Economic Review

September 2014

National Bank OF BELGIUM

Eurosystem

© National Bank of Belgium

All rights reserved. Reproduction of all or part of this publication for educational and non-commercial purposes is permitted provided that the source is acknowledged.

ISSN 1780-664X

Contents

Outlook for the finances of the Communities and Regions

P. Bisciari
W. Melyn
L. Van Meensel (*)

Introduction

The sixth State reform, finalised at legislative level at the beginning of the year, continues the reorganisation of Belgium's institutional structure, a process initiated in previous decades. During that period, reforms were implemented in 1970, 1980, 1988-1989, 1993 and 2001. As a result of the reforms, a growing number of powers were devolved from federal level to the Communities and Regions. Provision was also made for the resources needed to fund those powers. In accordance with the sixth phase of the State reform, powers amounting to € 18.7 billion (4.6 % of GDP) will be transferred in 2015, the first full year in which the reform applies. The funding of the Communities and Regions is also being modified. In this connection, this government sub-sector is to contribute towards the consolidation of Belgian public finances. The State reform therefore has a significant influence on public finances, and more specifically on the allocation of revenue and expenditure among the various levels of power. This article examines how these changes will affect the finances of the Communities and Regions in the future.

The article is in five chapters. Chapter 1 gives an account of the finances of the Communities and Regions between 1995 and 2013. Chapter 2 goes into more detail on the institutional framework established by the sixth State reform. Chapter 3 is devoted to the new budgetary framework of the Communities and Regions following the changes resulting from this reform and adjustments to the European governance framework. Chapter 4 contains projections for some of the variables in the budgets of the Communities and Regions, including the budget balance, taking account of the new institutional framework. Chapter 5 gives a broad outline of the government agreements of the four largest Communities and Regions for 2014-2019. The article ends with a number of conclusions.

1. Recent developments in the finances of the Communities and Regions

Chapter 1 of this article gives an account of the finances of the Communities and Regions since 1995 (1). In that respect, it deals both with these entities as a whole and with the four largest ones – the Flemish Community, the French Community, the Walloon Region and the Brussels-Capital Region – taken separately. In 2013, these four entities represented 98.4 % of the revenue and 98 % of the primary expenditure of the Communities and Regions as a whole. We shall proceed to examine the budget balance first, followed by the debt ratio.

1.1 Budget balance

The budget balance of the Communities and Regions as a whole improved during the period 1995-2013, being converted from a deficit of 0.8 % of GDP to a more or less balanced budget as a result of real average annual growth

(*) The authors would like to thank Kris Van Cauter for his contribution to this article.

(1) The analysis presented in this article is based mainly on data from the National Accounts Institute relating to the April 2014 government accounts drawn up in accordance with the ESA 95 methodology. There is a break in the statistical series of those data in 2009 owing to an enlargement of the consolidation scope. On 30 September 2014, new government accounts were published in which the figures deviate from those in this article, partly because of methodological changes resulting from the switch to the ESA 2010.

of revenues (2.4 %) exceeding that of primary expenditure (2.1 %)[1]. Both revenues and primary expenditure growth outpaced real GDP growth, on average. The balance fluctuated as there were periods of gradual improvement interspersed with periods when the balance deteriorated sharply.

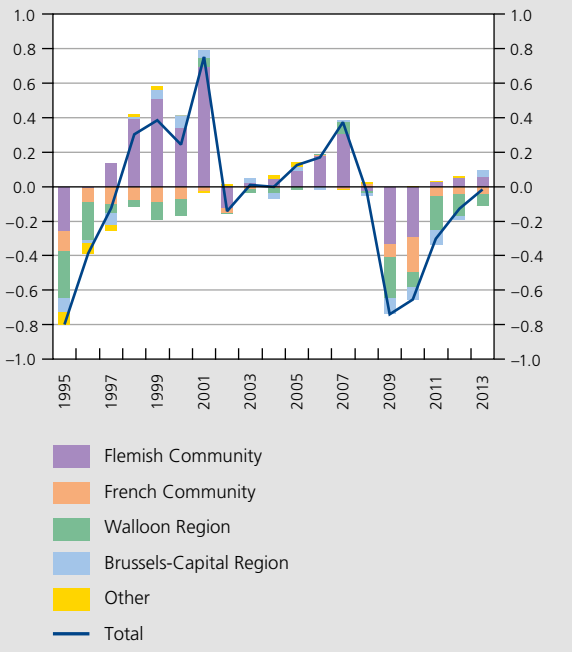
During the period 1995-2001, the balance improved considerably, changing from a deficit of 0.8 % of GDP into a surplus of 0.8 % of GDP, since the average revenue growth considerably outstripped the rise in primary expenditure (4 %, compared to 1.8 %). That improvement faltered against the background of the sharp cyclical downturn in 2001, and a deficit of 0.1 % of GDP was recorded in 2002. In the ensuing five years, the balance improved again, and a surplus of 0.4 % of GDP was achieved in 2007. However, it deteriorated again thereafter, mainly on account of the financial and economic crisis, and the result was a deficit of 0.7 % of GDP in 2009. Finally, from 2010, it improved again under the impetus of the consolidation programmes of the various regional and community governments, so that the budget was more or less in balance in 2013.

During the period 1995-2013, the budget balance of the four largest Communities and Regions followed a pattern

(1) Since the interest charges of the Communities and Regions as a whole are modest, they had no decisive influence on the movement in the budget balance.

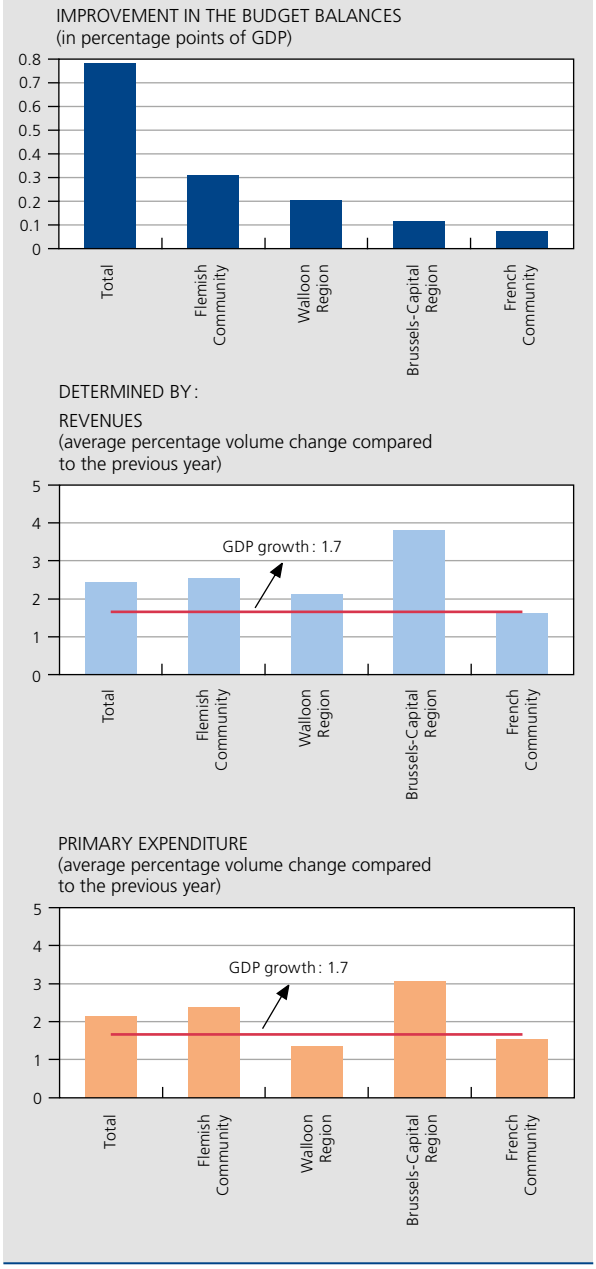
CHART 1 BUDGET BALANCE OF THE COMMUNITIES AND REGIONS

(in % of GDP)



Sources: NAI, NBB.

CHART 2 DETERMINANTS OF THE MOVEMENT IN THE BUDGET BALANCE OF THE COMMUNITIES AND REGIONS DURING THE PERIOD 1995-2013[1]



Sources: NAI, NBB.

(1) Two adjustments have been made to the data on revenues and primary expenditure to bring them more into line with the budgetary angle, more particularly as regards imputed social contributions and notional transfers from the federal government to the Communities and Regions for the payment of their staff pensions. The figures at constant prices are calculated by means of the GDP deflator.

fairly comparable to that of the overall balance. Over the period as a whole, all these entities saw an improvement in the balance. The Flemish Community and the Brussels-Capital Region recorded a small surplus in 2013, while the French Community and the Walloon Region ended with a small deficit. At the beginning of the period under review, all four were still in deficit. As in the case of the overall balance, the improvement in the case of the four entities taken separately was due to revenue growth outpacing the growth of primary expenditure. Also, the Flemish Community recorded a modest surplus on average for the entire period, as it had a substantial surplus in some years. Conversely, the other three entities recorded a deficit on average, though it was only small.

The substantial improvement in the budget balance of the Communities and Regions since 2010 is attributable largely to slower growth of primary expenditure, as the annual average increase dropped from 2.5 % in the period 1996-2009 to 1 % in the period 2010-2013. The consolidation efforts made by the various governments played a key role here. The resulting slower growth of primary expenditure by the Communities and Regions as a whole in the period 2010-2013 could be clearly observed in the four main entities, and especially in the Walloon Region.

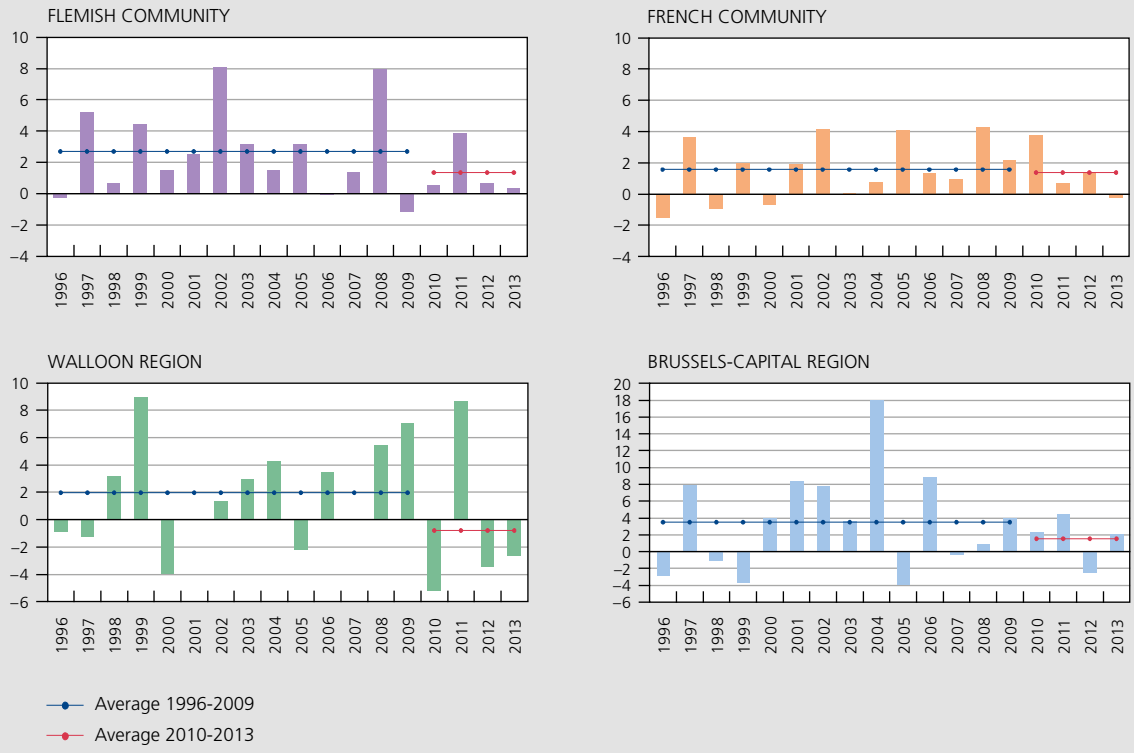
1.2 Debt ratio

After 1995, the debt ratio of the Communities and Regions declined almost continuously to reach 3.7 % of GDP in 2007. As a result of the budget surpluses accumulated by the Flemish Community, the fall in the debt ratio over that period was much sharper there than in the Walloon Region and the Brussels-Capital Region. In the French Community, the debt was almost stable during this period.

From 2008, the debt ratio of the Communities and Regions increased, reaching 8 % of GDP in 2012. That rise was due to cumulative budget deficits, the capital injected into ailing financial corporations (Dexia, Ethias Finance and KBC), and a break in the statistical series in

CHART 3 PRIMARY EXPENDITURE

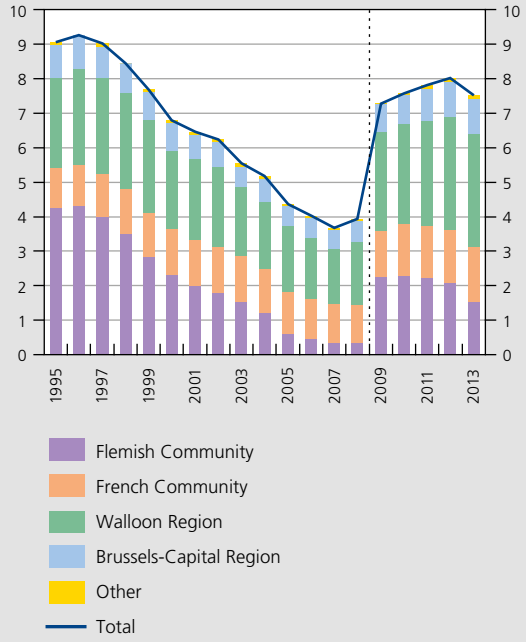
(percentage changes compared to the previous year, constant prices)



Sources: NAI, NBB.

CHART 4 CONSOLIDATED GROSS DEBT OF THE COMMUNITIES AND REGIONS[1]

(in % of GDP)



Sources : NAI, NBB.

(1) In the government accounts published in April 2014, there is a break in the series in 2009 owing to a substantial enlargement of the consolidation scope. That break caused an increase in the debt of the Communities and Regions as a whole amounting to 1.5 % of GDP in 2009.

2009 caused by an extension of the consolidation scope. As a result of these three factors, the debt ratio increased more sharply in the Walloon Region and the Flemish Community than in the other two main federated entities.

In 2013, the debt ratio of the Communities and Regions as a whole subsided again, mainly as a result of the repayment by KBC of the first tranche of the capital injection from the Flemish Community.

2. New institutional framework

From an economic and fiscal point of view, the two most fundamental aspects of the sixth State reform are the transfers of new powers from the federal level to the Communities and Regions and the revision of the financing mechanisms of the Communities and Regions. The transfer of federal government and social security powers to the Communities and Regions is governed by the special law of 6 January 2014 on the Sixth State Reform. The budgetary aspects are set out in the special law of 6 January 2014 reforming the financing of the Communities and Regions, extending the fiscal autonomy of the Regions and financing the new powers.

In the spring of 2014, the Law of 19 April 2014 supplemented these two aspects for the German-speaking Community, and decrees transferred certain responsibilities and the associated resources from the French Community to the Walloon Region and the French Community Commission, thus implementing the Sainte-Émilie agreements.

Although these laws and decrees came into force on 1 July 2014, most of the elements relating to financing will not apply until 1 January 2015.

The sections which follow describe the scale of the transfer of powers and outline the new system of funding for the Communities and Regions, focusing on the mechanisms created or modified by the revision of the Finance Act[1].

2.1 Transfer of powers

On the basis of estimates for 2015, i.e. the first full year in which the sixth State reform will be effective, the additional transfer of powers from federal level to the Communities and Regions will amount to around € 18.7 billion, or 4.6 % of GDP. In 2016, this will be supplemented by the transfer of funding for hospital infrastructures, on which expenditure is estimated at € 630 million.

Before account is taken of the transfer of powers between federated entities, such as those resulting from the Sainte-Émilie agreements, the most substantial transfers in budgetary terms – amounting to around 2.8 % of GDP – will be the transfers to the Communities. This concerns all family allowances and various aspects of health care and social support. In regard to matters concerning the elderly, this mainly concerns such facilities as retirement homes, retirement and care homes, and isolated geriatric hospitals, and support allowances for the elderly. The other health care expenditure transferred comprises aspects of mental health care, preventive medicine and the organisation of front-line care. Most of these powers concern expenditure currently borne by social security. Expenditure relating to other powers, including

(1) The reform of the Special Finance Act for the Communities and Regions has already been presented in an Economic Review article (see Bisciari P. and L. Van Meensel, 2012).

