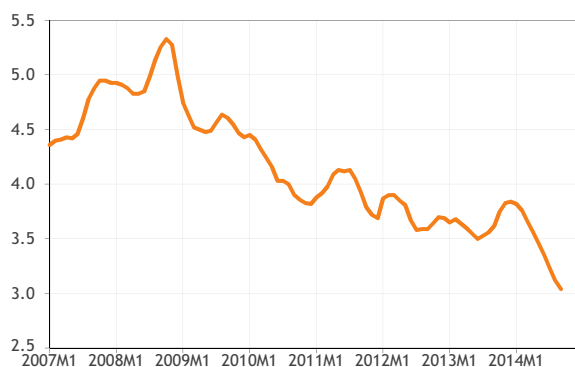
## Housing investment

**Graph 14 - Housing investment growth and leading indicator**  
(YoY growth rates of 4-quarter moving averages)



Source: INR/ICN, FPB

**Graph 15 - Mortgage rate (over 10 years initial rate fixation, in %)**



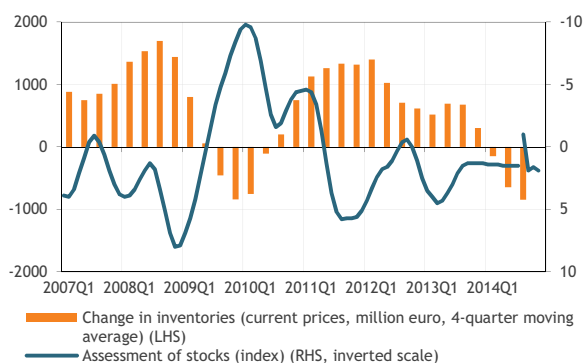
Source: NBB

Belgian residential investment contracted strongly for the fourth time over the last six years in 2013 (-3.5%), and reached a level that is nearly 11% below its peak in 2007. This pushed down the nominal residential-investment-to-GDP ratio from 5.8% in 2007 and (due to relative price effects) 6% in 2008 to 5.3% in 2013, which is close to its average since 1995. During that period, a minimum was reached in 2002 (4.2%).

Housing investment dragged down economic growth until 2013Q3, after which a recovery started. The end of the downturn is confirmed by the FPB leading indicator, which reached a trough by the end of 2012. The indicator points to a further but modest pick-up in the residential investment growth cycle. Some of the components of the FPB leading indicator (information from the architects' survey and the total value of mortgage applications) lead the development of housing investment by three to four quarters. Housing investment should be supported by the historically low (nominal) mortgage rate, but the impact of recent policy adjustments in the field of tax incentives, such as a more limited deductibility of mortgage loans in the Flemish Region, remains to be seen.

## Stock building

**Graph 16 - Stock building indicators**



Source: INR/ICN, NBB

As changes in inventories can take on positive as well as negative values, the series that can be calculated using chain-linked volume indices does not provide any useful information and is no longer published in the quarterly national accounts. Therefore, changes in inventories are only shown at current prices in Graph 16. However, their contribution to real GDP growth can be derived as a residual, taking the contributions of other demand components to economic growth into account.

Against the background of weak demand, changes in inventories dragged down economic growth by 0.7 %-point in 2012 and by 0.5 %-point in 2013. This drag should become much smaller in 2014. Business confidence has improved and fewer entrepreneurs have been considering their stock levels as excessive since 2013Q2.

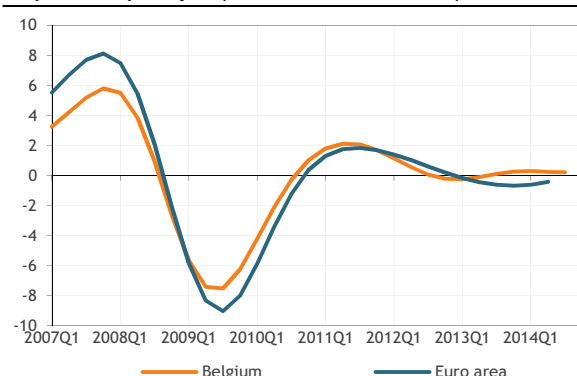
## Foreign trade

Table 4 - Belgium - Trade statistics (goods, intra/extrastat, national concept)

	2012	2013	2013Q3	2013Q4	2014Q1	2014Q2	2014M3	2014M4	2014M5	2014M6	2014M7	2014M8
Exports - value [1]	1.4	2.0	5.0	4.9	2.9	2.4	-0.2	3.6	-1.9	5.5	-1.3	-0.5
Imports - value [1]	1.6	0.9	3.2	1.0	0.2	0.7	-1.3	1.5	-2.0	2.6	0.1	0.8
Exports - volume [1]	-1.7	2.1	4.7	6.0	3.8	2.6	0.9	5.4	-2.6	5.3	-0.6	0.4
Imports - volume [1]	-3.2	1.1	4.4	2.2	1.9	2.6	1.0	5.1	-1.4	4.0	1.8	0.7
Exports - price [1]	3.2	0.0	0.3	-1.0	-0.9	-0.2	-1.1	-1.7	0.7	0.2	-0.7	-0.8
Imports - price [1]	4.9	-0.2	-1.2	-1.1	-1.6	-1.8	-2.2	-3.4	-0.6	-1.3	-1.7	0.1

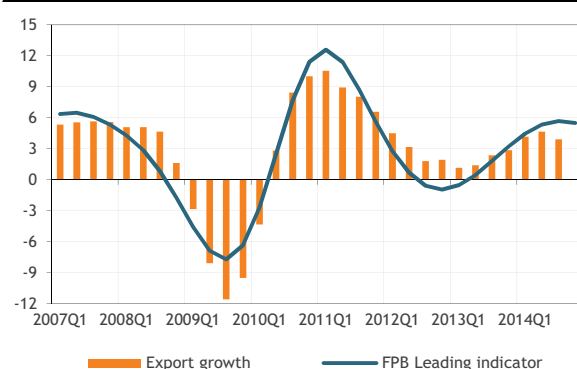
[1] Change (%) compared to same period previous year  
Source: INR/ICN

Graph 17 - Export cycle (deviation from trend, in %)



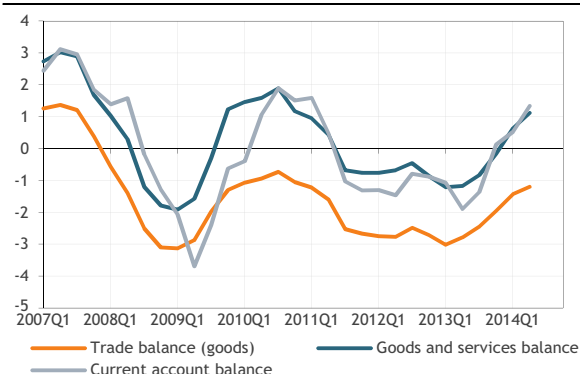
Source: INR/ICN, Eurostat, FPB

Graph 18 - Export growth and leading indicator (YoY growth rate of 4-quarter moving averages)



Source: INR/ICN, FPB

Graph 19 - Belgian foreign balances (4-quarter cumul, % of GDP)



Source: INR/ICN, NBB, FPB

After the post-financial crisis bounce, the Belgian and European export cycles declined between mid-2011 and end-2012 as the sovereign debt crisis pushed the euro area in recession. Ever since that moment both export cycles have remained close to their trend, with barely any change in direction or difference between them discernible. This is basically in line with the evolution of world trade growth, which has mostly moved sideways over this period.

Within the euro area, export performances have differed widely. Since the start of 2013, exports have proved to be especially strong in Ireland, Portugal, Greece and Spain as these countries made headway in cutting labour costs and became more competitive. This was not the case in Italy, however, leading to more subdued export growth. The weakest export growth rates, however, were registered in Finland and Austria. Belgian export growth over these quarters slightly outpaced the euro area average.

