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Contents

Opinions expressed by the authors of studies do not necessarily reflect the official viewpoint of the Oesterreichische Nationalbank or of the Eurosystem.

Call for Applications: Visiting Research Program

The Oesterreichische Nationalbank (OeNB) invites applications from external researchers for participation in a Visiting Research Program established by the OeNB's Economic Analysis and Research Department. The purpose of this program is to enhance cooperation with members of academic and research institutions (preferably postdoc) who work in the fields of macroeconomics, international economics or financial economics and/or pursue a regional focus on Central, Eastern and Southeastern Europe.

The OeNB offers a stimulating and professional research environment in close proximity to the policymaking process. Visiting researchers are expected to collaborate with the OeNB's research staff on a prespecified topic and to participate actively in the department's internal seminars and other research activities. They will be provided with accommodation on demand and will, as a rule, have access to the department's computer resources. Their research output may be published in one of the department's publication outlets or as an OeNB Working Paper. Research visits should ideally last between three and six months, but timing is flexible.

Applications (in English) should include

- a curriculum vitae,
- a research proposal that motivates and clearly describes the envisaged research project,
- an indication of the period envisaged for the research visit, and
- information on previous scientific work.

Applications for 2015 should be e-mailed to *eva.gehringer-wasserbauer@oenb.at* by May 1, 2015.

Applicants will be notified of the jury's decision by mid-June. The following round of applications will close on November 1, 2015.

Analyses

Growth Remains Weak in 2015

Economic Outlook for Austria from 2014 to 2016 (December 2014)

Gerhard Fenz,
Martin Schneider[1]

1 Summary

In its economic outlook of December 2014, the Oesterreichische Nationalbank (OeNB) expects the growth of the Austrian economy in 2014 to amount to only 0.4%. And available leading indicators do not currently provide any clear signs that business activity will recover perceptibly in 2015. Growth next year will thus be only marginally higher (0.7%). The weakness of growth that started in 2012 will thus continue for the fourth year in succession. It is only in 2016 that the OeNB expects economic growth to pick up to 1.6%. The growth prospects given in the economic outlook of June 2014 have had to be revised significantly downward. The growth now forecast for 2014 and 2015 will be around 1 percentage point lower than that expected in June. The downward revision of the figure for 2016 is in the order of half a percentage point.

The current weakness of economic activity in Austria is due to a whole range of factors. The external factors that have had a negative impact are, in particular, the persistent weakness of the euro area economy and geopolitical tensions such as those between Ukraine and Russia, as well as the related loss of confidence in the prospects of the export industry. At home, uncertainty about future economic development has curbed enterprises' propensity to invest. The modest increase in real incomes has moreover left little room for additional consumer spending. The impact of growth-retarding factors will decline only slowly over the period under review, so that the supportive effect of the expansionary monetary policy on business activity will take hold only gradually.

In view of the subdued growth prospects, unemployment is expected to rise to 5.3% in 2015. It is only in 2016 that no further deterioration of the situation on the labor market is anticipated, but the economic recovery will remain too weak for unemployment to decline. Inflation is likely to fluctuate around the mark of 1½% in the period from 2014 to 2016. The fact that the upward movement of prices has slowed down significantly in comparison with that recorded over the past two years will help considerably to return real income growth to positive territory in the period under review. Low HICP inflation will therefore be a key driver of business activity. Although the general government budget balance will deteriorate to –2.4% of GDP this year, it is set to improve significantly in 2015 and 2016, namely to –1.8% and –1.4% of GDP, respectively. The government debt ratio will rise to 85.4% of GDP in 2014, but next year will see a reversal of the trend, with the debt-to-GDP ratio for 2016 expected to be in the order of 82.9%.[2]

The global economy has developed along more subdued lines than expected over the course of the year to date. This was due, not least, to the weakness of economic activity in the euro area, weakness that will continue into the year 2015. The U.S.A. and the United Kingdom, by contrast, are two leading industrialized countries

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Cutoff date:
November 28, 2014

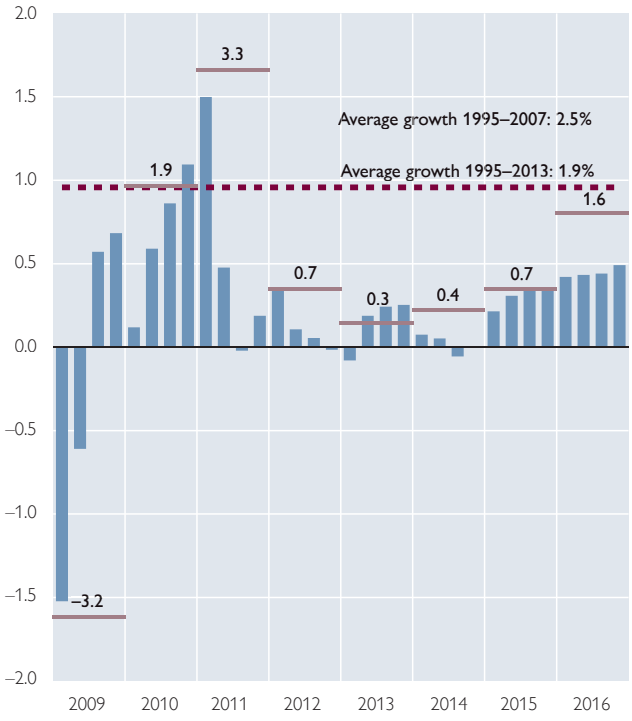
[2] *Calculated in accordance with the ESA 2010 standards.*

Chart 1

OeNB December 2014 Outlook for Austria – Key Results

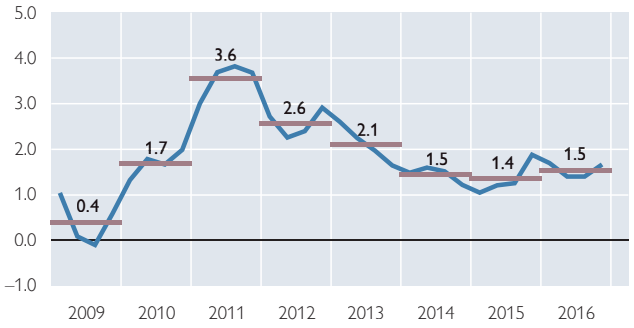
Real GDP Growth (Seasonally and Working Day-Adjusted)

Quarterly change in % (bars)



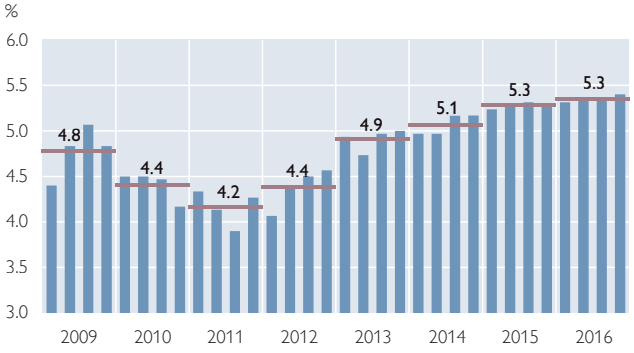
Harmonised Index of Consumer Prices

Annual change in %



Unemployment Rate

%



Source: Statistics Austria. WIFO. OeNB December 2014 outlook.

that are enjoying robust economic recoveries. Growth in emerging market economies remains significantly higher than that in the advanced countries, but the rates of increase recorded prior to the crisis are unlikely to be reached in the period under consideration. Gratifying is the fact that a number of peripheral countries in the euro area have achieved a trend reversal on the basis of implemented reforms. Spain and Ireland, in particular, have surprised to the upside in this respect. France and Italy, by contrast, are battling with structural problems. Prospects for Germany have turned gloomier since spring, not only as a result of the cloudier international environment, but also and in particular on account of persistently weak fixed capital formation.

Aside from the challenge of weak global growth, Austrian exporters are also having to deal with clearly below-average international trade dynamics. To this is added the fact that demand for Austrian exports remains muted on account of their regional and sectoral structure. Over the period under review, the pace of growth on Austrian export markets will pick up only gradually from 3.0% in 2014 to 5.0% in 2016, thus remaining far removed from the rate of 7.0% recorded prior to the crisis. The contribution of net exports to economic growth is thus likely to be small over the forecasting horizon.

Domestic demand will consequently have to play a greater role in driving growth. However, fixed capital formation will contribute less than in normal recovery. Accordingly, the high

uncertainty regarding sales prospects, both at home and abroad, is likely to decline only slowly, so that investment dynamics will thus, all in all, remain rather weak. The comparatively modest acceleration of real investment growth will be driven primarily by investment in plant and equipment, and by housing investment, with the latter benefiting from rising real estate prices, favorable terms and conditions for mortgages and higher demand for housing. Investment in civil engineering projects will remain below average in view of low public sector demand.

Consumer spending will develop along only very subdued lines in 2014 and 2015. The again stronger growth of real wages and salaries expected for 2016, however, will cause consumption to pick up slightly. A major role in connection with the improvement in real income trends will be played by inflation. The upward movement of prices slowed down in the course of 2014. In October this year, HICP inflation stood at 1.4%, clearly below the annual rate of 2.1% recorded for 2013. Over the period from 2014 to 2016, HICP inflation is set to hover around 1½%. This is due to weak economic growth, low global commodity prices and only moderately rising wage costs.

In the period under review, employment will – as in the past – follow cyclical developments with a lag. While payroll employment growth was 0.9% in 2014, it is expected to bottom out at 0.4% in 2015, and to rise to 0.6% as the economy picks up steam in 2016. The number of annual hours worked, however, will continue to develop along more muted lines. The unemployment rate will rise gradually over the forecasting horizon, from 4.9% in 2013 to 5.3% in 2016. In addition to cyclical effects, the job market also reflects the impact of a growing labor participation rate among older workers and the influx of foreign workers.

The OeNB's budget forecast is based on the assumption of no change in policy, which means that solely already adopted discretionary measures are included. The tax reforms currently being debated are thus not covered here. The general government budget deficit will increase noticeably, to –2.4% of GDP in 2014, after –1.5% of GDP in the year before. This deterioration of the budget balance is due, in particular, to the significantly rising capital transfers to banks in the course of the reorganization of Hypo Group Alpe Adria. With these capital transfers decreasing in the years thereafter, the budget balance is set to improve to –1.8% and –1.4% of GDP in 2015 and 2016, respectively. The increase in the public debt ratio to 85.4% of GDP in 2014 was likewise driven by the reorganization of Hypo Group Alpe Adria. The public debt ratio will see a trend reversal in 2015 and fall to 82.9% of GDP by the end of 2016.

By contrast, the structural budget deficit, i.e. the general government budget balance excluding both cyclical components and the effects of one-off measures, is set to decrease in 2014, on account not only of measures taken on the revenue side and "bracket creep" (the automatic movement of taxpayers into higher tax brackets as their incomes increase over time), but also of spending restraint. Next year, however, will see a slight deterioration of the structural budget balance. In the OeNB's view, Austria's attainment of its specifically targeted structural budget deficit of –0.45% of GDP in 2015 requires additional consolidation measures in the order of around ¼% of GDP.

Table 1

OeNB December 2014 Outlook for Austria – Key Results[1]

	2013	2014	2015	2016
Economic activity	*Annual change in % (real)*			
Gross domestic product[2]	+0.3	+0.4	+0.7	+1.6
Private consumption	–0.1	+0.5	+0.7	+1.3
Government consumption	+0.4	+1.0	+1.4	+1.3
Gross fixed capital formation	–0.9	–0.1	+0.8	+2.3
Exports of goods and services[3]	+0.9	+0.8	+2.4	+4.6
Exports of goods and services[3]	–0.2	+0.5	+2.5	+4.7
	% of nominal GDP			
Current account balance	+1.0	+0.4	+0.6	+0.8
Contribution to real GDP growth	*Percentage points*			
Private consumption	–0.1	+0.3	+0.4	+0.7
Government consumption	+0.1	+0.2	+0.3	+0.3
Gross fixed capital formation	–0.2	+0.0	+0.2	+0.5
Domestic demand (excluding changes in inventories)	–0.2	+0.5	+0.8	+1.4
Net exports	+0.5	+0.2	+0.1	+0.2
Changes in inventories (including statistical discrepancy)	+0.0	–0.2	–0.2	+0.0
Prices	*Annual change in %*			
Harmonised Index of Consumer Prices (HICP)	+2.1	+1.5	+1.4	+1.5
Private consumption expenditure (PCE) deflator	+2.2	+1.7	+1.4	+1.5
GDP deflator	+1.6	+1.8	+1.6	+1.3
Unit labor costs in the total economy	+2.6	+2.4	+1.3	+1.2
Compensation per employee (at current prices)	+2.2	+2.0	+1.5	+2.2
Compensation per hour worked (at current prices)	+2.7	+2.2	+1.7	+2.3
Import prices	–0.3	–0.6	+1.0	+1.6
Export prices	+0.1	+0.8	+1.1	+1.5
Terms of trade	+0.4	+1.4	+0.0	–0.1
Income and savings				
Real disposable household income	–2.0	+0.1	+1.1	+1.4
	% of nominal disposable household income			
Saving ratio	7.3	6.8	7.1	7.2
Labor market	*Annual change in %*			
Payroll employment	+0.8	+0.7	+0.4	+0.6
Hours worked (payroll employees)	+0.3	+0.5	+0.2	+0.5
	% of labor supply			
Unemployment rate (Eurostat definition)	4.9	5.1	5.3	5.3
Public finances	*% of nominal GDP*			
Budget balance	–1.5	–2.4	–1.8	–1.4
Government debt	81.2	85.4	84.6	82.9

Source: 2013: Eurostat, Statistics Austria; 2014 to 2016: OeNB December 2014 outlook.

[1] The outlook was drawn up on the basis of seasonally adjusted and working day-adjusted national accounts data. Therefore, the figures for 2013 deviate from the unadjusted data released by Statistics Austria. Calculated in accordance with the ESA 2010.

[2] The figures on real GDP are based on the first full set of quarterly national accounts data published for the third quarter of 2014, while the expenditure-side components of GDP are based on a flash estimate of the national accounts for the third quarter of 2014.

[3] With respect to Austria's foreign trade figures, the conversion of the national accounts to conform to ESA 2010 requirements brought discrepancies to light between the goods trade figures of Statistics Austria and the services trade figures of the OeNB. For that reason, the import and export figures were calculated on the basis of the respective data sources.

2 Technical Assumptions

This forecast for Austria is the OeNB's contribution to the Eurosystem's staff projections of December 2014. The forecasting horizon covers the period from the fourth quarter of 2014 to the fourth quarter of 2016. The cutoff date for data on which the assumptions on global growth, interest rates, exchange rates and crude oil prices are based was November 14, 2014. The forecast was compiled on the basis of the OeNB's macroeconomic quarterly model. This is the first forecast using quarterly series of seasonally and working day-adjusted data computed in accordance with the new European System of National and Regional Accounts (ESA 2010), which are available up to the second quarter of 2014. Data for the third quarter of 2014 are based on GDP flash estimate figures, which cover only part of the national accounts aggregates, however. The quarterly national accounts data are computed by the Austrian Institute of Economic Research (WIFO). The short-term interest rates used over the forecasting horizon are based on market expectations for the three-month EURIBOR, namely 0.2% in 2014, 0.1% in 2015 and 0.1% in 2016. The long-term interest rates used, which are based on market expectations for ten-year government bonds, have been set at 1.5% in 2014, 1.1% in 2015 and 1.4% in 2016. The euro's exchange rate vis-à-vis the U.S. dollar is assumed to remain unchanged at USD 1.25 over the period from the fourth quarter of 2014 to the end of 2016. The projected development of crude oil prices is based on futures prices. The oil price in 2014 has been set at USD 101.2 per barrel of Brent, while the corresponding prices assumed for 2015 and 2016 are USD 85.6 and USD 88.5, respectively. Prices of commodities excluding energy are likewise based on futures prices over the forecasting horizon.

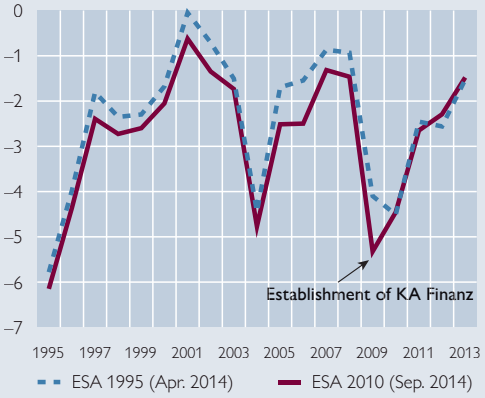
Box 1

Conversion of the National Accounts Raises GDP by EUR 9.5 billion and the Debt Ratio by just under 7 Percentage Points

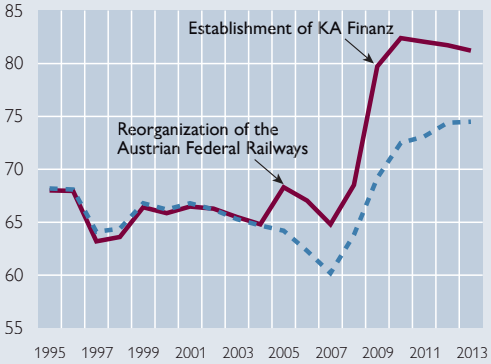
At the end of September 2014, Statistics Austria presented annual figures for the period from 1995 to 2013 that were based, for the first time, on the revised European System of National and Regional Accounts (ESA 2010). The most important change against the previously applicable ESA 95 is to be found in the extended definition of investment. Spending on research and development (R&D) is no longer recorded under intermediate consumption, but is rather included in gross fixed capital expenditure, and thus increases GDP. Weapon systems and other military equipment are now treated as capital goods. The impact this has on GDP in Austria is not significant. Another new element is the breakdown of producing entities into market and non-market producers. Some entities, such as hospitals and the Austrian Federal Railways, that were previously classified as belonging to the private sector now fall under general government. This reclassification, too, raises GDP significantly because the value added by such entities is now measured in terms of the production cost. The changeover to the ESA 2010 consequently goes hand in hand with a noticeable increase in GDP, an increase amounting to EUR 12.1 billion in 2013. However, revisions to both the underlying statistics and the methodology used to calculate GDP for that year reduced it by EUR 2.6 billion, so that GDP for 2013 was ultimately raised by, all in all, EUR 9.5 billion or 3%.

ESA 95 versus ESA 2010: Impact on Fiscal Statistics

Budget Balance



Schuldenstand



Source: Statistics Austria.

Moreover, these reclassifications, together with the inclusion of R&D expenditure and the downward revision of estimates of the government's employer's social security contributions for civil servants, have led to marked changes in the patterns of public sector expenditure.

Expenditure items such as capital transfers, subsidies and social benefit payments in kind (to market producers), which had comprised mainly subsidies for the Austrian Federal Railways and hospitals under the ESA 95, have fallen sharply. At the same time, spending on compensation of employees, intermediate inputs, capital expenditure and interest payments, as well as revenues, have become far higher than before.

Effects of the ESA 2010 (using 2013 as an example)

	ESA			
	1995	2010	1995	2010
	EUR billion		*% of GDP*	
Budget balance (EDP [1])	–4.8	–4.8	–1.5	–1.5
Debt level (EDP[1])	233.3	262.0	74.5	81.2
Taxes (incl. EU)	142.1	139.9	45.4	43.4
GDP	313.2	322.6		
Subsidies and capital transfers	19.4	8.8	3.4	1.4
Gross fixed capital formation	3.2	9.5	1.0	3.0

Source: Statistics Austria.

[1] *EDP = excessive deficit procedure.*

3 Slow and Uneven Global Recovery

The global economy developed along more subdued lines than expected in the first half of 2014, which was due, not least, to the weakness of business activity in the euro area. Japan slipped back into recession in the third quarter. The U.S.A. and the United Kingdom, however, are two major industrialized countries that are enjoying a robust recovery. Viewed in terms of GDP, global trade was perceptibly more muted in the first six months of 2014 than in the past. The most marked downturns in import growth were recorded by economies in Asia. Imports actually even declined in Russia, Brazil, Argentina and Turkey. This was a consequence not only of currency depreciation and increases in key interest rates, but also of special factors such as the conflict between Russia and Ukraine.

The situation on *financial markets* is currently favorable and supportive of world-wide economic development. Share prices have recently recorded gains, and risk premiums are low. Volatility on markets is muted. However, these trends also entail some risk because the low level of interest rates is inducing many investors to undertake risky investment. Monetary policies reflect the differences in the stages of the business cycle prevailing in individual countries. The U.S.A. and the United Kingdom have already taken first steps toward a reversal of the monetary policy stance, while monetary policy in both the euro area and Japan remains expansionary.

Growth in the *emerging market economies* is higher than that in the industrialized countries. There are, however, signs of a weakening of their growth potential. Growth rates such as those recorded both prior to the crisis and in the two years thereafter are unlikely to be attained in the next few years. Developments in individual countries are increasingly being driven by country-specific factors. The low commodity prices are having a dampening impact on growth prospects in emerging market economies where commodity exports are a major source of revenue.

Growth in *China* will be slightly lower in 2014 than it was in the year before. This marginal decline is due to a contraction of investment activity growth as a result of, inter alia, the slowdown in the real estate market. On the other hand, consumer spending is gaining ever greater importance on account of rising real wages and salaries. Moreover, the government has taken a number of measures to support business activity. Developments in the other Asian countries are very heterogeneous. All in all, however, economic growth in the region is stable. Cyclical activity in *Latin America* is being driven by the sharp downturn of growth in Brazil and by the recession in Argentina.