TABLE 1 TRANSFER OF POWERS TO THE COMMUNITIES AND REGIONS

(estimates based on needs with no change of policy in 2015 (1) (2))

	Amounts (in € billion)	In % of GDP
Communities	11.1	2.8
of which:		
Family allowances (3)	6.4	1.6
Aspects of health care and social support	4.5	1.1
Regions	7.6	1.9
of which:		
Employment policies	4.2	1.0
Miscellaneous tax expenditure	3.0	0.8
Total	**18.7**	**4.6**

Sources: federal government, NBB.

(1) This table only concerns transfers scheduled for 2015. It therefore excludes those which have already taken place (Meise botanical garden) and those which will come later (funding of hospital infrastructures in 2016 and inter-university centres in 2018).

(2) Excluding drawing rights and monitoring of the availability of unemployed persons, since the Regions already receive grants for those, while Participation Fund expenditure is not included since the amounts involved are non-recurring.

(3) This figure does not include the family allowances that the Communities and Regions were already paying directly to their workers before the reform.

those concerning justice, is also being transferred to the Communities.

In regard to the Regions, in budgetary terms it is mainly some aspects of employment policy that are being transferred. These transfers originate partly from federal government and partly from social security. Some of these powers, namely the reductions in certain social security contributions, were previously considered by the National Accounts Institute as reductions in revenue. From 30 September 2014, they are treated as expenditure on subsidies to firms.

The Regions will also acquire significant powers concerning tax expenditure, which counts as reductions in revenue from a statistical point of view. The main tax expenditure concerns the housing bonus. Another substantial budget relates to the use of service vouchers and LEA cheques.

In all, following the sixth State reform, there will be a considerable increase in the share of the Communities and Regions in general government revenues, and even more so in general government expenditure. On the basis of estimated figures for 2015, the additional primary expenditure of this sub-sector, which equals 3.8 percentage points of GDP, will be taken almost entirely from social security expenditure.

TABLE 2 TAX EXPENDITURE TRANSFERRED IN 2015

(in € million)

	Flemish Region	Walloon Region	Brussels-Capital Region	Total
Housing (1)	1 714	754	144	**2 612**
Service vouchers and LEA cheques	219	94	34	**347**
Energy-saving investment and passive houses	23	8	1	**32**
Other (2)	31	20	6	**56**
Total	**1 986**	**876**	**186**	**3 048**

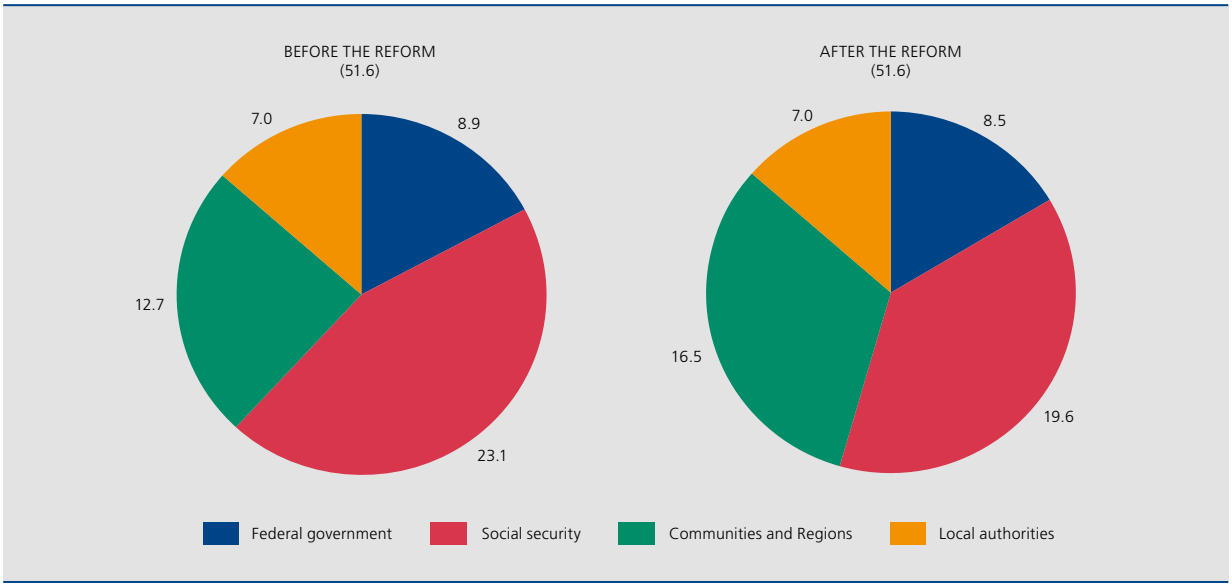
Source: federal government.

(1) Expenditure relating to mortgage loans contracted for own home purchase or maintenance (tax allowance for a single own home, increased tax relief for home savings, additional deduction for mortgage interest and life insurance premiums).

(2) Tax on non-residents and other elements of personal income tax (securing housing against fire and theft, renovation of housing let at modest rents, and housing in an urban positive action zone).

CHART 5 FINAL PRIMARY EXPENDITURE OF THE GOVERNMENT SUB-SECTORS [1] [2] [3] [4]

(in % of GDP, estimates based on 2015 figures)



Sources: federal government, NAI, NBB.

(1) Excluding transfers between government sub-sectors so that only final expenditure is considered.

(2) The transferred expenditure is classified on an institutional basis. In the national accounts, some expenditure of the Communities and Regions could be regarded as social security expenditure.

(3) The reductions in social security contributions transferred to the Regions were reclassified as expenditure in anticipation of the change expected by the NAI on account of the switch to the ESA 2010.

(4) In contrast to what is done in the rest of the article, imputed social contributions and notional transfers from the federal government to the other sub-sectors for the payment of their staff pensions have not undergone any adjustment, so that they are recorded in the same way as in the government accounts.

2.2 New funding system

This section gives a broad outline of the new funding system, first for the Regions and then for the Communities. Particular attention focuses on the contributions towards the consolidation of public finances and towards the cost of ageing, specified in the law of 6 January 2014; the amounts and mechanisms of those contributions had not yet been decided at the time of the agreement on the State reform dated 10 October 2011. A comparison of the revenue structure of the four main Communities and Regions is also presented by way of illustration.

2.2.1 New funding system for the Regions

The new system of regional funding is based primarily on increased fiscal autonomy for the Regions. This means that they can levy extended additional percentages on personal income tax. This aspect of the reform was implemented by the Law of 8 May 2014 amending the Income Tax Code. In 2015, these additional percentages will correspond to 25.99 % of personal income tax revenues, or around € 11.9 billion, which is 3 % of GDP. They will finance 40 % of the transferred tax expenditure and will replace the basic personal income tax grant and most of the negative term, the latter compensating the federal State for the loss of revenue resulting from the transfer of certain taxes to the Regions in 2002. With no change of policy, they will keep pace with the proceeds from personal income tax, which will tend to grow faster than GDP for two reasons: the progressive character of the tax and population ageing, as pensions form part of the tax base but are not included in GDP.

The federal government transfers personal income tax revenues to cover the remaining 60 % of this tax expenditure and 90 % of the new powers relating to employment. These allocated resources are not linked to the growth of personal income tax revenues but are indexed to inflation and, in part, to real GDP growth. They are allocated according to the key for personal income tax which remains at the federal level.

A national solidarity allowance levied on federal personal income tax revenues is retained for Regions where per capita personal income tax revenues are below the national average. However, the detailed arrangements have been changed. Ultimately, 80 % of the gap between a Region's share in the population and its share in personal income tax revenues will be adjusted, but the basic

TABLE 3 FUNDING STRUCTURE OF THE REGIONS FOLLOWING THE SIXTH STATE REFORM

Unchanged elements

Regional taxes and levies
Personal income tax resources allocated to the Brussels-Capital Region for the municipalities
Certain federal government grants (1)
Transfers received from other federated entities (2)
Other non-fiscal revenues

New or modified elements

Elements neutralised in 2015 by the transitional amount (3)

Regional additional percentages on personal income tax
Allocated personal income tax resources
- Resources for new powers (employment and tax expenditure)
- Resources for some residual powers (old and new)
- Revised national solidarity allowance
- Transitional mechanism (4)

Transferred non-fiscal revenues (motoring offence fines)
Transferred fiscal expenditure (negative sign)

Elements not neutralised by the transitional amount

Personal income tax resources allocated
- Contribution to the consolidation of public finances (structural reductions in various transferred resources)
- Contribution to ageing costs (reduction in the link to economic growth for various transferred resources)
- Certain aspects of the refinancing of the Brussels-Capital Region (compensation for commuters and international officials)

Transfers received (grants)
- Climate responsibilisation mechanism (if appropriate)
- Part of the refinancing of the Brussels institutions benefiting the Brussels-Capital Region or channelled through it (grants for mobility, for security and for bilingualism premiums and mortmain)

p.m. New expenditure : pension and, if appropriate, climate, responsibilisation mechanism

Elements resulting from transfers between federated entities

Transfer from the French Community to the Walloon Region (Sainte-Émilie)

(1) Beliris, grants for the collection of certain regional taxes taken over by the Regions, etc.
(2) For example, the grant paid by the French Community to the Walloon Region following the Saint-Quentin agreement.
(3) This amount allows in particular for the restructuring and abolition of old mechanisms for funding the Regions such as the drawing rights for getting unemployed persons back into work.
(4) Account is also taken of an estimate of the needs relating to the new powers transferred to the Regions for calculating the transitional amount. This mechanism captures the difference between the regional distribution of resources and needs in 2015.

amount on which the adjustment is applied now includes resources of the Communities and Regions. In 2015, the amounts transferred in this respect to the Walloon Region and the Brussels-Capital Region will be reduced, but in the future they will be linked not only to inflation but also to economic growth.

A new residual grant, likewise comprising resources allocated out of federal personal income tax, covers the resources provided for the old powers, namely those transferred in 1993 and 2002, and for various new regional powers.

Taking account of all the changes to the method of financing the Regions, of which only the most important have been mentioned here, some entities will see a reduction or increase in their funding compared to the previous system. A transitional mechanism in the form of an equalisation factor has therefore been provided to ensure that no entity gains or loses at the time of the switch from the old Finance Act to the new one. The amounts of this factor will be fixed in nominal terms for ten years, before being phased out over the ensuing ten years.

There is an exception in the case of some elements, in that they are not offset in the transitional mechanism and therefore have an immediate budgetary impact on relations between the federal government and the Regions. This concerns the refinancing of the Brussels institutions and the two responsibilisation mechanisms, one relating to pensions and the other to climate, and the contributions to the consolidation of public finances and to the cost of ageing (see sub-section 2.2.3. for this last item).

The Brussels institutions – Brussels-Capital Region, municipalities and French and Flemish Community Commissions – will receive additional funding amounting to about 0.1 % of GDP up to 2015, generated via various channels. For instance, given the net inflow of commuters into this Region, with effect from 2014, an adjustment incorporates part of the income of commuters from the other two Regions. This is a horizontal transfer, i.e. a transfer between Regions, which operates via the allocated personal income tax revenues transferred from the federal government. Another mechanism which also applies from 2014 and operates via the transferred personal income tax revenues compensates the Brussels-Capital Region for the revenue which it does not receive on the salaries of officials of international institutions such as the EC and NATO. This compensation only applies in respect of the larger share of these officials in the tax base of the Brussels-Capital Region compared to the other two Regions. Finally, there are grants for specific expenditure such as security, mobility and bilingualism premiums. Part of the refinancing has benefited the Brussels institutions from 2012.

The Regions now pay a contribution to the federal State in respect of the pensions of their civil servants, as a contribution towards the budgetary cost of ageing. Until now, the federal government had borne almost all the cost of these pensions.

Under the climate responsibilisation mechanism, if a Region exceeds the target for reduction in greenhouse gas emissions in residential and tertiary sector buildings, it receives a financial bonus. Conversely, if it fails to meet the target, it has to pay a penalty. In the rest of this article it is assumed that each Region does no more and no less than meet its target.

Finally, under the Sainte-Émilie agreements, the Walloon Region receives a grant from the French Community for the powers which it is taking over in its territory. This mainly concerns family allowances and most of the health care and social support expenditure.

2.2.2 New funding system for the Communities

The method of financing the Communities is based, as before, on resources transferred by the federal government, be it in the form of grants or transferred tax revenues.

Most of the federal transfers are distributed among the Communities according to formulas which reflect the needs for specific powers. Thus, there are demographic criteria for the allocation of resources in respect of the new Community powers: the number of children aged from 0 to 18 years for family allowances, the number of persons over the age of 80 years for health care and elderly people's support, and the total population for other aspects of health care and social support (excluding hospital infrastructures). In addition, the number of pupils attending French-speaking and Dutch-speaking schools is the criterion used for allocating transferred VAT resources. Apart from the old basic VAT transfer – namely the part of the VAT transfer that was already allocated previously according to the number of pupils – the transferred VAT resources now include the "economic growth-related" part of the supplementary Lambermont resources over the period 2010-2015, the compensation for the radio-TV licence fee that was allocated to the Communities on account of the transfer of that fee to the Regions in 2002, and an amount to fund a package of new powers.

The restructuring of the resources available to the Communities to finance their previous powers has also affected the transferred personal income tax revenues. As before, they are shared between the Communities according to the proceeds of this tax. These revenues now consist of the old basic personal income tax transfer plus the supplementary VAT resources relating to the Lambermont agreement other than the part reflecting the "link to economic growth" 2010-2015, which is shifted to the reformed VAT transfer.

TABLE 4 FUNDING STRUCTURE OF THE COMMUNITIES AND COMMUNITY COMMISSIONS FOLLOWING THE SIXTH STATE REFORM

Unchanged elements

Certain federal government grants (1)
Transfers received from other federated entities (2)
Other non-fiscal revenues

New or modified elements

Elements neutralised in 2015 by the transitional amount

VAT resources allocated (revised mechanism (3))
Personal income tax resources allocated
- Restructured personal income tax resources
- Transitional mechanism (4)

Resources allocated to the Joint Community Commission and the German-speaking Community (5)
Federal grants for most of the new powers (6)

Elements not neutralised by the transitional amount

Personal income tax resources allocated
- Contribution to the consolidation of public finances (structural reductions in various transferred resources)
- Contribution to ageing costs (reduction in the link to economic growth for various transferred resources)
- Shares of the refinancing of the Brussels institutions allocated to the French Community Commission and the Flemish Community Commission

p.m. New expenditure : pension responsibilisation mechanism

(1) University payroll tax, funding for foreign students, cooperation between universities, national lottery, Institute of Tropical Medicine, Meise botanical garden, etc.
(2) This mainly concerns transfers received by the Community Commissions from the French Community (Saint-Quentin grant for the French Community Commission), the Flemish Community or the Brussels-Capital Region. They also include grants by the Walloon Region to the German-speaking Community, in particular following the transfer of certain powers.
(3) The revision of the mechanism also affects the composition of the VAT resources allocated. They will also include the old compensatory grant for the radio-TV licence fee that the Communities have received since 2002 on account of the transfer of this fee to the Regions.
(4) Account is also taken of an estimate of the needs relating to the new powers transferred to the Regions for calculating the transitional amount. In particular, this mechanism captures the differential between the regional distribution of resources and needs in 2015.
(5) From 2015 onwards, the old general grants paid by the federal government to the German-speaking Community and to the Joint Community Commission will be converted into transferred tax revenues. The drawing rights for getting unemployed persons back into work in the German-speaking Community will be incorporated into the general funding of that Community via transferred tax revenues.
(6) Family allowances, care for the elderly, other health care and social support, hospital infrastructures, justice and inter-university centres.

As in the case of the Regions, there is a transitional mechanism to ensure that no entity loses or gains resources at the time of the switch to the new Finance Act. However, some elements apply after implementation of the transitional mechanism in order to trigger an immediate budgetary effect favourable to the federal government. This concerns the contributions towards the consolidation of public finances and to the ageing costs, and pension responsibilisation. The impact of this last item on the budget will be greater for the Communities than for the Regions, since the former employ more workers than the latter, primarily teaching staff.

2.2.3 Contributions from the Communities and Regions to the consolidation of public finances and to the ageing costs

The Finance Act now specifies a number of contributions from the Communities and Regions towards the consolidation of public finances. In 2014, a one-off reduction of € 250 million will be applied to the personal income tax resources allocated to them under the old Finance Act. Lump sums are fixed for each Community and Region.

From 2015, the Finance Act will arrange structural levies in the form of cuts in the transferred tax revenues so

that, including the induced effect on the revised national solidarity contribution, the Communities and Regions together should make a contribution of € 1.25 billion, which will be increased to around € 2.5 billion from 2016. The transferred tax revenues in question are the personal income tax resources levied to fund the new employment policies for the Regions and those destined for the Communities and the Joint Community Commission.