In the latest version of the Belgian national accounts (in ESA 2010), export growth was substantially revised upwards for 2013 (2.9%, or 1 %-point higher than previously mentioned).

This year, Belgian exports declined by 0.7% in 2014Q1 and subsequently soared by 2.5% in 2014Q2. This surge in exports is difficult to reconcile with the feeble GDP growth seen in the euro area. Monthly figures suggest that Belgian exports could drop significantly in 2014Q3. Beyond that, exports ought to grow again in line with the expected moderate acceleration of economic growth in the euro area.

Balance of payment figures have also been revised substantially as the current account balance is now estimated at 0.5 billion (+0.1% of GDP) in 2013. This year, the current account balance should further improve as net exports should contribute positively to economic growth and international oil prices decline. In spite of a slide in the euro exchange rate, oil prices in euro were some 20% lower in November compared to the same month last year.

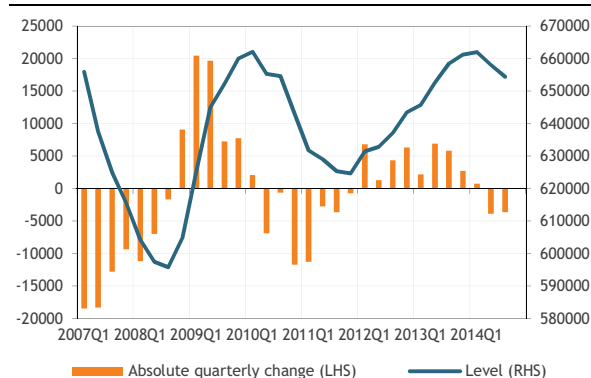
## Labour market

**Table 5 - Labour market indicators**

	2012	2013	2013Q4	2014Q1	2014Q2	2014Q3	2014M5	2014M6	2014M7	2014M8	2014M9	2014M10
Unemployment [1][2]	636.3	654.5	661.2	662.0	658.1	654.5	657.9	656.9	655.4	653.9	654.2	653.9
Unemployment rate [2][3]	12.1	12.4	12.5	12.5	12.4	12.4	12.4	12.4	12.4	12.4	12.4	12.3
Unemployment rate-Eurostat [3][4]	7.6	8.4	8.5	8.4	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.6

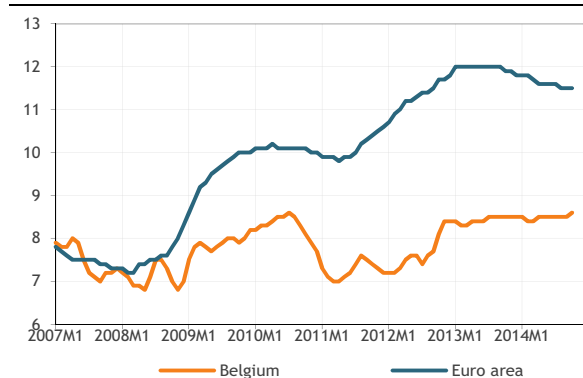
[1] Level in thousands, s.a.; [2] Broad administrative definition; [3] In % of labour force, s.a.; [4] Recent figures are based on administrative data and may be subject to revision  
 Source: RVA/ONEM, FPS Employment, Eurostat, FPB

**Graph 20 - Evolution of unemployment (incl. older) (number of persons, seasonally adjusted figures)**



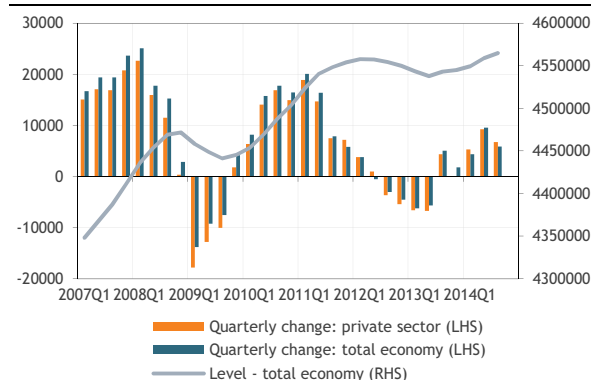
Source: RVA/ONEM

**Graph 21 - Harmonised unemployment rates (in % of labour force)**



Source: Eurostat

**Graph 22 - Evolution of domestic employment (number of persons, seasonally adjusted figures)**



Source: INR/ICN

Private sector employment growth turned positive in the second half of last year (qoq growth rate of 0.1% on average) and picked up further during the first three quarters of this year (0.2% growth on average). Nevertheless, the industry breakdown still presents a mixed picture. Employment through interim services has clearly increased and is now almost reaching the levels observed in the first half of 2011. Moreover, in trade and road transport employment growth has recently turned positive. On the other hand, manufacturing industries continue to shed jobs at a virtually unchanged pace. In addition, ongoing job losses in construction are particularly worrisome. Employment in construction had showed remarkable resilience in the years immediately following the 2008 financial crisis, but has entered into a period of steep decline since the beginning of 2012. Over the last two years and a half, 5.5% of salaried employment has been lost in this industry.

The gradual improvement in overall employment growth has had a favourable impact on the unemployment figures. Broad administrative unemployment continued to increase, but at a slower pace since 2013Q3 and even started to fall considerably during the second and third quarters of this year. The unemployment rate reached a peak of 12.5% in 2014Q1, but has currently fallen to 12.3%. However, the data for the last couple of months show a near standstill in the unemployment evolution, suggesting that the pace of job creation may be slowing down.

The labour force grew by a mere 0.1% in 2013, which is the combined result of a significant decrease in the growth in the population of working age and a slight decline in the overall activity rate. Although activity rates in the older age bands increased substantially, this was more than offset by continuing downward pressure on participation in the younger and middle age bands. Growth in the labour force this year seems to be picking up slightly. Although the momentum of the increase in the population of working age is expected to drop further, this should be more than compensated by the further boost that is given to activity rates in the older age brackets following the previous government's measures aimed at tightening entry conditions for various early retirement schemes.

## Prices

**Table 6 - Inflation rates: change compared to the same period in the previous year (in %)**

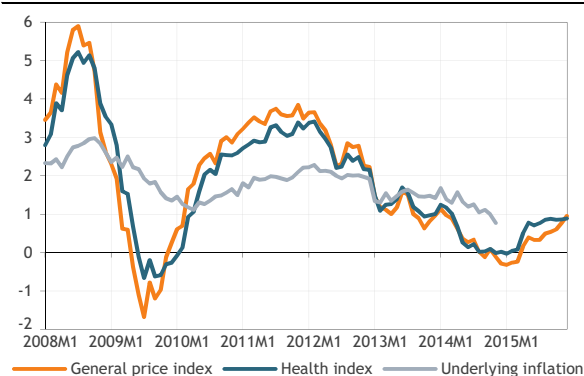
	2012	2013	2013Q4	2014Q1	2014Q2	2014Q3	2014M6	2014M7	2014M8	2014M9	2014M10	2014M11
Consumer prices: all items	2.84	1.11	0.80	1.00	0.42	0.08	0.27	0.33	0.02	-0.12	0.09	-0.11
Food prices	2.99	3.62	2.28	1.19	-0.11	-0.59	-0.78	0.01	-0.72	-1.07	-1.19	-0.88
Non food prices	2.74	-0.80	-1.15	-0.33	-1.02	-1.32	-0.77	-1.11	-1.24	-1.62	-1.10	-1.28
Services	3.17	2.31	2.66	2.50	2.43	1.97	1.99	2.14	1.73	2.04	1.97	1.46
Rent	1.52	1.28	1.38	2.16	2.04	2.10	2.05	2.14	2.01	2.15	2.11	2.07
Health index	2.65	1.24	0.97	1.15	0.36	0.09	0.14	0.22	0.02	0.03	0.10	-0.01
Brent oil price in USD (level)	111.7	108.7	109.4	108.3	109.7	102.0	111.8	106.9	101.6	97.3	87.4	79.0