The *U.S.A.* is experiencing sound growth dynamics – aside from a slowdown driven by temporary factors in the first quarter of 2014. Growth there is being supported by a number of favorable fundamentals. Although the Fed's bond purchasing program came to an end in October, increases in interest rates are expected only in the course of 2015. Monetary policy is thus still expansionary. The dampening impact of fiscal policy as a result of the automatic spending cuts ("sequester") that took effect in 2013 is subsiding. Consumer spending is benefiting from the recovery on the labor market and from households' declining indebtedness. Although activity on the real estate market is currently ebbing, it nonetheless remains robust. The decrease in energy prices triggered by the boom in shale gas extraction is supporting the recovery of industrial output.

The upswing in the *United Kingdom* is being driven by strong domestic demand. Consumer spending is benefiting from significant employment growth. The marked increase in capital expenditure is being supported by favorable sales expectations, good corporate profits and favorable terms and conditions for external financing. Construction investment is developing very dynamically, as is the real estate market as a whole. However, the overheated real estate market in London is showing first signs of cooling off as a result of the macroprudential measures taken to this end. Exports, by contrast, are curbing growth.

Japan slipped into recession in the third quarter of 2014. GDP fell yet again, after it had already declined in

the two preceding quarters, on account of value-added tax (VAT) being raised from 5% to 8% in the second quarter and as a result of the associated anticipatory effects in the first quarter. As a consequence thereof, the second stage of the increase in VAT, which was scheduled for October 2015, has been postponed to 2017.

Economic activity in *Russia,* which had already slowed down prior to the imposition of sanctions, will be stagnant in 2014. The geopolitical tensions generated by the conflict between Russia and Ukraine have thus far led to only relatively limited spillovers to other countries. Thanks to dynamic domestic demand, the economic development of countries in Central and Eastern Europe is very robust.

Cyclical activity in the *euro area* has yet to gain momentum, despite a number of factors that foster growth. The improvement of public finances has put a damper on consolidation pressures, so that a major impediment to growth is gradually fading. The budgetary situation of, in particular, the countries hit especially hard by the crisis (Greece, Ireland, Portugal and Spain) has brightened significantly. Monetary policy in the euro area is currently highly expansionary. In addition to lowering its key interest rates to 0.05%, the ECB has implemented a number of unconventional measures aimed at revitalizing the extension of loans. These measures are having favorable effects on long-term interest rates. Yields on both government and corporate bonds have declined considerably over the course of the year. Greece is the only country to record rising government bond yields in the last few months. The growth of global trade – although only weak at present – and the depreciation of the euro have improved exporters' sales opportunities. Given prevailing uncer-

Table 2

Underlying Global Economic Conditions

	2013	2014	2015	2016
Gross domestic product	*Annual change in % (real)*			
World excluding the euro area	+3.7	+3.6	+4.0	+4.2
U.S.A.	+2.2	+2.2	+2.9	+2.9
Japan	+1.5	+0.9	+1.2	+1.0
Asia excluding Japan	+6.0	+6.1	+6.3	+6.2
Latin America	+2.8	+1.3	+2.1	+3.0
United Kingdom	+1.7	+3.1	+2.8	+2.5
CESEE EU Member States[1]	+1.4	+2.7	+2.6	+2.8
Switzerland	+1.9	+1.6	+1.7	+2.0
Euro area	–0.4	+0.8	+1.0	+1.5
World trade (imports of goods and services)				
World trade (imports of goods and services)	+2.8	+2.9	+4.0	+5.2
World excluding the euro area	+3.4	+2.7	+3.9	+5.2
Euro area export markets (real)	+2.9	+2.3	+3.4	+4.9
Austrian export markets (real)	+2.3	+2.9	+3.4	+5.0
Prices				
Oil price in USD/barrel (Brent)	108.8	101.2	85.6	88.5
Three-month interest rate in %	0.2	0.2	0.1	0.1
Long-term interest rate in %	2.0	1.5	1.1	1.4
USD/EUR exchange rate	1.33	1.33	1.25	1.25
Nominal effective exchange rate (euro area index)	100.3	103.1	99.3	99.3

Source: Eurosystem (December 2014 staff macroeconomic projections).

[1] *Bulgaria, Poland, Romania, Czech Republic and Hungary.*

tainties, however, companies are currently very cautious with regard to real capital expenditure. As returns on real investment are deemed to be low and uncertain, many enterprises are taking recourse to financial investment instead. The determining factors behind this development include the geopolitical tensions between Russia and Ukraine, as well as developments in the Middle East. Developments in France and Italy are probably also influenced by dissatisfaction about the lack of progress made with reforms. The locational disadvantage Europe has on account of the significant drop in U.S. energy prices in the wake of shale gas production is yet another detrimental factor. Despite low financing costs, lending standards remain restrictive when compared over a longer period. Bank balance sheets are continuing to shrink, a fact that is reflected in a decline in lending. Ongoing corrections on the real estate markets of a number of countries are curbing construction activity. Moreover, business activity is continuing to suffer from the high levels of both private and public sector debt.

In the first three quarters of 2014, real GDP growth in the euro area averaged a mere 0.2%, quarter on quarter. As there are no signs of a recovery in the fourth quarter, growth over the year as a whole will amount to only 0.8%. The weakness of economic growth is likely to persist well into the first half of 2015. The year 2015 will thus not see any noticeable acceleration of growth, which is expected to be in the order of 1.0%. It is only in 2016 that the effects of growth-impeding factors will have faded to a degree that would allow business activity to pick up more markedly, namely by 1.6%.

Developments within the euro area are highly heterogeneous. A number of peripheral countries have achieved a trend reversal as a result of the reforms implemented. Spain and Ireland, in particular, have surprised to the upside in this respect. France and Italy, by contrast, are battling with structural problems. The downturn in confidence indicators in these two countries reflect companies' declining faith in the respective government's ability to resolve these structural issues. Prospects for Germany have become significantly gloomier since spring, not only as a result of the cloudier international environment, but also and in particular on account of persistently weak fixed capital formation.

4 Next Year Marks Fourth Successive Year of Weak Economic Growth in Austria

4.1 Subdued Exports Weigh on Growth

International trade flows, and thus also demand for Austrian exports, have developed along very muted lines since 2012. This is probably due to both cyclical and structural factors. One of the cyclical factors to be mentioned in this context is a temporary weakness of demand for goods with a high import content, such as plant and equipment, as well as consumer durables. Such investment is currently declining in the euro area. Austria is very highly integrated into global value chains, which – together with its sectoral pattern of exports – makes the country extremely responsive to cyclical fluctuations, as also indicated by the sharp drop in exports in 2008 and 2009. The most important structural factor behind the more subdued growth of global trade is to be found in the global value chains. When these global value chains were built up in the course of the 1990s and in the first few years of the new millennium, trade flows in-

creased far more than production. This trend had already slowed down before the economic and financial crisis. Since 2011, global trade flows and global output have been expanding more or less in parallel.

Chart 2 (left-hand panel) shows the regional breakdown of Austria's export growth (measured in terms of imports by Austria's export partner countries). The decline of export dynamics in 2012 and 2013 was due primarily to the weakness of imports by Austria's trading partners in Europe. The direct effects of the conflict between Russia and Ukraine on Austrian exports have thus far been small. The outlook for the period from 2014 to 2016 shows that the recovery of Austria's export markets is proceeding along regional patterns similar to those prevailing prior to the crisis. The pace of growth, however, is slower than that before the crisis.

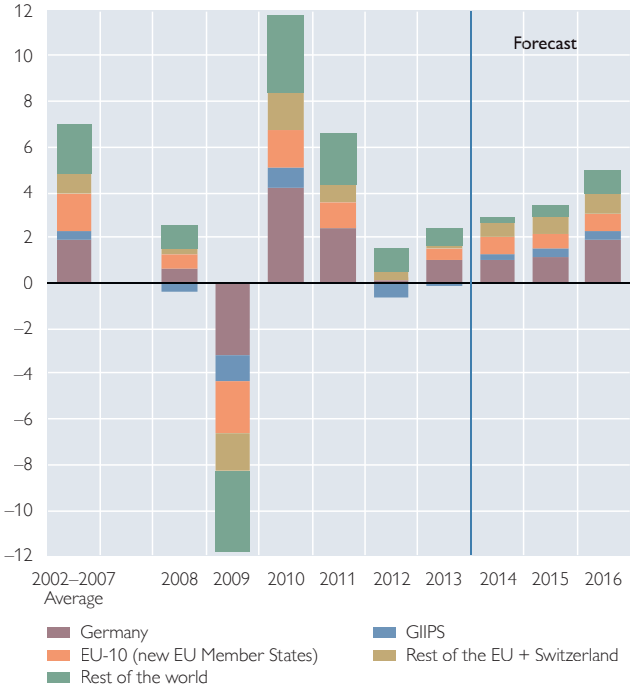
Prices for Austrian exports have risen only slowly in recent years. However, given that the prices of competitors on Austria's export markets have fallen, Austria's price competitiveness has deteriorated in recent years. This is one of the reasons why Austrian exporters have lost market shares. In the course of 2014, exports have developed along very muted lines, growing by only 0.8% in real terms. Export growth is expected to accelerate in 2015. In 2016, the expansion of exports is likely to be in the order of 4.7%, thus again more or less equal to the growth of the export markets involved. Net exports will contribute only little to Austria's GDP growth over the forecasting horizon.

Chart 2

Exports

Contribution to the Growth of Austrian Export Markets

Percentage points

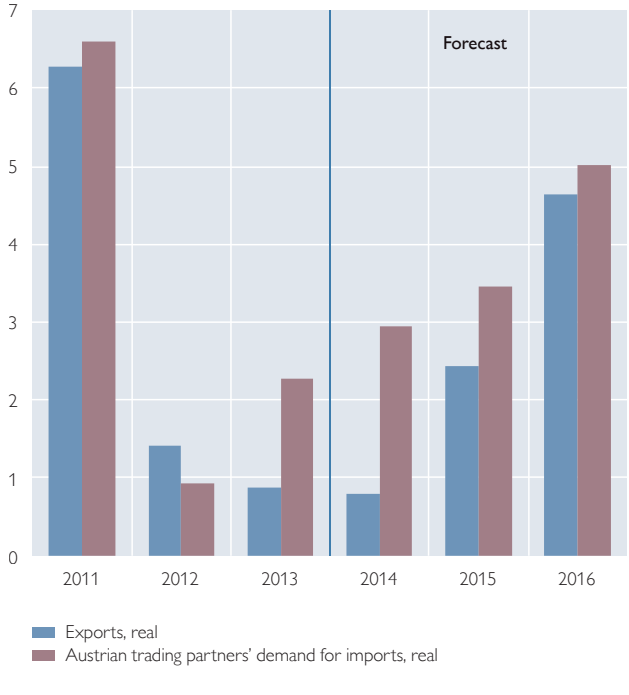


Source: Eurostat, Statistics Austria, Eurosystem, OeNB.

Note: GIIPS = Greece, Ireland, Italy, Portugal and Spain.

Exports and New Export Orders

Annual change in %



Source: Eurostat, Eurosystem, OeNB.

Table 3

Growth and Price Developments in Austria's Foreign Trade[1]

	2013	2014	2015	2016
	Annual change in %			
Exports				
Competitor prices in Austria's export markets	–1.8	–1.2	+0.6	+1.3
Export deflator	+0.1	+0.8	+1.1	+1.5
Changes in price competitiveness	–1.9	–2.0	–0.5	–0.2
Import demand on Austria's export markets (real)	+2.3	+2.9	+3.4	+5.0
Austrian exports of goods and services (real)	+0.9	+0.8	+2.4	+4.6
Austrian market share	–1.4	–2.1	–1.0	–0.4
Imports				
International competitor prices on the Austrian market	–1.3	–0.9	+0.9	+1.2
Import deflator	–0.3	–0.6	+1.0	+1.6
Austrian imports of goods and services (real)	–0.2	+0.5	+2.5	+4.7
Terms of Trade	+0.4	+1.4	+0.0	–0.1
	Percentage points of real GDP growth			
Contribution of net exports to GDP growth	+0.5	+0.2	+0.1	+0.2
	% of nominal GDP			
Foreign trade ratios				
Export ratio	+53.3	+52.9	+53.6	+55.2
Import ratio	+49.9	+48.8	+49.3	+50.9

Source: 2013: Eurostat; 2014 to 2016: OeNB December 2014 outlook, Eurosystem.

[1] *With respect to Austria's foreign trade figures, the conversion of the national accounts to conform to ESA 2010 requirements brought discrepancies to light between the goods trade figures of Statistics Austria and the services trade figures of the OeNB. For that reason, the import and export figures were calculated on the basis of the respective data sources.*

With the publication of the data for the second quarter of 2014, Austria's current account was converted to bring it into line with the provisions of the sixth edition of the International Monetary Fund's Balance of Payments and International Investment Position Manual (BPM6). This move was, above all, meant to improve the statistical recording of data on global production and value chains in the wake of the outsourcing of parts of production to low-cost countries. The most important methodological changes were the shift of inward and outward processing from goods to services and the shift of transit trade from services to goods. The balance of trade in goods consequently improved, while the balance of trade in services deteriorated. The overall current account figures were largely unaffected by these reclassifications. Figures for past periods that have been recalculated in line with the BPM6 are available up to 2006.

Austria's current account surplus had reached a record high at 3.4% of GDP in 2008. Since then, it has been in continuous decline, with the first half of 2014 seeing a balanced current account (0.2% of GDP) as a result of weak export growth. The reasons for this development are to be found not only in the worsening of the balance of trade in both goods and services, but also in the deterioration of the primary income account (formerly the income account). The secondary income account (formerly the transfer payments account) remained unchanged from January to June 2014 in comparison with the corresponding period of the year before. Although the pickup of exports expected for 2015 and 2016 will be moderate, it should lead to a slight improvement of the current account.

Table 4

Austria's Current Account

	2013	2014	2015	2016
	% of nominal GDP			
Balance of trade	2.7	2.0	2.2	2.4
Balance of goods	–0.6	–1.1	–1.1	–0.6
Balance of services	3.3	3.1	3.3	3.0
Balance of primary income	–0.5	–0.5	–0.5	–0.5
Balance of secondary income	–1.2	–1.2	–1.1	–1.1
Current account	1.0	0.4	0.6	0.8

Source: 2013: Eurostat; 2014 to 2016: OeNB December 2014 outlook.

4.2 Enterprises' Propensity to Invest Remains Muted

Austrian companies have recently reduced their fixed capital expenditure to an unexpectedly marked degree. In the third quarter of 2014, real gross fixed capital formation fell by 1.1% against the preceding quarter. All major components of such investment are in decline. Particularly affected was investment in nonresidential real estate, which shrank by 2.7%. Housing investment contracted only marginally (by 0.25%). Investment in plant and equipment, which is sensitive to cyclical fluctuations, declined by 0.7% in the third quarter, after having expanded strongly in the first quarter of 2014.

The current reluctance to invest in fixed assets is probably linked to the high uncertainty regarding future sales prospects. That uncertainty is driven

Table 5

Investment Activity in Austria

	2013	2014	2015	2016
	Annual change in %			
Total gross fixed capital formation (real)	–0.9	–0.1	+0.8	+2.3
of which: investment in plant and equipment	*–0.7*	*+1.4*	*+1.1*	*+3.0*
residential construction investment	*–0.3*	*+1.1*	*+1.2*	*+2.8*
nonresidential construction investment and other investment	*–1.4*	*–1.3*	*+0.5*	*+1.6*
public sector investment	*+3.6*	*+2.1*	*+1.7*	*+1.7*
private sector investment	*–1.6*	*–0.4*	*+0.7*	*+2.4*
	Contribution to the growth of gross fixed capital formation in percentage points			
Investment in plant and equipment	–0.2	+0.5	+0.4	+1.0
Residential construction investment	–0.1	+0.2	+0.2	+0.5
Nonresidential construction investment and other investment	–0.6	–0.6	+0.2	+0.8
Public sector investment	+0.5	+0.3	+0.2	+0.2
Private sector investment	–1.4	–0.4	+0.6	+2.1
	Contribution to real GDP growth in percentage points			
Total gross fixed capital formation	–0.2	+0.0	+0.2	+0.5
Changes in inventories	+0.7	+0.2	+0.0	+0.0
	% of nominal GDP			
Investment ratio	+22.3	+22.1	+22.1	+22.2

Source: 2013: Eurostat; 2014 to 2015: OeNB December 2014 outlook.

by a whole range of factors. The persistent weakness of economic activity in the euro area and geopolitical tension such as that related to the conflict between Russia and Ukraine are leading to loss of confidence in foreign trade. The subdued development of real incomes in Austria is dampening sales expectations at home. These factors are being complemented by increasingly negative perceptions of the medium-term outlook for an expansion of global trade and domestic economic growth. Given the uncertainty of returns on fixed capital expenditure, many enterprises are turning to financial investment instead.

The effects of some of these investment-inhibiting factors will recede over the forecasting horizon. Growth in the euro area, for instance, will pick up and be more or less back to the long-term average in 2016. Demand for Austrian exports is gradually rising, but the growth rate of 5% expected for 2016 will remain below the precrisis annual average of 7%. Consumer spending, too, will again have increasingly stronger stimulating effects in Austria. It is not likely, however, that this will all take place swiftly and simultaneously, so that fixed capital formation will gain momentum only hesitantly. In such circumstances, investment-supporting factors such as companies' significant holdings of financial assets and favorable financing conditions cannot take full effect.

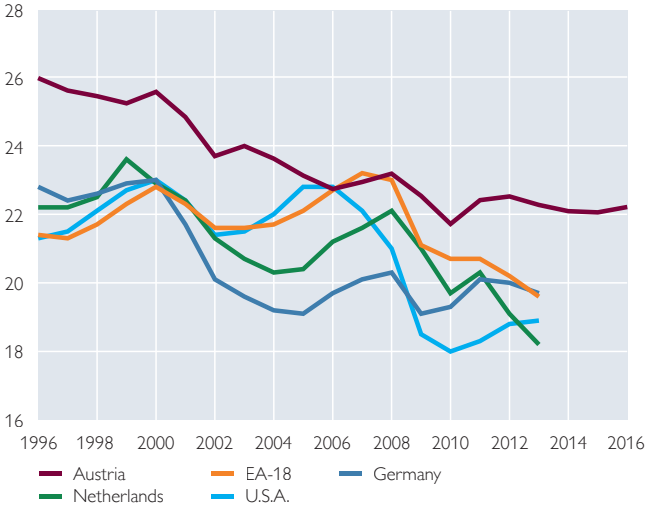
On the basis of developments over the year to date, real gross fixed capital formation will decline slightly, by 0.1%, in 2014, and will rise by 0.8% in the year thereafter, thus at roughly the same rate as overall economic output. It is only in 2016 that, given an expected increase of 2.3%, the pattern of fixed capital formation will return to that seen in a "normal" cyclical recovery and be higher than GDP growth. The acceleration of fixed capital formation will be driven primarily by investment in plant and equipment and by

Chart 3

Investment

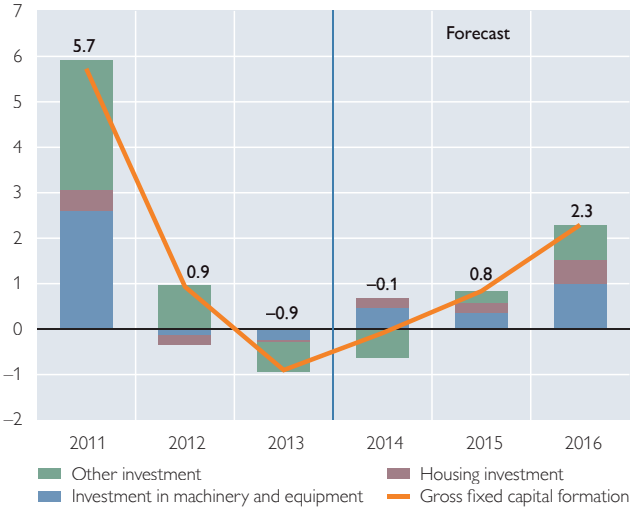
Comparison of Investment Ratios

% of GDP



Contributions to Gross Fixed Capital Formation Growth

Percentage points



Source: OeNB, Eurostat.

housing investment, with the latter being supported by rising real estate prices, favorable terms and conditions for mortgages and high demand for housing. Civil engineering activity will remain subdued on account of only few public sector orders.

In the period from 1996 to 2010, the ratio of investment to GDP developed in line with international trends and fell by 4 percentage points to 22%. Since 2011, the investment ratio has stabilized at that level, with no further change being expected over the period under review.