Furthermore, from 2017, the federated entities will be asked to make an additional effort rising to 0.2 % of GDP in 2030, by means of reductions in the link to economic growth for certain grants or transferred tax revenues. In the case of the Regions, this concerns the personal income tax revenues transferred to cover the new employment powers and tax expenditure, for which the link to growth will decline from 75 % to 55 %, and the new residual grant for which the link will be cut from 100 % to 55 %. For the Communities, the link to economic growth will drop from 82.5 % to 65 % for grants relating to health care and to support for the elderly, and from 75 % to 55 % for personal income tax resources. There will also be a reduction in the link to growth – from 82.5 % to 65 % – in the case of resources transferred to the Joint Community Commission.

2.2.4 Structure of the revenues of the main Communities and Regions

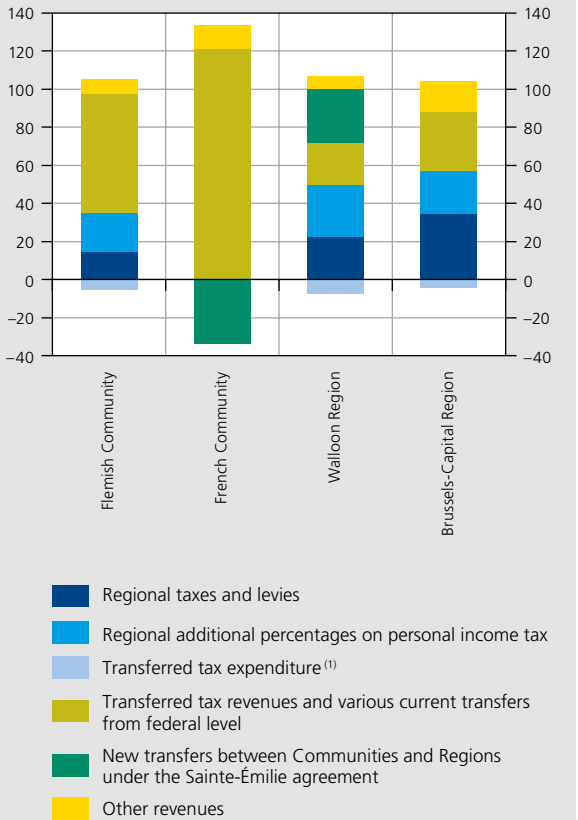
Taking account of all the changes made by the special law of 6 January 2014 and by the decrees implementing the Sainte-Émilie agreements, the structure of the revenues of the Communities and Regions will be considerably different from 2015 onwards. In addition, that structure will vary greatly from one entity to another. The breakdown of the revenues of the four main federated entities set out in this sub-section assumes no change of policy in 2015.

The revenue breakdown for the French Community is the most atypical in that this Community is financed solely by transfers from the federal government under the Finance Act and by various revenues (such as higher education tuition fees). In addition, this entity transfers around one-third of its revenues to the Walloon Region and the French Community Commission under the Sainte-Émilie agreements.

This "Sainte-Émilie" transfer from the French Community represents 28 % of the Walloon Region's revenues. Transfers from the federal government under the Finance Act, mainly transferred tax revenues, now only make up 22 % of the Region's revenues. Half of its revenues are own tax revenues, be it new additional percentages on personal income tax (28 %) or old regional taxes and levies (22 %).

CHART 6 REVENUE BREAKDOWN IN 2015

(share of total revenues of each entity, in %)



Sources: federal government, NAI, NBB.

(1) Transferred tax expenditure amounts to a reduction in revenues. The impact of this transfer of powers is offset under other headings (partly in the regional additional percentages on personal income tax and partly in tax revenues transferred by the federal government to the Regions).

These old taxes and levies, which include property registration fees and inheritance duties, are still the primary source of funding for the Brussels-Capital Region, accounting for around 35 %. The additional percentages on personal income tax add around 15 % to the Region's own tax revenues. Transfers under the Finance Act, mainly personal income tax revenues, generate 31 % of this Region's revenues.

The Flemish Community, which combines the powers of Communities and Regions, is in an intermediate position between the extremes of the French Community and the other two Regions. Transfers under the Finance Act, be it personal income tax or VAT revenues or federal grants, bring in almost 63 % of this entity's resources. The new additional percentages on personal income tax represent just over one-fifth of the revenues of the Flemish Community, while the old regional taxes and levies bring in 15 %.

3. New budgetary framework

Recent years have seen considerable changes in the fiscal policy framework of the various Belgian public authorities, owing to the significant adjustments to the European rules and following the sixth State reform. This section will begin by discussing those changes. Against that backdrop, it will then deal with the proposed normative path.

3.1 Significant recent changes

In a federal State such as Belgium, each entity contributes towards the attainment of the budget targets applicable at the level of general government. To ensure the necessary coordination of policy between the various governments, the "Public Sector Borrowing Requirement" Section was established within the High Council of Finance (HCF) by the Special Finance Act of 16 January 1989. In its opinions, this Section makes recommendations on budget balances, both for the general government and for each of the Communities and Regions separately; these opinions generally form the basis of the cooperation agreements on fiscal targets concluded by the Consultative Committee of the federal government and the governments of the Communities and Regions. These agreements are the cornerstone of the coordination of fiscal policy in Belgium.

The fiscal policy of the Belgian public authorities has long been largely determined by European rules. In recent years, owing to the sovereign debt crisis, the European budget guidelines have been tightened up by the introduction of the "Six Pack", the "Two Pack " and the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union, and especially its section on the budget, better known as the "Fiscal Compact". This compact was implemented by the cooperation agreement of 13 December 2013 between the federal State, the Communities and Regions and the Community Commissions.

A key aspect of this cooperation agreement is the transposition into Belgian law of the "golden rule" of the Fiscal Compact. This stipulates that the general government budget must be in balance or in surplus. This rule is deemed to be respected if the annual structural balance of general government corresponds to the medium-term objective (MTO) specific to the country, or if it conforms to the required convergence path tending towards that objective.

In addition, the cooperation agreement formalises the existing coordination arrangements by creating a legal basis for the recommendation and assessment functions of the "Public Sector Borrowing Requirement" Section. Moreover, the Section's responsibilities have been extended. For instance, it has to issue an opinion on the allocation of the annual general government budget target among the various levels of power, in both nominal and structural terms. It is also designated as the independent body responsible among other things for monitoring these decisions and more generally for assessing compliance with the commitments given by the governments. In addition, it is asked to issue an opinion on the scale of any adjustment to be made, and to supervise the implementation of the measures. It also has a new task of proposing how any financial penalty imposed by the Council of the European Union should be shared between the various levels of government, in proportion to the slippages identified.

The cooperation agreement also specifies that the overall budget target of general government is first to be discussed by the Consultative Committee and that the latter must approve the allocation of the targets between the various levels of power.

Another recent major change affecting the fiscal framework and the setting of the budget targets in particular for each entity concerns the introduction of a series of mechanisms from 2014 onwards under the new Finance Act (see section 2.2.). This concerns contributions from the Communities and Regions for their staff pensions, towards the consolidation of public finances and to the cost of ageing.

3.2 Normative budget path of the Communities and Regions

In 2009, the "Public Sector Borrowing Requirement" Section of the HCF began to make proposals for the consolidation of public finances, which was essential after the public deficit had swollen in the wake of the financial and economic crisis. In formulating these proposals, it was necessary not only to set overall budget targets, particularly a balanced budget by no later than 2015, but also to move towards a clear, balanced sharing of the effort across the various government sub-sectors. Another vital criterion concerned ensuring the fiscal sustainability of each level of power.

In 2009, the Section proposed four possible schemes for sharing the consolidation efforts between Entity I, comprising the federal government and social security, and Entity II, comprising the Communities and Regions and local authorities. At the end of 2009, the Consultative

Committee decided to base the allocation up to 2012 on the share of final primary expenditure[1]. That criterion has the advantage of taking account of the relative positions in regard to government intervention, and is justified by the fact that fiscal sustainability is based more particularly on long-term control of the range of public sector activity. According to simulations produced by the Section, since Entity II initially had a smaller deficit, application of this formula would lead to a divergence in the normative budget paths with an estimated surplus of around 1 % of GDP for Entity II in 2015 and a comparable deficit for Entity I. However, that does not correspond to fiscal sustainability at each level of power, and could cause problems for certain components of Entity II, presumed to continue accumulating surpluses. Indeed, such surpluses are not justified for Entity II which has a relatively small debt burden and does not face the issue of pre-financing ageing-related expenditure under the allocation of powers.

In its opinions between September 2009 and March 2011, the Section therefore recommended an institutional reform to permit convergence of the budgetary prospects and trajectories for the various entities. In March 2012, in view of the October 2011 agreement on the State reform, the Section based the sharing of the budget targets on a return to nominal balance in 2015 for each level of power, including each Community and each Region, making this new path conditional upon a transfer of costs from Entity I to Entity II. For Entity II, it was important to specify the arrangements for the participation of the federated entities in the consolidation of public finances referred to in the agreement on the State reform. In its March 2013 opinion, the Section reiterated this principle and examined two potential scenarios for the contribution of Entity II towards the fiscal consolidation effort.

In July 2013, a final political agreement was concluded on the sixth State reform, leading to a transfer of fiscal burdens from Entity I to Entity II. In its March 2014 opinion, the Section took note of this political agreement and this transfer of burdens which it estimated at 0.7 % of GDP for the year 2017, and in consequence retained the principle of a balanced budget for Entity II and its components during the period 2014-2017, leaving Entity I to make the remaining effort[2]. During 2014-2017, the Communities and Regions as a whole and each federated entity considered separately would have to aim at a nominal balance every year. These targets were included under the form of an indicative path in Belgium's April 2014 stability programme.

(1) Entity I was therefore to assume 65 % of the efforts over the period as a whole, and Entity II was to take on 35 %. These percentages were derived from the allocation of expenditure between these entities over the period 2006-2008, according to figures available in the summer of 2009.

(2) The years 2014 and 2015 form an exception in that a surplus of 0.1 % of GDP is prescribed for Entity II on account of a temporary surplus stipulated for the local authorities, in view of their investment cycle.

4. Projections incorporating the new institutional framework

Two projection exercises were conducted for the various Communities and Regions, one outlining the budget balances under the assumption of no change of policy up to 2030, and the other calculating the growth rates of primary expenditure (other than expenditure linked to the reform of the Finance Act) compatible with a return to a balanced budget from 2015. Section 4.1 sets out the main elements of the method and assumptions underlying these projections.

4.1 Assumptions and method

These projections are based, for 2013, on the April 2014 government accounts drawn up by the NAI in accordance with the ESA 95.

For 2014, the methodology is similar to that for the forecasts published by the Bank last June. The primary expenditure growth rates are inferred from an analysis of the initial budgets of the main entities. From 2014, revenues are estimated according to the Finance Act on the basis of a macroeconomic framework corresponding to that of the Bank's June forecasts up to 2016, and subsequently to that of the annual report of the Study Committee on Ageing, published in July. The demographic framework is based on the population forecasts for 2013-2060 published in April.

The effects of the switch to the new Finance Act and of the decrees implementing the Sainte-Émilie agreements have been taken into account. On the basis of an unchanged policy, it is assumed that the federated entities take over the powers from the federal government and social security exactly as those sub-sectors would have applied them in the absence of the State reform. They therefore do not exercise their decision-making autonomy on these subjects. It is similarly assumed that the Regions do not use their fiscal autonomy.

Apart from a few exceptions, the other revenues are assumed to track nominal GDP. In the case of regional taxes and levies, as in the Bank's June forecasts account is taken of the measures adopted and of the impact of certain temporary factors, such as the tax regularisation and the one-month reduction in the time limits for submitting inheritance duty declarations. Another temporary factor

taken on board is the 2013 transfer from the federal government of part of the proceeds of the sale of the mobile telephony licences. KBC is not expected to pay any dividends in 2014 or in 2016. As agreed with the EC, between now and 2020, this bank is to repay to the Flemish Community the capital which it injected.

The analysis of primary expenditure for 2014 takes account, among other things, of the downward revision of inflation following the cut in VAT on electricity. In particular, this delays until 2015 the indexation of the wages of employees of the community and regional authorities. In the case of the Flemish Community, the *Scholen van Morgen* public-private partnership (PPP) is included in the expenditure. In 2015, primary expenditure is also adjusted for the temporary impact of the sale of buildings and land in the previous year.

No account was taken of the measures announced in the regional and community policy statements issued in July. The projections therefore show the budgetary context in which those measures were decided.

4.2 Expected movement in budget balances with no change of policy

The budget balance projection exercise assuming no change of policy is based on the additional assumption that, from 2015, primary expenditure other than that related to the revision of the Finance Act will increase in line with nominal GDP, except for the adjustments mentioned at the end of the previous section.

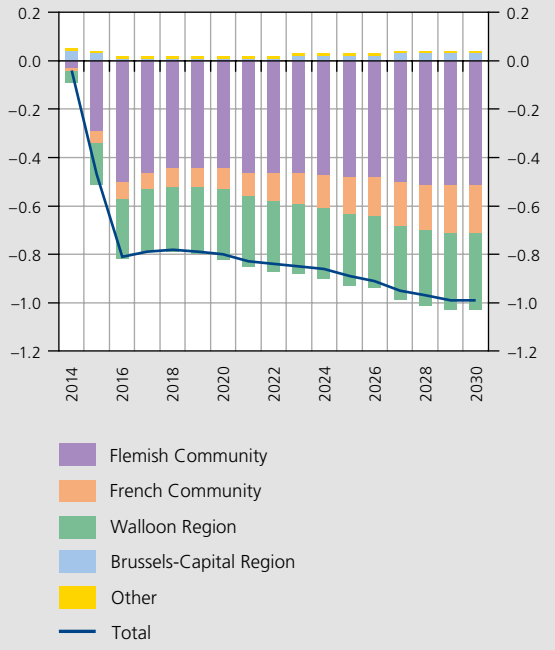
In the case of the Communities and Regions as a whole, the expected deficit – which is small in 2014 – is likely to increase in 2015 and 2016, stabilising at around 0.8 % of GDP until 2021, then rising again up to 2030. The profile is fairly similar for the Flemish Community, the French Community and the Walloon Region. In the Brussels-Capital Region, the 2014 surplus will diminish in future years, becoming virtually zero in 2017. This Region's surplus will subsequently increase again slightly.

The movements in the primary balance account for much of the changes in the budget balance. The increase in the interest burden, which is modest at the start of the period, will subsequently accelerate owing to the debt dynamics.

Factors relating to the Finance Act account for much of the movement in the primary balance compared to 2014 in the Flemish Community, the French Community and the Walloon Region. More particularly, the contribution towards the consolidation of public finances, which

CHART 7 BUDGET BALANCES IF PRIMARY EXPENDITURE OTHER THAN THAT RELATED TO THE REVISION OF THE FINANCE ACT[1] INCREASES IN LINE WITH NOMINAL GDP FROM 2015

(in % of GDP)



Sources: FPB, Study Committee on Ageing, federal government, NAI, NBB.

(1) The expenditure relating to the revision of the Finance Act is primary expenditure concerning the powers transferred under the sixth State reform, the pension responsibilisation contribution and the transfers under the Sainte-Émilie agreements.

increases from € 250 million in 2014 to € 1.25 billion in 2015 and then to € 2.5 billion in 2016, will be a burden on the finances of each of the federated entities. The finances of the Communities will also have to bear pension responsibilisation contributions, the cost of which will rise until 2028.

In the Flemish Community, factors relating to the Finance Act will cause a marked deterioration in the primary balance in 2015 and 2016, mainly because of the structural contribution towards the consolidation of public finances. In 2015, revenues will no longer be supported by the favourable temporary effect in 2014 due to the tax regularisation, while expenditure will feel the repercussions of the sale of buildings and land in 2014 and the effects of the *Scholen van Morgen* PPP. The maximum impact of factors other than those relating to the Finance Act will be felt in 2016, partly on account of this PPP and the absence of any KBC dividends in that year.

In the French Community, the deterioration in the primary balance will be due entirely to factors relating to the

CHART 8 BREAKDOWN OF THE CHANGE IN THE PRIMARY BALANCE

(in percentage points of GDP compared to 2014)

Sources: FPB, Study Committee on Ageing, federal government, NAI, NBB.

(1) Mainly transferred tax revenues, most of the federal grants, fiscal autonomy, the transfer of powers over revenue and expenditure, transfers resulting from the Sainte-Émilie agreements and pension responsibilisation

Finance Act. Up to 2016, the effect of the contribution towards the consolidation of public finances will predominate, but in the long term it is the pension responsibilisation contribution that will entail the biggest cost.