Source: FPS Economy, Datastream

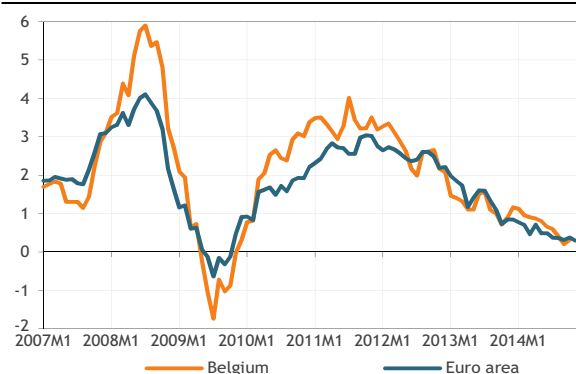
**Table 7 - Monthly inflation forecasts**

	2014M1	2014M2	2014M3	2014M4	2014M5	2014M6	2014M7	2014M8	2014M9	2014M10	2014M11	2014M12
Consumer prices: all items	100.50	100.66	100.72	100.41	100.30	100.38	100.55	100.17	100.09	100.22	100.09	100.07
Consumer prices: health index	100.60	100.75	100.79	100.44	100.29	100.34	100.46	100.12	100.06	100.28	100.28	100.43
Moving average health index	100.37	100.51	100.64	100.65	100.57	100.47	100.38	100.30	100.25	100.23	100.19	100.26
	2015M1	2015M2	2015M3	2015M4	2015M5	2015M6	2015M7	2015M8	2015M9	2015M10	2015M11	2015M12
Consumer prices: all items	100.18	100.40	100.48	100.58	100.70	100.71	100.88	100.67	100.63	100.83	100.86	101.03
Consumer prices: health index	100.57	100.80	100.87	100.96	101.07	101.05	101.23	100.98	100.94	101.14	101.15	101.32
Moving average health index	100.39	100.52	100.67	100.80	100.93	100.99	101.08	101.08	101.05	101.07	101.05	101.14

Source: Observations (up to 2014M11): FPS Economy; forecasts: FPB

**Graph 23 - Monthly inflation evolution (YoY growth rates, in %)**

Source: FPS Economy, from 14M12 on: forecasts FPB

**Graph 24 - Harmonised inflation rates (YoY growth rates, in %)**

Source: Eurostat

Belgian headline inflation, as measured by the yoy growth rate of the national CPI, declined from well over 3% in 2011 to around 0% in recent months. A large part of this decline is related to the development of energy commodity prices, but other factors (such as increased competition on the gas and electricity markets, the decline in the VAT rate on electricity from 21 to 6% in April 2014 and technical adjustments in the methodology for calculating the national CPI) also contributed to this phenomenon. In the course of 2014, food prices went down due to benign weather conditions and the Russian embargo, while underlying inflation was reduced by a slowdown in unit labour cost growth. Although inflation was slightly negative in September and November, it is exaggerated to consider this as deflation. In fact, deflation is associated with price decreases across a large number of products and services and with negative effects on the real economy due to the postponement of consumption. Belgian inflation is currently pushed down by a limited number of products, while underlying inflation is still clearly positive. Despite measures to limit wage growth (e.g. the so-called 'index jump' that prevents wages and social benefits from rising during the coming years by the health index-related 2% to adjust to the higher cost of living), underlying inflation is even expected to increase gradually in the course of 2015.

According to our latest forecasts, Belgian headline inflation should amount to 0.3% in both 2014 and 2015, while the health index should increase by 0.4% and 0.6% respectively. Social benefits and public wages will not be increased after the crossing of the pivotal index in 2015.

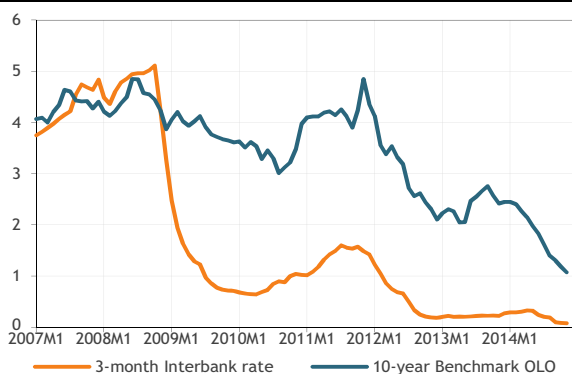
## Interest rates

**Table 8 - Interest rates**

	2012	2013	2013Q4	2014Q1	2014Q2	2014Q3	2014M6	2014M7	2014M8	2014M9	2014M10	2014M11
<b>Short-term money market rates (3 months)</b>												
Euro area (Euribor)	0.57	0.22	0.24	0.29	0.30	0.16	0.24	0.20	0.19	0.10	0.08	0.08
United States	0.43	0.27	0.24	0.24	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Japan	0.19	0.15	0.14	0.14	0.13	0.13	0.13	0.13	0.13	0.12	0.11	0.11
<b>Long-term government bond rates (10 years)</b>												
Belgium	2.99	2.40	2.48	2.37	1.99	1.44	1.83	1.61	1.40	1.30	1.18	1.07
Germany	1.55	1.62	1.79	1.68	1.43	1.06	1.35	1.20	1.02	0.97	0.83	0.80
Euro area	3.22	2.71	2.74	2.49	2.10	1.67	1.97	1.84	1.64	1.53	1.44	1.35
United States	1.78	2.33	2.74	2.75	2.61	2.49	2.59	2.53	2.41	2.52	2.29	2.32
Japan	0.85	0.71	0.64	0.63	0.60	0.53	0.59	0.54	0.51	0.53	0.49	0.47

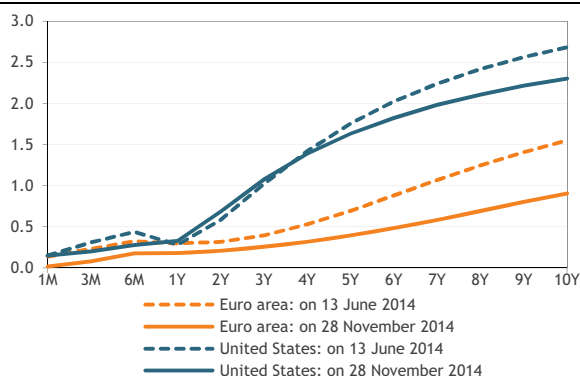
Source: Datastream

**Graph 25 - Interest rate levels in Belgium (in %)**



Source: NBB

**Graph 26 - Yield curves for the euro area and the us (interest rate swap yields, in %)**



Source: Datastream

The continuous slide in inflation in the euro area (to merely 0.3%) and the weakening of economic growth has led the ECB to reduce its main policy rate from 0.25% to 0.05% so far this year. The deposit rate, the rate at which banks are charged for keeping excess liquidity at the ECB, even turned negative (-0.2%). The ECB now also provides cheap loans to banks if the latter promise to lend it to SMEs (TLTROs). Moreover, the ECB has embarked on a large-scale programme of quantitative easing, in which covered bonds and asset-backed securities are being purchased. It has finally suggested it might even start to buy government bonds.