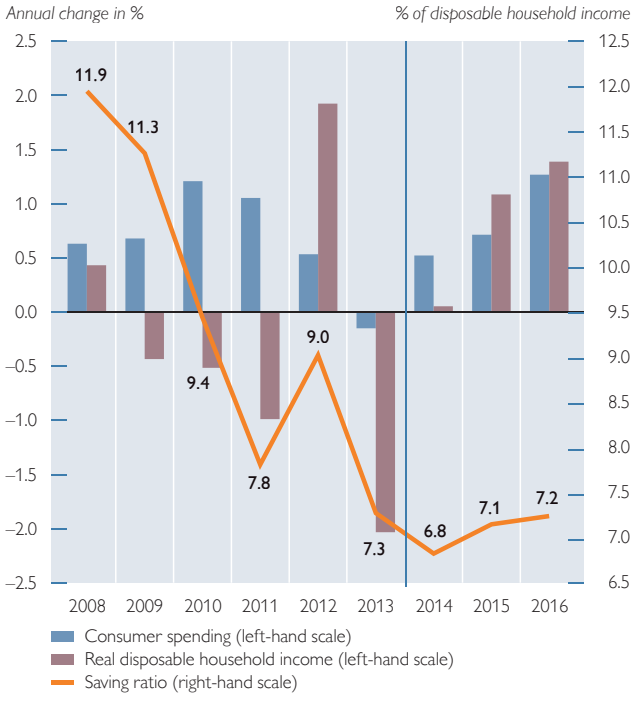
4.3 Low Inflation Supports Consumer Spending

After households had reduced their real consumption expenditure slightly in 2013 (by 0.1%), a return to a path of growth can be observed for the year to date, albeit only at a very subdued level. In the second quarter of 2014, real retail sales increased by 0.1% against the preceding quarter, while the expansion over the three-month period to August was even stronger at 1.1%. Car registrations are picking up after the sharp downturn recorded in the second quarter as a result of the March in-

Chart 4

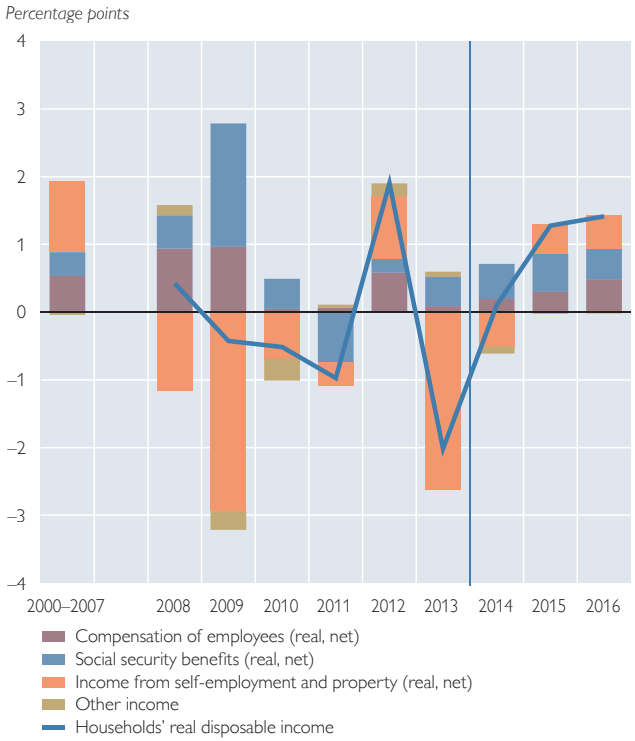
Consumer Spending[1]

Households' Consumption Expenditure



Source: Eurostat, Statistics Austria, OeNB.

Contributions to the Growth of Households' Real Disposable Income



Source: Statistics Austria, OeNB.

[1] *Explanatory notes and data sources relating to chart 4, right-hand panel: "Compensation of employees (real, net)": compensation of employees less social contributions (actual and imputed, to government and private entities) of employers and employees, as well as other wage-related taxes payable by employees (Statistics Austria data up to and including 2013; as from 2014, updates based on 2014 tax data and the OeNB outlook). "Social security benefits (real, net)": difference between monetary social benefits received by the household sector (including transfers from the private sector) less wage tax and social security contributions on pensions (data for wage tax and social security contributions on pensions based on wage tax statistics, combined with the OeNB outlook). "Income from self-employment and property (real, net)": sum total of property income (including interest) and mixed income accruing to self-employed households less withholding taxes on property income of the household sector, assessed income tax and social security contributions of self-employed households (latter based on own estimates). "Other income": primarily net contribution of other current transfers (e.g. nonlife insurance premiums and benefits, membership fees, state grants to nonprofit organizations) as well as social security contributions and current direct taxes that were not taken into consideration above (in particular, motor vehicle taxes and parafiscal charges paid by private households).*

Table 6

Consumer Spending in Austria

	2013	2014	2015	2016
	Annual change in %			
Households' disposable income (nominal)	+0.1	+1.7	+2.5	+2.9
Consumption deflator	+2.2	+1.7	+1.4	+1.5
Households' disposable income (real)	–2.0	+0.1	+1.1	+1.4
Consumer spending (real)	–0.1	+0.5	+0.7	+1.3
	Contribution to real GDP growth in percentage points			
Consumer spending	–0.1	+0.3	+0.4	+0.7
	% of households' nominal disposable income			
Saving ratio	+7.3	+6.8	+7.1	+7.2
	% of nominal GDP			
Consumption ratio	+53.9	+53.9	+53.7	+53.6

Source: 2013: Eurostat; 2014 to 2016: OeNB December 2014 outlook.

crease in motor vehicle registration tax (a drop of 12.2% in comparison with the first quarter) and have recently increased significantly (by 9.2% in the three months to October).

The modest acceleration of consumer spending in 2014 was due primarily to rising real incomes. Although the compensation per employee increased marginally less in 2014 than in the year before, this was more than offset by the fact that inflation was half a percentage point lower. The upward movement of prices will remain at around 1½% in the further course of the period under review, and will thus contribute to a moderate growth of real incomes and a gradual acceleration of consumer spending. Viewed over the whole forecasting horizon from 2014 to 2016, inflation will be just about 1 percentage point lower, year on year, than the average recorded over the past three years, while the growth of real incomes will be 0.7 percentage points higher.

2015 will see a decline in employment dynamics on cyclical grounds, so that the share of compensation of employees in households' incomes will fall. This will be compensated for by rising property and self-employment income, as well as by increases in net transfer payments and a slower rise of direct taxes. In 2016, all types of income will benefit from the anticipated recovery of business activity. The growth of households' real disposable income will thus return to positive territory over the forecasting horizon, after the decrease of 2.0% as a result of investment losses in 2013, gradually rising from 0.1% in 2014 to 1.4% in 2016. Consumer spending is expected to increase along similar lines, namely by 0.5%, 0.7% and 1.3% in 2014, 2015 and 2016, respectively.

The saving ratio will remain stable at around 7% over the forecasting horizon, and will thus remain clearly below the multi-year average of 10% (1999–2013). Changes in Austria's saving ratio are determined predominantly by the composition of households' disposable income. The saving ratio increases in line with the share of property income in households' total income in view of a below-average marginal propensity to consume property income. Accordingly, the saving ratio declined from around 12.1% in 2007 to 7.3% in 2013. Over the same period, the share of

Table 7

Determinants of Austrian Households' Nominal Income

	2013	2014	2015	2016
	Annual change in %			
Payroll employment	+0.8	+0.7	+0.4	+0.6
Wages and salaries per employee	+2.2	+2.0	+1.5	+2.2
Compensation of employees	+3.0	+2.7	+1.9	+2.9
Property income	–16.5	+0.3	+1.3	+3.9
Self-employment income and operating surpluses (net)	+3.1	+1.2	+2.7	+3.5
	Contribution to households' disposable income in percentage points			
Compensation of employees	+2.4	+2.2	+1.6	+2.4
Property income	–2.4	+0.0	+0.2	+0.5
Self-employment income and operating surpluses (net)	+0.5	+0.2	+0.4	+0.6
Net transfers less direct taxes[1]	–0.4	–0.8	+0.3	–0.6
Households' disposable income (nominal)	+0.1	+1.7	+2.5	+2.9

Source: 2013: Eurostat; 2014 to 2016: OeNB December 2014 outlook.

[1] Negative figures indicate an increase in (negative) net transfers less direct taxes, while positive figures indicate a decrease.

property income dropped from 20% to 12%. The years from 2014 to 2016 are unlikely to see any major change in the composition of households' income, and the saving ratio is expected to stabilize. It is only in 2014 that special factors will cause the saving ratio to decline temporarily to 6.8%. In the wake of the conclusion of tax agreements with Switzerland and Liechtenstein, there has recently been a significant increase in the number of self-indictments by tax evaders. Under the provisions of the ESA 2010, payments of tax arrears in this context have a dampening effect on households' income and will reduce the saving ratio by around 0.3 percentage points in 2014. Once this special factor ceases to have an effect, the saving ratio will rise to 7.1% and 7.2% in 2015 and 2016, respectively.

Box 2

Development of Public Sector Finances[1]

The data revisions as a result of the changeover to the ESA 2010, as outlined in box 1, have implications for the forecast general government deficit and the public sector debt-to-GDP ratio. Although the deficit for 2013 has remained unchanged at 1.5% of GDP, the structure of expenditure, in particular, has changed significantly. The reclassification of various quasi-public sector companies and the KA Finanz, a "bad bank," as entities that are part of the general government sector has raised the public sector debt ratio to 81.2% of GDP.

The significant deterioration of this year's general government budget balance is due, above all, to comparatively high transfers of assets to banks and to the nullification of high one-off revenue enjoyed in 2013. The reorganization of the Hypo Group Alpe Adria, in particular, currently raises the deficit quite significantly. Thanks to robust payroll developments, the weakness of cyclical activity is reflected solely in subdued goods tax revenues (in particular, value-added tax) and in a marked increase in unemployment benefits. However, persistently weak business activity will have a major negative impact on budgetary developments next year. Nonetheless, the budget balance is expected to improve in both 2015 and the year thereafter, primarily on account of a decline in transfers to banks and lower interest payments. The reorganization of the Hypo Group Alpe Adria will also cause the public sector

[1] Prepared by Doris Prammer, Oesterreichische Nationalbank, Economic Analysis Division, doris.prammer@oenb.at.

debt ratio in 2014 to rise by more than 4 percentage points. As of 2015, reduced new borrowing, comparatively high nominal GDP growth and sales of assets by bad banks will lead to a reversal of the trend in general government debt. The public sector debt ratio will thus decrease to 82.9% of GDP by the end of 2016.

The most important factor of uncertainty in the current projection of developments in the nominal budget balance, and of the debt ratio, is to be found in the financial stabilization measures ("bank support package"). With respect to the budgetary impact of these measures, the OeNB's current budget balance forecast for 2014 and 2015 is based on information provided by the Austrian Federal Ministry of Finance (Austrian draft budgetary plan for 2015). Moreover, the tax reform being debated at the moment has not been considered since it has yet to be specified in detail.

Further improvements to the structure of the budget balance are expected over the forecasting horizon, especially in the current year. This year's significant improvements are due, above all, to several minor measures on the supply side, e.g. the increase in motor vehicle insurance tax and tobacco tax, as well as ongoing bracket creep, further pension adjustments in 2014 that remained below the inflation rate and the muted growth of both staff costs and discretionary spending. As of 2015, however, virtually no additional consolidation measures are likely, and smaller expansionary measures will become effective (the reduction of employers' social security contributions and a higher family allowance). 2015 will thus see a marginal structural deterioration of the budget balance. In the OeNB's view, Austria's attainment of its specific medium-term objective of a structural budget deficit of –0.45% of GDP in 2015 calls for additional consolidation measures in the order of around ¼% of GDP.

5 Unemployment Rises to 5.3%

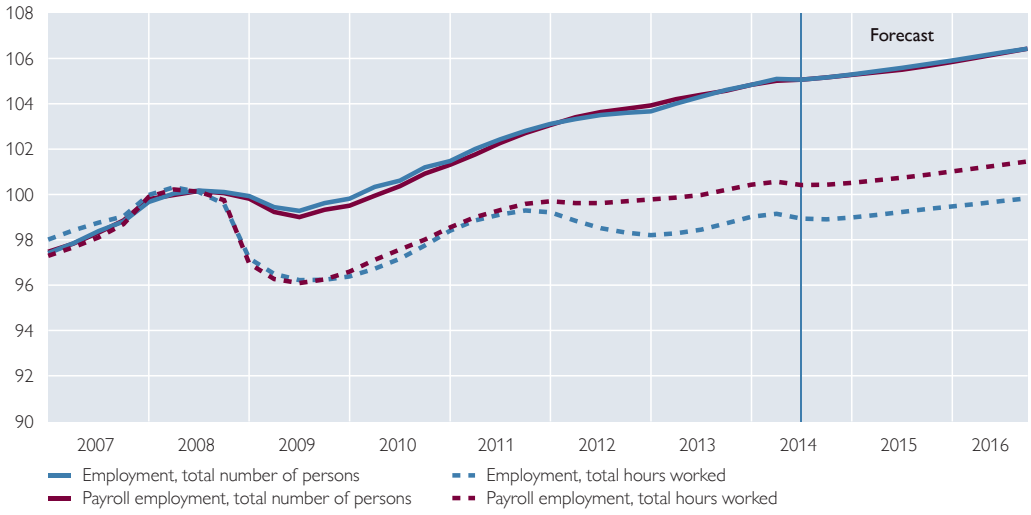
Despite the weakness of economic growth that has persisted since 2012, Austria has experienced record employment levels year after year throughout this period. In 2014, payroll employment as defined by the national accounts will rise by some 25,000 persons year on year, to a new record high of just about 3.7 million persons. An analysis of the number of hours worked, however, presents a rather different picture of the Austrian labor market. Since 2011, the volume of work completed has de facto remained unchanged. At 6.99 billion hours worked in 2014, it will be only marginally higher (0.1%) than that in 2011.

There are several reasons why employment and hours worked have developed along different lines. On the one hand, cyclical adjustments on the Austrian labor market are frequently effected by way of cuts in working hours as companies often attempt to keep employees on the payroll in a downturn. On the other hand, longer-term trends such as declining standard working hours and a rising proportion of part-time employees also play a role. These factors will continue to have an impact throughout the period from 2014 to 2016. Only toward the end of the forecasting horizon will the expected recovery of business activity cause the total number of hours worked to again rise at a rate similar to the increase in employment (see chart 5). The total number of hours worked in 2016 will thus still be slightly lower (0.3%) than the precrisis level of 2008. The number of persons employed in 2016, by contrast, will be 6% higher than the precrisis level, and thus conceals the negative consequences that the crisis has had for the Austrian labor market.

As in the past, employment in the years under review will follow the trend in business activity with a lag. The growth of 0.9% in payroll employ-

Chart 5

Employment in Austria



Source: OeNB, Eurostat.

ment in 2014 will be followed by a trough of 0.4% in 2015. 2016 is expected to see a cyclical acceleration of employment growth to 0.6%. The total number of hours worked is likely to develop less well. Compared with developments in 2011 and 2012, employment growth will be significantly lower over the forecasting horizon. This is due both to the muted economic growth and to the fading effects of the opening-up of the Austrian labor market to employees from eastern European countries.

In the period under review, the unemployment rate will rise gradually from 4.9% in 2013 to 5.3% in 2016. Aside from cyclical factors, increasing labor force participation by older workers and the inflow of labor from abroad play a major role. The labor force participation rate of workers between

Table 8

Labor Market Developments in Austria

	2013	2014	2015	2016
	Annual change in %			
Total employment	+0.7	+0.9	+0.4	+0.6
of which: payroll employees	*+0.8*	*+0.7*	*+0.4*	*+0.6*
self-employed	*–0.8*	*–0.1*	*+0.0*	*+0.0*
public sector employees	*+0.5*	*+1.7*	*+0.6*	*+0.5*
Total hours worked	–0.3	+0.6	+0.2	+0.5
of which: Payroll employees	*+0.3*	*+0.5*	*+0.2*	*+0.5*
Self-employed	*–3.0*	*+1.0*	*–0.1*	*+0.2*
Labor supply	+1.3	+1.0	+0.7	+0.7
Registered unemployed	+13.4	+3.8	+5.8	+1.9
	% of labor supply			
Unemployment rate (Eurostat definition)	4.9	5.1	5.3	5.3

Source: 2013: Eurostat; 2014 to 2016: OeNB December 2014 outlook.

50 and 64 years old has recently climbed to 63.9% (second quarter of 2014), so that it is now only just below the euro area average of 66%. However, it is still considerably lower than the levels in comparable countries such as Germany (75.6%) and Sweden (82.0%). Not least the pension reforms make it likely that the participation rate of older workers will continue to rise. Since the liberalization of the Austrian labor market, the supply of labor from the ten new EU Member States has increased, on average, by more than 30,000 workers per annum. However, the inflow is likely to gradually decline over the forecasting horizon.

6 Upward Movement of Prices Clearly Slower than in Past Years

The upward movement of prices has slowed down in comparison with 2013. In October this year, HICP inflation stood at 1.4%, and was thus clearly below the annual rate recorded for 2013 (2.1%). The decline is attributable to the subdued economic growth, falling global commodity prices, low import prices and the modest increase in labor costs.

Commodity prices will remain at currently low levels throughout the period under consideration, as indicated by futures prices, while collectively agreed wages and salaries will rise only moderately on account of high unemployment levels, and business activity will only gain momentum toward the end of the forecasting horizon. This means that there are no perceptible price pressures to be expected from either the supply side or the demand side. The rate of HICP inflation will consequently hover around 1½% throughout the period from 2014 to 2016. Core inflation will slowly decline over the forecasting horizon, from 1.8% in 2014 to 1.6% in 2016.

Despite declining in 2014, inflation in Austria will nonetheless continue to be considerably higher that the euro

Table 9

Selected Price and Cost Indicators for Austria

	2013	2014	2015	2016
	Annual change in %			
Harmonised Index of Consumer Prices (HICP)	+2.1	+1.5	+1.4	+1.5
HICP energy	–1.0	–2.0	–2.6	+0.6
HICP excluding energy	+2.4	+1.8	+1.8	+1.6
Private consumption expenditure (PCE) deflator	+2.2	+1.7	+1.4	+1.5
Investment deflator	+1.7	+1.5	+1.3	+1.4
Import deflator	–0.3	–0.6	+1.0	+1.6
Export deflator	+0.1	+0.8	+1.1	+1.5
Terms of trade	+0.4	+1.4	+0.0	–0.1
GDP deflator at factor cost	+1.3	+1.6	+1.8	+1.5
Collective wage and salary settlements	+2.6	+2.4	+1.9	+2.2
Compensation per employee	+2.2	+2.0	+1.5	+2.2
Hourly compensation per employee	+2.7	+2.2	+1.7	+2.3
Labor productivity per employee	–0.4	–0.4	+0.2	+1.0
Labor productivity per hour	+0.6	–0.2	+0.5	+1.1
Unit labor costs	+2.6	+2.4	+1.3	+1.2
Profit margins[1]	–1.4	–0.8	+0.5	+0.3

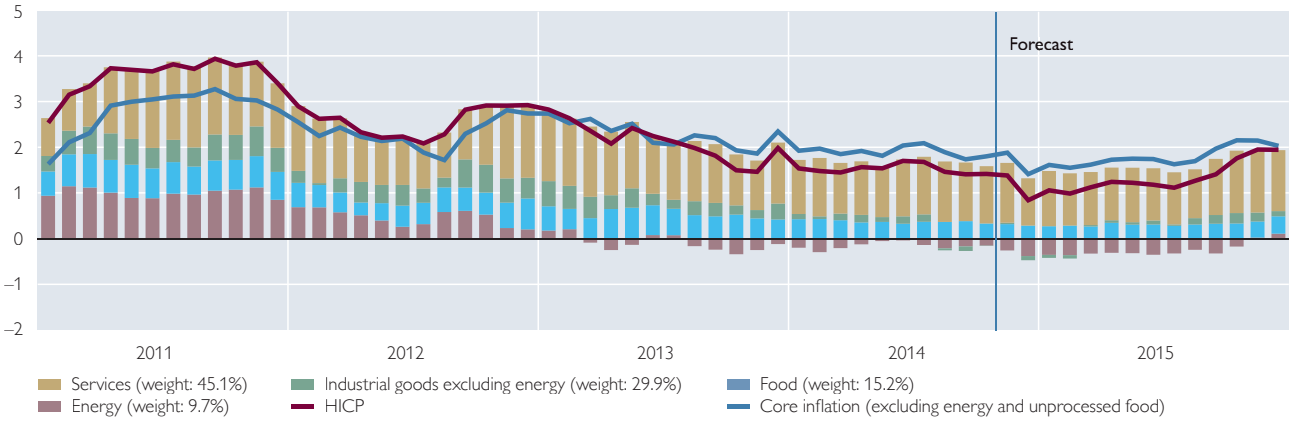
Source: 2013: Eurostat, Statistics Austria; 2014 to 2016: OeNB December 2014 outlook.

[1] GDP deflator divided by unit labor costs.

Chart 6

Austrian HICP Inflation Rate and Contributions of Subcomponents

Annual change in % (HICP and core inflation) and percentage points (contributions to inflation) *Last observation: 1.4% (October 2014)*



Source: OeNB, Statistics Austria.

area average. According to provisional figures, the gap vis-à-vis the euro area was 1 percentage point in October 2014. The adjustment processes under way in countries covered by financial assistance programs, in particular, are resulting in low, at time even negative, rates of inflation there. But the HICP inflation gap vis-à-vis Germany, Austria's most important trading partner, has likewise remained in positive territory for some years now. At present, the difference between the Austrian and German inflation rates is the consequence of a higher contribution of Austrian service prices to inflation, which is due, on the one hand, to greater dynamics in wage and demand-sensitive sectors (e.g. restaurant and hotel services, as well as financial services) and, on the other, to a higher contribution of the Austrian public sector to inflation. The inflation gap vis-à-vis the euro area will therefore diminish slowly over the forecasting horizon and will virtually have disappeared at 0.2 percentage points in 2016. The upward movement of prices in Germany is likely to accelerate through the introduction of a minimum wage as of 2015, so that German inflation in 2016 will probably be higher than that in Austria.