In the Walloon Region, most of the deterioration in the primary balance in 2015 and 2016 will be due to the contribution towards the consolidation of public finances. From 2015 onwards, the Region will also feel the repercussions of the one-off measures adopted in 2014, such as the sale of the Sofico fibre optic network and the temporary effects concerning inheritance duties following the tax regularisation.

From 2015, the primary balance of the Brussels-Capital Region will deteriorate but, in contrast to the other federated entities, that will be due solely to factors other than those relating to the Finance Act, such as the repercussions of one-off measures adopted in 2014 (sale of buildings and land) and temporary effects concerning inheritance duty (tax regularisation). In 2015, this Region will still benefit from the final phase of the refinancing obtained under the sixth State reform. That effect will outweigh the impact of the contribution towards the consolidation of public finances.

4.3 Efforts required to restore a balanced budget in 2015

Another simulation exercise involves assessing any scope available to the entities in terms of admissible real growth of primary expenditure other than spending relating to the revision of the Finance Act in order to achieve the target of a balanced budget in 2015 and maintain it thereafter as recommended by the "Public Sector Borrowing

TABLE 5 ADMISSIBLE REAL GROWTH OF PRIMARY EXPENDITURE OTHER THAN THAT RELATING TO THE REVISION OF THE FINANCE ACT TO ACHIEVE A BALANCED BUDGET IN 2015 AND MAINTAIN THAT BALANCE

(percentage changes compared to the previous year, data deflated by the GDP deflator)

	2014[1]	2015	2016	Average 2017-2019
Flemish Community	1.0	–1.7	–1.3	1.8
French Community	–0.2	–0.3	1.2	1.4
Walloon Region	0.5	–6.7	–2.7	1.6
Brussels-Capital Region	5.7	6.2	–0.8	1.4
Total	**1.0**	**–1.5**	**–1.0**	**1.6**

Sources: FPB, Study Committee on Ageing, federal government, NAI, NBB.
(1) Expenditure growth compatible with the estimate based on the Bank's June 2014 forecasts.

Requirement" Section of the HCF. For this exercise, the starting point for 2014 is the same as for the projection with no change of policy. The profile of primary expenditure relating to the revision of the Finance Act and of revenues is the same as in the scenario with no change of policy.

For the Communities and Regions as a whole, following modest real growth of primary expenditure estimated at 1 % in 2014, the restoration of a balanced budget would require a 1.5 % reduction in primary expenditure in 2015 and a further 1 % cut in 2016. These efforts are due not only to the need to restore a balanced budget but also, and above all, to the additional constraint imposed by the contribution towards the consolidation of public finances. Furthermore, primary expenditure could rise thereafter by an annual average of around 1.6 % over the last three years of the regional legislature due to end in 2019.

Among the main federated entities, the Walloon Region is the one subject to the tightest constraint in terms of the admissible rate of real growth of primary expenditure other than spending relating to the revision of the Finance Act, that is to say if the budgetary effort did not concern either revenues or expenditure transferred following the sixth State reform. That other primary expenditure needs to be cut by 6.7 % in 2015 and by a further 2.7 % in 2016. This constraint is more severe than for the other entities owing to a budget position estimated to be less favourable in 2014, as the Walloon Region is in fact the entity with the biggest deficit in that year.

Conversely, the Brussels-Capital Region will benefit from a surplus in 2014 and from the last tranche of refinancing for the Brussels institutions in 2015. It could maintain a balanced budget while recording strong growth of its primary expenditure other than that relating to the revision of the Finance Act. However, in 2016, it would have to cut that expenditure by 0.8 %, as the consolidation contribution will outweigh the refinancing, and the Region's starting point in 2015 is a balanced budget.

The French and Flemish Communities are in an intermediate position: in the scenario outlined, they need to cut their primary expenditure (other than that relating to the revision of the Finance Act) in real terms in 2015, but to a lesser degree than the Walloon Region.

The simulation illustrates the difficulty of achieving the consolidation efforts in the main federated entities other than the Brussels-Capital Region solely on the basis of the old expenditure. Given the scale of the adjustment required, it is also conceivable that measures might have to be taken in regard to the new spending powers and on the revenue side.

5. Government agreements of the Communities and Regions

The government agreements concluded in the various federated entities during July 2014 reflect the budget position as described in the preceding sections.

The governments of the Brussels-Capital Region and the Flemish Community aim to maintain a balanced budget throughout the legislature ending in 2019, while the governments of the French Community and the Walloon Region aim to achieve a balanced budget by 2018.

To meet these targets, all the entities are expecting to maintain strict control over their spending growth. A

number of specific measures have been devised with that aim in view; their effects will be felt mainly at the start of the legislature. Similarly, some entities intend to make substantial cuts in recruitment numbers.

In addition, the Regions will exercise their new tax-raising powers. The Brussels-Capital Region aims to reduce the tax burden on labour to some extent, transferring it to property. The housing bonus could be modified for that purpose. The Flemish Region decided to keep the housing bonus but to end its indexation under existing contracts; moreover, the tax advantage for new contracts is to be restricted. The Walloon Region will make reductions in the tax advantage of service vouchers and is considering a reform of the housing bonus.

Conclusions

According to the government accounts published in April 2014, the accounts of the Communities and Regions as a whole were more or less in balance in 2013. The Flemish Community and the Brussels-Capital Region recorded a small surplus while the French Community and the Walloon Region showed a small deficit.

In addition to a substantial transfer of powers to the Communities and Regions and increased fiscal autonomy for the Regions, the revision of the Finance Act implies a transfer of costs from the federal government to the Communities and Regions. In 2015 and 2016, that transfer will take the form of contributions towards the consolidation of public finances. After that, it will mainly concern contributions towards the cost of ageing. The sixth State reform has also made provision for the refinancing of the Brussels institutions from 2012.

With no change of policy, i.e. before the implementation of the measures mentioned in the government agreements concluded this summer, the projections for 2030 set out in the article indicate a total deficit of around 0.8 % of GDP from 2016. The increase in the deficit in 2015 and 2016 is due mainly to the contributions towards the consolidation of public finances. During the ensuing decade, the deficit is expected to rise again to around 1 % of GDP, mainly on account of the contributions towards the cost of ageing. With the exception of the Brussels-Capital Region, which will maintain a small surplus throughout the period, the other main Communities and Regions, namely the Flemish Community, the French Community and the Walloon Region, are predicted to record substantial deficits throughout the period.

Taking account of the contributions towards the consolidation of public finances, the maintenance or achievement of the balanced budget target advocated in March 2014 by the "Public Sector Borrowing Requirement" Section of the HCF, and included under the form of an indicative path in Belgium's April 2014 stability programme, implies substantial fiscal consolidation for the main Communities and Regions other than the Brussels-Capital Region. The recent government agreements for the legislature ending in 2019 take account of this budgetary context.

Bibliography

Agreement on the State reform, http://www.lachambre.be/kvvcr/pdf_sections/home/FRtexte%20dirrupo.pdf.

Bisciari P. and L. Van Meensel (2012), "Reform of the Special Finance Act for the Communities and Regions", NBB, *Economic Review*, June, 65-85.

Décret spécial du 3 avril 2014 relatif aux compétences de la Communauté française dont l'exercice est transféré à la Région wallonne et à la Commission communautaire française (Parliament of the French Community) (published in the Belgian Official Gazette on 25 June 2014).

Décret du 4 avril 2014 relatif aux compétences de la Communauté française dont l'exercice est transféré à la Région wallonne et à la Commission communautaire française (Assembly of the French Community Commission) (published in the Belgian Official Gazette on 25 June 2014).

Décret du 11 avril 2014 relatif aux compétences de la Communauté française dont l'exercice est transféré à la Région wallonne et à la Commission communautaire française (Walloon Parliament) (published in the Belgian Official Gazette on 12 May 2014).

FPB (2014), *Perspectives économiques 2014-2019*, June.

FPB and DGSEI (2014), *Perspectives démographiques 2013-2060*, April.

FPS Finance (2014), *Belgium's stability programme (2014-2017)*, April.

HCF (2009), *Avis sur les trajectoires budgétaires à court et à moyen terme relatives au programme de stabilité 2009-2012 ajusté,* «Public Sector Borrowing Requirement» Section, September.

HCF (2011), Évaluation 2010 et *trajectoires budgétaires pour le programme de stabilité 2011-2015*, «Public Sector Borrowing Requirement» Section, March.

HCF (2012), *Avis sur la trajectoire budgétaire pour le programme de stabilité 2012-2015*, «Public Sector Borrowing Requirement» Section, March.

HCF (2013), *Avis sur la trajectoire budgétaire en préparation du programme de stabilité 2013-2016*, «Public Sector Borrowing Requirement» Section, March.

HCF (2014), *Avis sur la trajectoire budgétaire en préparation du programme de stabilité 2014-2017*, «Public Sector Borrowing Requirement» Section, March.

Langenus G. (2005), "The stability and growth pact: an eventful history", NBB, *Economic Review* June, 65-81.

Loi spéciale du 16 janvier 1989 relative au financement des Communautés et des Régions (publiée au Moniteur belge du 17 janvier 1989).

Loi spéciale du 6 janvier 2014 relative à la Sixième Réforme de l'État (publiée au Moniteur belge du 31 janvier 2014).

Loi spéciale du 6 janvier 2014 portant réforme du financement des communautés et des régions, élargissement de l'autonomie fiscale des régions et financement des nouvelles compétences (publiée au Moniteur belge du 31 janvier 2014).

Loi du 19 avril 2014 modifiant la loi du 31 décembre 1983 de réformes institutionnelles pour la Communauté germanophone (publiée au Moniteur belge du 2 mai 2014).

Loi du 8 mai 2014 modifiant le code des impôts sur les revenus 1992 à la suite de l'introduction de la taxe additionnelle régionale sur l'impôt des personnes physiques visée au titre III/1 de la loi spéciale du 16 janvier 1989 relative au financement des Communautés et des Régions, modifiant les règles en matière d'impôts des non-résidents et modifiant la loi du 6 janvier 2014 relative à la Sixième Réforme de l'état concernant les matières visées à l'article 78 de la Constitution (publiée au Moniteur belge du 28 mai 2014).

Nautet M., R. Schoonackers, P. Stinglhamber and L. Van Meensel (2014), "Is government spending the key to successful consolidation?", NBB, *Economic Review*, June, 29-44.

NBB (2014), "Economic projections for Belgium – Spring 2014", *Economic Review*, June, 7-27.

Study Committee on Ageing (2014), *Rapport annuel*, July.

Van Hecke A. (2013), "Het Europese begrotingskader en de interne verdeling van begrotingsinspanningen binnen een federale staat", *Documentatieblad van het Ministerie van Financiën*, 2nd quarter.

Vlaamse overheid (2014), *Bijdrage van de Vlaamse administratie aan het regeerprogramma van de Vlaamse regering 2014-2019*, May.

Value creation in exports
A diagnosis for Belgium

C. Duprez[*]

Introduction

An economy's external competitiveness is generally assessed by the scale of its exports of goods and services. Foreign sales in fact provide a yardstick for measuring the desirability of domestic production, since they are less protected by possible economic or administrative barriers than on the domestic market. From a macroeconomic angle, exports of goods and services are vitally important. As the counterpart to imports which are often essential in the absence of a full range of commodities, exports support the current account balance, where a deficit cannot be sustained in the long term. They also act as a growth catalyst by offering the opportunity to exploit untapped foreign demand, particularly in emerging countries. It is therefore natural to find statistics on exports of goods and services on the list of indicators frequently used to assess an economy's competitiveness. The European Commission included them in its scoreboard for monitoring macroeconomic imbalances, and international institutions in general use them as an assessment tool in their country studies[1].

Although the export basket formerly comprised goods and services which were largely produced by the exporting country, that is less the case today. For one thing, it has become more common for goods to be re-exported, partly as a result of the development of international trade routes, with sea ports as the dominant hubs. Also, production processes increasingly involve imported inputs, notably energy products and commodities, which are an integral economic component of exports, even if they undergo physical processing. Ultimately, exports incorporate prior imports, which have to be disregarded if the aim is to identify the true source of income and employment for an economy, namely exported value added.

The purpose of this article is to introduce the exported value added approach (Johnson, 2014, Johnson and Noguera, 2012a, Johnson and Noguera, 2014, Koopman *et al.*, 2014)[2] and present the main findings for Belgium. While this approach does have its limitations, such as the uncertainty surrounding some data or the significant delay in data availability, it nevertheless enriches the diagnosis of external competitiveness traditionally based on statistics on exports of goods and services, thus shedding new light on the degree of openness of an economy, the loss of market shares, trading partners, the branches of the economy involved in exports, and the trade balance.

1. Sources used

The main source used for this article is the input-output matrix, known as the input-output table. It gives a detailed description of the production process and transactions between the economy's branches of activity. Published every five years, Belgium's input-output matrix is available for the year 2010 with a breakdown into 64 branches of activity[3]. To ascertain all Belgium's connections with the rest of the world, the article also uses the data from the global input-output matrix called TiVA, compiled by the WTO and the OECD[4]. Broken down into 18 branches of activity, it covers 57 countries

(*) The author would like to thank C. Swartenbroekx, L. Dresse and F. Caruso for their advice.

(1) See in particular EC (2013), EC (2014), IMF (2013), IMF (2014) and OECD (2013).

(2) See Amador and Cabral (2014) for an overview of the literature on the subject.

(3) For more information, see FPB (2013). A matrix in the same format is also available on Eurostat for other European countries.

(4) For more information, see OECD-WTO (2012).

and, for the purposes of this article, relates to the period 1995-2008 [1].

The great advantage of the input-output matrices is that, by describing the purchases and sales of the branches of activity and the remuneration of the production factors, they make it possible to identify the origin of the value creation. The method used for that purpose is based on the classic analysis of the Leontief inverse matrix [2]. Sometimes also known as the cumulative cost method, it is regularly used for economic analysis, including for Belgium (Avonds, 2013a, 2013b). However, as far as we know, this article is the first to draw the initial lessons for the diagnosis of Belgium's external competitiveness.

Nevertheless, there are limits to the use of the input-output matrices. First, there is a significant delay, ranging between three and five years, before the data become available. Moreover, the TiVA global input-output matrix does not comprise official statistics. It has not been validated by national statistical institutes, so the possibility of inconsistencies cannot be ruled out [3]. Finally, it should be remembered that the use of an input-output matrix for analysis purposes is based on a fundamental assumption of the homogeneity of branches of activity [4]. Production units within the same branch of activity are assumed to have the same productivity and produce the same goods or the same service, as the case may be, with constant returns to scale [5].

2. Exports of goods and services: from the traditional concept to the value added concept

The global economy has seen a proliferation of exports of goods and services (G&S). These exports have grown at a faster pace than economic activity (Jacks *et al.*, 2011) to the point where they exceed output in some countries. This surprising finding is due to various phenomena which can be captured by the concept of the import content, or in other words the foreign value of exports.

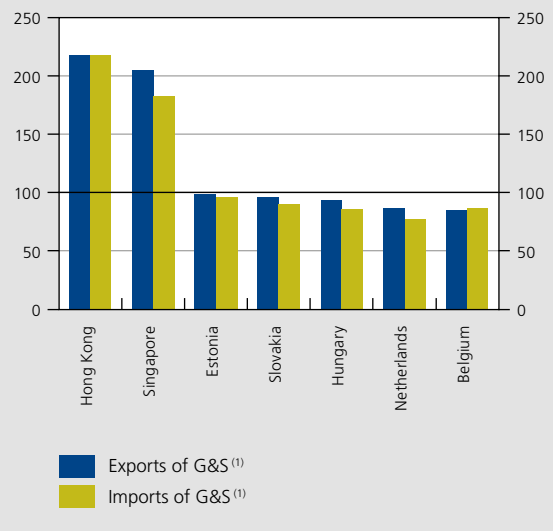
(1) The data for 2009, which are also available, were disregarded because they were greatly affected by the economic crisis. Moreover, the 2009 data for Belgium could not be clearly validated by checking with the aid of NAI data.
(2) For a formal presentation of the method applied to exports, see in particular Koopman *et al.* (2012) and Avonds (2013b).
(3) To compile a global input-output matrix it is usually necessary to introduce adjustments to official statistics, as the data from the various countries are not always consistent: exports recorded by country A intended for country B do not always correspond to the imports from country A recorded by country B.
(4) This limit applies mainly to the global input-output matrix. In the Belgian input-output matrix, the branches of activity are homogenised in that secondary output is reallocated to the branch of activity concerned (FPB, 2013).
(5) However, research has shown that, within the same branch of activity, export firms are generally more productive than non-exporters (see in particular Bernard *et al.*, 2003, for the United States, Eaton *et al.*, 2004, for France, and Muûls and Pisu, 2007, for Belgium).
(6) See WTO (2013).
(7) For more information on the role of multinationals in foreign trade, see Bernard *et al.* (2010).