The US Federal Reserve has recently stopped its quantitative easing programme as economic growth firmed after the winter weakness and as unemployment continues to decline at a steady pace. The main policy rate, which has been between 0% and 0.25% over the past six years, might be increased for the first time next year.

Long-term interest rates in both developed and emerging countries have declined steadily in the course of 2014 under the influence of an increasing fear of deflation. The US long-term interest rate declined by some 50 basis points to 2.3%. The decline in the average long-term interest rate in the euro area proved to be much stronger because of the weakness of economic activity and the very low level of inflation. The decline in interest rates was most pronounced in the peripheral countries of the euro area, leading to considerably lower spreads with German bond yields. The spread between Belgian and German 10-year bond yields, e.g., declined to only 30 basis points, coming from almost 300 basis points at the end of 2011. Most European interest rate levels are now at or close to their lowest nominal level in hundreds of years.



## Exchange rates

Table 9 - Bilateral exchange rates

	2012	2013	2013Q4	2014Q1	2014Q2	2014Q3	2014M6	2014M7	2014M8	2014M9	2014M10	2014M11
USD per EUR	1.286	1.328	1.361	1.371	1.371	1.325	1.359	1.353	1.332	1.290	1.267	1.248
UKP per EUR	0.811	0.849	0.841	0.828	0.815	0.794	0.804	0.793	0.797	0.791	0.789	0.791
JPY per EUR	102.7	129.6	136.8	140.8	140.0	137.7	138.8	137.7	137.1	138.4	136.9	145.2

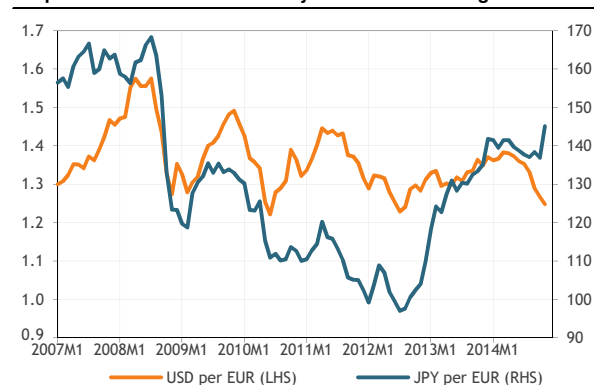
Table 10 - Nominal effective exchange rates (2010=100)

	2012	2013	2013Q4	2014Q1	2014Q2	2014Q3	2014M5	2014M6	2014M7	2014M8	2014M9	2014M10
Euro	93.2	98.4	100.2	100.8	100.2	98.0	100.1	99.3	98.8	98.1	96.8	96.2
Growth rate [1]	-6.1	5.7	1.3	0.6	-0.6	-2.2	-0.8	-0.9	-0.5	-0.7	-1.3	-0.7
US dollar	97.3	100.2	99.9	101.4	100.5	102.1	100.3	100.5	100.3	101.8	104.2	105.9
Growth rate [1]	3.3	2.9	-1.2	1.5	-0.9	1.6	-0.3	0.2	-0.2	1.5	2.4	1.6
Japanese yen	108.4	87.9	84.4	82.6	82.5	82.0	82.8	82.7	83.0	82.6	80.4	80.9
Growth rate [1]	2.6	-18.9	-3.1	-2.1	-0.1	-0.6	0.7	-0.1	0.4	-0.5	-2.6	0.5

[1] Change (%) compared to previous period

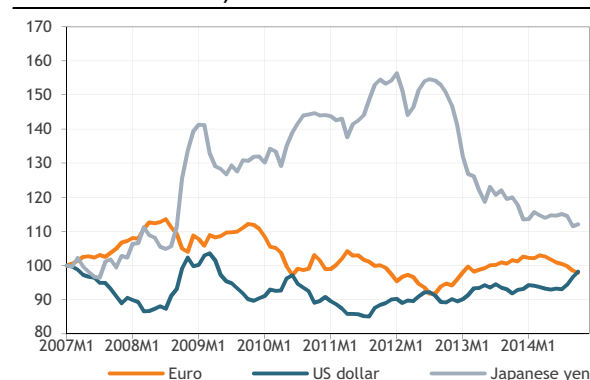
Source: BIS, NBB

Graph 27 - Euro-dollar and euro-yen bilateral exchange rates



Source: NBB

Graph 28 - Nominal effective exchange rates (indices, 2007M1=100)



Source: NBB, BIS

The decreased fear of a break-up of the monetary union and the gradual repayment of the LTRO loans by banks (that reduced the supply of euros and contracted the ECB's balance sheet) led to a substantial appreciation of the euro against the dollar from mid-2012 onwards. This evolution was halted in May of this year as the euro started to depreciate under the influence of disappointingly low growth, the decline in inflation and the corresponding expectation of monetary easing measures by the ECB. Especially, the ECB's promise to start a quantitative easing programme, while in the meantime the US Federal Reserve ended its own programme, accelerated the slide in the euro exchange rate.

Since the start of the year, the euro lost some 9% against the US dollar, comparable to the losses recorded vis-à-vis the Chinese yuan and the Indian rupee. The euro also lost considerable terrain against the British pound, fed by the expectation that monetary policy would be tightened much earlier in the UK (Belgium's fourth most important trading partner) considering its excellent economic growth figures and substantially higher inflation rates. The euro also lost ground against most other major currencies, although there were two major exceptions, namely the Japanese yen and the Russian rouble.

While the Japanese yen appreciated gradually in most of the year, the Bank of Japan's announcement that it would sharply increase the annual amount of quantitative easing from 30 to 80 trillion JPY led to a spectacular fall of the yen recently. The Russian rouble (-27% against the euro since the start of the year) for its part is being hit by capital flight ignited by the economic boycott, geopolitical tensions and reduced legal security of foreign investments.

In nominal effective terms, the euro has already lost more than 4% so far this year.

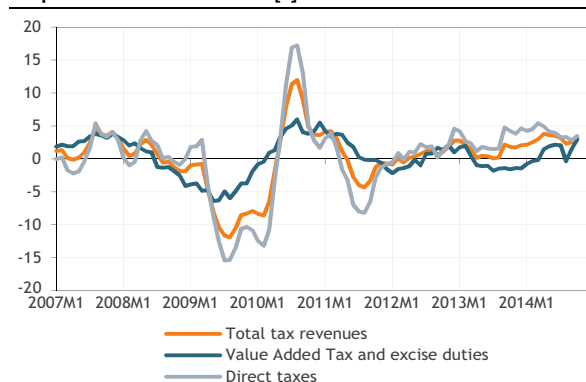
**Tax indicators**

**Table 11 - Tax revenues [1]**

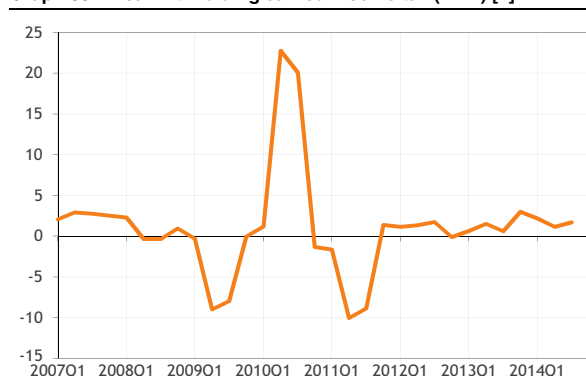
	2012	2013	2013Q4	2014Q1	2014Q2	2014Q3	2014M5	2014M6	2014M7	2014M8	2014M9	2014M10
Total [2], of which:	5.7	3.2	6.1	1.5	3.2	1.1	7.2	1.7	-2.3	-9.5	20.5	7.6
Direct taxes, of which:	7.5	5.9	11.0	-1.4	0.6	2.8	6.0	2.8	-3.7	3.1	17.0	6.4
Withholding earned income tax (PAYE)	2.7	4.2	6.3	0.2	0.9	1.9	5.3	-2.3	-1.2	1.1	8.1	-16.6
Prepayments	-0.5	1.3	0.2	.	2.5	-2.4	.	.	-9.1	.	.	6.5
Value Added Tax and excise duties	3.8	-0.3	0.7	5.0	5.0	-1.0	8.2	0.9	-0.6	-25.4	36.5	12.9