The pay settlements reached thus far (+1.8% in the public sector, +2.1% in the wholesale and retail trade, and +2.1% in the metal-working industry) indicate that collectively agreed wages and salaries are likely to increase by 1.9% in 2015. Given the recovery of business activity expected for 2016, wage growth is forecast to be slightly higher at 2.2% in that year.

Wage drift has been on a negative trend for quite some time now, which is due to structural shifts of employment to low-wage sectors and a rising proportion of part-time employees. Fluctuations around this underlying trend are, typically, procyclical in nature. Accordingly, the wage drift forecast for 2014 and 2015 is likely to be negative (–0.4 percentage points per annum). On account of the improvement of economic activity in 2016, wage drift is expected to be neutral in that year. If bracket creep is taken into account, net compensation per employee in 2015 and 2016 will rise by 1.3% and 1.9%, respectively. In real terms, net compensation per employee

Table 10

Compensation of Employees[1]

	2013	2014	2015	2016
	Annual change in %			
Per person employed (nominal)				
Collectively agreed wages and salaries[2]	+2.6	+2.4	+1.9	+2.2
Wage drift	–0.4	–0.4	–0.4	+0.0
Compensation per employee (gross)	+2.2	+2.0	+1.5	+2.2
Bracket creep[3]	–0.3	–0.3	–0.2	–0.3
Compensation per employee (net)	+1.8	+1.7	+1.3	+1.9
Per person employed (real)				
Compensation per employee (gross)	+0.0	+0.3	+0.1	+0.8
Compensation per employee (net)	–0.3	+0.0	–0.1	+0.4
Per hour (nominal)				
Compensation per hour (gross)	+2.7	+2.2	+1.7	+2.3
Compensation per hour (net)	+2.3	+1.9	+1.4	+2.0
Per hour (real)				
Compensation per hour (gross)	+0.5	+0.5	+0.3	+0.9
Compensation per hour (net)	+0.1	+0.2	+0.1	+0.5
	% of nominal GDP			
Wage share	47.9	48.2	48.0	47.9

Source: 2013: Eurostat; 2014 to 2016: OeNB December 2014 outlook.

[1] *Including employers' social security contributions.*
[2] *Overall economy.*
[3] *Based, ceteris paribus, on average past developments.*

will remain unchanged in 2014 and 2015. An increase (0.4%) is to be expected only in 2016. The share of compensation of employees in national income is expected to decline slightly over the forecasting horizon, namely from 48.2% in 2013 to 47.9% in 2016. It will thus be 2 percentage points higher than the level prior to the crisis, but 4 percentage points lower than in 1995.

7 Significant Risks to Global Business Activity, and thus also to Developments in Austria

The outlook presented here is subject to a number of risks, most of which are pointing toward the downside. The most significant risks to global economic developments currently emanate from geopolitical tensions. A further escalation of the conflict between Russia and Ukraine, and the associated sanctions imposed by both the European Union and the U.S.A., poses the greatest threat to business activity. Although the sanctions currently in place have had hardly any direct impact on Austria's foreign trade, a disruption of Russian gas and oil supplies could undermine cyclical activity in Europe. Yet another geopolitical risk is to be found in a further proliferation of IS terror in the Middle East and the effects this may have on crude oil production in the area. Further moves in the U.S.A. to exit from the expansionary monetary policy pursued there could lead to outflows of capital from emerging market economies, with corresponding negative effects. The extended period of low interest rates has given rise to a search for yield that automatically entails higher risks. China is experiencing a real estate bubble, the bursting of which could pose a grave threat to economic development there. Given low inflation, the downside risks to business activity in the euro area are associated with a higher risk of defla-

tion. Risks to economic developments in Austria are seen to be generally balanced.

8 Clear Downward Revision of the OeNB Outlook of June 2014

The outlook presented here had to be revised significantly downward in comparison with that of June this year. However, the underlying assumptions with respect to the international environment only partially reflect factors of relevance to the revisions. The cumulative growth of Austrian export markets over the three years under review is 3½% lower than that expected in June. However, the geopolitical tensions currently undermining business activity in Europe are having an impact on countries that play an only minor role in Austria's direct foreign trade relations. In addition, a number of external factors are currently better than in June. The weakness of global business activity, together with an increase in supply, has led to significantly lower crude oil prices. The accommodative monetary policy measures have brought interest rates down to record lows. The yields on ten-year government bonds over the forecasting horizon are up to 90 basis points lower than those given in the June outlook. In addition, the measures taken by the ECB have resulted in a depreciation of the euro.

The impact of the changed underlying external assumptions was simulated by way of the OeNB's macroeconomic model. Table 11 lists the individual reasons for revising the outlook. Aside

Table 11

Change in the External Economic Conditions since the OeNB June 2014 Outlook

	December 2014			June 2014			Difference		
	2014	2015	2016	2014	2015	2016	2014	2015	2016
	Annual change in %								
Growth of Austria's export markets	+2.9	+3.4	+5.0	+4.0	+5.2	+5.6	–1.1	–1.8	–0.6
Competitor prices on Austria's export markets	–1.2	+0.6	+1.3	–1.8	+1.0	+1.4	+0.6	–0.4	–0.1
Competitor prices on Austria's import markets	–0.9	+0.9	+1.2	–1.3	+1.1	+1.6	+0.4	–0.2	–0.4
	USD per barrel (Brent)								
Oil price	101.2	85.6	88.5	107.2	102.2	98.2	–6.0	–16.6	–9.7
	Annual change in %								
Nominal effective exchange rate (exports)	–1.3	+0.5	+0.0	–1.9	+0.0	+0.0	+0.6	+0.5	+0.0
Nominal effective exchange rate (imports)	–0.9	+0.5	+0.0	–1.3	+0.0	+0.0	+0.4	+0.5	+0.0
	%								
Three-month interest rate	0.2	0.1	0.1	0.3	0.3	0.4	–0.1	–0.2	–0.3
Long-term interest rate	1.5	1.1	1.4	1.8	2.1	2.4	–0.3	–1.0	–1.0
	Annual change in %								
U.S. GDP (real)	+2.2	+2.9	+2.9	+2.4	+3.0	+3.0	–0.2	–0.1	–0.1
	USD/EUR								
USD/EUR exchange rate	1.33	1.25	1.25	1.38	1.38	1.38	–0.05	–0.13	–0.13

Source: Eurosystem.

from the impact of updated external assumptions, the effects of new data and other changes played a role. The influence of new data covers the impact of revisions to both historical data available at the time of the publication of the OeNB's previous economic outlook (i.e. data up to the first quarter of 2014) and forecasting errors with respect to data on quarterly developments (in the second and third quarters of 2014) that have now been published for the first time. The other changes include new expert analyses of the development of domestic variables, such as public sector consumption and pay settlements, as well as any changes to the model.

The prospects for growth in 2014 were revised perceptibly downward (by 1.0 percentage point) in comparison with those given in the economic outlook of June this year, when the indicators available had suggested a marked recovery of both global and domestic business activity as of the second quarter of 2014. GDP growth had been forecast to be in the order of 0.5% in both the second and the third quarter. At 0.1% and 0.0% in the second and third quarter, respectively, actual GDP growth was significantly lower than expected. The forecasting errors with respect to these two quarters explain half the downward revision of the figures for 2014. Yet another factor was the downward revision of the national accounts for both the second half of 2013 and the first quarter of 2014. The resulting negative impact on GDP growth in 2014 is 0.3 percentage points.

At –1.1 percentage points, the downward revision of the outlook for 2015 was even more marked than that for 2014. Just over one-quarter of that revision (–0.3 percentage points) is accounted for by the subdued growth recorded throughout 2014, which gives rise to a statistical overhang for 2015. The deterioration of the prospects for growth in 2015 is reflected only partially in the external assumptions underlying the economic outlook. Although the reduced growth on Austria's export markets dampens the prospects for sales there, domestic growth is supported by lower interest rates, reduced crude oil prices and the depreciation of the euro. The net effect on growth in Austria is relatively small, namely –0.2 percentage points in both 2015 and 2016. The most important channel of transmission, the downturn of sentiment, is not reflected in the external factors, however. That is why most of the downward revision for 2015 and 2016 cannot be explained either by the availability of new data or by changes in external assumptions. Instead, it reflects a significant clouding of sentiment, indicators of which cannot be incorporated into traditional macroeconomic models.

The downward revision of the outlook for inflation is due primarily to the decline in commodity prices. In addition, the weak outlook for economic activity is curbing price pressures.

Table 12

Breakdown of Revisions to the OeNB Outlook

	GDP			HICP		
	2014	2015	2016	2014	2015	2016
	Annual change in %					
Outlook of December 2014	+0,4	+0,7	+1,6	+1,5	+1,4	+1,5
Outlook of June 2014	+1,6	+1,9	+2,1	+1,8	+1,7	+1,9
Difference	–1,2	–1,2	–0,5	–0,3	–0,3	–0,4
Caused by:	*Percentage points*					
External assumptions as of Q4 2014	+0,0	–0,2	–0,2	–0,2	–0,3	–0,1
New data[1]	–0,9	–0,4	x	–0,2	–0,1	x
of which: revisions to historical data up to Q1 2014	*–0,3*	*+0,0*	*x*	*+0,0*	*+0,0*	*x*
projection errors for Q2 and Q3 2014	*–0,6*	*–0,4*	*x*	*–0,2*	*–0,1*	*x*
Other changes[2]	–0,3	–0,6	–0,3	+0,1	+0,1	–0,3

Source: OeNB outlooks of June and December 2014.

[1] *„New data" refer to data on GDP growth and/or inflation that have become available since the publication of the preceding OeNB outlook.*
[2] *Different assumptions with respect to trends in domestic variables, such as wages and salaries, public sector consumption, effects of tax measures, other changes to assessments and model changes.*

Table 13

Comparison of the OeNB Outlook of December 2014 with the OeNB Outlook of June 2014

	Outlook of December 2014				Outlook of June 2014			
	2013	2014	2015	2016	2013	2014	2015	2016
Economic activity	*Annual change in % (real)*							
Gross domestic product	+0.3	+0.4	+0.7	+1.6	+0.3	+1.6	+1.9	+2.1
Private consumption	–0.1	+0.5	+0.7	+1.3	+0.1	+0.7	+1.0	+1.4
Public sector consumption	+0.4	+1.0	+1.4	+1.3	+1.4	+0.8	+1.2	+1.1
Gross fixed capital formation	–0.9	–0.1	+0.8	+2.3	–0.9	+0.8	+2.6	+2.9
Exports of goods and services	+0.9	+0.8	+2.4	+4.6	+2.5	+5.4	+5.4	+5.7
Imports of goods and services	–0.2	+0.5	+2.5	+4.7	+0.5	+3.9	+5.4	+5.8
	% of nominal GDP							
Current account balance	+1.0	+0.4	+0.6	+0.8	+2.7	+3.1	+3.4	+3.6
Contribution to real GDP growth	*Percentage points*							
Private consumption	–0.1	+0.3	+0.4	+0.7	+0.0	+0.4	+0.5	+0.8
Public sector consumption	+0.1	+0.2	+0.3	+0.3	+0.3	+0.1	+0.2	+0.2
Gross fixed capital formation	–0.2	+0.0	+0.2	+0.5	–0.2	+0.2	+0.5	+0.6
Domestic demand (excl. changes in inventories)	–0.2	+0.5	+0.8	+1.4	+0.1	+0.7	+1.3	+1.6
Net exports	+0.5	+0.2	+0.1	+0.2	+1.2	+1.2	+0.5	+0.4
Changes in inventories (incl. statistical discrepancies)	+0.0	–0.2	–0.2	+0.0	–0.9	–0.3	+0.2	+0.1
Prices	*Annual change in %*							
Harmonised Index of Consumer Prices (HICP)	+2.1	+1.5	+1.4	+1.5	+2.1	+1.8	+1.7	+1.9
Private consumption expenditure (PCE) deflator	+2.2	+1.7	+1.4	+1.5	+2.2	+1.9	+1.6	+1.8
GDP deflator	+1.6	+1.8	+1.6	+1.3	+1.7	+1.5	+1.5	+1.8
Unit labor costs in the overall economy	+2.6	+2.4	+1.3	+1.2	+2.6	+1.6	+1.4	+1.7
Compensation per employee (at current prices)	+2.2	+2.0	+1.5	+2.2	+2.2	+2.1	+2.4	+2.8
Compensation per hour worked (at current prices)	+2.7	+2.2	+1.7	+2.3	+3.6	+2.6	+2.7	+2.8
Import prices	–0.3	–0.6	+1.0	+1.6	–0.8	+0.1	+1.3	+1.6
Export prices	+0.1	+0.8	+1.1	+1.5	–0.3	+0.4	+1.2	+1.5
Terms of trade	+0.4	+1.4	+0.0	–0.1	+0.5	+0.2	–0.1	–0.1
Income and savings								
Real disposable household income	–2.0	+0.1	+1.1	+1.4	–1.1	+0.7	+1.8	+2.3
	% of households' nominal disposable income							
Saving ratio	7.3	6.8	7.1	7.2	+6.6	+6.4	+7.1	+7.8
Labor market	*Annual change in %*							
Payroll employment	+0.8	+0.7	+0.4	+0.6	+0.8	+1.1	+0.9	+1.0
Hours worked (payroll employees)	+0.3	+0.5	+0.2	+0.5	–0.6	+0.5	+0.7	+1.0
	% of labor supply							
Unemployment rate (Eurostat definition)	4.9	5.1	5.3	5.3	+4.9	+5.0	+5.0	+4.9
Public finances	*% of nominal GDP*							
Budget balance	–1.5	–2.4	–1.8	–1.4	–1.5	–2.5	–1.2	–0.7
Government debt	81.2	85.4	84.6	82.9	74.5	79.2	77.5	75.3

Source: 2013: Eurostat. Statistics Austria; 2014 to 2016: OeNB December 2014 outlook.

[1] *The outlook was drawn up on the basis of seasonally adjusted and working day-adjusted national accounts data. Therefore. the figures for 2013 deviate from the unadjusted data released by Statistics Austria. Calculated in accordance with the ESA 2010.*

Annex: Detailed Result Tables

Table 14

Demand Components (Real Prices)

Chained volume data (reference year = 2005)

	2013	2014	2015	2016	2013	2014	2015	2016
	EUR million				*Annual change in %*			
Private sector consumption	160,980	161,823	162,978	165,046	–0.1	+0.5	+0.7	+1.3
Public sector consumption	60,630	61,266	62,109	62,927	+0.4	+1.0	+1.4	+1.3
Gross fixed capital formation	67,645	67,586	68,148	69,710	–0.9	–0.1	+0.8	+2.3
of which: investment in plant and equipment	*22,362*	*22,682*	*22,923*	*23,599*	*–0.7*	*+1.4*	*+1.1*	*+3.0*
residential construction investment	*12,969*	*13,112*	*13,272*	*13,641*	*–0.3*	*+1.1*	*+1.2*	*+2.8*
nonresidential construction investment and other investment	*32,079*	*31,652*	*31,817*	*32,333*	*–1.4*	*–1.3*	*+0.5*	*+1.6*
Changes in inventories (incl. statistical discrepancies)	5,062	4,519	3,845	3,752	×	×	×	×
Domestic demand	294,317	295,194	297,080	301,435	–0.3	+0.3	+0.6	+1.5
Exports of goods and services	162,679	163,979	167,952	175,758	+0.9	+0.8	+2.4	+4.6
Imports of goods and services	149,640	150,451	154,180	161,354	–0.2	+0.5	+2.5	+4.7
Net exports	13,039	13,528	13,773	14,404	×	×	×	×
Gross domestic product	307,356	308,723	310,853	315,839	+0.3	+0.4	+0.7	+1.6

Source: 2013: Eurostat; 2014 to 2016: OeNB December 2014 outlook.

Table 15

Demand Components (Current Prices)

	2013	2014	2015	2016	2013	2014	2015	2016
	EUR million				*Annual change in %*			
Private sector consumption	173,783	177,610	181,336	186,347	+2.0	+2.2	+2.1	+2.8
Public sector consumption	63,866	65,534	67,338	68,996	+1.7	+2.6	+2.8	+2.5
Gross fixed capital formation	71,864	72,860	74,453	77,222	+0.8	+1.4	+2.2	+3.7
Changes in inventories (incl. statistical discrepancies)	2,269	10	163	18	×	×	×	×
Domestic demand	311,783	316,014	323,291	332,583	+1.2	+1.4	+2.3	+2.9
Exports of goods and services	171,846	174,594	180,777	191,994	+1.0	+1.6	+3.5	+6.2
Imports of goods and services	160,973	160,827	166,544	177,012	–0.4	–0.1	+3.6	+6.3
Net exports	10,873	13,767	14,232	14,982	×	×	×	×
Gross domestic product	322,656	329,781	337,523	347,565	+1.9	+2.2	+2.3	+3.0

Source: 2013: Eurostat; 2014 to 2016: OeNB December 2014 outlook.

Table 16

Demand Components (Deflators)

	2013	2014	2015	2016	2013	2014	2015	2016
	2005 = 100				*Annual change in %*			
Private sector consumption	108.0	109.8	111.3	112.9	+2.2	+1.7	+1.4	+1.5
Public sector consumption	105.3	107.0	108.4	109.6	+1.3	+1.5	+1.4	+1.1
Gross fixed capital formation	106.2	107.8	109.2	110.8	+1.7	+1.5	+1.3	+1.4
Domestic demand (excl. changes in inventories)	107.0	108.7	110.2	111.7	+1.9	+1.6	+1.4	+1.4
Exports of goods and services	105.6	106.5	107.6	109.2	+0.1	+0.8	+1.1	+1.5
Imports of goods and services	107.6	106.9	108.0	109.7	–0.3	–0.6	+1.0	+1.6
Terms of trade	98.2	99.6	99.6	99.6	+0.4	+1.4	+0.0	–0.1
Gross domestic product	105.0	106.8	108.6	110.0	+1.6	+1.8	+1.6	+1.3

Source: 2013: Eurostat; 2014 to 2016: OeNB December 2014 outlook.

Table 17

Labor Market

	2013	2014	2015	2016	2013	2014	2015	2016
	Thousands				*Annual change in %*			
Total employment	4,260.5	4,297.1	4,316.3	4,343.3	+0.7	+0.9	+0.4	+0.6
of which: private sector	*3,591.0*	*3,628.1*	*3,647.3*	*3,674.6*	*+1.0*	*+1.0*	*+0.5*	*+0.7*
Payroll employment (national accounts definition)	3,671.1	3,697.2	3,712.6	3,736.5	+0.8	+0.7	+0.4	+0.6
	% of the labor supply							
Unemployment rate (Eurostat definition)	4.9	5.1	5.3	5.3	x	x	x	x
	EUR per real unit of output x 100							
Unit labor costs (economy as a whole)[1]	58.4	59.8	60.6	61.3	+2.6	+2.4	+1.3	+1.2
	EUR thousand per employee							
Labor productivity (economy as a whole)[2]	72.1	71.8	72.0	72.7	–0.4	–0.4	+0.2	+1.0
	EUR thousand							
Compensation per employee (real)[3]	39.0	39.1	39.2	39.5	+0.0	+0.3	+0.1	+0.7
	At current prices in EUR thousand							
Compensation per employee (gross)	42.1	43.0	43.6	44.6	+2.2	+2.0	+1.5	+2.2
	At current prices in EUR million							
Total gross compensation of employees	154,694	158,849	161,933	166,605	+3.0	+2.7	+1.9	+2.9

Source: 2013: Eurostat; 2014 to 2016: OeNB December 2014 outlook.

[1] *Gross wages and salaries divided by real GDP.*
[2] *Real GDP divided by total employment.*
[3] *Gross wages and salaries per employee divided by private consumption expenditure (PCE) deflator.*

Table 18

Balance on current account

	2013	2014	2015	2016	2013	2014	2015	2016
	EUR million				*% of nominal GDP*			
Balance of trade	8,869.0	6,724.2	7,464.1	8,243.9	2.7	2.0	2.2	2.4
Balance of goods	–1,909.0	–3,495.8	–3,618.9	–2,234.9	–0.6	–1.1	–1.1	–0.6
Balance of services	10,778.0	10,219.9	11,083.0	10,478.8	3.3	3.1	3.3	3.0
Balance on income	–1,708.0	–1,698.6	–1,742.5	–1,742.5	–0.5	–0.5	–0.5	–0.5
Balance of transfer payments	–3,837.0	–3,830.3	–3,815.9	–3,815.9	–1.2	–1.2	–1.1	–1.1
Balance on current account	3,324.0	1,195.3	1,905.7	2,685.5	1.0	0.4	0.6	0.8

Source: 2013: Eurostat; 2014 bis 2016: OeNB December 2014 outlook.