The first wave of foreign trade expansion occurred in the late 19th century, driven by the fall in transport costs and the lowering of customs barriers [6]. Against the backdrop of industrialisation which favoured the concentration of production units in western countries, the latter became major exporters of goods and, at the same time, major importers of the commodities required for the manufacturing processes.

Since 1970, the emergence of information and communication technologies and the reduction of political and economic barriers in the emerging countries have generated a second wave of international trade expansion. At the heart of this development, multinational companies [7] have made maximum use of the scope for boosting their production efficiency by improving their cost control via the (re)location of certain phases of production in low-wage countries or countries with less stringent tax, social and environmental laws. By exploiting the comparative advantages offered by each production site, they have participated in ending the partitioning of production lines, which have become broken down into a succession of links in the chain, sometimes spread across several countries.

Nowadays, a country's firms very rarely produce their goods and services purely from domestic resources. Whether their output is destined for the home market or the foreign market, the production process uses imported inputs such

CHART 1 EXPORTS AND IMPORTS OF GOODS AND SERVICES
(in % of GDP)



Source: UNCTAD.
(1) According to the balance of payments.

as commodities, and in particular energy products, or other intermediate goods and services. As former WTO Director-General Pascal Lamy[1] said: "As recently as 30 years ago, products were assembled in one country, using inputs from that same country. [Now] it is very different. Apple's iPhone illustrates this clearly. It is assembled in China. Yet the components come from numerous countries. It isn't just phones. Automobiles, aircraft, electronics – even clothing – are increasingly made in many countries. Manufacturing is driven by global supply chains, while most imports should be stamped 'made globally' ".

From a statistical angle, transfers of inputs between the various countries are always recorded as exports. Moreover, some countries are located at the crossroads of trade routes and act as a link between the supplier countries and the countries of destination. Goods entering a country and leaving without undergoing any processing – referred to as re-exports – inflate the export statistics[2]. At global level, that has an amplifying effect because the same product is exported by several countries in succession. Re-exports of goods are particularly substantial in countries which have an international sea port. That is why re-export is sometimes called a "port effect". Hong Kong and Singapore, which serve as entry and exit ports for the south-east Asian market, experience this on a large scale, as do Belgium and the Netherlands which serve the north European market. Other countries which are also located along trade routes, such as Estonia, Slovakia and Hungary, are all three major re-exporters of machinery and transport equipment.

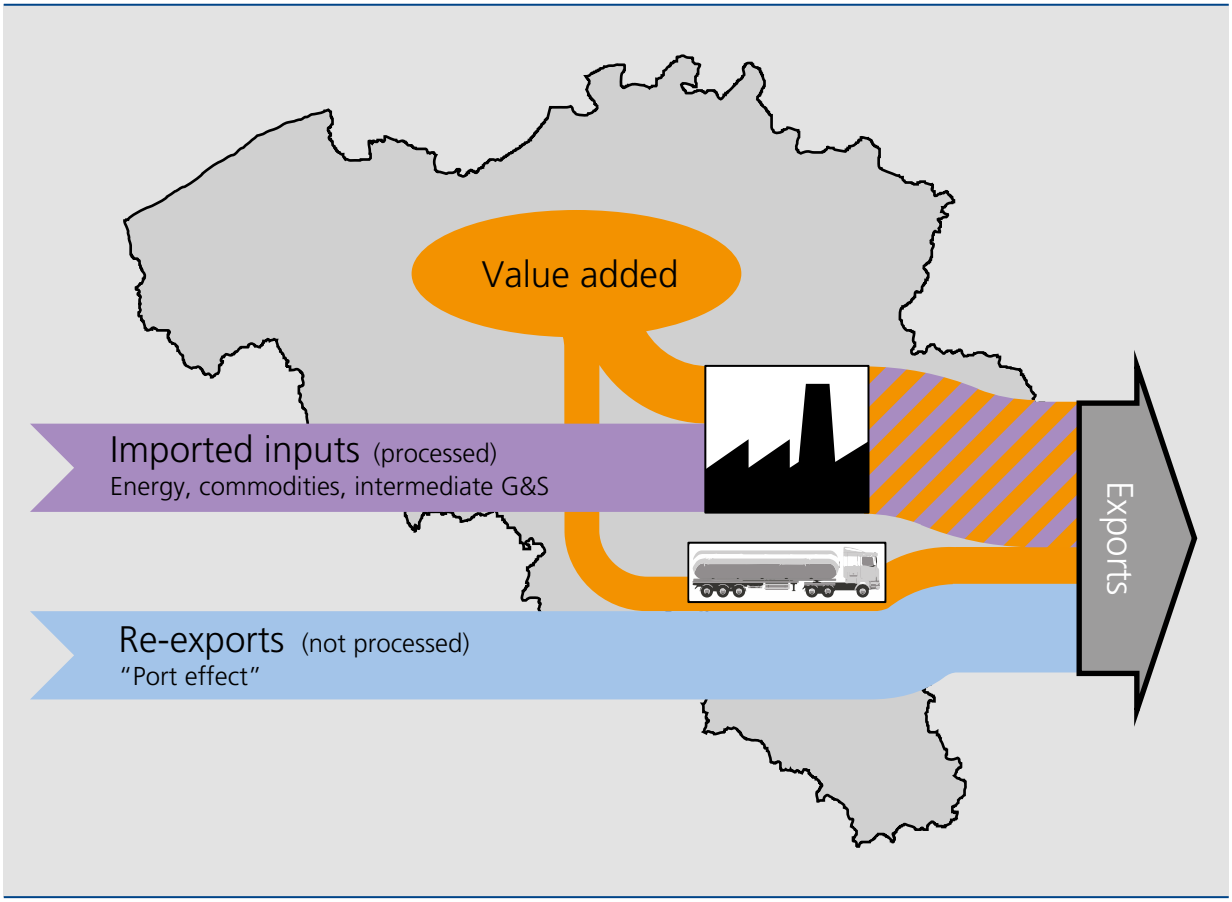
Re-exports and imported inputs together make up the total foreign value of exports[3], because they were previously imported. Although it may no longer necessarily be possible to distinguish the imported inputs, as they have been incorporated during the production processes, in economic terms they form an integral part of exported

(1) Financial Times, 24 January 2011.

(2) Re-exports differ from transit in that a resident acquires ownership of the goods at the time of the transaction (see NAI-NBB, 2009, 2012). Transit is not recorded in the national accounts data or in the balance of payments or foreign trade figures. However, in Belgium, foreign firms with a Belgian VAT number engage in transit activities. These are recorded in the foreign trade data according to the Community concept but not in those according to the national concept, nor are they recorded in the national accounts.

(3) To be precise, we should refer to foreign value added, not foreign value. However, for simplicity we shall refer to value added only if it is of domestic origin.

CHART 2 BREAKDOWN OF EXPORTS OF GOODS AND SERVICES



Source: NBB.

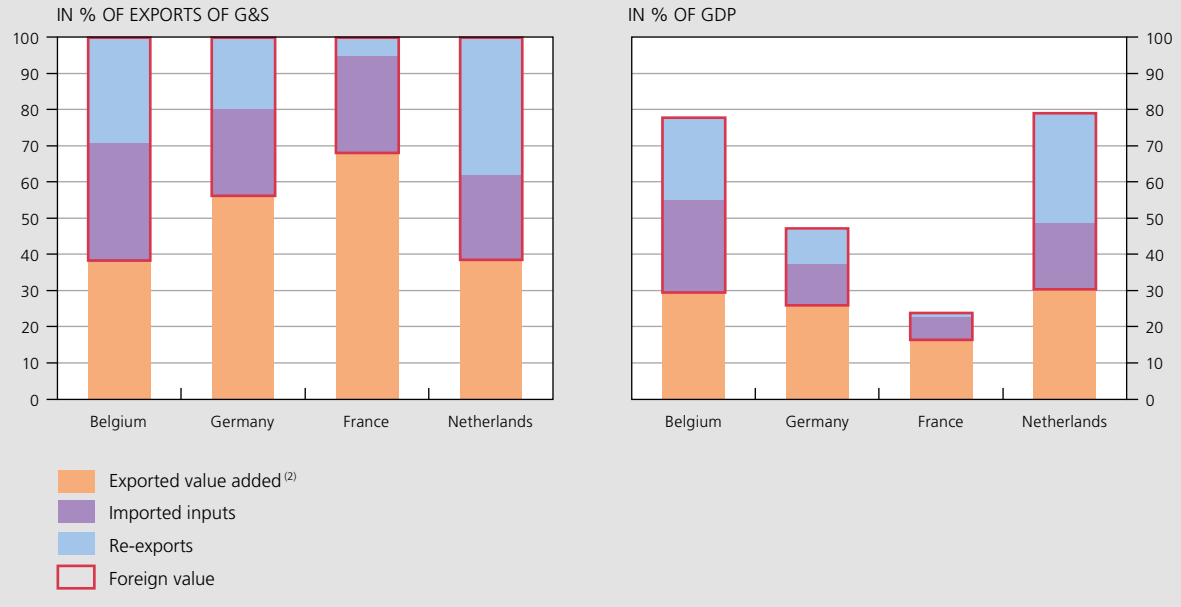
goods and services. By deducting the foreign value content of exports, we find the exported value added (VA)[1]. From the economic point of view, that measures the real value creation of exports, by remunerating the domestic production factors involved directly or indirectly in the production of goods and services for export. In the case of re-exports which are sold on without processing, the exported VA corresponds to any difference between the buying price and the selling price, encompassing the trade margin and, if appropriate, payment for transport and logistic services provided in the country concerned.

In practice, the exported VA may be generated in various stages via a fragmented production process. The values are therefore established on a cumulative basis. A simple example can illustrate this mechanism. Say a Belgian firm processes imported inputs (cocoa beans) to make intermediate goods (cocoa paste), then sells them to another Belgian firm that in turn processes them into an end product for export (chocolate), by incorporating other imported inputs (sugar) in its production process[2]. In this example, the exported VA corresponds to the sum of the VA created by each of the two domestic firms[3]. From a macroeconomic point of view, it is obtained simply by taking the income from the sale of exported chocolate and deducting the imported inputs, i.e. the sum of the invoices for cocoa beans and sugar. The macroeconomic approach has the great advantage of highlighting relevant economic information while avoiding the tedious job of tracing each of the intermediate inputs used in each successive stage in the production of each of the exported goods and services (see De Backer and Miroudot, 2013).

In Belgium, an export amounting to € 100 in 2010 generated income of € 38 on average, because it entailed prior foreign purchases amounting to € 62, of which € 29 represented goods for re-export and € 33 represented imported inputs incorporated in the production process. These figures for the foreign value of exports are comparable to those for the Netherlands, which shares the same characteristics in terms of size and geographical location[4], but they are much higher than for Germany or France.

(1) The term is used by analogy with the concept applied at firm level, as a firm is said to create VA if the selling price of its product exceeds the price of the intermediate consumption, namely the goods and services bought to make the product.
(2) Imported inputs are incorporated at each production stage since energy is generally necessary (for heating, transport, etc.).
(3) In this case, the exported VA = (price of cocoa paste – price of cocoa beans) + (price of chocolate – price of cocoa paste – price of sugar) = price of chocolate – price of cocoa beans – price of sugar.
(4) According to Baldwin and Lopez-Gonzalez (2013), another determinant is the proximity to Germany, which is one of the three global clusters.

CHART 3 RELATIVE SHARES OF THE THREE COMPONENTS OF EXPORTS OF GOODS AND SERVICES[1]
(2010)



Source: NBB calculations based on EC data.
(1) According to the national accounts, excluding consumption by non-residents in the country.
(2) Including taxes net of product subsidies.

3. External competitiveness from the value added angle

As we shall see, the breakdown of exports into value added and foreign value usefully complements the traditional view of external competitiveness based on goods and services export statistics. By excluding the foreign value content, the analysis of exported value added sheds new light on the various concepts, including the degree of openness, market shares, identification of the branches of the economy involved in export, trading partners and the trade balance.

3.1 A new look at the degree of openness

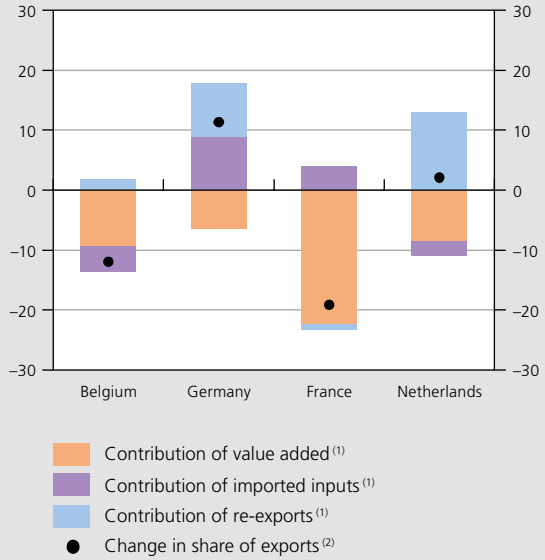
While the degree of openness is traditionally defined as the ratio between exports of goods and services and GDP, it can be assessed by taking exported VA as the numerator. According to this new criterion, the degree of openness in Belgium came to almost 30 % of GDP in 2010 [1], comparable to the figure for the Netherlands and, to a lesser extent, Germany. In comparison with the 80 % figure traditionally used, based on data on exports of goods and services, this degree of openness is relevant in various respects. It links two conceptually identical variables, namely exported VA and GDP, which is the same as total VA [2]. It therefore offers an economic interpretation of the residual share, namely 70 % of GDP, which represents the creation of value in Belgium consumed or invested within the country's borders.

The degree of openness based on exported VA also offers a relevant measure of the real economic weight of exports. Excluding the foreign value of exports in fact permits identification of the amount generating income and employment for the economy. In general, exported VA is created by two production factors, namely labour and capital, which are mobilised directly by export firms or indirectly by their suppliers. In 2010, the remuneration of employees involved in production destined ultimately for export was equivalent to 16 % of GDP, compared to 13 % for the gross operating surplus [3] of the corresponding activities. In terms of jobs, 29 % of the 4.5 million Belgian workers were directly or indirectly employed in exports.

As is evident from chart 8 in section 3.5, the degree of openness measured from the point of view of exported VA hardly varied between 1995 and 2010, hovering around 30 % of GDP. Conversely, the ratio based on exports of goods and services has risen from 65 % to 80 % of GDP since 1995. However, this rise was due only to accelerating re-exports and increased use of imported inputs in export-oriented production processes.

CHART 4 CHANGE IN EXPORT SHARES IN OECD COUNTRIES AS A WHOLE

(changes in total exports of goods and services of OECD countries between 1995 and 2008)



Source : NBB calculations based on OECD data.

(1) For country i, the contribution of component C_i (C = value added, imported inputs or re-exports) of exports X_i equals $(C_i^{08}/X_i^{95})*(X_{OECD}^{95}/X_{OECD}^{08})-(C_i^{95}/X_i^{95})$. The contribution of exported value added includes taxes less subsidies on products.

(2) In value, according to the national accounts.

3.2 A new look at the loss of market shares

External performance is traditionally assessed according to export market shares. Although there are divergences between the various possible methods of calculation or the statistical sources used [4], they all indicate that Belgium is tending to suffer much greater losses of market shares than Germany or the Netherlands. Belgium's share in exports of goods and services of all OECD member countries, measured in value according to the national accounts, was thus down by 12 % between 1995 and 2008. Over the same period, Germany and the Netherlands respectively gained 11 % and 2 % in market shares, while France lost 19 %.