[1] Change (%) compared to same period previous year; [2] Total received by federal government, excl. of death-duties  
Source: FPS Finance

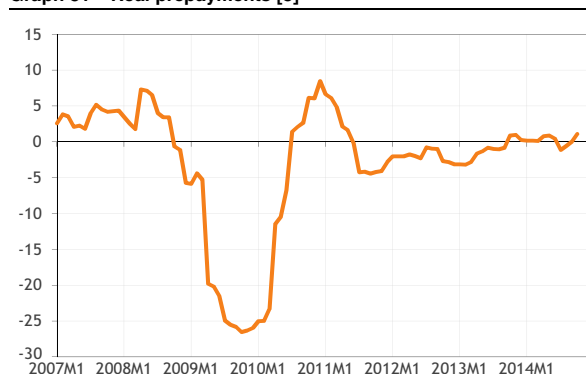
**Graph 29 - Real tax revenues [3]**



**Graph 30 - Real withholding earned income tax (PAYE) [4]**



**Graph 31 - Real prepayments [3]**



[3] Change (%) over past 12 months, compared to previous 12 month period, deflated by consumer price index  
[4] Change (%) over past 4 quarters, compared to previous 4 quarter period, deflated by consumer price index

Adjusted for administrative lags, the evolution in VAT revenue in the last quarters does not reflect any stronger than expected acceleration in private consumption or exports (export dynamics affect VAT revenue through the delay between gross perceptions and refunds). Moreover, VAT revenue is suffering from low price inflation and the reduced VAT rate (from 21 to 6%) applied on household electricity consumption as from April 2014. On the other hand, the exemption from VAT on lawyers' services was abolished in early 2014, but this only has a small impact. Excise duties on energy are driven by a significant increase in the consumed volumes of gasoline and diesel.

PIT revenue growth remains affected by the sluggish evolution of employment in the private sector and the further decrease in the public sector, to which is added the zero real wage growth imposed by the government for 2013-2014. Moreover, in 2014, as was the case in 2013, the indexation of the progressive PAYE scales (based on the previous year's higher inflation) exceeds wage and replacement income indexation.

Figures for prepayments in April and July 2014 (first and second due date) were below expectations, considering the potential impact on profitability of the wage moderation and the improvement in terms of trade. However, figures for October 2014 (third due date) are more in line with economic forecasts, with a yoy nominal increase of 7% of prepayments by corporate businesses. It is likely that companies have delayed the prepayments due to business cycle uncertainty and due to low incentives to make payments early in the year (the tax surcharge for inadequate prepayments is currently very low).

Revenue from taxation on interest earnings has grown more than expected given low interest rates and the persistent attractiveness of untaxed savings accounts. Taxes on dividends show an even stronger progression, however this is likely to be related to the transitional measure allowing so-called "internal liquidations" to avoid the increase from 10% to 25% of the tax rate on liquidation surpluses decided by the former government. Note that the new government formed in October 2014 will revise this setup and make it permanent.

## Public support for R&D and the educational mix of R&D employees

This Working Paper assesses the impact of public support for R&D activities on the educational mix of R&D employees in private companies in Belgium. Estimations show that some tax incentives significantly raise the share of researchers holding a PhD. There are indications that holders of PhDs substitute for R&D employees with a lower education degree. It is also shown that controlling for changes in the educational mix of R&D personnel lowers estimates of the impact of public support on the average wages of researchers.

Acknowledging the fundamental role of research and development (R&D) in technological progress, and well-known market failures in knowledge creation, a large majority of OECD countries provide direct or indirect support for R&D activities of private companies. Most studies that evaluate public support focus on the extent to which subsidies or tax incentives foster R&D projects that companies would not have carried out without support (so-called input additionality). Some recent studies consider output additionality, in effect, the impact of public support for R&D on product and process innovation or productivity. The possible effects of public support on R&D behaviour - for example, shifting R&D activities towards more risky and potentially more profitable projects - are studied by even fewer scholars.

Between 2005 and 2007, the Belgian federal government introduced four distinct measures that provide partial exemption from withholding tax on the wages of researchers. The measures in support of R&D collaboration or of Young Innovative Companies are rather general, but for the two other measures, only researchers with a specific educational degree are eligible (for example, PhDs and masters' in exact or applied sciences or civil engineering). These measures affect the relative wage cost of specific groups of R&D personnel and thereby relative demand. If the supply of some inputs is inelastic, the rising demand for these inputs due to targeted incentives may increase factor prices (wages).

The results presented in this paper show that some measures of public support indeed affect the composi-

tion of R&D personnel in companies. There are some indications of substitution of PhD holders and civil engineers for R&D employees with a lower degree. Although firms are free to decide how to use the money freed by the partial exemption from withholding tax on the wages of researchers, the partial exemption for researchers with a PhD or civil engineering degree is found to have a substantial positive impact on the share of researchers with that specific degree. The partial exemption for researchers with a master's degree, on the other hand, is not found to have had a statistically significant impact on the number of R&D employees or the share of researchers with a master's degree. In line with previous studies, we find evidence that public support increases the average wage of researchers. Our results, however, clearly show the need to disentangle the impact on wages due to changes in the educational mix of R&D personnel from the impact public support may have by increasing demand for researchers when supply is inelastic. If data over a longer period become available, possible changes in the supply of researchers could be taken into account in the assessment of the impact of public support for R&D on the educational mix of R&D personnel.

A more in-depth estimation of the impact of changes in the educational mix of R&D personnel on the orientation of R&D activities (e.g., the share of R&D dedicated to basic research, applied research or experimental development) seems warranted. Further analysis is also necessary to shed light on whether or not changes in the educational mix translate into changes in innovative performance. This would help in the debate on the relation between policy support and the wages of R&D personnel, in effect, the extent to which rising wages reflect the rising education level of researchers and whether the latter has a positive impact on the long-term innovative capacity of firms.

*"Public support for R&D and the educational mix of R&D employees",*

*M. Dumont, A. Spithoven and P. Teirlinck,  
Working Paper 8-14, November 2014*

## A methodology for household projections: the HPROM model

This Working Paper presents the methodology the Federal Planning Bureau has currently developed to draw up long-term Belgian household projections. This methodology allows detailed projections of the number of households (at the district level) by household type

according to living arrangements and not legal situation. Thus, the projections include the different forms of living arrangements, such as cohabitation, single-parent families, single households ("one person"), etc. They also guarantee coherence with the national population pro-

jections, which have been published by the Federal Planning Bureau and Statistics Belgium for several years and are based on the so-called component method.

Since 2008, Statistics Belgium and the Federal Planning Bureau have been publishing annual population projections for Belgium at the district level (NUTS3) and by gender and age. Several federal and regional institutions (including the FPB) use those projections as explanatory variables in numerous short-, medium- and long-term projection models (w.r.t. the economy, long-term health care, energy, transport, etc.) and for specific projects and requests. For several years now, the demand for a demographic projection at the household level has been increasing. Understanding household dynamics is particularly useful for various aspects of social life (identification of, for instance, the growing number of single-parent families - often single women - or single households - often elderly; these are susceptible to poverty problems or a lack of support) and economic life (impact on housing, transport, mobility, consumption, taxes, etc.). In order to meet those demands, a household projection model was developed for Belgium. This Working Paper aims to specify further the methodology used.