Table 19

Quarterly Outlook Results

	2014	2015	2016	2014				2015				2016			
				Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Prices, wages and costs	*Annual change in %*														
HICP	+1.5	+1.4	+1.5	+1.5	+1.6	+1.5	+1.2	+1.1	+1.2	+1.3	+1.9	+1.7	+1.4	+1.4	+1.7
HICP (excluding energy)	+1.8	+1.8	+1.6	+1.9	+1.8	+1.9	+1.7	+1.6	+1.7	+1.7	+2.1	+1.8	+1.5	+1.5	+1.8
Private consumption expenditure (PCE) deflator	+1.7	+1.4	+1.5	+1.7	+1.7	+1.7	+1.5	+1.4	+1.4	+1.3	+1.4	+1.5	+1.5	+1.5	+1.4
Gross fixed capital formation deflator	+1.5	+1.3	+1.4	+1.0	+1.3	+1.9	+1.7	+1.7	+1.6	+1.0	+1.0	+1.2	+1.4	+1.5	+1.5
GDP deflator	+1.8	+1.6	+1.3	+1.5	+1.7	+1.7	+2.1	+1.8	+1.8	+1.7	+1.2	+1.2	+1.3	+1.4	+1.4
Unit labor costs	+2.4	+1.3	+1.2	+2.3	+2.3	+2.4	+2.5	+2.0	+1.5	+1.0	+0.6	+0.9	+1.2	+1.4	+1.5
Nominal wages per employee	+2.0	+1.5	+2.2	+1.9	+1.9	+2.0	+2.1	+1.8	+1.6	+1.4	+1.2	+1.7	+2.1	+2.4	+2.7
Productivity	–0.4	+0.2	+1.0	–0.4	–0.4	–0.4	–0.5	–0.2	+0.1	+0.4	+0.7	+0.8	+0.9	+1.0	+1.1
Real wages per employee	+0.3	+0.1	+0.7	+0.3	+0.2	+0.2	+0.5	+0.4	+0.3	+0.1	–0.2	+0.2	+0.6	+1.0	+1.2
Import deflator	–0.6	+1.0	+1.6	–0.3	–0.7	–0.9	–0.6	+0.2	+1.1	+1.4	+1.5	+1.6	+1.6	+1.6	+1.6
Export deflator	+0.8	+1.1	+1.5	+0.3	+1.1	+1.1	+0.7	+0.8	+1.0	+1.2	+1.3	+1.4	+1.5	+1.5	+1.5
Terms of trade	+1.4	+0.0	–0.1	+0.6	+1.8	+2.0	+1.3	+0.6	–0.1	–0.2	–0.2	–0.1	–0.1	–0.1	+0.0
Economic activity	*Annual and/or quarterly changes in % (real)*														
GDP	+0.4	+0.7	+1.6	+0.1	+0.1	–0.1	+0.0	+0.2	+0.3	+0.3	+0.3	+0.4	+0.4	+0.4	+0.5
Private sector consumption	+0.5	+0.7	+1.3	+0.2	+0.1	+0.2	+0.1	+0.2	+0.2	+0.2	+0.2	+0.4	+0.4	+0.4	+0.4
Public sector consumption	+1.0	+1.4	+1.3	+0.2	+0.2	+0.2	+0.9	+0.1	+0.2	+0.3	+0.3	+0.4	+0.3	+0.3	+0.3
Gross fixed capital formation	–0.1	+0.8	+2.3	+0.4	–0.5	–1.1	–0.1	+0.6	+0.6	+0.6	+0.6	+0.5	+0.6	+0.6	+0.6
Exports	+0.8	+2.4	+4.6	+0.3	+0.2	+0.3	+0.4	+0.7	+0.8	+0.8	+1.0	+1.2	+1.3	+1.3	+1.3
Imports	+0.5	+2.5	+4.7	–0.3	+0.0	–0.1	+0.3	+0.8	+1.0	+1.0	+1.1	+1.2	+1.2	+1.2	+1.2
	Contribution to real GDP growth in percentage points														
Domestic demand	+0.5	+0.8	+1.4	+0.2	+0.0	–0.1	+0.2	+0.3	+0.3	+0.3	+0.3	+0.4	+0.4	+0.4	+0.4
Net exports	+0.2	+0.1	+0.2	+0.3	+0.1	+0.2	+0.1	+0.0	–0.1	–0.1	+0.0	+0.1	+0.1	+0.1	+0.1
Changes in inventories	–0.2	–0.2	+0.0	–0.4	–0.1	–0.1	–0.3	+0.0	+0.1	+0.1	+0.0	–0.1	–0.1	–0.1	+0.0
Labor market	*% of labor supply*														
Unemployment rate (Eurostat definition)	5.1	5.3	5.3	5.0	5.0	5.2	5.2	5.2	5.3	5.3	5.3	5.3	5.3	5.4	5.4
	Annual and/or quarterly changes in %														
Total employment	+0.9	+0.4	+0.6	+0.2	+0.2	+0.0	+0.1	+0.1	+0.1	+0.1	+0.2	+0.2	+0.2	+0.2	+0.2
of which: private sector	+1.0	+0.5	+0.7	+0.3	+0.3	+0.0	+0.1	+0.1	+0.2	+0.2	+0.2	+0.2	+0.2	+0.2	+0.2
Payroll employment	+0.7	+0.4	+0.6	+0.2	+0.2	+0.1	+0.1	+0.1	+0.1	+0.1	+0.1	+0.2	+0.2	+0.2	+0.2
Additional variables	*Annual and/or quarterly changes in % (real)*														
Real disposable household income	+0.1	+1.1	+1.4	–0.7	–0.3	+0.1	+0.4	+0.1	+0.5	+0.5	+0.4	+0.3	+0.2	+0.2	+0.2
	% of real GDP														
Output gap	–1.0	–1.4	–1.1	–0.6	–0.8	–1.1	–1.4	–1.5	–1.4	–1.4	–1.3	–1.2	–1.1	–1.1	–0.9

Source: OeNB December 2014 outlook. Quarterly figures adjusted for seasonal and working-day variations.

Table 20

Comparison of Current Economic Forecasts for Austria

Indicator	OeNB			WIFO		IHS		OECD			IMF		European Commission		
	December 2014			September 2014		September 2014		November 2014			October 2014		November 2014		
	2014	2015	2016	2014	2015	2014	2015	2014	2015	2016	2014	2015	2014	2015	2016
Key results	*Annual change in %*														
GDP (real)	+0.4	+0.7	+1.6	+0.8	+1.2	+0.8	+1.6	+0.5	+0.9	+1.6	+1.0	+1.9	+0.7	+1.2	+1.5
Private consumption (real)	+0.5	+0.7	+1.3	+0.4	+0.8	+0.5	+0.8	+0.5	+0.5	+1.0	×	×	+0.4	+0.6	+0.8
Government consumption (real)	+1.0	+1.4	+1.3	+1.6	+1.2	+0.8	+0.5	+0.7	+0.6	+1.1	×	×	+1.6	+0.9	+0.8
Gross fixed capital formation (real)	–0.1	+0.8	+2.3	+0.9	+1.5	+0.9	+2.7	+0.9	+0.6	+3.5	×	×	+0.5	+2.0	+3.2
Exports (real)	+0.8	+2.4	+4.6	+1.5	+3.3	+3.1	+4.9	–0.2	+2.5	+4.9	+2.7	+4.7	+2.2	+3.2	+4.7
Imports (real)	+0.5	+2.5	+4.7	+1.7	+3.4	+3.4	+4.8	+1.4	+2.7	+5.1	+2.7	+4.5	+2.4	+2.9	+4.8
GDP per employee[1]	–0.4	+0.2	+1.0	+0.8	+1.1	+0.1	+0.6	–0.6	+0.6	+0.6	×	×	–0.2	+0.6	+0.5
GDP deflator	+1.8	+1.6	+1.3	+1.6	+1.6	+1.4	+1.3	+1.7	+1.4	+1.4	×	×	+1.5	+1.6	+1.6
CPI	×	×	×	+1.8	+1.8	+1.8	+2.0	×	×	×	×	×	×	×	×
HICP	+1.5	+1.4	+1.5	+1.7	+1.8	+1.7	+2.0	+1.5	+1.6	+1.9	+1.7	+1.7	+1.5	+1.7	+1.8
Unit labor costs	+2.4	+1.3	+1.2	+1.8	+1.5	+2.1	+1.7	+1.9	+1.2	+1.2	×	×	+2.2	+1.5	+1.5
Payroll employment	+0.9	+0.4	+0.6	+0.7	+0.6	+0.6	+1.0	+0.9	+0.3	+1.0	×	×	+0.9	+0.6	+1.0
	% of labor supply														
Unemployment rate (Eurostat definition)	5.1	5.3	5.3	5.0	5.2	5.0	5.0	5.0	5.2	5.1	5.0	4.9	5.3	5.4	5.0
	% of nominal GDP														
Current account	0.4	0.6	0.8	2.4	2.5	×	×	1.6	1.7	1.5	3.0	3.2	2.4	2.7	2.8
Budget balance	–2.4	–1.8	–1.4	–2.9	–1.9	–2.8	–1.6	–3.0	–2.2	–1.8	–3.0	–1.5	–2.9	–1.8	–1.1
External assumptions															
Oil price in USD/barrel (Brent)	101.2	85.6	88.5	110.0	110.0	107.0	110.0	101.4	85.0	85.0	102.8	99.4	102.6	91.0	92.8
Short-term interest rate in %	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.2
USD/EUR exchange rate	1.33	1.25	1.25	1.35	1.30	1.34	1.27	1.33	1.24	1.24	1.35	1.34	1.33	1.27	1.27
	Annual change in %														
Euro area GDP (real)	+0.8	+1.0	+1.5	+0.8	+1.1	+0.7	+1.4	+0.8	+1.1	+1.7	+0.8	+1.3	+0.8	+1.1	+1.7
U.S. GDP (real)	+2.2	+2.9	+2.9	+2.2	+3.1	+2.1	+2.8	+2.2	+3.1	+3.0	+2.2	+3.1	+2.2	+3.1	+3.2
World GDP (real)	+3.3	+3.7	+3.9	+3.1	+3.5	×	×	+3.3	+3.7	+3.9	+3.3	+3.8	+3.3	+3.8	+4.1
World trade[2]	+2.9	+4.0	+5.2	+3.5	+4.0	+3.3	+5.0	+3.0	+4.5	+5.5	+3.8	+5.0	+3.0	+4.6	+5.5

Source: OeNB, WIFO, IHS, OECD, IMF, European Commission.

[1] *Excluding WIFO: productivity per hour.*
[2] *European Commission: global imports.*

A Common European Unemployment Insurance – A Much Debated Route toward European Fiscal Union

Christian Beer, Walpurga Köhler-Töglhofer, Alfred Stiglbauer[1]

The crisis has reignited a debate on deeper fiscal integration in the euro area. The goal is to improve the capability of the currency union to cope with asymmetric shocks. One instrument in this context is the implementation of a European unemployment insurance (EUI) scheme aiming at automatic stabilization of income and aggregate output in countries affected by adverse macroeconomic shocks and rising unemployment. Recently, a number of proposals and estimates of the economic effects of such a scheme have been published. The empirical analyses indicate a non-negligible stabilization effect of an EUI. However, an EUI is likely to face several problems originating, among other things, from structural differences in labor markets and potential moral hazard by Member States. An EUI therefore does not appear to be the most appropriate approach to increasing common risk sharing.

JEL classification: E63, F45, H55, J65
Keywords: Automatic stabilization, unemployment insurance, monetary union, fiscal union

While the financial crisis had originated in the United States, it acquired a truly European nature in 2010, when observers started to question the survival of the euro, blaming, inter alia, shortcomings in the design of European Economic and Monetary Union (EMU) for the crisis. This experience led to a renewed debate on deeper fiscal integration so that the euro area could cope better with asymmetric demand shocks. Toward the end of 2012, the "four presidents' report" (Van Rompuy, 2012) and the "blueprint for a deep and genuine Economic and Monetary Union" (European Commission, 2012a) proposed to introduce a "fiscal capacity" at the central level of the monetary union, provided that this does not lead to permanent unidirectional transfers between Member States and that moral hazard of Member States is ruled out.

One instrument for heading toward a fiscal union is the implementation of a European unemployment insurance (EUI) aimed at automatic stabilization of income and aggregate output in countries affected by adverse macroeconomic shocks and rising unemployment. Recent publications on an EUI comprise proposals and estimates of the economic effects of such a scheme. We provide an overview of this literature and assess the ongoing discussion.

The article is structured as follows: Section 1 summarizes the main points of the debate on closer fiscal integration in the euro area. In section 2, we discuss some aspects of centralized risk sharing. In section 3, we characterize current national unemployment insurance (UI) systems in euro area Member States to gain a better grasp on proposals for an EUI. In section 4, we review design aspects of an EUI and discuss its likely stabilization properties. Section 5 sheds light on the question whether the requirements set out for introducing a fiscal capacity are likely to be fulfilled. Section 6 summarizes and concludes.

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1 A Fiscal Union for the Euro Area – The Renewed Official Debate

1.1 European Monetary Union – An "Unfinished" Project

Before the start of European monetary union, many economists had argued that the currency union would not survive unless it was complemented by a fiscal or even by a political union.[2] The need for some type of (joint) macroeconomic stabilization or – in today's terminology – a risk-sharing mechanism within the monetary union had also been voiced repeatedly in influential EU reports.[3]

Optimum currency area theory states that country-specific shocks to aggregate demand would – due to sticky domestic prices and limited labor mobility across euro area countries – translate into lengthy and painful internal devaluation, which the common monetary policy cannot address (De Grauwe, 2012). In contrast, euro area-wide automatic fiscal stabilizers would allow re-establishing equilibrium, while limiting the necessary reduction in domestic prices and wages in a country affected by adverse asymmetric demand shocks. A shared fiscal policy would above all benefit a currency union with relatively weak cross-country labor mobility, limited wage and price flexibility, differing labor market institutions and different degrees of trade openness – patterns which are characteristic for the euro area.

In the euro area, the precrisis norm for budgetary behavior was to let automatic stabilizers operate freely, with discretionary policy being the exception rather than the rule. Policy makers in the euro area countries agreed to coordinate national fiscal policies through the Stability and Growth Pact. This set of rules was meant to provide national fiscal policies with enough room for letting the automatic stabilizers do their work as well as for taking necessary discretionary measures in case of periods of slow or negative growth. However, when the crisis hit, it became clear that fiscal positions in many euro area countries allowed very little leeway for discretionary anticyclical measures. Moreover, in particular the sovereign debt crisis showed that the scope of national fiscal policies to act countercyclically will disappear if credit markets freeze up. No longer able to borrow, countries fail to smooth aggregate income and consumption. Hence, the incomplete design of the European monetary union was once again criticized (O'Rourke and Taylor, 2012; Krugman, 2013; De Grauwe, 2013).

1.2 A "Fiscal Capacity" for the Euro Area – A First Step Toward a Fiscal Union

The official debate on a fiscal union[4] for the euro area[5] started at the June 2012 European Council, when the presidents of the European Council, the Commission, the Eurogroup and the ECB were

[2] *See European Commission (2013a) for references to this older discussion.*

[3] *The MacDougall Report (Commission of the European Committees, 1977), the Delors Report (European Community, 1989) and the "One Market One Money" Report (Commission of the European Communities, 1990). For instance, one of the conclusions of the MacDougall Report was that public finance in economic unions plays a major role in cushioning short-term and cyclical fluctuations.*

[4] *The term "fiscal union" is used to mean very different things. We use it to refer to the creation of a significant tax and transfer system at the central level of monetary union capable of cushioning asymmetric shocks.*

[5] *We do not discuss fiscal risk sharing at the level of the EU as a whole because the issue of fiscal risk sharing is only critical in a currency union where national monetary and/or exchange rate policy instruments are no longer available.*

commissioned with coming up with a specific road map "towards a genuine Economic and Monetary Union." The final report of the four presidents (Van Rompuy, 2012) proposed "a timeframe and a stage-based process towards the completion of Economic and Monetary Union." The first stage was ensuring fiscal sustainability (e.g. the "six-pack" and "two-pack" legislations) and breaking the link between banks and sovereigns (above all, by establishing the Single Supervisory Mechanism (SSM) and the European Stability Mechanism (ESM)). Stage two includes the completion of the integrated financial framework and "setting up a mechanism for stronger coordination, convergence and enforcement of structural policies." The final, post-2014 third stage suggests "improving the resilience of EMU through the creation of a shock-absorption function at the central level" by establishing a "well-defined and limited fiscal capacity."

With regard to putting the concept of a fiscal capacity into practice, the four presidents' report suggests two broad options: the first is following a "macroeconomic approach," under which contributions and disbursements would be based on fluctuations in cyclical revenue and expenditure items, or on measures of aggregate economic activity. The alternative would be a "microeconomic approach," under which transfer payments would depend on a "specific public function sensitive to the business cycle, such as unemployment insurance." The fiscal capacity would then work as a complement or partial substitute to national UI systems. The report suggests that transfers could be limited to cyclical unemployment by covering only short-term unemployment. It states principles of a fiscal capacity, but does not define a specific plan in more detail.

In parallel to the four presidents' report, the European Commission submitted "A blueprint for a deep and genuine Economic and Monetary Union – launching a European debate" (European Commission, 2012a). This report likewise proposes a three-stage process, starting with the establishment of a "convergence and competitiveness instrument" within the EU budget to support rebalancing, adjustment and growth. In the second stage, a proper fiscal capacity for EMU should be established to support the implementation of the policy choices resulting from deeper policy coordination, in particular in the field of taxation and employment. The long-run solution would be to establish "an autonomous euro area budget" (European Commission, 2012a, p. 12). The European Commission, too, considers both a "macro" and a "micro" approach; like the four presidents' report, it does not propose a detailed scheme for a fiscal capacity, either.

Moreover, the issue was also addressed in an IMF staff discussion note (see Allard et al., 2013). The authors suggest several instruments for the further development of EMU, such as: (1) a "rainy-day fund,"[6] which would accumulate contributions from Member States and redistribute them to specific countries when they are hit by an idiosyncratic shock; (2) an EUI accompanied by efforts to enhance and harmonize labor market arrangements across euro area countries; and (3) a fully-fledged euro area budget with centralized provision of public goods, such as infrastructure, which could be used as a countercyclical tool.

[6] *This instrument is also discussed by the European Commission (2012a and 2013a).*

1.3 Guiding Principles for a Common Risk-Sharing Mechanism in the Euro Area

Both the four presidents' report and the blueprint by the European Commission clearly stress that a common fiscal risk-sharing instrument can only be implemented if it satisfies specific requirements, formulated as guiding principles in the four presidents' report: It should not undermine incentives for sound economic policy, and it should limit moral hazard and foster structural reforms. The fiscal capacity should not lead to unidirectional and permanent transfers between countries, nor should it be conceived as an income equalization instrument. Moreover, it should not result in an increase in expenditure or taxation levels.

In a similar vein, the Commission blueprint calls for a mechanism specifically designed to address short-term asymmetric cyclical developments, in order to avoid permanent transfers and to support structural reforms. Finally, such a mechanism needs to be subject to strict political conditionality to avoid moral hazard.

2 Is Centralized Public Risk Sharing Always Desirable?

In this section, we discuss two aspects that could affect the assessment of the usefulness of an EUI. First, we attempt to identify circumstances under which centralized automatic stabilizers are superior to Member States' automatic stabilizers. Second, we consider potential private alternatives to public risk sharing. At this point, it is appropriate to issue a caveat as it is far from obvious that fiscal stabilization at the central level of monetary union is always desirable. When a member country of a currency union is hit by an asymmetric shock, public insurance at the central level may indeed cushion such a shock. However, automatic stabilizers are no panacea – in the case of a supply shock and/or a permanent shock, they tend to delay necessary adjustment processes.

2.1 Centralized versus National Automatic Fiscal Stabilization

A partial centralization of automatic fiscal stabilization might be desirable because of coordination failures. In a currency union of small open and heavily interdependent economies, the individual member states do not provide enough automatic stabilization because their fiscal multipliers at the country level are small due to high marginal propensities to import. Thus, member states do not take the external stabilization effect into account (see Oates, 1999).

Furthermore, centralized fiscal shock absorption is preferable when individual countries face credit constraints. The crisis revealed that the scope of national fiscal policies to act countercyclically may become very restricted or may even disappear completely if credit markets freeze up. Consequently, such countries can no longer borrow and hence no longer smooth aggregate income and consumption. Similarly, a fiscal capacity could prevent countries which are restricted in making deficits by EU regulations, such as the Stability and Growth Pact, from being forced to undertake procyclical measures (see also von Hagen and Wyplosz, 2008).[7] However, the effect of an EUI hinges

[7] *Although the EU Economic Governance Reform 2011 increased the flexibility of the Stability and Growth Pact insofar that a "waiver" from any (procyclical) fiscal adjustment is provided in the event of an extremely severe crisis (see European Commission, 2013c), for less severe circumstances the von Hagen/Wyplosz argument is still valid. See also De Grauwe (2013).*

also on how Member States use the funds that are freed up by an EUI (e.g. Enderlein et al., 2014).

2.2 Private Alternatives to Fiscal Risk Sharing

There are two key market-based means to smooth country-level consumption and stabilize demand within a currency union: private insurance via international capital markets and cross-border saving and borrowing.[8] The insurance tool of choice in international capital markets is portfolio diversification. Yet, as stated by Allard et al. (2013), cross-border ownership of assets within the euro area remains more limited than in the U.S.A. or across the federal states in Germany. This behavior might have become even more pronounced with the recent crisis.

In Europe, however, private risk sharing is not only low, but also exhibits inherent problems. For example, Furceri and Zdzienicka (2013) estimate that the share of unsmoothed shocks is particularly high in recessionary periods (76% in 2008–2010), i.e. when it would, in fact, be badly needed. International credit markets appear reluctant and are quite unwilling to grant cross-country loans particularly in severe downturns.[9] Moreover, according to Fahri and Werning (2012), even with perfect financial markets, economic agents tend to underinsure as they do not take into account the aggregate demand externalities inherent in their choices. This argument is similar to the one of underprovision of automatic stabilization by individual states in currency unions.