Since changes in market shares are calculated on the basis of export statistics, they are influenced by changes in the foreign value content of exports. If that content increases, a rise in exports may be entirely consistent

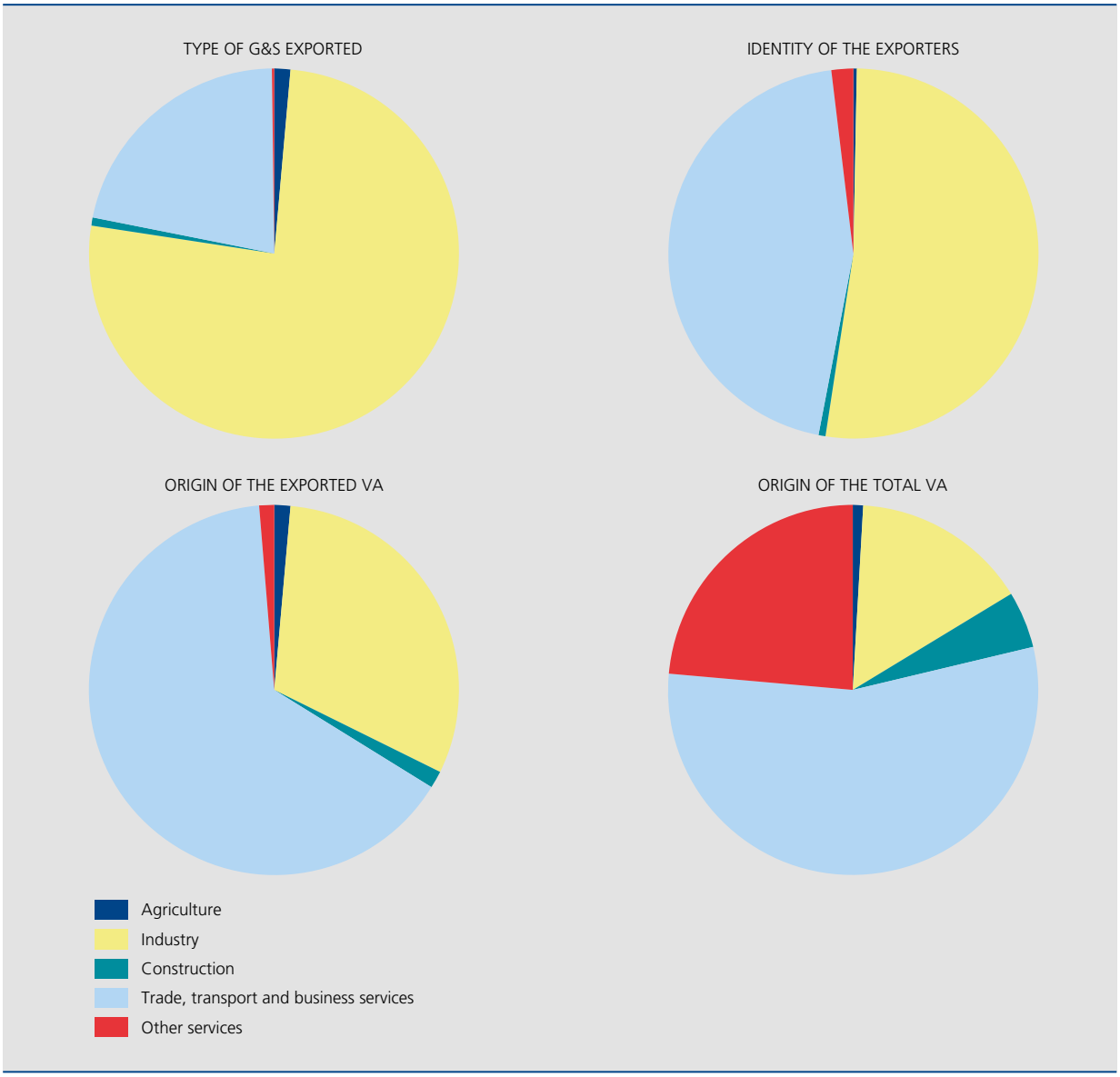
(1) Exported VA includes taxes less subsidies on products.

(2) Plus taxes less subsidies on products.

(3) Including gross mixed income, i.e. the remuneration of self-employed persons.

(4) Market shares may be obtained by comparing a country's exports with the exports of a group of countries or the imports of a group of partner countries, in value or in volume. The national accounts, balance of payments and foreign trade are all potential statistical sources.

CHART 5 ROLE OF THE BRANCHES OF ACTIVITY IN EXPORTS OF GOODS AND SERVICES
(2010)



Source : NBB calculations based on NAI data.

with a fall in exported VA, as in the case of a firm whose increased turnover masks a decline in profits. The growth of re-exports in the Netherlands combined with greater use of imported inputs in Germany inflated the exports of those two countries between 1995 and 2008. Conversely, Belgium's export performance did not feature a positive contribution from foreign value. Therefore, if the latter is excluded and the focus is solely on the contribution of exported value added, it seems that Belgium's export performance lags behind that of Germany and the Netherlands to a much smaller degree than if it is assessed on the basis of the goods and services export statistics.

In general, the negative contribution of imported inputs to Belgium's exports could be due to greater use of domestic inputs. However, in view of the high imported input content of Belgian exports, that is not the case, and Belgium is therefore not isolated from global production chains. That negative contribution is probably due more to catching up on the part of the other OECD countries. Compared to their situation in 1995, they include more imported inputs in their export-oriented production processes. However, in terms of level, most of them are less integrated than Belgium.

3.3 A new look at the branches of the economy involved in exports

By examining the branches of the economy involved in exports, it is possible to refine the analysis of exported VA. For that purpose, we shall look at the types of goods and services exported, the identity of the exporters – namely the branches of activity to which export firms belong – and finally the identity of the creators of exported VA – i.e. the branches of activity which have played the biggest part, be it directly or indirectly, in the export production process.

The share of goods in foreign trade, namely around 80 %, was long attributed to industry. Services, which make up the remaining 20 %, were naturally allocated to the market services branches of activity. However, these orders of magnitude are not validated by the statistics currently available. Thus, of the total amount of goods and services exported by Belgium, the share to be credited to industrial firms was 52 % in 2010, compared to 47 % for firms classified in the service branches[1]. Taking exports of goods on their own, the share of service companies already came to 35 %. In that regard, the explanation lies in the role that many service companies play as intermediaries. Sometimes they engage in the re-export of goods transiting via Belgium, particularly through the port of Antwerp, and sometimes they form a link in the export chain for goods made by Belgian industrial firms.

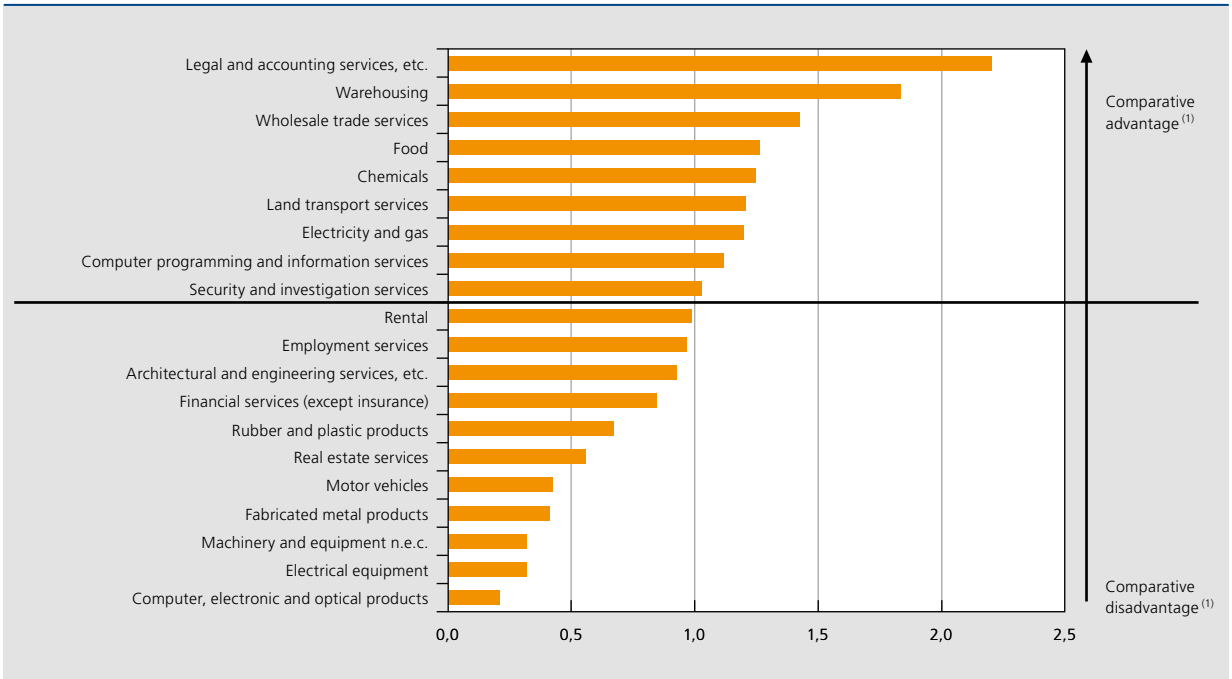
The exporter's identity does not necessarily provide relevant economic information. In a context of fragmented production and distribution chains, the value of exported goods and services is generally created by various companies, each involved at successive stages in the production process. As illustrated by the chart 10 in the annex, the many economic links between branches of activity bear witness to the complexity of that process. The export contribution of each branch of activity can be assessed according to their respective contributions to the process of producing the exported goods and services. A breakdown of the total amount of VA exported by Belgium according to the branch of activity of origin reveals that the creation of export value is attributable mainly to the service branches, at 66 %, against 31 % for industry.

Service firms naturally create VA by producing services for export. However, an examination of the industrial goods production process shows that the value that the goods

(1) The remaining 1 % is attributable to agriculture and construction.

CHART 6 BELGIUM'S REVEALED COMPARATIVE ADVANTAGES

(in relation to the three neighbouring countries, 2010)



Source : EC.

(1) Share of exported VA created by each branch in total VA exported by Belgium, standardised in relation to the three neighbouring countries. An index higher (lower) than 1 indicates a comparative advantage (disadvantage), as the share of the branch in exported VA is bigger (smaller) in Belgium than in the three neighbouring countries.

acquire is also attributable partly to the service branches. An analysis of intermediate consumption reveals that between 1980 and 2010 the contribution of service firms increased from 14 % to 31 % of the total VA exported in the form of industrial products. Admittedly, part of that rise is due to a shift towards service activities, something which is more an accounting matter[1]. Thus, goods are sometimes exported by branches of industrial groups classified in the service sector, whose exported VA is inflated by the trade margins achieved. However, another reason for this development is that industrial firms are reverting to their core business. In that respect, industrial firms are now increasingly outsourcing service activities relating to industrial activity, such as legal, accounting, financial and transport services.

From a macroeconomic angle, the key role performed by service branches in export activities does to some extent resolve the paradox whereby goods account for the major part of foreign trade whereas service activities predominate in the economy[2]. The analysis from the value creation perspective in fact shows that the service branches are of crucial importance to external competitiveness. However, that only applies to market services. Non-market services are still almost exclusively domestic activities, as is construction.

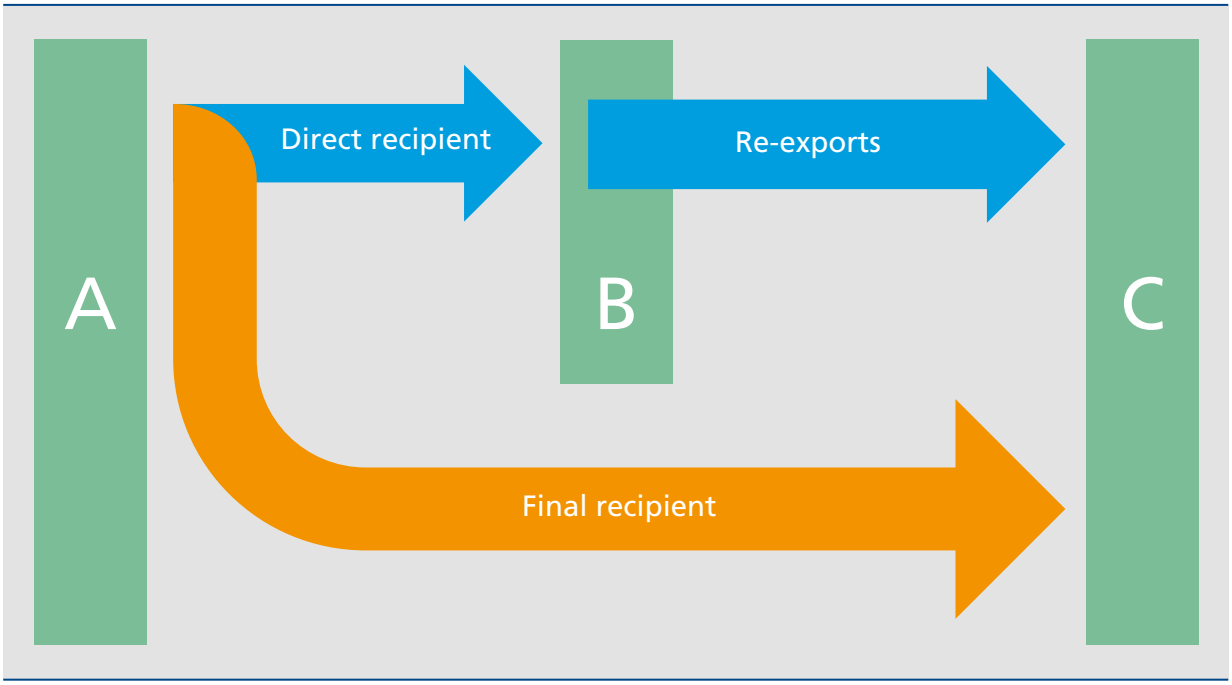
Belgium has a revealed comparative advantage for a number of market services in the 20 main branches of activity out of the 64 in the breakdown. Compared to the three neighbouring countries, the contributions to the exported VA of legal and accounting services, warehousing and the wholesale trade services are relatively high. Apart from certain services, Belgium also has a revealed comparative advantage in food and chemical branches. Conversely, a comparative disadvantage is evident in a large number of manufacturing industries, such as computer products, electrical equipment, machinery and equipment, fabricated metal products and motor vehicles.

3.4 A new look at the geography of foreign trade

The traditional approach to foreign trade identifies the direct recipient of the exports[3]. But exports to one country may in turn be rerouted to a third country, possibly after processing. The final recipient of the exports, and hence of the exported VA which they contain, may therefore differ from the direct recipient[4]. Similarly, traditional import

(1) This applies in particular to employment services (classified in the service branches), which include agency work, notably that allocated to industry.
(2) See Duprez and Dresse (2013).
(3) Foreign trade and the balance of payments provide a geographical breakdown of imports and exports respectively for goods and services.
(4) The exporting country may itself be the final recipient if it re-imports the products or services sent abroad for processing. According to the OECD data, however, the amounts are very small in the case of Belgium.

CHART 7 DIRECT RECIPIENT VERSUS FINAL RECIPIENT: AN EXAMPLE



Source: NBB based on WTO (2013).

TABLE 1 BELGIUM'S TRADING PARTNERS

(2008, in % unless otherwise stated)

	G&S exports		G&S imports	
	Final recipient	Direct recipient (G)[1]	Origin of the value	Direct supplier (G)[1]
EU	59.3	75.5	60.7	74.3
Germany	9.1	17.1	13.5	16.1
France	13.2	17.5	12.4	12.4
Netherlands	5.6	13.5	9.5	24.3
United Kingdom	8.2	6.9	6.7	6.4
United States	9.9	3.8	8.2	4.1
BRICS	8.5	5.7	10.4	7.1
Average distance[2] (km)	2 943	1 846	2 841	2 037

Sources: OECD, NAI.

(1) Data for goods only, according to foreign trade in national concept.

(2) Bilateral distances measured according to the geographical distribution of the population (Mayer and Zignago, 2011) were weighted according to the geographical distribution of exports and imports.

data identify the direct supplier, yet the true origin may be quite different as the supplier may have previously imported the goods and services.

For many production lines, a country is just one of many links in the chain. In general, the value of the goods and services consumed by the final recipient can be subdivided into value content created successively by each country participating in the production process[1]. This determines the geographical origin of the value, as well as the place of final consumption.

Comparison of the map of Belgium's trading partners according to the traditional approach and according to the VA perspective sheds new light on the subject. In 2008, the EU consumed almost 60 % of the VA exported by Belgium, whereas its share in Belgian exports of goods exceeded 75 %. There are two factors which may explain this finding, which applies in particular to Germany and the Netherlands. First, neighbouring countries predominate as recipients of Belgian re-exports, in which the VA content is by definition relatively small. Also, they use goods and services from Belgium as inputs in their own production destined for export. The Netherlands and, to a greater extent, Germany may be the next link in a chain that ultimately ends elsewhere. Thus, on average, Belgian exports have travelled almost 1 850 km before reaching their direct recipient, whereas final consumption takes place on average almost 3 000 km away[2].

In the case of imports, the foreign value has also been created at a much greater distance, on average, than the distance between Belgium and its direct suppliers. For example, energy imported into Belgium via the Netherlands inflates that supplier's importance in the import data.

3.5 A new look at imports and the trade balance

Apart from their role in exports, imports also meet domestic demand. Examining them from the value added perspective is similarly instructive as it was in the case of exports. Direct inputs and absorbed imported inputs – i.e. 'absorbed' inputs as opposed to imported inputs destined for exports – constitute the foreign value finally consumed in Belgium[3]. Unlike direct imports, which are consumed without further processing, absorbed imported inputs – i.e. commodities such as energy or even other intermediate goods and services – are used in the process of producing goods and services for the domestic market.