This methodology belongs to the group of *static* household projection models, as opposed to the *dynamic* models. While the latter study the transition probabilities from one state (i.e. one position in a household) to another by analysing flows, the former focus on the stocks and rates of each state in the studied population. It is, however, not limited to the so-called *Household Headship rate* method, which determines and projects the number of households by the share of heads of households in the population; instead, it expands that method by also taking into account the rate of membership of a specific position within the household for each member of the household. Therefore, the methodology allows detailed projections (at the district level) by household type and according to *living arrangements* (*de facto* situation) and

not legal situation. The legal situation represents the administrative situation of each individual as he/she is registered with the Belgian National Register (single, married, divorced, widowed). Given the new forms of living arrangements which have been observed for several years, the legal situation does not always correspond to the actual situation of a household. From a socio-demographic point of view, the *de facto* situation is often more relevant than the legal situation.

More concretely, the household projection starts from the population projection by age and gender at the NUTS3 level. An individual household membership rate is associated with each group of individuals (by age, gender and NUTS3 level). Individual household membership rates are defined according to their living arrangements. The number of individuals at time  $t$  with a given household position (by age and gender at the NUTS3 level) is obtained by multiplying the population at time  $t$  (by age and gender at the NUTS3 level) by the corresponding individual household membership rate for the given position (by age and gender at the NUTS3 level).

The population projection comes from the Belgian population projection published by Statistics Belgium and the Federal Planning Bureau. The future evolution of the rates of membership of a position within the household includes the recent developments regarding the different forms of living together by age and gender of the individuals. However, it is presumed that the different household types will coexist in the long run, whereas the current trends should not continue at the same pace. Hence, a saturation effect is introduced in the long run.

“Une méthodologie de projection des ménages: le modèle HPRM (Household PROjection Model)”,  
M. Vandresse,  
Working Paper 9-14, November 2014

## Prices of electricity and natural gas for business use

The study discusses the evolution of the prices of electricity and natural gas for business use in Belgium, Germany, France and the Netherlands. It examines the role of the three components of the price: energy, network cost and (fiscal) levies. The study is relevant for the analysis of competitiveness, which is partly determined by energy prices as compared to other countries.

Prices are built up of three components. The energy component depends on a combination of market-related

factors, but may also be regulated by government. Large consumers negotiate the price with their suppliers. For small consumers, market-compliant index formulas are applied in Belgium. The networks are natural monopolies, where prices are regulated to avoid rent-seeking. The lower the electric tension or gas pressure one is connected to, the higher the tariffs one pays. The levies are in many cases degressive, so large consumers have lower tariffs than small consumers.

The principal data source is the Eurostat domain of energy prices. These statistics are augmented by data from the federal market regulator (CREG) and two studies carried out by Deloitte for the Federation of Belgian Industrial Energy Consumers (FEBELIEC). The data from these two sources are less representative than those of Eurostat, but very precise in simulating network cost and levies. Moreover, the Deloitte data are of interest for the analysis of competitiveness; these simulate prices specifically for energy-intensive manufacturing.

Belgian electricity was the second most expensive of the four countries between 2010 and 2013. Even so, during that period prices evolved relatively favourably, increasing by smaller percentages than those in Germany and France. By 2014, the prices for small consumers reached the middle position; the prices for large consumers are now even among the lowest, although the differences with the French and Dutch prices are narrow. The average prices are highest in Germany, which is due to exceptionally high levies. Despite this favourable evolution, enterprises connected to low-tension networks face high network tariffs. This is caused by expensive public service obligations, mainly used to support renewable energy. The energy component does not differ much from those in Germany and the Netherlands, but is higher than that in France. In the latter country, the component is regulated. The Belgian levies are moderate. Nevertheless, they strongly increased at the regional level, in particular in Wallonia. This is also due to the support for renewables. In sum, falling production costs have been partly neutralised by rising network cost and levies. In all four countries, energy-intensive manufacturing receives reductions in most of the levies. In Germany, there is also a strongly reduced network cost.

Deloitte's studies therefore concluded that for energy-intensive manufacturing, electricity would be cheapest in Germany. Assuming that Walloon enterprises consuming up to 200 GWh per year pay the full tariff of the levy for renewables support, the studies concluded that Belgium is the most expensive country. Although this assumption is not confirmed, prices for energy-intensive manufacturing still need to be analysed accurately.

The average prices of natural gas in Belgium are for most consumers lower than in the neighbouring countries. This has been the case for a number of years, but the differences with two out of the three neighbouring countries are very small. For small consumers, only average Dutch prices are higher, which is due to exceptionally high levies in that country. For large consumers, average German prices are higher. The network cost and levies are relatively low in Belgium. The energy components for each of the four countries have converged. In late 2012, this was still at its highest in Belgium.

In conclusion, the prices of electricity and natural gas are relatively competitive for most users. For electricity, however, some policy issues remain. First, consumers connected to a low-tension network face relatively high network tariffs. Second, energy-intensive manufacturing pay relatively high levies.

*“De prijs van elektriciteit en aardgas voor ondernemingen in België: samenstelling, niveau en evolutie ten opzichte van de buurlanden”,  
J. van der Linden,  
Working Paper 10-14, December 2014*

## Innovation indicators for Belgium and its Regions

[www.innovationdata.be](http://www.innovationdata.be) provides a set of indicators describing the progress made by Belgium and its regions in the field of innovation. Data are also available for the Netherlands, France, Germany, Austria, the United Kingdom, the EU average and the Euro Area. The website has been developed by the Federal Planning Bureau at the request of the Scientific and Technical Information Service (DWTI/SIST), following the Federal Government's decision to create a transversal technology platform.

The website is organised into 4 sections:

- Assessment by international organisations  
The performances of Belgium in science, technology, innovation and competitiveness are regularly assessed by international organisations (OECD, Europe-

an Commission, etc.). The relative strengths and weaknesses of the Belgian innovation system identified in international reports are summarised in this section.

- Europe 2020 Indicators  
Europe 2020 is the EU smart, sustainable and inclusive growth strategy for the decade 2010-2020. This section provides the headline targets to be reached by 2020 that are linked to the field of innovation.
- Indicators of the innovation system  
The database distinguishes five innovation dimensions captured by more than 150 indicators. All data are downloadable. The five dimensions are: socio-economic context, business environment, finance, entrepreneurship and three dimensions of the

innovation process: inputs, knowledge development and outputs. Inputs to the innovation process represent the main drivers of innovation performance and are classified along two dimensions: human resources and finance. The development of knowledge refers to the mobilisation of resources in favour of research or experimental development in enterprises, in public research institutes and in universities. Outputs of the innovation process measure the results of the research activities and of all other activities contributing to the development and implementation of technological and non-technological innovations. The economic impacts of these innovations are also included.

- Overall performance of the system  
In this section, the overall performance of the Belgian national/regional innovation system(s) is shown in a radar chart, with the innovation dimensions represented on axes. The graph gives a synthetic overview of the strengths and weaknesses of Belgium and its regions in comparison with the EU average (indicator values relative to the EU (EU28=1)).

In conclusion, this database offers a single point for all relevant information on innovation in Belgium, provided in a user-friendly environment.