3 National Unemployment Insurance Systems in the Euro Area

Some knowledge of existing UI systems is indispensable for the evaluation of any EUI proposals. In particular, the stabilization impact of an EUI depends crucially on its interaction with national UI schemes. The main characteristics of national UI systems are compiled by several institutions, for example by the OECD and the Swedish Institute for Social Research in its Social Policy Indicator Database (SPIN).[10]

3.1 Main Characteristics of National UI Systems in the Euro Area

National UI systems in the euro area are complex and heterogeneous. There are differences along three dimensions: (1) the unemployment replacement rate, (2) unemployment benefit duration and (3) eligibility. The unemployment replacement rate is indicated in the literature mostly as a percentage of previous net earnings (net replacement rate – NRR). Because of earnings thresholds and supplements to benefits (e.g. when the unemployed person has children), NRRs depend on previous pay and the family situation of the unemployed. The NRRs as published by the OECD for the euro area countries are shown in the left panel of chart 1. The numbers refer to a single unemployed person whose wage equals the average wage in

[8] *Allard et al. (2013), Asdrubali et al. (1996) as well as Sørensen and Yosha (1998) estimate that, in the U.S.A., about 80% of income shocks are smoothed out, with the largest smoothing impact coming from capital markets (45%), followed by credit markets (about 20%). Risk sharing via private and public mechanisms in EMU is roughly half as effective, as only about 40% of income shocks are smoothed.*

[9] *In this respect, banking union aims at further financial integration, the reduction of financial fragmentation as well as the alleviation of the bank-sovereign debt nexus.*

[10] *Other sources are the Mutual Information System on Social Protection and Social Security (MISSOC) by the European Commission and "Social Security Programs Throughout the World" published by the U.S. Social Security Administration.*

the respective economy. It is patently evident from this chart that replacement rates vary substantially, namely from 37% in Greece to 87% in Belgium.

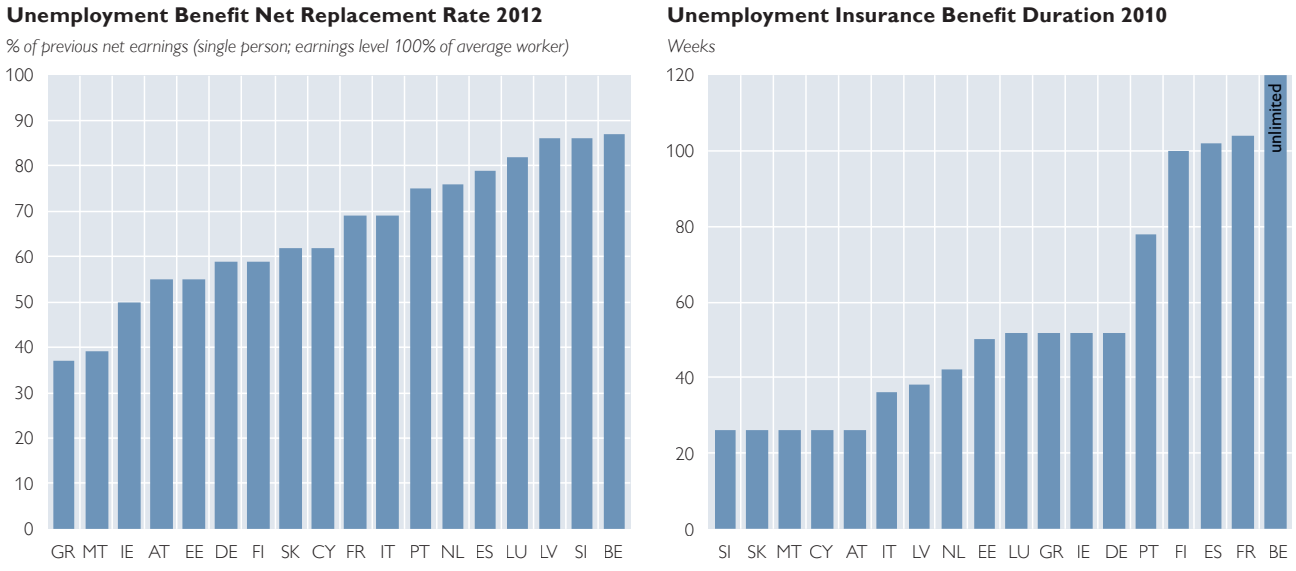
Unemployment benefit duration, likewise, varies greatly across the euro area countries, ranging from 26 weeks in a number of them, including Austria, to indefinite (Belgium). The right panel of chart 1 shows benefit duration as provided by the SPIN database for the year 2010. Benefit duration is often extended for specific vulnerable groups (e.g. young or elderly unemployed), and unemployed persons may requalify for unemployment benefit when they attend vocational training. Also, looking only at benefit duration could be misleading for countries that provide unemployment assistance payments (or social assistance)[11] for unemployed persons not entitled to unemployment benefits or whose benefits have expired. In contrast to UI benefits, unemployment assistance payments are means tested in most countries (i.e. family income and assets are taken into account).

The third dimension of UI systems, individual eligibility, typically depends on a qualifying period (i.e. the minimum number of weeks an unemployed person must have worked) within a certain reference period. Most countries have a qualifying period of 52 weeks; Slovakia has the longest such period (156 weeks), and France the shortest (17 weeks).[12]

It follows from such eligibility criteria that not all unemployed persons are covered by UI. Coverage, which is defined as the number of insured persons relative to the total labor force, may be low if some groups are excluded from the UI system altogether. For

Chart 1

Unemployment Benefit Replacement Rate and Benefit Duration in Euro Area Countries



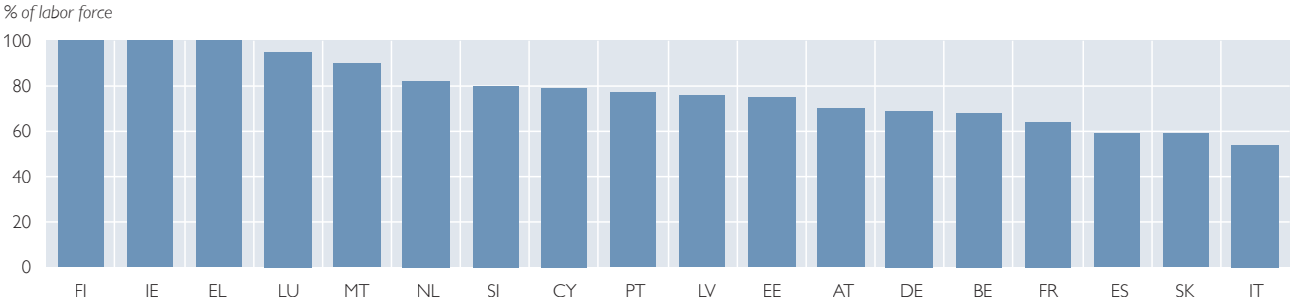
Source: OECD; Social Policy Indicator Database (SPIN).

[11] *See Esser et al. (2013) for different systems of unemployment assistance or social assistance that is available to unemployed persons whose benefits have expired. Italy appears to be the only country where there is no such income support.*

[12] *In Austria, the reference period is two years; the qualifying period is 52 weeks.*

Chart 2

Unemployment Insurance Coverage Rates (2010)



Source: Social Policy Indicator Database (SPIN).

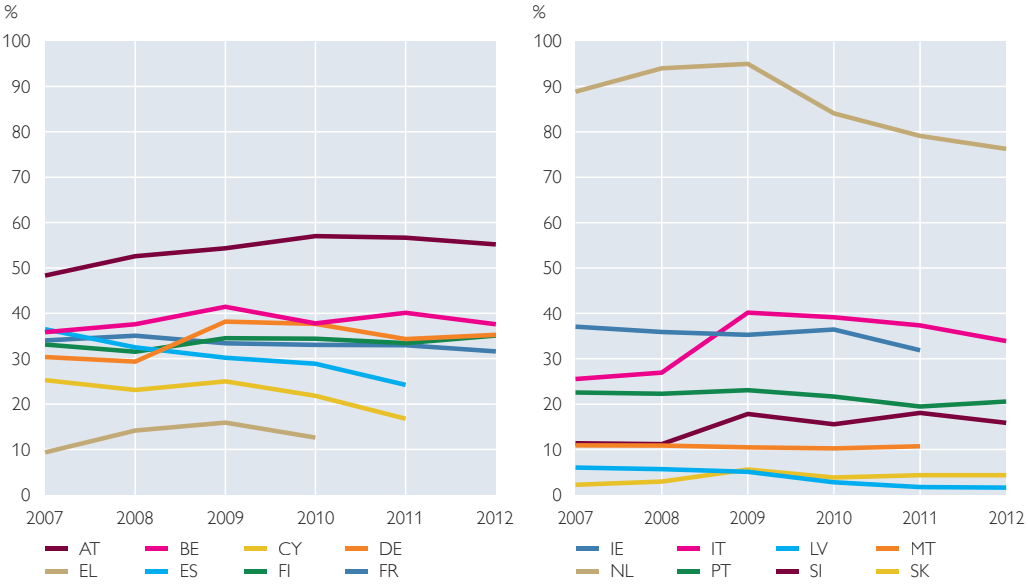
example, in many countries, self-employed persons are not included in the UI system. Chart 2 shows UI coverage rates for the euro area countries. Whereas coverage is 100% in Finland, Ireland and Greece, it is less than 60% in Spain, Slovakia and Italy.

A further important aspect of UI systems are job search (and job take-up) conditions that the unemployed persons have to fulfill in order to receive benefits (see Stovicek and Turrini, 2012).

To give an idea of the overall income support provided by national UI systems, chart 3 presents the ratio of unemployment benefits per unemployed person (Eurostat/ILO definition)[13] relative to average wages and salaries per em-

Chart 3

Unemployment Benefits per Unemployed Relative to Wages and Salaries per Employee



Source: Eurostat, authors' calculations.

[13] *This definition of unemployment does not necessarily correspond to the entitlement to unemployment benefits (see section 5.3).*

ployee. This chart once again reveals huge differences[14] among the euro area countries: With the exception of the Netherlands and Austria, the ratio is 40% or less throughout the euro area. It is very low in Greece (13%) and below 10% in Latvia and Slovakia. In most countries, the levels of the depicted ratio remained relatively stable during the observation period, with the exception of some crisis-ridden countries like Spain, where this ratio decreased over time.

4 Design of an EUI and Its Potential Stabilization Effect

Let us now turn to the design options for an EUI with regard to benefits, financing and eligibility. We also present some simulation results found in the literature to give an idea of the potential stabilizing effect of an EUI. The simulation methods used and the time periods underlying the estimates are very different, however. Thus, the estimates offered are hardly comparable.

Given the large number of pertinent contributions published over the last few years,[15] we have to restrict ourselves to a select few. We include Dullien (2013), as this author is probably the best-known advocate of an EUI. We consider contributions from an official European institution, i.e. the European Commission (2013a), and by Dullien et al. (2014) – the latter was commissioned by the Austrian Federal Ministry of Labour, Social Affairs and Consumer Protection. Attention is also given to Dolls et al. (2014) and Jara and Sutherland (2013) since they deliver – like Dullien et al. (2014) – a thorough impact assessment based on micro-simulation models rather than the crude mechanical simulations offered by Dullien (2013).

4.1 Designing an EUI – An Overview of the Discussion

A EUI scheme may interact with the national UI systems in different ways. Most proposals envisage a basic UI at the European level that substitutes the national UI for a certain period of time (e.g. one year) and can be topped up by national benefits. An EUI could aim at stabilization across countries, i.e. at alleviating cross-country business cycle differences. Stabilizing the euro area business cycle, i.e. intertemporal stabilization, might be an additional objective. Intertemporal stabilization implies that the EUI would be allowed to run surpluses and deficits in order to be effective in the case of common shocks. Accordingly, one would have to decide on the horizon over which the system has to be balanced and on how to balance it. In contrast, a system that merely aims at cross-country stabilization would have to distribute contributions contemporaneously as benefits. This complicates implementation as contribution rates or benefits would have to be adjusted regularly. Most of the discussion and also the simulation results discussed below are based on the assumption that an EUI will allow for intertemporal stabilization. Dullien

[14] *See Boeri and van Ours (2014) for a different approach to providing an overall measure of income support provided by unemployment benefit systems. According to their measure, Austria has the highest fraction of income stabilization among the countries surveyed (44.8%). The ratios are lowest in Portugal, Spain, Italy and Greece (15.3%, 14.9%, 5.8% and 2.4%, respectively). Boeri and van Ours argue strongly against simplistic comparisons of UI systems by using only benefit replacement rates and benefit duration, which has been quite common in the literature.*

[15] *For an overview, see European Commission (2013a) and Claeys et al. (2014a), which also review different types of schemes (e.g. catastrophic insurance) which we do not take into account.*

(2013) notes that this is – at least in the present economic situation where the effectiveness of monetary policy for business cycle stabilization is limited – the preferred approach.

Concerning the replacement rate, the proposals at hand assume that benefits depend on previous monthly wages and mostly amount to about half of that income. Maximum benefit duration is, as a rule, one year or less (see also section 5.1). Most studies assume that an EUI is financed by social contributions levied on labor income. The European Commission (2013a) departs from other papers in this respect by suggesting the system be financed not only by social contributions but also by a different tax base in order to shift part of the burden from labor income to other sources.[16] A specific contribution rate is not indicated. In Dullien (2013, 2014) and Dolls et al. (2014), the level of contributions is set in a way that the common EUI is balanced over the respective observation period. See table 1 for an overview of the specific proposals for the replacement rate, benefit duration and financing.

4.2 Assessment of the Economic Effects of an EUI[17]

Dullien et al. (2014) examine various schemes that differ in generosity: the most restrictive scheme provides unemployment benefits corresponding to 30% of the previous monthly net wage for a period of 6 months; in the most generous scheme, 70% of the previous income is paid out over 12 months. In the simulations, annual contributions and benefits amount on average to about EUR 40 billion in the most generous scheme. High net benefits (as a share of GDP) accrue to Spain, Greece, and France. Dullien et al. (2014) note that the net benefits to Spain and Greece are to a substantial extent a result of the crisis. These countries would have seen the highest transfers in 2012, namely in the amount of 0.9% and 1.0% of GDP, respectively. France, by contrast, permanently receives net benefits.

Dullien et al. (2014) measure macroeconomic stabilization as the impact of the EUI system on GDP growth rates and present results for selected countries. For the euro area as a whole, an EUI would have led to some stabilization during the crisis, with an increase in the euro area growth rate – relative to the baseline – of up to 0.13 percentage points in 2009. Stabilization is more pronounced in Spain, a country that was above average affected by the crisis. In the most generous model, GDP growth in Spain would have been higher in all years from 2007 to 2012 (except 2010) compared with the baseline. In 2009, in particular, the growth rate would have stood at –3.1% instead of –3.8%. For Austria, such an EUI would have mostly had a negative (but small) impact on growth.

Dolls et al. (2014) show that an EUI without national top-ups would have stabilized income in all Member States in 2009. On average, 42.5% of the shock on gross household income would have been absorbed by an EUI. In other years, the stabilizing effect would have been more modest, however. Over the whole period, countries with the worst

[16] *In this regard, the impact of taxation on the level of contributions and benefits and thus on stabilization should also be taken into account (see e.g. Box 5 in European Commission, 2013a). Currently, the financing of unemployment insurance differs from country to country: in most cases UI is financed by payroll taxes as paid by employers and workers (see Esser et al., 2013).*

[17] *In addition, Claeys et al. (2014b) offer the possibility of calculating online the effects of an EUI for different parameters.*

Table 1

Overview of EUI Proposals and Effects

		Benefit replacement rate (%)	Contribution rate (%)	Period under investigation	Maximum benefit duration (months)	Average annual payouts/ contributions (EUR billion)	Income stabilization	GDP stabilization
Dullien (2013)		50% of the insured earnings	depending on the assumptions on STU: 0.65% / 1.66% payroll tax	1995–2011	12	50	n. a.	0.2% (GR, 2001/02) to 55.8% (AT 2001/02)[1] measured as percentage of the deterioration in the output gap prevented by an EUI. The author shows only numbers for selected countries and periods.
Dullien et al. (2014). The authors analyze six schemes but focus on the two schemes presented in the table.	70/12 variant	70% of previous net earnings	1.33% of previous gross earnings	1999–2012	12	41	no specific numbers provided	0.13 percentage points (2009) to –0.12 percentage points (2010)[1] impact on euro area growth rate.
	30/6 variant	30% of previous net earnings	0.39% of previous gross earnings	1999–2012	6	12	no specific numbers provided	0.05 percentage points (2009, 2012) to –0.08 percentage points (2010)[1] impact on euro area growth rate.
European Commission (2013a). "Most proposed option" in table 11		40%–50% of previous earnings	financing mix proposed	n. a.	12	n. a.	n. a.	n. a.
Dolls et al. (2014)		50% of previous gross earnings	1.98% payroll tax	2008–2013	12	60	income stabilization coefficient 42.5% (2009)[1] for the euro area; precrisis calculations in Dolls et al. (2012) for the stabilization impact of national UI suggest a stabilization coefficient for unemployment shocks of national UI systems in the euro area of 20.2%.	n. a.
Jara and Sutherland (2013)	flat rate variant	33% of average national earnings	n. a.	n. a.	9 (months 4 to 12)	n. a.	19 percentage points (LV)[1] of additional income stabilization (coefficient of income stabilization).	n. a.
	proportional variant	50% of previous gross earnings	n. a.	n. a.	9 (months 4 to 12)	n. a.	24 percentage points (GR, LV, AT)[1] of additional income stabilization (coefficient of income stabilization).	n. a.

Source: Authors' compilation.

[1] Years/countries with most pronounced impact.

labor market outcomes would have received the most support – as intended by an EUI. Dolls et al. (2014) compare EUI-induced income stabilization with the stabilization offered by national UI schemes (see also Dolls et al., 2012). They conclude that the differences would be most pronounced in Estonia, Greece, Italy and Slovenia, and still above average also in Ireland and Spain. All of these countries have precrisis unemployment schemes in place that absorb only a fraction of unemployment shocks. Since the eligibility rules of the national unemployment systems are stricter than those of the EUI, low coverage ensues.

Jara and Sutherland (2013) consider the effect of an EUI that supplements national systems on disposable household income in selected euro area Member States (Germany, Estonia, Greece, Spain, France, Italy, Latvia, Austria, Portugal and Finland). They do not focus on a specific time period and assume that everybody has the same probability of becoming unemployed. The results of Jara and Sutherland (2013) show that an EUI would have positive effects on income stabilization but the impact on individual countries would be quite heterogeneous. The largest additional (i.e. relative to national UI systems) stabilization impact is observed for Greece, Latvia and Austria (23 to 24 percentage points in each case) under the proportional EUI scheme (i.e. benefits depend on previous income). The authors attribute these results mainly to differences in the design of national UI systems and in labor force characteristics (mainly the proportion of self-employed persons as they are not covered in many national UI schemes). The result for Austria is attributed to benefit ceilings in the national UI as well as to the fact that the earnings base is measured net of taxes and contributions (Jara and Sutherland, 2013, p. 24).

To summarize, the simulations show that an EUI may have a non-negligible effect. However, the impact depends on the precise design of the scheme and its interaction with national unemployment schemes. In particular, differences in the generosity of the European and the respective national unemployment scheme affect the country-specific impact of an EUI.

5 Are the Requirements for an EUI Likely To Be Fulfilled?

Let us recall, from section 1, the guiding principles of a fiscal capacity. First, the fiscal capacity should not lead to unidirectional and permanent transfers between countries. Second, it should limit moral hazard of Member States and it should not impede structural reforms. In the following section, we deal with these questions and briefly discuss some practical aspects of the implementation of an EUI.

5.1 Structural Differences between Labor Markets Make Unilateral Permanent Transfers Likely

The empirical papers reviewed suggest that, when we take a look at the period from the introduction of the euro until the more recent past, "core countries" like Germany, the Netherlands and Austria would have paid more into the scheme than they would have received in transfers. Countries in the southern rim, such as Spain, Portugal, Italy and Greece, that experience high unemployment rates, by contrast, are net recipients. This result is primarily due to the specific course of events and the deep structural crises in these countries on the periphery and need not be an argument against EUI *per se*. In contrast, here we discuss factors that are independent of the size of macroeconomic

shocks and which might suggest that there are winners and losers from such a scheme because of structural factors. Such factors are related to structural differences in the levels of unemployment and in the reaction of labor markets to aggregate shocks.

Given the significant differences in the unemployment rates of the euro area countries and the fact that the differences are at least partly due to different structural unemployment rates,[18] an EUI scheme covering total unemployment appears not to be politically feasible because the potential gains tend to be unevenly distributed (see also Keuschnigg, 2012). To avoid this obvious difficulty, the four presidents' report (Van Rompuy, 2012) and subsequent proposals suggest that an EUI should cover only cyclical unemployment, which, for practical reasons, could be approximated by short-term unemployment (STU, usually defined as the labor force share of the unemployed with unemployment duration of up to 12 months). STU has the advantage in this context that it is readily observable from unemployment statistics. Thus, there would be no need to estimate the cyclical position of an economy as it is required for "macroeconomic approaches" to stabilization. These estimates are sometimes controversial and lack robustness over time (European Commission, 2013a). However, the conceptual advantage of an EUI over stabilizers that are based on econometric estimates may be questioned.[19]

Even if an EUI is restricted to cyclical or short-term unemployment, there is another aspect of unemployment in which countries differ: euro area labor markets show heterogeneous reactions to aggregate shocks of a given size. The relationship between the deviation of the unemployment rate from its long-run equilibrium and the deviation of real output from its equilibrium value is known as Okun's law. In a recent review, Ball et al. (2013) find that the Okun coefficient varies substantially across countries. Table 2 contains their results for a number of euro area countries.