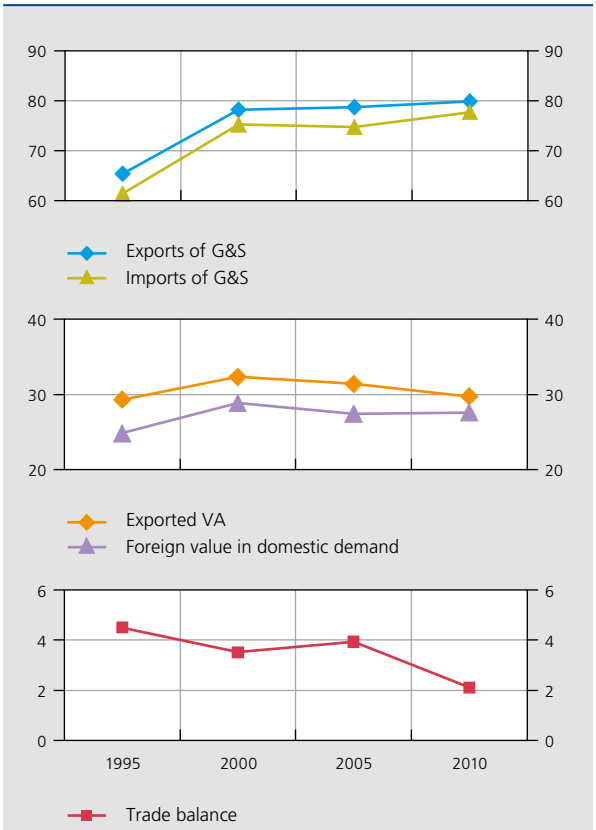
By analogy with the representation of exports in chart 2, domestic demand can also be subdivided into three components, namely absorbed value added, absorbed imported inputs, and direct imports, the latter taking

(1) Timmer *et al.* (2014) go further by calculating the respective contributions of each country's labour and capital.

(2) These are distances taken from the database compiled by the CEPII. They take account of the distribution of the population over the territory (Mayer and Zignago, 2011). It should also be noted that, according to Johnson and Noguera (2012b), the distance that exports travel has declined over the years. However, examination of the data for Belgium did not confirm that finding.

(3) Consumption is meant in the broad sense here, including gross fixed capital formation and changes in inventories.

CHART 8 DETERIORATION IN BELGIUM'S TRADE BALANCE
(in % of GDP)



Sources: NAI, NBB calculations.

the place of re-exports in the diagram. The absorbed VA measures the value generated during production for the home market. Part of it also comes from the trade and transport margins achieved in the routing or distribution of direct imports around the country. Absorbed VA supplements exported VA as an additional source of income for the economy.

In Belgium, the absorbed VA content varies from one domestic demand aggregate to another. While government consumption is dominated by Belgian VA, namely 88 % in 2010, household consumption and gross fixed capital formation, in which the VA content amounts to 71 % and 64 % respectively, have a higher proportion of foreign value. In total, 72 % of Belgian domestic demand as a whole is supplied by Belgian VA, as opposed to 28 % for foreign value. For comparison, with a Belgian VA content of only 38 %, exports have a much higher proportion of foreign value.

If exports and imports of goods and services are compared, the difference equals the trade balance. If the value added approach is adopted, the trade balance can be rewritten as follows:

Trade balance = Exports of goods and services – Imports of goods and services

= (Exported VA + foreign value of exports) – (absorbed foreign value + foreign value of exports)

= Exported VA – absorbed foreign value

The advantage of this new expression is that, by eliminating the amplifier effect, it neutralises the foreign value of exports that inflates both flows of goods and services. The trade balance is now redefined as the difference between exported VA[1] and absorbed foreign value. The first term measures the country's contribution to foreign demand, while the second determines the contribution of foreign countries to domestic demand. In the end, the trade balance expresses an economy's net contribution to foreign demand.

The trade balance is an instrument often used to monitor the economy. In Belgium, its deterioration is the main cause of the downward trend in the current account balance. However, the diagnosis of the forces at work varies according to the approach. If we consider the flows of goods and services, the deterioration in the trade balance appears to be due mainly to the relative growth of imports. Previous studies have shown that to be attributable essentially to the increasing cost of commodities, and more especially energy products, for which Belgium is a net importer[2]. For its part, the analysis of value added flows appears to place more emphasis on a decline in exported VA as a percentage of GDP since 2000. Although the analysis is still at a preliminary stage, it seems that the increase in the price of commodities has been kept under control by more rational use of these resources, but that it has weakened some export production lines.

In comparison, France's situation is similar overall to that of Belgium, with exported VA (as a percentage of GDP) declining since 2000. Conversely, Germany and the Netherlands have recorded a rise in their trade balance since 1995. A brief examination from the point of view of value added as a percentage of GDP indicates that Germany has benefited mainly from growth of exported

(1) To be precise, we should use the VA consumed abroad, which does not always correspond to exported VA, since part of the exported VA may be re-imported and ultimately consumed within the country. However, according to the OECD data, the amounts concerned are negligible in Belgium's case.
(2) See in particular NBB (2012).

VA while the Netherlands has gained from a decline in absorbed foreign value.

4. Recent results and conclusions

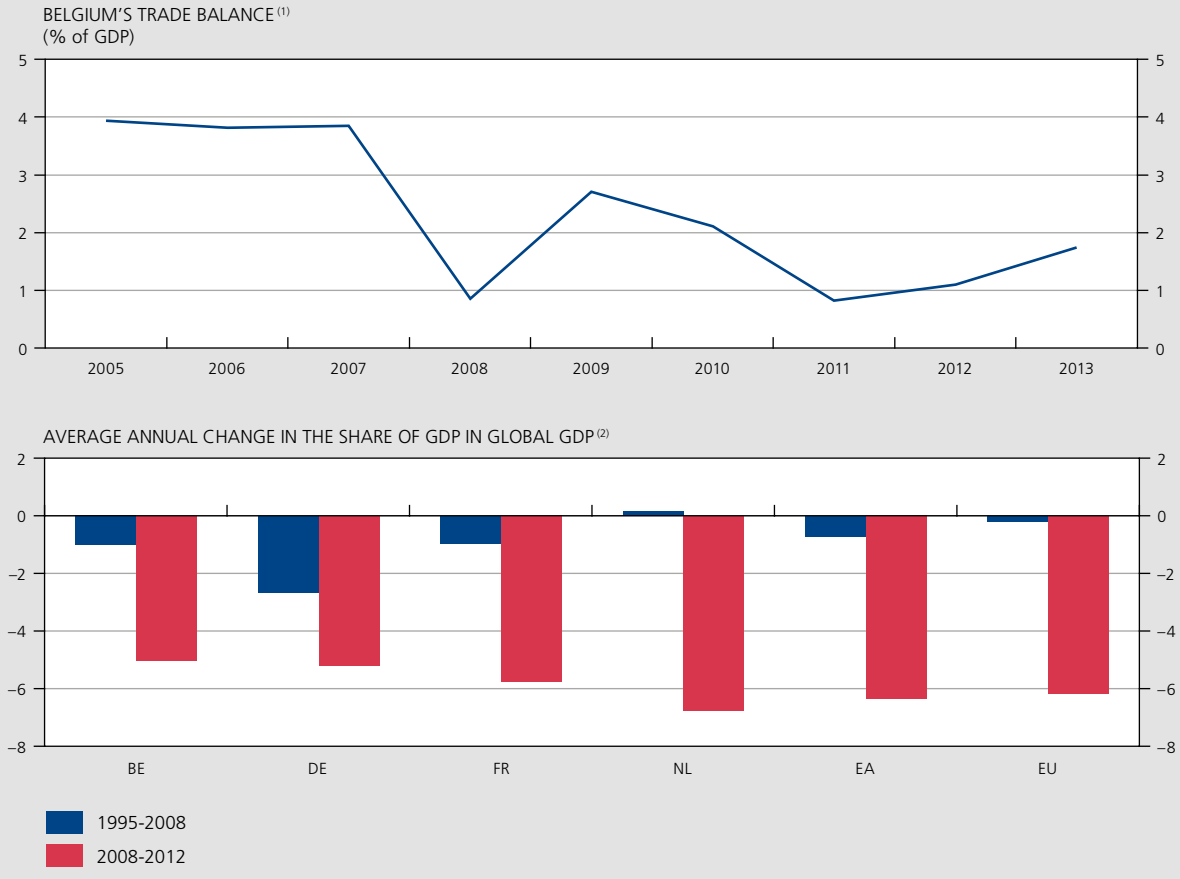
The value added approach offers new insights into external competitiveness. It is a worthwhile supplement to the analyses previously conducted on the basis of the statistics on imports and exports of goods and services. However, it is no substitute for such analysis, partly because the global matrix data have not been validated by the national statistical institutes, but also because there is a significant time lapse before the data become available.

It is difficult to make any definite pronouncement about recent developments, especially as they have taken place in the context of an economic crisis which may have affected structural trends. Nevertheless, some fragmented information provides a few indications. Belgium's trade balance deteriorated between 2007 and 2013, a deterioration only partly covered by this analysis which extends up to 2010. In general, Europe felt the full force of the economic crisis, as is clear from the marked fall in its share in global GDP between 2008 and 2012. Belgium was no exception, although it does not appear to have suffered more than neighbouring countries.

Although the value added approach set out in this article cannot be used to monitor recent developments, it nevertheless enriches the structural analysis of Belgium's external competitiveness in a number of ways. In particular:

– it improves the definition of the contours of the concept of exports of goods and services, which are statistics that include foreign value. That foreign value creates an amplifier effect which is undesirable in the analysis of an economy's external performance;

CHART 9 DEVELOPMENTS SINCE THE ECONOMIC CRISIS



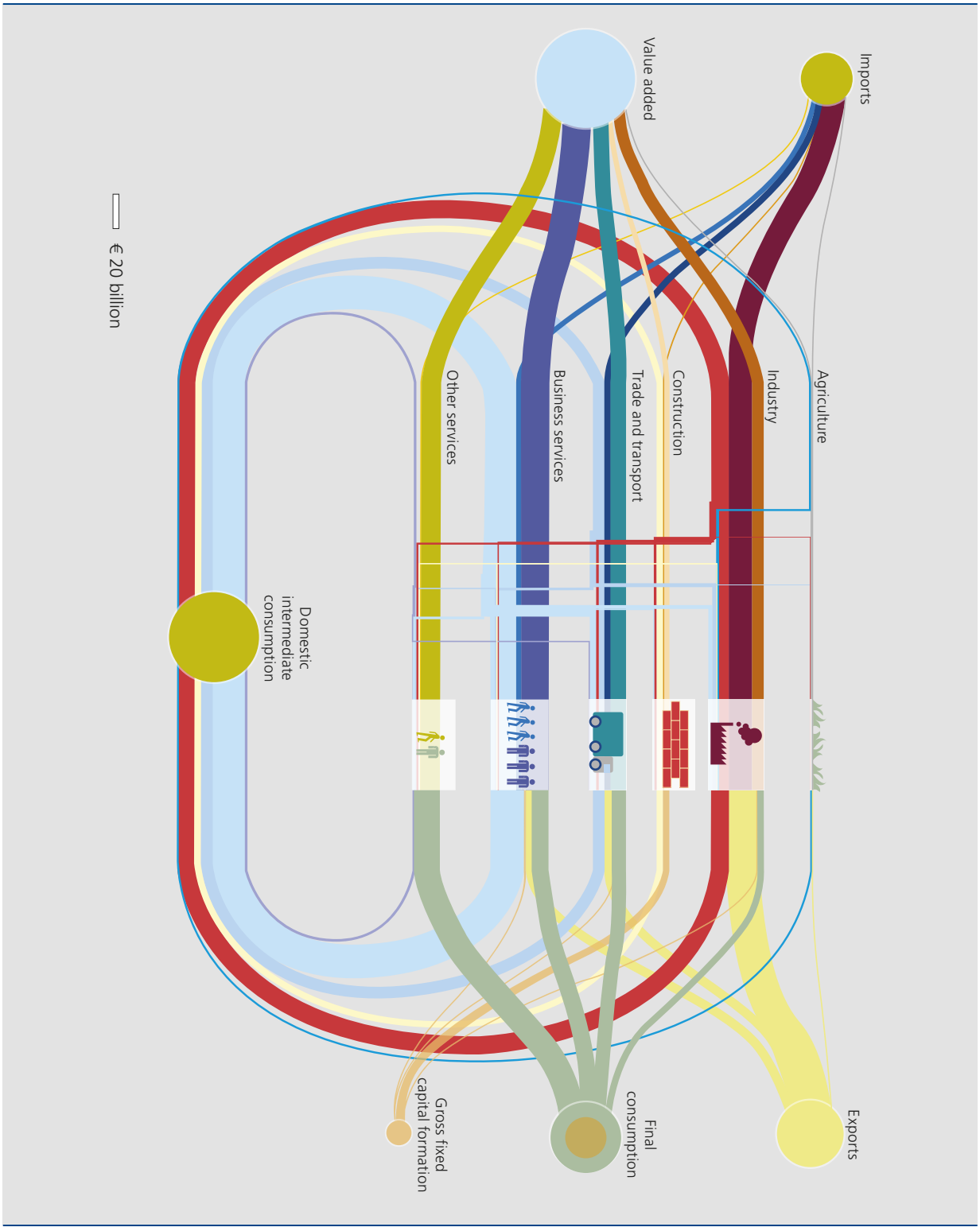
Sources: UNCTAD, NAI.
(1) According to the national accounts.
(2) Value data.

– it therefore offers an alternative concept to the degree of openness. If this is measured from the exported value added angle, the figure is around 30 % of GDP as opposed to 80 % for the traditional indicator based on exports of goods and services. The difference between these two ratios, almost 50 % of GDP, represents the foreign value of exports which, since it covers import costs, is not a source of income for domestic production factors;
– it qualifies the changes in export market shares recorded between 1995 and 2008. If the contribution of exported value added is considered in isolation, the losses of market share are slightly smaller than if they are calculated on the basis of exports of goods and services. In addition, the gap in relation to Germany and the Netherlands is narrower, as the performance of those two countries is due to the growth of re-exports and foreign inputs;
– it highlights the crucial, albeit sometimes indirect, role of firms belonging to the service branches. While goods account for the bulk of exports, the exporters are in many cases companies in the service sector. Sometimes they re-export goods transiting through Belgium, particularly via the sea ports, and sometimes they act as export links for goods manufactured by Belgian industrial firms. More fundamentally, the exported value added is generated mainly by firms active in the service branches, particularly via the supply of intermediate services to industrial firms;
– it completes the map of trading partners by identifying the true origin of imports and the ultimate destination of exports. The real consumers of the VA exported by Belgium are farther away than the direct recipients of the exports. The three neighbouring countries thus consume less than 30 % of the VA exported by Belgium, whereas they receive almost 50 % of Belgian goods exports;
– it contributes to the examination of the deterioration in the trade balance since 2000. Thus, it seems that the decline in value added exported by Belgium as a percentage of GDP is one of the key factors, although additional analyses are necessary here.

Finally, the value added approach is promising in various respects. It refines our knowledge of external competitiveness and also has the merit of opening up new avenues for analysis and research.

CHART 10 INTERCONNECTION OF BRANCHES OF ACTIVITY

(domestic production[1], 2010)



Source: Data visualisation by M. Bogaert based on NAI data.

(1) Changes in inventories, like taxes net of subsidies, are not represented because the corresponding amounts are very small.

Bibliography

Amador J. and S. Cabral (2014), *Global value chains: surveying drivers, measures and impacts*, Banco de Portugal, Working papers 3, January.

Avonds L. (2013a), *De gecumuleerde kosten 1995-2005*, FPB, Working Paper 9, September.

Avonds L. (2013b), *Bijdrage van de componenten van de finale vraag tot het bbp 1995-2005*, FPB, Working Paper 10, September.

Baldwin R. and J. Lopez-Gonzales (2013) *Supply-chain trade: a portrait of global patterns and several testable hypotheses*, NBER Working Paper 18957.

Bernard A., J. Jensen, S. Redding and P. Schott (2010), "Intra-firm trade and product contractibility", *American Economic Review*, 100(2), 444-448.

Bernard A., J. Jensen and S. Kortum (2003), "Plants and productivity in international trade", *American Economic Review*, 93(4), 1268-1290.

De Backer K. and S. Miroudot (2013), *Mapping global value chains*, OECD Trade Policy Papers, 159, OECD Publishing.