<http://www.innovationdata.be>

(The website will be available from the beginning of 2015)

## Other Recent Publications

Outlook, October 2014

“Het Belgisch energiesysteem in 2050: Waar naartoe? - Beschrijving van een Referentiescenario voor België / Le paysage énergétique belge : perspectives et défis à l’horizon 2050 - Description d’un scénario de référence pour la Belgique”

Working Paper 7-14, October 2014

“Modal choice for travel to work and school - Recent trends and regional differences in Belgium”,  
K. Geurts

Working Paper 6-14, September 2014

“Structurele determinanten van de publieke gezondheidszorguitgaven”,  
P. Willemé

Outlook, September 2014

“Economische vooruitzichten 2014-2015 / Prévisions économiques 2014-2015”

Working Paper 5-14, June 2014

“A new version of the MODTRIM II. An overview of the model for short-term forecasts”,  
B. De Ketelbutter, L. Dobbelaere, I. Lebrun,  
F. Vanhorebeek

Outlook, June 2014

“Perspectives économiques 2014-2019 / Economische vooruitzichten 2014-2019”

Working Paper 4-14, June 2014

“Analyse macro-sectorielle des effets d’une hausse de la TVA”,  
L. Masure

Outlook, March 2014

“Perspectives démographiques 2013-2060, population, ménages et quotients de mortalité prospectifs / Demografische vooruitzichten 2013-2060, bevolking, huishoudens en prospectieve sterfteskansen”

Working Paper 3-14, March 2014

“Belgische black-outs berekend. Een kwantitatieve evaluatie van stroompannes in België”,  
D. Devogelaer

Outlook, February 2014

“Economische vooruitzichten 2014 / Prévisions économiques 2014”

Working Paper 2-14, February 2014

“Dépenses des ménages et transport”,  
C. Daubresse

Planning Paper 114, February 2014

“Administratieve lasten in België voor het jaar 2012 / Les charges administratives en Belgique pour l’année 2012”,  
Ch. Kegels

Working Paper 1-14, January 2014

“La 6e réforme de l’État : enjeux en termes de soutenabilité budgétaire”,  
M. Saintrain

January 2014

“De maatschappelijke betekenis van de gezondheidszorg”,  
K. Van den Bosch, P. Willemé

## Research in progress

### The long-term budgetary and social challenges of ageing

The long-term model is used to project the budgetary consequences of ageing. For acute health care and long-term care public expenditure, new models were introduced in 2014. The first, notably, takes into account explicitly the impact of technological progress. The social dimension of pension benefits is investigated using a microsimulation model.

Contact: [maltese@plan.be](mailto:maltese@plan.be)

### Employment and retirement in the civil service

The question of whether the level and the structure of employment in government bodies in Belgium is appropriate has been raised frequently. A research project at FPB addresses this question, including the implications of public employment dynamics on public pensions, and the composition and dynamics of civil servant pensions.

Contact: [pubfin@plan.be](mailto:pubfin@plan.be)

### Macroeconomic, budgetary and ghg emissions prospects

Using a consistent modelling approach, medium-term macroeconomic and budgetary prospects – taking the 6<sup>th</sup> State reform into account – as well as the evolution of greenhouse gas (GHG) emissions are being investigated. A consistent regional-national version of the model developed in collaboration with experts from the regional governments of Brussels, Flanders and Wallonia is generating regional results.

Contact: [hermes@plan.be](mailto:hermes@plan.be)

### Economic drivers of migration flows

Modelling migration flows in population projections is recognized as a challenge. Although economic theory demonstrates the importance of economic drivers for some migration flows, these results are barely used in population projections. An ongoing research project aims at including some econometric results about these drivers in the FPB demographic model.

Contact: [demo@plan.be](mailto:demo@plan.be)

### Progress in economic modelling at the FPB

On-going projects aimed at incorporating new approaches in economic modelling are supported by different institutions. Partners from the three Regions (IBSA-BISA, SVR and IWEPS) support the development of a "bottom-up" approach in the regional/national medium-term model. The federal sickness and disability fund (RIZIV-INAMI) collaborates on modelling health care expenditure. The EC supports the development of a sectoral international model. A federal research fund (BELSPO) and the Federal Public Service Social Security support modelling

migrations in the dynamic microsimulation model, which is managed using the LIAM2 software developed at the FPB with the support of Luxembourg partners (IGSS – the Ministry of Social Security – and CEPS/INSTEAD).

Contact: [contact@plan.be](mailto:contact@plan.be)

### Offshoring

The FPB is continuing its work on offshoring. The aim of this work is to monitor trends in the relocation of activities carried out in Belgium as well as to determine their impact on employment and productivity. The analysis is done at the industry level, but also with firm-level data.

Contact: [bm@plan.be](mailto:bm@plan.be)

### Innovation

Innovation is a key determinant of productivity growth. In the current FPB research on this topic, particular attention is given to the question to what extent public policy can facilitate innovation leading to the creation of economic activity and jobs.

Contact: [ck@plan.be](mailto:ck@plan.be)

### Transport modelling

The FPB model on transport demand for passengers and goods PLANET will be further developed by introducing a regional dimension. As regional governments have the competence for major issues affecting transport demand, a more accurate modelling of transport demand requires the development of this regional dimension. The aim is to present the 2015 outlook for transport demand with a regional version of the model.

Contact: [transport@plan.be](mailto:transport@plan.be)

### Long-term energy outlook

After the publication of the energy outlook for Belgium up to 2050 describing a reference scenario, alternative policy scenarios will be studied and published in 2015.

Contact: [energy@plan.be](mailto:energy@plan.be)

### Indicators complementing GDP

The FPB received the mission to develop and publish indicators on quality of life, human development, social progress and sustainability of the economy (act of 14 March 2014). This set should consist of a limited number of indicators. As these indicators have to measure the evolution towards goals for society, the FPB's experience in sustainable development indicators will be useful in constructing the set of indicators complementing GDP.

Contact: [sustdev@plan.be](mailto:sustdev@plan.be)

## Recent history of major economic policy measures

October 2014

The new federal government released a government agreement together with a budget for 2015, after a "draft budgetary plan" was filed with the European Commission.

The budgetary targets for entity I (federal authority and social security), defined in structural terms, go from a deficit of 1.5% of potential GDP in 2015 (presented as an improvement of 0.7% w.r.t. 2014) to a balanced budget in 2018.

The package of measures developed to reach the budgetary targets amounts to 0.9% of GDP in 2015 and 2.2% of GDP in 2018, predominantly based (about three quarters) on spending cuts.

### Operating costs and investments

Wages, intermediate consumption and investments are subject to linear cost savings of, respectively, 4%, 20% and 22% in 2015. As from 2016, these percentages are increased by 2 %-points each year. National defence, SNCB/NMBS, development cooperation and other bodies are subject to specific savings targets.

### Social expenditure

*Pensions:*

- The minimum early retirement age and the minimum number of career years required for eligibility will be increased in the three pension schemes (wage earners, self-employed, civil servants). Starting from 62 years (of age) and 40 (career) years in 2016, these requirements will be increased to 63 and 42 years in 2019 (there will be exceptions for long careers).
- As from 2015, the pension bonus will be removed and the service credit allocated to civil servants for degrees will be phased out in the career requirements for early retirement.

*Unemployment, unemployment with company allowance and time credit:*

- The minimum age of entry into the unemployment with company allowance scheme will be increased from 60 to 62 years in 2015 for new entrants into the general system (exceptions remain).
- Some allowances will be eliminated (the seniority supplement for unemployed elderly people for new entrants, the exemption for family and social reasons, the guaranteed income allowance, the allowance for a non-justified time credit for new entrants) or reduced (the allowance for new entrants, the allowance for temporary unemployment).
- The age limit will be increased for active and passive availability for the labour market (for new entrants and for the stock) and for end of career jobs at the end of the career.
- The maximum age for demanding an 'insertion allowance' will be lowered to the age of 25 and under the age of 21 the allowance will be conditional on holding a diploma.
- The number of days for economic unemployment per employee will be limited.