The absolute value of the coefficient for 1980–2011 is by far the highest in Spain (–0.85); it even seems to have risen in absolute terms since the mid-1990s. This is probably attributable to reforms in the 1980s which made it easier for firms to employ leased staff (who are also much easier to lay off

Table 2

Estimates of the Okun Coefficient (1980–2011; annual data)

	Whole period	Until 1995	As of 1996
Austria	–0.14	–0.13	–0.14
Belgium	–0.51	–0.63	–0.31
Finland	–0.50	–0.61	–0.30
France	–0.37	–0.40	–0.34
Germany	–0.37	–0.43	–0.27
Ireland	–0.41	–0.46	–0.38
Italy	–0.25	–0.14	–0.36
Netherlands	–0.51	–0.71	–0.34
Portugal	–0.27	–0.22	–0.46
Spain	–0.85	–0.79	–0.92

Source: Ball et al. (2013).

[18] *There is a wide consensus that cross-country differences in unemployment rates are strongly driven by differences in structural unemployment rates (European Central Bank, 2012; European Commission, 2013b). However, the extent to which unemployment is structural or cyclical is subject to an intensive debate (see Arpaia et al., 2014, and Diamond, 2013).*

[19] *It is not obvious that STU is indeed a good proxy for cyclical unemployment: In quarterly data (from the first quarter of 1999 to the first quarter of 2014) for the whole euro area (EA-18), the correlation coefficient between the short-term unemployment rate and the cyclical component of the unemployment rate (obtained with an HP filter, parameter λ=1600) is merely 0.41.*

when demand goes down).[20] At an Okun coefficient of a mere –0.14, which seems to have been quite stable over time, Austria, on the other hand, is shown to record the weakest unemployment reaction to output fluctuations. The reaction of unemployment to macroeconomic shocks depends on many structural factors. They include the degree of employment protection, labor relations (e.g. the system of collective bargaining) and the readiness of firms to shield workers against demand disturbances (the role of "implicit contracts" and the extent to which employment adjustment occurs through the intensive rather than on the extensive margin, i.e. through the adjustment of working time rather than headcount employment) but also the role of active labor market policies (ALMP), to which we will turn below. Box 1 provides further evidence on structural differences between labor markets.

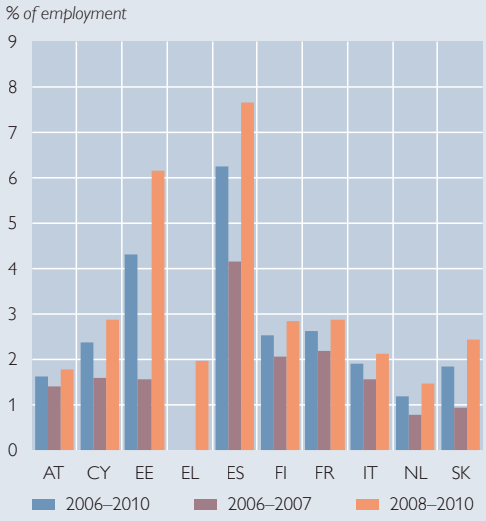
Box 1

Structural Differences between Labor Markets: Evidence from Flow Data

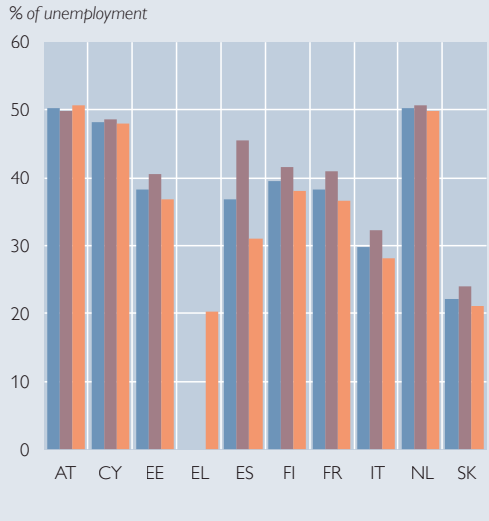
By definition, the equilibrium unemployment rate (provided that the labor force is constant) is given by $u^* = (s/(s+f))$ where s is the separation rate (flows from employment to unemployment) and f is the job-finding rate (flows from unemployment to employment). Equilibrium unemployment is thus determined by both s and f, which depend on structural characteristics of labor markets. s is influenced by the degree of employment protection, the degree of labor hoarding and the extent to which labor is adjusted on the intensive or extensive margin, respectively, while f might depend on the generosity of unemployment benefits, the strictness of job search requirements or the role of active labor market policies.

Annual Labor Market Transition Rates in Euro Area Countries

From Employment into Unemployment



From Unemployment to Employment



Source: European Commission (2012b); for Austria: authors' calculations.

Note: The transition rate for a particular year (t) is the share of transitions from year (t) to year (t+1).

[20] *Spain has been a country with high employment protection for permanent contracts, but it also had the highest share of leased workers before the crisis (28% of the total workforce). It can thus be regarded as a country with a high degree of "dualism" in its labor market (Boeri, 2011).*

The chart above shows annual labor market transition rates for ten euro area countries[1] from 2006 to 2010, as presented in a survey published by the European Commission (2012b). We calculated the values for Austria ourselves, drawing on Austrian Labour Force Survey (LFS) data. The left panel of the chart displays employment to unemployment transitions and the right panel shows unemployment to employment flows.

Different patterns emerge (see European Commission, 2012b) which suggest structural differences in labor market reactions[2]: One group of countries posts relatively high transition rates from unemployment to employment and moderate inflows into unemployment (Austria, the Netherlands, Finland, and to a certain extent also France and Cyprus) both before and during the crisis. Another group of countries, e.g. Italy, records low overall labor market dynamics before and during the crisis (low flows out of unemployment into employment, but also in the opposite direction). Finally, there are countries with generally high dynamics and a significant deterioration in both rates (such as Spain) or countries with generally low dynamics (like Greece).

[1] *Results for Greece are available for 2008–2010 only.*

[2] *More evidence on labor market flows and cross-country differences is provided in two reports by the European Central Bank (2012 and 2014).*

Given the way labor markets are currently structured, unidirectional permanent transfers are likely to result from an EUI. To address this issue, it is often suggested (e.g. by the European Commission, 2013a, and Andor, 2014) that contribution parameters of an EUI scheme be regularly adjusted to bring the system closer to ex ante balance over the medium term.[21] An alternative are "clawbacks," which would neutralize net transfers ex post. Such mechanisms would resolve the problem of permanent transfers but make an EUI scheme more complex and reduce its stabilization impact.

5.2 Potential Moral Hazard Problems

Moral hazard problems are intrinsic to any form of insurance. In case of an EUI, moral hazard could potentially arise for a number of aspects. One is the extent to which structural factors that are under the control of the government influence the level of unemployment. Under an EUI scheme, governments might be less willing to pursue policies which reduce unemployment risks if such policies go along with considerable political costs. Claeys et al. (2014a) observe that there is a tradeoff between the stabilization properties of an EUI and design features aimed at limiting moral hazard. For example, stabilization would be larger if income support were very long lasting. But this would presumably lead to moral hazard at the level of the individual countries. Thus, it is essential that the income support provided by an EUI is only temporary and rather short term (see also Dolls et al., 2014). Moral hazard can also be avoided if there is ex ante or ex post adjustment of UI parameters but the presence of such adjustments limits the stabilization effects of an EUI.

A more relevant problem with an EUI could be that such a scheme provides adverse incentives to absorb shocks at the intensive margin of

[21] *A similar mechanism is present in the U.S. system. The European Commission (2013a) recommends establishing Member State accounts. As in the U.S. unemployment system, these accounts would have to be balanced over a specified time period (e.g. by – automatically – adjusting contribution rates).*

employment rather than at the extensive margin because some of the costs of such employment adjustment would be borne by national governments (ALMP measures like expenses for short-time work benefits), whereas unemployment benefits are financed by the common pool (Dolls et al., 2014). This constitutes an argument for a greater harmonization of national labor market policies.

5.3 Is there a Need for More Harmonization of National UI Systems?

EUI proponents regularly stress that an EUI could easily complement the diverse national UI systems and that there is no need to harmonize these systems (e.g. Dullien, 2014). An EUI would replace national UI temporarily. However, in national systems, there are clear provisions as regards UI contributions and eligibility to benefits. The harmonized data of the European Labour Force Survey (EU-LFS) that Dullien (2014) refers to are not relevant for an EUI: Unemployment in the EU-LFS is merely weakly related to unemployment benefit eligibility,[22] and being classified as "employed" in the EU-LFS does not necessarily mean that such persons have to contribute to unemployment insurance. For an EUI, common standards concerning eligibility would have to be established and monitored because otherwise countries could claim higher than justified unemployment benefits or they could try to reduce the contributions to the common UI scheme (see Enderlein et al., 2014).

Further aspects are the relationship between unemployment benefits and job search requirements on the one hand and the relationship between unemployment benefits and ALMP measures (such as educational training) on the other. They imply great variance among countries because there are very diverse ways to organize public employment and training schemes for the unemployed.

Thus, it seems quite obvious that eligibility criteria and regulations concerning UI contributions should be harmonized across countries at least for the time span EUI is granted to individuals. The European Commission (2013a) suggests introducing common eligibility standards (for a qualifying period, a reference period, and the types of labor contract covered).[23] Moreover, an EUI and national schemes should likewise be harmonized with a view to avoiding difficulties when an unemployed person's eligibility to EUI benefits expires. Such a harmonization of national social systems would be an ambitious task.

6 Summary and Conclusions

The recent financial and economic crisis has revealed that more central risk sharing – e.g. in the form of a EUI – might be beneficial for the euro area. Several proposals for the design of an EUI have been discussed widely, and empirical analyses indicate that such a scheme would have a non-negligible

[22] *Many of those classified as "unemployed" are not recipients of unemployment benefits because they are not eligible. Indeed, this fraction of the unemployed also differs widely among EU Member States (see Dullien, 2013). Moreover, some recipients of unemployment benefits are not classified as unemployed (e.g. because they had worked a few hours in the reference week of the survey).*

[23] *According to Dolls et al. (2014) as well as Jara and Sutherland (2013), all new unemployed, including former self-employed persons, should be eligible given a certain period of previous contributions. Dullien et al. (2014), on the other hand, propose that EUI eligibility should be connected to eligibility for national unemployment benefits. As eligibility varies substantially, this would put countries with tight eligibility criteria at a disadvantage.*

stabilization effect, in particular in countries where the income stabilization provided by national UI systems is low. Moreover, an EUI is believed to be especially helpful for Member States that have lost access to capital markets or that are restricted from borrowing for other reasons.

Nevertheless, any practical implementation of an EUI is likely to suffer from shortcomings for various reasons: Structural differences in labor markets (i.e. different reactions of unemployment to shocks and different magnitudes of labor market flows) imply that costs and unemployment benefits tend to be distributed unevenly. Additionally, moral hazard by Member States cannot be ruled out. Apart from that, there are numerous practical difficulties associated with the implementation of an EUI. Finally, the costs and benefits of an EUI should be compared with those of other instruments to establish a fiscal capacity.

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Bitcoin – The Promise and Limits of Private Innovation in Monetary and Payment Systems

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A private initiative that has created a virtual currency and a payment system based on cryptography and decentralized management, Bitcoin is considered not only an interesting, but also a disruptive technical innovation by many observers. A number of regulatory and supervisory bodies have issued assessments of the phenomenon, contributing to an emerging international discussion. Does Bitcoin's claim to provide useful monetary and payment services hold up when checked against principles of monetary theory and the economics of payment systems? We find that while Bitcoin does not rival the established money and payment systems in their traditional domains, a complementary function is conceivable in niches. Using the Bitcoin network poses several risks to customers, however. Since this network and financial services related to bitcoins are not regulated, costumers must take appropriate technical measures to protect their bitcoin holdings. In case of error and fraud, payments are difficult to reverse. Furthermore, the significant exchange rate fluctuations could pose a grave risk to bitcoin owners' wealth and discourage widespread use for monetary purposes. In a nutshell, at present, bitcoins can be regarded as speculative assets, and the Bitcoin network might inspire further innovation in payment systems and other applications.

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The economic and financial crisis that had started in 2007 triggered a public discussion about the performance of the financial system. Contributions to this discussion have included innovative attempts of providing alternative solutions for a number of services offered by this system (Weber, 2015), with Bitcoin a prominent example, which has garnered a lot of media attention in the last two years. This privately initiated project, which is based on open participation, intends to provide a private digital currency – the bitcoin (BTC)[2] – and a system for transferring payments in this currency. In this article, we assess the claims of its supporters and the implications of its operation for central bank goals.

Section 1 describes the way Bitcoin works and its market development. In section 2 we assess Bitcoin's claims to work as a payment system, section 3 concentrates on Bitcoin as a currency, and section 4 reviews assessments from authorities. Finally, section 5 concludes.

1 Bitcoin – How Does It Work, and How Does It Perform?

In 2009, a white paper was published online under the name Satoshi Nakamoto (probably a pseudonym), proposing a new solution for something that some Internet enthusiasts had been looking forward to since the beginning of the Internet: A form of digital cash that functions based on principles dear to libertarian strands of the Internet community – non-state administered, decentralized ("peer to peer") and open source based. In this strand of thought, cryptography and anonymous transaction systems are seen as important instruments to defend privacy and freedom in the digital age (Hughes, 1993; Stephenson, 1999). With trust in the monetary and financial system shattered by the crisis, Nakamoto's proposal was

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[2] *"Bitcoin" refers to the system, "bitcoin" and BTC to the unit of account in that system.*

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taken up in 2009 and implemented by a significant number of supporters.

Bitcoin offers a purely digital currency consisting of strings of numbers. An open source software provides a platform where users can produce a private currency and make payments in this currency without recourse to banks and central banks, based on encryption technology. This setup is meant to make online payments comparable to cash payments offline.

The system is run by voluntary supporters that are attracted and governed by economic incentives provided by the system architecture. With each supporter contributing computing power, a network is formed. Network supporters are attracted by the prospect of engaging in competition over receiving newly issued bitcoins. This process is inspired by gold extraction: Like gold, bitcoins are "buried" in the system and may be unearthed and put into circulation by "miners." The mining process is designed in the following way: Every ten minutes, the system provides a new amount of bitcoin units. In order to obtain them, network supporters, i.e. miners, compete to solve mathematical problems with a random component. These problems are hard to solve, but the correctness of the solution is easy to verify. In each of these contests, the competitors coming up with the first correct solution receive the newly issued amount of bitcoin units. They broadcast their solutions to the whole network, where they are automatically verified by other members.

The software provides for a fixed amount of currency units (about BTC 21 million). A pre-established technical rule ensures the issuance of these units into circulation up to about 2140 according to a specified time path. However, as the reward to miners will be reduced[3] over time, more than 99% of all bitcoins will have been mined in about 2032. In mid-October 2014, more than 13 million bitcoins were in circulation.

Once new bitcoin units are in the possession of a member (apart from mining, bitcoins can be acquired on exchanges or by selling goods or services in exchange for bitcoins), they can be kept or spent if other members accept them as payment in a transaction, or exchanged for official currencies. So how are bitcoins transferred among members? Bitcoins are stored in anonymous addresses in the form of strings containing numbers and letters, equipped with two complementary keys, one public and one private. The public key can be compared to the account number of a bank account, and the private key to the PIN to access such account. If A wants to send a payment to B, A needs B's public key and encrypts a certain sum of bitcoins with B's public key and A's private key, so that only B can decrypt the payment and make use of the sum. To transmit the payment and, at the same time, to guarantee that A has not spent the same electronic string of numbers on another occasion (double spending), the transaction partners rely on the network. It performs the functions that payment intermediaries fulfill in conventional payment processes. Every ten minutes new payment transaction orders are collected by the system and are verified by the system supporters. To this end, new transactions are recorded in a public ledger called blockchain that comprises all transactions ever operated in the Bitcoin system. By comparing the new bitcoin payment orders with the history

[3] *Initially, the reward for solving a block (a record of recent transaction orders) was set to BTC 50. Every 210,000 blocks – i.e. about every four years (given an average rate of six blocks per hour) –, this subsidy is reduced by 50%.*

of all previous orders, the legitimacy and accuracy of the orders are verified. For various technical reasons, a bitcoin transaction can only be considered secure after a number of confirmations in the Bitcoin network. The incentive for network members to participate in the verification process is the above-mentioned mining process. The mathematical problem to be solved to gain newly created bitcoins or transaction fees depends also on information about the previous blockchain and transaction. Mining for bitcoins therefore also helps check that new transaction orders are legitimate and adds these new transactions to the blockchain.

Theoretically, the system offers an innovative method for solving the problem of producing agreements among mutually distrustful parties. Technically, this process consumes significant amounts of computing power and electricity. Competition among miners has led to continuous innovation and investment in computer processing power. Consequently, entry barriers have risen as well, given the cost of computer hardware and energy, which entails the risk of increasing concentration in mining (The Economist, 2013). Over time, it will be increasingly inconvenient to save the ever growing blockchain. Fewer supporters might therefore be willing to support public record keeping, which would weaken the network and make it more vulnerable to attack. Bitcoin mining continuously drives up energy consumption, and given low energy efficiency, energy consumption per transaction is high (Sorge and Krohn-Grimberghe, 2013).

The market price of one bitcoin unit, as derived from quotations on the most frequented private exchanges, was relatively flat until the beginning of 2013 (see chart 1). It then skyrocketed, reaching USD 1,151 in December 2013, which implied a price increase of 8,388% in 2013. This enormous price hike can be considered both cause and effect of growing media attention and further contributed to the popularity of Bitcoin (Salmon, 2013). Recently, we have observed a general downward trend, with BTC 1 worth USD 384.1 on October 22, 2014.

Chart 1

Market Price

USD market price of the bitcoin on the major exchanges

Source: http://blockchain.info.

In mid-2014, 41 million addresses were registered in the system (Ali et al., 2014, p. 4). As users are able, and even encouraged, to register multiple addresses to retain anonymity, the number of actual users is likely to be much smaller (Sorge and Krohn-Grimberghe, 2013). Only 1.6 million Bitcoin addresses existing in July 2014 accounted for holdings of more than BTC 0.001 (Ali et al., 2014, p. 4), which can be interpreted as being indicative of the upper limit of any estimate of the number of Bitcoin users. Given the anonymous and global nature of the system, no data are available on Bitcoin usage in Austria or other countries. The "Bitcoin Austria" association[4] hosts regular meetings for local Bitcoin users.

[4] *See http://bitcoin-austria.at.*

So far, user traffic has been significant, but still modest when compared with established payment systems. According to the Bitcoin information site blockchain.info,[5] the system had administered about 50 million bitcoin transactions by October 2014. In 2013, the daily average came to about 60,000 transactions (representing a total daily value of USD 237 million based on the bitcoin's peak valuation in December 2013). By contrast, the biggest credit card provider, Visa, registered 212 million transactions per day (representing a value of USD 16 billion).[6] Given the anonymous nature of bitcoin transactions, there is no reliable information on what they are used for.

2 Bitcoin as a Payment System

Bitcoin claims to operate a retail payment system with no need for trusted intermediaries. The latter are perceived to charge excessive fees for payment transmission[7], to lack adequate protection of personal financial data (e.g. with regard to credit card fraud or disclosure to public authorities) and to expose customers to financial risk by being prone to financial crises (Nakamoto cited in p2p foundation, n.d.). In this section, we discuss whether Bitcoin can legitimately claim to provide improvements on these charges.

Whereas users have over decades become accustomed to paying with cash at zero financial transaction costs within national economies thanks to public support for the underlying infrastructure, other forms of retail payments may involve (substantial) costs. However, the advent of globalization and digitalization has led to an increase of commercial innovation in the retail payment market, expanding on the initial innovation of the credit card (Maurer, 2011; Salmon, 2013). As a consequence, competition among payment service providers has been on the increase over the past few decades. The established business model of intermediating electronic payments can be characterized as a two-sided market, where a payment service provider links payer and payee. In facilitating and recording transactions, the payment service provider is faced with a choice concerning the allocation of the burden of fees among payer and payee. In most card payment systems, merchants bear most of the cost charged by the payment service provider. Consumers may likewise face significant costs, especially in cross-border consumer-to-consumer payment services (Bolt, 2013). In this context, Bitcoin has positioned itself as a low-cost alternative (Pflaum and Hateley, 2014).