*Disability:*

- From 2015 onwards, the allocation of allowances will be stricter; for example, surveillance and a reinstatement plan will be mandatory after 3 months of primary incapacity.
- Some allowances will be eliminated (the supplementary allowance for disabled unemployed people) or reduced (the allowance for new entrants).
- From 2016 onwards, the period with guaranteed salary will be increased from 1 to 2 months.

*Healthcare:*

- Over the period 2016-2019, growth in the federal healthcare budget will be capped at 1.5% annually in real terms. In addition to the limitations set by the budget norm, EUR 236 million will be saved structurally by 2018 through cost containment measures.

*All social security benefits:*

- The automatic indexation of social benefits to price evolution will be skipped once in 2015.
- The minimum social benefits and social assistance allowances will be raised to the level of the European poverty line.
- Family allowances will no longer be taken into account for the calculation of the living standards adjustment budget as from 2015. As from 2015, the adjustment to living standards will be translated into fiscal measures. In 2018, EUR 78 million of the welfare budget will not be spent.

### Labour market

- There will be a one-off suspension of the automatic indexation of wages to prices in 2015.
- The 2013 competitiveness package (employers' SSC cuts for low-wage employment, wage subsidies for non-profit employment, wage subsidies for shift and night-time labour) will be rescheduled: the 2015 package will be postponed to 2016 while the 2017 package will be brought forward to 2016.

### Taxation

- Increased tax revenues are expected in: personal income tax (anticipated and staggered taxation on private non-collective pension savings), taxes on capital income (taxation on international estate structures), corporate income tax (taxation of local public utilities, limited deduction of notional interest for the regulatory capital of banks), VAT (on plastic surgery, international e-services and housing renovation), excise duties (on tobacco and diesel, most specific duties becoming otherwise subject to indexation), tax on stock exchange operations (increased ceiling) and tax on the financial sector (the duty on deposit being extended to capital funds).
- These tax hikes are partially offset by a reduction in personal income tax implemented through an increase in the personal tax allowance.
- Furthermore, (corporate) tax provisions concerning secret commissions and liquidation surpluses are being revised.



## Recent history of major economic policy measures

The government agreement plans structural reforms in different areas.

### Pension reform:

- The government has announced the introduction of a points system by 2030 at the latest for calculating pensions. Meanwhile, the government will introduce an automatic adjustment of the conditions for early retirement or the statutory pension age that will take into account demographic and financial evolutions within the pension system and the increase in life expectancy.
- The statutory retirement age will be increased from 65 to 67 years in 2030 and the minimum age for being granted a survivor's pension will be 55 in 2025 (instead of 50), increasing by one year each year as from 2015.
- Continuing to work after reaching the minimum number of career years required to receive a pension will lead to supplementary pension rights; it will be possible to earn an additional income without limits in retirement after reaching the statutory retirement age or after 45 years of career.
- Justified career interruptions will be assimilated for the whole period and valued at the last earned income; unjustified career interruption will no longer be considered as assimilated periods.
- The minimum pension and the guaranteed income for the elderly will be increased.
- In the civil servants' scheme: the preferential so-called 'tantième' (career fraction) will be abolished (except for heavy work); future civil servants' pension will no longer take into account non-statutory periods worked before having the tenure (on condition that a second pillar pension is created); the 'health pension' will be replaced by a disability allowance in the social security system for wage earners.

### Labour market policy measures:

- Unlike the 1996 law, the new competitiveness law will require that the social partners take into account past wage settlements that were in excess of the wage norm when negotiating new wage agreements and that past excessive settlements be compensated more automatically. Unlike the criteria set out in the 1996 law, international labour cost comparisons will take into account a range of wage subsidies, to be listed by the government, and the labour cost in state-owned enterprises.
- The automatic indexation of wages mechanism will be adjusted.
- Real wages will be frozen in 2015-2016 or beyond for as long competitiveness is not restored.
- A major overhaul of employers' SSCs will reduce the headline employers' SSC rate to 25% by 2018. The decrease in the headline rate will be partially funded by incorporating a number of existing labour cost reducing measures: the across-the-board wage subsidy (equal to 1% of gross wages), the across-the board SSC reductions (both the stipend predating the 2013 competitiveness package and the increases due to the 2013 competitiveness package) and the SSC cuts targeted at high-wage earnings.

### Taxation:

- The government states it will implement a tax shift in order to reduce the tax burden on labour, with terms that remain to be defined.

### September 2014

Electricity TSO Elia took two measures to avoid black-outs during winter. It did so because three out of Belgium's total of seven nuclear plants are inactive for several reasons, and two more should be closed permanently by February 2015. This has made the country prone to shortages during cold days. First and most important, Elia updated its three-year-old 'disconnection plan' that would guide the country through such periods of shortage. The plan determines the areas that will be disconnected when shortages occur. This way, brown-outs are controlled and their burden is shared equally among the population. Second, it announced an increase in the tariff for imbalances to 4 500 EUR per MWh. This very high price should give suppliers an incentive to adopt a policy to avoid shortages.

The ECB lowered its main refinancing rate by 10 basis points to 0.05%.

### August 2014

The Flemish municipalities and electricity incumbent Electrabel agreed to swap their stakes in energy supply and distribution. DSOs will then be fully public and Electrabel's supply branch ECS fully private. This way, ownership separation will be established four years earlier than required by law.

### July 2014

In July 2014, the federated authorities presented their government agreement for the period 2014-2019. The budget of the Flemish government and the Brussels Capital Region should be in balance from 2015. The Walloon Region and the French Community plan to reach budgetary equilibrium in 2018.

As part of the sixth State Reform, the competence for energy distribution tariffs was transferred from the federal market regulator CREG to the three regional regulators (VREG, CWaPE and Brugel).

A more complete overview of "Recent history of major economic policy measures" is available on the FPB web site (<http://www.plan.be>)

**Abbreviations for names of institutions used in this publication**

BIS	Bank for International Settlements
CPB	Netherlands Bureau for Economic Policy Analysis
CRB/CCE	Centrale Raad voor het Bedrijfsleven / Conseil Central de l'Economie
DGSB	FPS Economy - Directorate-General Statistics Belgium
EC	European Commission
ECB	European Central Bank
EU	European Union
FEBIAC	Fédération Belge des Industries de l'Automobile et du Cycle "réunies"
FPB	Federal Planning Bureau
FPS Economy	Federal Public Service Economy, S.M.E.s, Self-employed and Energy
FPS Employment	Federal Public Service Employment, Labour and Social Dialogue
FPS Finance	Federal Public Service Finance
IMF	International Monetary Fund
INR/ICN	Instituut voor de Nationale Rekeningen / Institut des Comptes Nationaux
IRES	Université Catholique de Louvain - Institut de Recherches Economiques et Sociales
NBB	National Bank of Belgium
OECD	Organisation for Economic Cooperation and Development
RSZ/ONSS	Rijksdienst voor Sociale Zekerheid / Office national de la Sécurité Sociale
RVA/ONEM	Rijksdienst voor Arbeidsvoorziening / Office national de l'Emploi

**Other Abbreviations**

BoP	Balance of Payments
CPI	Consumer Price Index
EUR	Euro
GDP	Gross Domestic Product
JPY	Japanese yen
LHS	Left-hand scale
OLO	Linear obligations
qoq	Quarter-on-quarter, present quarter compared to previous quarter of s.a. series
RHS	Right-hand scale
s.a.	Seasonally adjusted
t/t-4	Present quarter compared to the corresponding quarter of the previous year
t/t-12	Present month compared to the corresponding month of the previous year
UKP	United Kingdom pound
USD	United States dollar
VAT	Value Added Tax
yoy	Year-on-year, i.e. t/t-4 (for quarters) or t/t-12 (for months)