With respect to cost, bitcoin payments can currently be made at minimal or no financial cost to the two parties engaged in a payment transfer. This is possible because the mining process described above is devised to substitute for the role of banks and other established payment operators in the Bitcoin system. Instead of a centralized intermediary, the payment transfer is operated by miners following the procedures of the Bitcoin protocol

[5] *See http://blockchain.info.*

[6] *See http://www.btcfeed.net/infographics/bitcoin-vs-other-payment-systems-daily-transaction-volume (retrieved on October 28, 2014).*

[7] *According to a survey by the European Commission published in 2012, the European payment card industry provides the means for consumer payments with an overall value of EUR 1,350 billion per year. Such payments generate an estimated EUR 25 billion in annual fees (European Competition Network, 2012, p. 17), which corresponds to an average fee of 1.9%. On the basis of this study, the European Commission started to launch proposals to regulate the market for card, Internet and mobile payments.*

(engaging in competition to solve problems, with the byproduct being the confirmation and recording of the payment transfer). As mentioned before, Bitcoin miners incur substantial costs for hardware and electricity. Stiffer competition and greater complexity of the problem to be solved[8] imply a continuous upgrade of computing power and increased electricity use. Miners incur that cost without charging substantial fees to customers because successful miners are rewarded with new units of the remaining bitcoin stock. So, the cost advantage for customers is based on systematic cross-subsidization of the payment system by the currency creation process. This advantage is dependent on collective value attributions to Bitcoin being sufficiently high in order for miners to cover their costs (which are due in official currency). Cross-subsidization may also be evident in traditional payment systems: Many banks, for instance, allow customers to make payments free of charge, recovering costs through profits in other areas. Most credit card operators charge merchants per-payment fees, while customers – apart from a lump-sum annual charge – do not pay extra for individual payments. In cash payments, important logistical costs are borne by central banks and by ATM operators (Schmiedel et al., 2012).

How sustainable is the cost recovery process in the Bitcoin system? While there is no fixed charge for bitcoin payments, users can and do offer small fees to miners. Because there is no obligation for miners to include all payments in their calculation, more resourceful miners can be incentivized to include a payment when a fee is offered, thereby increasing the speed of transaction for customers. Currently, transaction fees are of minor importance. Calculations with data from blockchain.info show that less than 1% of miners' revenues are from transaction fees. However, while successful miners are currently rewarded with 25 newly issued bitcoins, this amount will decrease to about 0.78 bitcoins in 2032 (when about 90% of all bitcoins will have been mined). Whether miners will be able to recover their costs with such a reward, will depend on the bitcoin's market value and the production costs. The reward will eventually drop to zero in 2140 when the whole bitcoin stock will have been put into circulation. Hence, eventually miners will have to fully recover their costs from customer fees. To give some estimates of transaction costs, calculations with the above-mentioned data reveal that, in 2014, miners' average revenue (new bitcoins plus fees) per transaction amounted to USD 37.05 (2013: USD 14.59), which is equivalent to 4.40% (2013: 2.42%) of the transaction volume. Based on an educated guess of capital and operating expenditure for competitive bitcoin mining, McCook (2014) calculated that, in mid-2014, the costs (capital expenditures and electricity, excluding labor costs) for bitcoin mining amounted to about USD 600 per bitcoin, which basically equaled the market price at the time.

Because all payment transfers are preceded by a race, where many competitors attempt to solve the same task, the marginal costs in the Bitcoin system for verifying transactions is higher than in centralized payment systems (Ali et al., 2014, p. 6).

All this implies that the price advantage of bitcoin payments is not based on a cost advantage and is a

[8] *The difficulty is adjusted in order to keep the average number of blocks solved at six per hour.*

transitory phenomenon only.[9] Moreover, if Bitcoin is merely used as a payment vehicle, the costs of exchanging legal tender currency for bitcoins and back must be added.[10]

Another important question is whether users of Bitcoin are exposed to risks. Bitcoin, which does not eliminate financial and operational risks to customers, rather implies a transfer of risks to the individual. The Bitcoin system's efforts to ensure the integrity of the payment system concentrate on counterfeit control and securing anonymity. Bitcoin attempts to digitally mimic cash in terms of anonymity, payment finality, transaction costs and decentralized operation of transfers. To prevent double spending, a public record of all transactions is kept against which every new transaction is checked. As long as users manage to prevent detection of address ownership by outside observers, transactions can remain anonymous. Anonymity in transactions could make the system suitable for money laundering, tax evasion and the purchase of illicit goods and services. While other payment systems (apart from cash) do not support such anonymity, they typically offer payment services as part of a bundle of services. For example, banks offer deposit taking, account keeping, proof of payment services and chargeback facilities together with payment services. In the Bitcoin system, these services are unbundled. The core infrastructure only offers one-way payment transfers and counterfeit checks. Related services must either be purchased from third-party providers or be provided by users themselves.

In light of the anonymous and decentralized nature of payment transfers in Bitcoin, there is no intermediary to reverse payments that were made erroneously or where counterparties did not fulfill their obligations in return. Consumers who want their money back have to pay for third-party escrow services or go to court in the case of complaints, provided anonymity does not prevent such measures. Merchants, on the other hand, might be inclined to perceive the lack of chargeback risks as an advantage. They may also benefit from the lower Bitcoin fees compared with card payment services, where they usually bear the brunt of fees. Also, accepting bitcoins might serve as a marketing move to attract additional customers and profit from the public attention the project receives (Fuchs, 2014; Wingfield, 2013). The "no chargeback" feature of Bitcoin and the elimination of merchant fees involved in credit card payments favor merchants. In contrast, consumers face a comparably higher risk of nondelivery, and may or may not be offered discounts by merchants to share in their fee advantage (Fleishman, 2014; Wingfield, 2013). In any case, these considerations apply mainly to online businesses. In offline retail commerce, undue waiting times result from the fact that a bitcoin transaction can only be considered secure after six confirmations in the Bitcoin network. This can be expected

[9] *The cost disadvantage vis-à-vis centralized systems can induce concentration pressure in the market of bitcoin miners in order to achieve economies of scale. Such an outcome would defeat the original intention of decentralization and increase fraud risks (Ali et al., 2014, p. 6).*

[10] *Within the scope of this article we cannot analyze whether there are circumstances where – despite these features – use of Bitcoin could promote financial inclusion either because of lack or excessive cost of alternatives, e.g. payments to and within underbanked areas (see Pflaum and Hateley, 2014, for a discussion of the legal dimension). Of course, Bitcoin is only one of many possible solutions in this regard, as indicated by the success of money transfers via mobile phones in some regions.*

to take up to one hour, which may in many cases be longer than customers are prepared to wait for payment to be completed (Velde, 2013).

In Bitcoin, users must store their holdings either on their own computer or in wallets provided by third-party service providers. Currently, the latter are private startups not (yet) subject to bank-like regulation and the associated safety nets. Bitcoin users are therefore subject to risks from loss, theft and fraud of their holdings to a greater degree than with established service providers. In February 2014, Mt.Gox, the biggest Bitcoin trading platform at that time, had to close after significant amounts of user holdings had been reported to be lost or stolen (McMillan, 2014).

Furthermore, there are significant risks and costs involved in exchanging bitcoins for official currency. As there is no market maker, being able to buy and sell bitcoins depends on finding a transaction partner on one of the private exchange platforms online. The exchange rate is very volatile, and the market is rather illiquid. Exchange charges can be in the order of a few percent (Fleishman, 2014). Many exchanges closed after a few months, with at least one involving severe losses for users (Moore and Christin, 2013). Although various exchanges coexist, there are rarely any arbitrage opportunities, as these are outweighed by the cost of moving funds between exchanges (Gandal and Halburda, 2014, p. 3).

3 Bitcoin as a Monetary System

In economic theory, money is defined by three functions: unit of account, means of payment and store of value.

In modern economies, there is a single unit of account in every currency area. This is considered to be an efficient solution: Having all prices in a currency area denominated in the same unit makes them comparable and enables the operation of markets. Usually, means of payment are issued as official currency by a central bank that is in charge of ensuring the quality and quantity of that money according to a public mandate. In most countries, such a mandate entails ensuring the functioning of these means of payment as stable and most liquid store of value over the short to medium term. The acceptance of official currency among the public is supported by the currency's exclusive acceptance by the state for the discharge of tax liabilities and its use by the state as (one of) the biggest single transaction parties in the economy. Apart from the central bank, private issuers can also offer means of payment as long as they are accepted by the public. Such private means of payment, denominated in the official unit of account, represent a claim on the issuer for official currency. Banks are the biggest providers of private means of payment, as the bulk of daily transactions among economic subjects is conducted by transferring bank deposits (which represent a claim on official currency). In their role as the biggest providers of private means of payment, banks are subject to regulation, supervision and monetary policy. The resulting monetary system is a hierarchical construction, where the state-provided unit of account and means of payment issued in that unit form the apex of the system, and private means of payment represent claims on the official means of payment denominated in the official unit of account. The need to maintain the ability to keep the promise underlying these claims serves as a major disciplining device for the issuers.

While Bitcoin represents one of many private means of payment, it entails three peculiarities: It introduces

a separate unit of account, it has no single and identified issuer and its quantity is ultimately fixed once and for all.

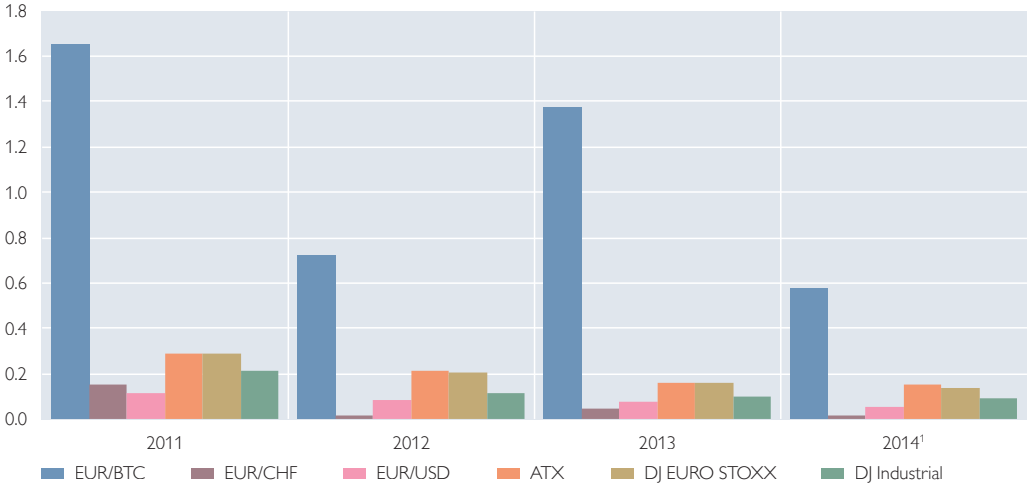
Built around the model of gold, the bitcoin is a pure asset not related to credit creation processes. It has no central issuer and does not represent anybody's liability. This implies that its quantity cannot be adjusted to variations in demand, and it does not come with anybody's promise to convert it into official currency at a certain rate. Given its operation based on cryptographic mechanisms described above, the term "cryptocurrency" has been introduced to characterize Bitcoin-type systems. Bitcoin governance is not completely decentralized: There is the Bitcoin Foundation, which describes its tasks as standardization (e.g. funding the Bitcoin infrastructure, including a core development team), protection (e.g. maintenance, improvement and legal protection of the integrity of the technical protocol underlying the operation of Bitcoin) and promotion of the Bitcoin system, but does not represent the issuer of the currency.[11] The latter is replaced by a decentralized process of mining as described above. The Foundation is based on voluntary membership, whose voting and other rights depend on the size of the fee (based on four membership classes with different rights). Whereas central banks' role in the monetary and payment system is based on a legal mandate of the polity of the currency area and its ability to issue currency, the Bitcoin Foundation lacks such ingredients and therefore cannot fulfill the role of a central bank. Indeed, deliberately designing a system without a central bank is one of the cornerstones of the Bitcoin concept.

Being nobody's liability is a feature the bitcoin shares with gold. But in contrast to gold, which is customarily used for various products (e.g. electronics, industry, dental fillings or jewelry) and has a commodity value, the bitcoin has no use value other than

Chart 2

Volatility

Annualized standard deviation of daily logarithmic changes



Source: OeNB, http://blockchain.info, authors' calculations.

[1] *January 1 to October 20.*

[11] *See https://bitcoinfoundation.org for more details.*

serving its role in the Bitcoin system. Therefore its value is determined only by the subjective valuation of users, exhibiting substantial volatility in terms of official currency (see chart 2). The fixed increase, up to a predefined final level, of supply makes demand effects dominant. This has led some observers to invoke the "greater fool theory" as basis for the bitcoin's valuation (Blundell-Wignall, 2014, p. 9). Can the bitcoin nevertheless serve monetary purposes?

Economists in the tradition of Friedrich A. Hayek have called for the abolition of the prevailing monetary system in favor of competing private units of account (see Weber, 2013, for a detailed account).[12] Such a conception entails a number of problems, however. A newly introduced rival private unit of account is at a huge disadvantage against an established unit, all the more if it has an unstable exchange rate against the official unit of account. A unit of account is subject to significant network effects, which entails switching costs for users (Dowd and Greenaway, 1993). If a merchant were to start to price goods and services in bitcoin, she would incur substantial exchange rate and conversion risks. With inputs and taxes being priced in official currency, bitcoin income from sales would have to be at least partially converted into official currency. But their value would fluctuate in terms of the official currency according to the daily exchange rate, and conversion costs would accrue. As a result, while there are a number of online merchants accepting bitcoins in payment, none of them is known to use the bitcoin as a unit of account. Instead, prices are fixed in official currency and bitcoin prices are adjusted according to the bitcoin's fluctuating exchange rate, possibly including additional costs for the conversion spread.

While several (mainly online) merchants accept payment in bitcoin[13] and the Bitcoin network has attracted a significant number of payment transactions, there are strong reasons to suspect that bitcoins are not widely used as a means of payment. Due to the anonymity of transactions, no direct observation on the motives underlying bitcoin payments is possible. But the fixed supply of bitcoins is designed to attract users with the promise of value appreciation in the face of growing demand. Whereas official currency is managed with a view to serving as a stable store of value over the short and medium term, Bitcoin builds on the promise of long-term value appreciation, not stability. In the short term, it even exhibits extraordinary volatility in comparison with most other financial assets (Yermack, 2013; see chart 2).[14] There is no market maker willing or able to ensure the stability usually expected from a currency by users. Rather than a store of value, the bitcoin can be better characterized as a speculative asset. In light of this, economic incentives for hoarding are far greater than incentives for spending bitcoins. Exceptions are transactions where using official currency is not applicable or disadvantageous (e.g. illicit transactions and small-denomination online payments). According to Segendorf (2014, p. 79), trade appears to be subdued as a mere 4% of all bitcoin holdings are traded within one week and 24% within three months. It takes six months for some 50% to be traded, and about 38% are held for more than one year.

[12] *According to a Bitcoin Foundation executive, "Choice in currency is the free speech of commerce." (Matonis, 2013).*

[13] *According to http://coinmap.org about 50 Austrian companies accept payment in bitcoin.*

[14] *Although the implications of this attribute for portfolio choice are subject to debate, see Briere et al. (2013).*

Gandal and Halburda's (2014) observations on market developments in competing cryptocurrencies confirm this assessment. A number of cryptocurrencies have emerged in the wake of Bitcoin, most of them modeled after the latter with small variations in design. If there were an emerging market for cryptocurrency as a substitute for money, network effects would entail a winner-takes-it-all dynamic. But although Bitcoin was the first and is by far the largest network in terms of market capitalization, several hundred competitors have since then been established by various entities and some have succeeded in gathering some support. This could be considered evidence that the financial asset function is a more prominent motive than currency adoption among users.

4 The Opinion of Governments and Regulators

Following the bitcoin's price hikes and increasing coverage by the media, governments, central banks and regulators have started to publish opinions on Bitcoin. These publications discuss the risks of Bitcoin (e.g. to costumers or financial stability), potential regulatory responses or the legal and fiscal classification of Bitcoin. In this section, we review some of these assessments, focusing on Austrian and European contributions.

The risks of Bitcoin and potential regulatory reactions are for example discussed by the European Central Bank (ECB, 2012) and the European Banking Authority (EBA, 2014). The ECB focuses on those aspects that are relevant for central banks, i.e. risk to price stability, financial stability, the payment system, and reputational risks for central banks. Overall, the ECB concludes that virtual currency schemes do not pose considerable risks, inter alia because of their relatively low volume and their limited interrelation with the real economy. However, this could change if virtual currency schemes became quantitatively more important and their use more widespread. The ECB further notes that, as payment systems, virtual currency schemes fall into the responsibility of central banks. Central banks therefore also need to take into account potential reputational risks as central banks may be held responsible by the public for incidents involving bitcoins. In any case, the development of virtual currency schemes and their interaction with the real economy should be closely monitored.

After the EBA had issued a warning to make consumers aware of risks that arise from the fact that virtual currencies are not regulated (EBA, 2013), the regulatory agency published an opinion on virtual currencies in July 2014 (EBA, 2014). It comprises a discussion of potential benefits and risks of virtual currency schemes as well as the EBA's opinion on their regulation. Even though the EBA (2014) concedes that there are potential benefits (e.g. lower transaction costs, increased financial inclusion), it considers these benefits less relevant in the EU. Some of the potential advantages may only exist because of the lack of regulation. Furthermore, it is not guaranteed that these advantages will still apply in the future. On the other hand, the EBA identifies about 70 risks and categorizes them (see figure 1 in EBA, 2014, p. 22), for instance, into risks to users (e.g. losses through hacking), risks to non-user market participants (e.g. merchants are eventually not reimbursed), risks to financial integrity (e.g. money laundering, other financial crime), risks to existing payment systems (e.g. conventional payment services compromised from virtual currency operations

of the payment system provider), and risks to regulatory authorities (e.g. reputational risks when chosen regulatory approach fails). Not all of these risks are specific to virtual currencies; some are also present in conventional payment services or financial products.

As to regulation, the EBA (2014) differentiates between an immediate response and a comprehensive response that can most likely only be implemented in the long term. The immediate regulatory response that the EBA advocates should mitigate risks that arise from the interaction of virtual currency schemes and the regulated financial sector. This should essentially be achieved by separating regulated financial services from virtual currency schemes as regulators should discourage regulated financial intermediaries from buying, holding or selling virtual currency schemes. Furthermore, the EBA recommends for "market participants at the direct interface between conventional and virtual currencies such as virtual currency exchanges, to become 'obliged entities' under the EU Anti Money Laundering Directive and thus subject to its anti-money laundering and counter terrorist financing requirements" (EBA, 2014, p. 6). The comprehensive long-term regime includes, among other elements, the creation of a governance authority for each virtual currency scheme that is accountable to the regulator, the collection of basic identity information when someone buys virtual currencies, standards for individuals performing certain functions with respect to a virtual currency scheme, mandatory incorporation as a legal person in an EU Member State, capital requirements for those market participants that hold virtual currency on behalf of others as well as measures that ensure the security of IT systems. Risks stemming from the fact that virtual currencies are not legal tender and that there is no authority that provides exchange rate stability remain deliberately unaddressed.

Another strand of official responses deals with the legal classification of both Bitcoin and economic activity related to bitcoins as well as tax-related issues. In this regard, the Austrian Ministry of Finance (BMF, 2014) argues that the bitcoin does not constitute a financial instrument. The Ministry of Finance basically shares the opinion of the Austrian Financial Market Authority (FMA, 2014), which states that – while Bitcoin is in principle neither regulated nor supervised by the FMA – certain business models involving Bitcoin may require compulsory licensing. Certain activities involving bitcoin transactions can be taxable, e.g. VAT for the exchange of bitcoins and income tax on income from mining and capital gains. The view of the Ministry of Finance that the bitcoin is not a financial instrument departs from the opinion of the Austrian Ministry of Economics (BMFWF, 2014). In the same vein, Germany's Federal Financial Supervisory Authority (BaFin, 2014) regards the bitcoin as a financial instrument, but not as e-money. Trading of bitcoins may require authorization.

Several institutions also warned consumers against using or investing in bitcoins, stressing the risks involved. The above-mentioned warning by the EBA (2013), for instance, stresses the fact that users of Bitcoin are not protected by regulation (e.g. in case "platforms that exchange or hold virtual currencies fail or go out of business") and that the value of bitcoins may not remain stable. The EBA (2013) discusses potential losses due to fraud (e.g. when digital wallets are hacked) and advises consumers to take care of potential tax liabilities resulting from

the use of virtual currencies. In Austria, the warnings of the EBA were reiterated by the FMA (2014). Similar warnings were issued, inter alia, by the Banca d'Italia (2014) and the Banque de France (2013).

5 Summary and Conclusions

From a technical point of view, Bitcoin offers an interesting proposal for a decentralized payment system. But doing away with regulated intermediaries in payment systems exposes users to a number of new risks and costs, which will make its use only attractive for purposes which are underserved by existing payment systems, such as illicit transactions due to its anonymity features as well as small-denomination online payments due to transitory low user costs. The risks involved have been the subject of a number of opinions recently issued by authorities worldwide.

The price hikes of bitcoins suggest that this virtual object is largely regarded as a speculative asset rather than as a currency. The high volatility of the exchange rate against official currencies makes the use of bitcoins in a world in which most payments eventually have to be made in official currencies quite risky.

While exposing the lack of competition in certain payment markets and potentially contributing to competition-inducing innovation in payment systems, the bitcoin in its present form cannot therefore be expected to offer noteworthy competition for official currencies in their established domain. Its design points to instability over time, disfavoring adoption as a unit of account, means of payment and store of value.

Nevertheless, technological innovations that are associated with bitcoins and other cryptocurrencies may inspire innovation in payment systems and other applications.

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www.oenb.at/Publikationen/Oesterreichische-Nationalbank/Geschaeftsbericht.html
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Konjunktur aktuell — German | seven times a year

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