Duprez C. and L. Dresse (2013), "The Belgian economy in global value chains – An exploratory analysis", NBB, *Economic Review*, September, 7–22.

Eaton J., S. Kortum and F. Kramarz (2004), "Dissecting trade: firms, industries, and export destinations", *American Economic Review*, 94(2), 150–154.

EC (2013), *Macroeconomic imbalances – Belgium,* Occasional Paper 144, April.

EC (2014), *Macroeconomic imbalances – Belgium*, Occasional Paper 172, March.

FPB (2013), *Input-output tables 2010*, December.

IMF (2013), *Belgium: 2013 Article IV Consultation-Staff Report*, IMF country report 13/123, May.

IMF (2014), *Belgium: 2014 Article IV Consultation-Staff Report*, IMF country report 14/76, March.

Jacks D., C. Meissner, and D. Novy. (2011) "Trade Booms, Trade Busts, and Trade Costs", *Journal of International Economics*, 83, 185-201.

Johnson R. (2014), "Five facts about value-added exports and implications for macroeconomics and trade research", *Journal of Economic Perspectives*, 28(2), 119-142.

Johnson R. and G. Noguera (2012a), "Accounting for intermediates: Production sharing and trade in value added", *Journal of International Economics*, 82(2), 224-236.

Johnson R. and G. Noguera (2012b), "Proximity and production fragmentation", *American Economic Review: Papers and Proceedings* , 102 (3), 407-411.

Johnson R. and G. Noguera (2014), *A portrait of trade in value added over four decades*, Working Paper.

Koopman R., Z. Wang and S.-J. Wei (2014), "Tracing value added and double counting in gross exports", *American Economic Review*, 104(2), 459-494.

Mayer T. and S. Zignago (2011), *Notes on CEPII's distances measures: the GeoDist Database*, CEPII Working Paper 25.

Muûls M. and M. Pisu (2007), *Imports and exports at the level of the firm: evidence from Belgium*, NBB Working Paper 114.

NAI-NBB (2009), *Foreign trade statistics*, Monthly Bulletin (11), 5-31.

NAI-NBB (2012), *Foreign trade statistics*, Monthly Bulletin (06), 5-6.

NBB (2012), *Annual Report*.

NBB (2013), *Annual Report*.

OECD-WTO (2012), *Trade in value added: concepts, methodologies and challenges*, Joint OECD-WTO note.

OECD (2013), *OECD Economic Survey Belgium*, May.

Timmer M., A. Erumban, B. Los, R. Stehrer and G. de Vries (2014), "Slicing up global value chains", *Journal of Economic Perspectives*, 28(2), 99-118.

WTO, Fung Global Institute and Nanyang Technical University (2013), *Global value chains in a changing world*, edited by Elms D. and P. Low.

Global imbalances and gross capital flows

P. Butzen
M. Deroose
S. Ide

Introduction

The subject of global imbalances was a constant theme of economic debate in the first decade of this century, yet it seems to have attracted rather less interest in recent years. The reason is the empirical finding that global imbalances – traditionally reflected in current account deficits and surpluses on the balance of payments – have declined since the financial crisis, so that the associated vulnerabilities have also diminished. Moreover, international policy forums have turned their attention to the development of a more secure financial framework and a sustainable recovery of economic growth, as evidenced by the G20 Growth Initiative for example. However, the recent heightened volatility on the financial markets of the emerging economies is a reminder that a number of countries, including those with a current account deficit, are still very vulnerable to a reversal in investor sentiment. Using the new insights offered by the literature following analysis of the financial crisis and global imbalances, this article takes a closer look at the indicators which reflect the external vulnerability of a country or economic region.

In the past, it was usual to consider the current account positions on the balance of payments in order to analyse external vulnerability. Countries with a current account deficit and a net debt position were deemed vulnerable to a reversal in capital flows, known as a sudden stop. This analysis framework was supported by experience during the Latin American crisis in the 1980s and the Asia crisis at the end of the 1990s. In the 2000s, there was growing concern over the escalating deficits in the United States. However, some people considered that, for various reasons, those deficits could quite readily be financed by the surplus countries in Asia, while the euro area with its negligible net position had no role to play. The excess savings of the said surplus countries were therefore thought to be part of the reason for the very easy credit conditions in the United States and the American housing market bubble, which ultimately led to the financial crisis. However, the outcome of the financial crisis – no sudden stop in the United States, heavy losses for the European banking sector as a result of its international exposure, and the fact that the financial position of the Asian surplus countries was relatively unscathed – revealed the shortcomings of this analysis framework.

Together with the availability of supplementary statistics, the economic literature focused increasingly on cross-border gross capital flows. Of course, the analysis of gross capital flows is nothing new: people have long been aware of the importance of gross capital flows, their composition, and any currency, maturity and liquidity mismatches. However, the recent situation is different from the past in that these capital flows have expanded enormously, leading to an unprecedented accumulation of cross-border outstanding amounts of claims and liabilities. Thorough analysis of gross capital flows is therefore vital in order to assess an economy's vulnerability. As is evident from the European sovereign debt crisis and, more recently, the turmoil on the financial markets of the emerging economies, it also remains essential for a vulnerability analysis to consider net positions and current account balances.

Section 1 of this article gives a brief résumé of the situation regarding global imbalances. Section 2 demonstrates the increased importance of cross-border capital flows worldwide, and explains in more detail how the analysis of gross capital flows is necessary and complementary to

any assessment of a country's vulnerability. The financial crisis provides empirical support for this view. Section 3 presents a supplementary and more recent illustration of this, in which the authors investigate the extent to which both indicators have been decisive for explaining the volatility on emerging economies' financial markets since the summer of 2013.

1. Global current account imbalances: the traditional approach

In the run-up to the financial crisis, global current account imbalances increased rapidly. The most striking instances were the escalating surpluses in China and in the commodity-exporting countries, accompanied by the constantly growing deficits in the United States. In the euro area, which – taken as a whole – had an external position that was more or less in balance, the various individual Member States nevertheless had relatively large surpluses or deficits. Before the crisis, current account imbalances were due to various country-specific and global factors, in particular the very favourable financing conditions encouraged by under-estimation of credit risks and foreign capital inflows, over-optimistic income expectations, higher commodity prices and a mercantilist growth strategy accompanied by a massive accumulation of foreign exchange reserves[1].

In 2009, global imbalances diminished sharply, and thereafter remained considerably smaller than in the period preceding the financial crisis, though they still exceeded those of the 1980s and 1990s. This improvement in external positions mainly reflects cyclical adjustments triggered by the financial crisis. The stricter financing conditions (and more especially the drying up of external funding sources) and the fall in asset prices had a particularly severe impact on domestic demand and imports in countries with a current account deficit. In the surplus countries, domestic expenditure generally proved more resilient, but exports suffered from the negative consequences of the collapse and ensuing muted revival of international trade, and – for some countries – the initial decline in commodity prices. The weak recovery of the global economy since the outbreak of the crisis, fuelled at first by the emerging economies (in 2010-2011) and then by the advanced economies (since the end of 2013), prevented a renewed surge in global imbalances. Temporary country-specific factors, such as the increased energy imports by Japan following the 2011 earthquake, also helped to keep global imbalances under control.

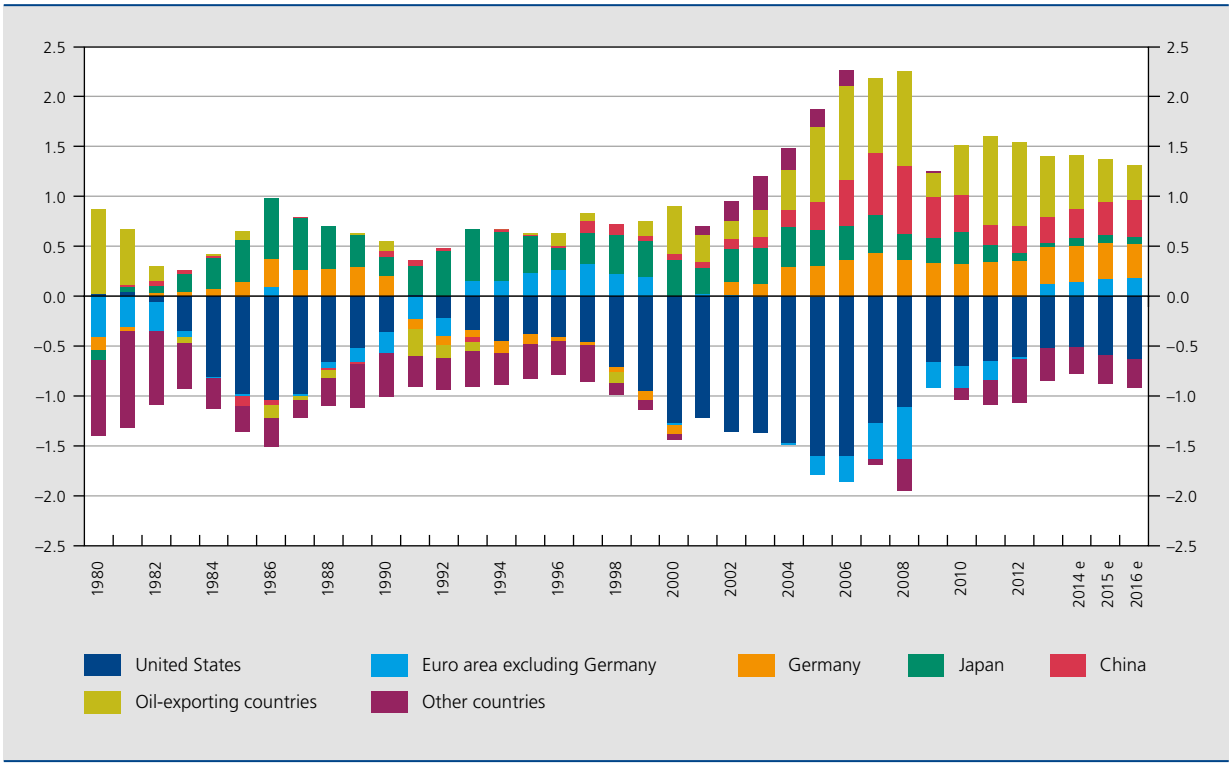
(1) For a more detailed description, see for example Butzen *et al.* (2010).

Apart from cyclical factors, more permanent adjustments are in progress in several economies. For instance, many deficit countries are proceeding with fiscal consolidation, although that process has slowed down recently. In addition, and more specifically, the private savings ratio in the United States is rising (albeit from a low level). That ratio is also expected to remain at a structurally higher level than in the pre-crisis period, since recent experience has taught American households that painfully sharp corrections in equity and property prices are not impossible, so that a stouter asset buffer is needed. Furthermore, the increasing oil production in the United States, due mainly to the extraction of shale oil, is also helping to bring down the current account deficit. In China, factors such as the growing importance of consumption in GDP growth and the gradual appreciation of the renminbi have helped to reduce the current account surplus. In November 2013, the Chinese government also presented a reform plan for the coming decade, which aims to continue rebalancing the economy. In addition, the improvements in the external competitiveness of the peripheral euro area countries seem to be more lasting. Yet so far, structural reforms have played only a minor role in reducing the global imbalances, so that there is a risk that the imbalances may begin to increase again as time goes by (IMF, 2013a and Ollivaud and Schwellnus, 2013).

Overall, the US current account deficit has improved from $ 681 billion in 2008 to $ 379 billion in 2013. Similarly, over the same period, the euro area excluding Germany converted its $ 327 billion deficit into a $ 92 billion surplus, mainly as a result of efforts by the deficit countries. For instance, Ireland, Portugal and Spain converted their respective deficits of $ 15 billion, 32 billion and 154 billion in 2008 into a surplus of $14 billion, 1 billion and 10 billion in 2013. The surplus of the oil-exporting countries shrank from $ 585 billion in 2008 to $ 445 billion in 2013, and China's surplus contracted from $ 421 billion to $ 189 billion. The persistence of the German surplus is also striking: since 2011, it has actually overtaken that of China to become the biggest in the world.

A current account imbalance is not in itself an immediate indication that the situation is out of control; it may even be entirely appropriate in view of an economy's fundamentals and structural characteristics. For instance, it may be desirable for a country with an ageing population to set money aside for old age (surplus), and for a country with worthwhile opportunities for investment to raise foreign capital to finance its infrastructure or capital goods (deficit). However, if imbalances are due to underlying internal malfunctioning, they are not sustainable and a correction is advisable. Since external imbalances may therefore reflect internal imbalances, they are

CHART 1 CURRENT ACCOUNT BALANCE
(in % of world GDP)



Source: IMF.

a useful indicator for policy-makers in detecting any risks to macroeconomic and financial stability. Countries with a deficit are generally considered more vulnerable, as they are very dependent on foreign financial flows. If these flows suddenly dry up or go into reverse (the sudden stop scenario), that usually implies a painful adjustment for the economy as a whole, as the recent past has once again demonstrated.

Since the accumulation of imbalances in the mid-2000s was followed by the eruption of a serious financial crisis, it has become even more important to monitor external imbalances. Thus, at the G20 summit in Pittsburgh in September 2009, both deficit and surplus countries agreed on policy measures which should help to correct the global imbalances. A mutual assessment process with technical support from the IMF is monitoring compliance with the commitments given. Furthermore, the European Commission records current account balances in the scoreboard that it has used since 2012 in the new economic governance procedure (the European Semester) to track macroeconomic imbalances in the EU Member States. Since 2013, the IMF has also published an annual report analysing the external sector of 29 major economies and focusing in particular on the current account position.

Nonetheless, the literature does not indicate a robust causal connection between current accounts and the occurrence or intensity of financial crises[1]. A number of authors have shown that other, more financial, factors are also involved. The next section will look at that in more detail. In any case, it may be useful for policy-makers, in their supervision of global financial stability, to enrich their analysis framework with information obtained from other relevant variables.

2. The importance of analysing gross capital flows

The first section of this article described the current account picture in the various main regions of the world, concluding that the current account may be a good indicator of a country's economic fragility and also of

(1) For a detailed analysis, see Blanchard *et al.* (2010), Frankel and Saravelos (2010), Jordà *et al.* (2011) and Gourinchas and Obstfeld (2012).

its vulnerability to financial shocks. However, the recent financial crisis has shown that an analysis based solely on the current account – essentially a net concept – is not enough for accurate assessment of those vulnerabilities. Before the outbreak of the financial crisis, it was the persistent current account deficits in the United States that were the primary focus of concern. The assumption was that these deficits were financed by the surpluses in the emerging Asian economies, whereas the euro area, where the current account was more or less in balance, was not thought to be involved and was certainly not considered vulnerable. This section aims to show that, on the basis of analysis of gross financial flows, Asia did not really contribute to the financing of the credit boom in the United States, while the euro area – and especially the banks – played a crucial role. Those banks therefore proved to be extremely vulnerable when the US credit boom collapsed. In other words, countries or currency areas with a balanced current account can still develop fragile gross financial positions.

This section briefly explains the importance of analysing gross financial flows, rather than focusing solely on net balance of payments concepts. To support this assertion, we begin by describing the pattern of gross capital flows worldwide, before taking a closer look at the role of gross capital flows in the creation of vulnerabilities before the recent financial crisis. In the final section of this article, on the basis of this enriched analysis, we try to assess the vulnerability of the emerging economies in the current economic context.

2.1 The increasing significance of gross capital flows[1]

Greater trade integration and the expansion of trade in goods and services throughout the world have been accompanied by the growth of financial flows since the 1990s, particularly cross-border capital flows. The main capital flow categories in the balance of payments are as follows: (1) foreign direct investment, (2) portfolio investment in debt instruments and equities[2], (3) official reserves, and (4) other investment. This last group includes financial transactions relating to loans and deposits, bank capital, trade credits and official capital flows other than movements in the foreign exchange reserves. In regard to capital movements, gross flows have increased by much more than net flows. The increase reflects a financial broadening of balance sheets, particularly in the financial sector, and at the same time a reduction in the financial home bias which has led to an expansion of the share of foreign assets and liabilities on those balance sheets.

In the past few decades, cross-border capital flows have seen unprecedented growth, which has accelerated particularly strongly since the mid-1990s. In 2007, the cumulative inflows and outflows had risen to no less than 20 % of world GDP, compared to an average of under 1 % in 1980-1995. Although there was an increase in virtually all capital flow categories, the expansion was driven mainly by cross-border interbank transactions (included under "other investment") and to a lesser extent by the formation of reserves. However, at the start of the financial crisis in 2008, gross capital flows collapsed. They picked up again in 2009, but since then – partly as a result of the European sovereign debt crisis – have subsided to levels comparable to those of the late 1990s. These recent developments mask three trends which are not always parallel.

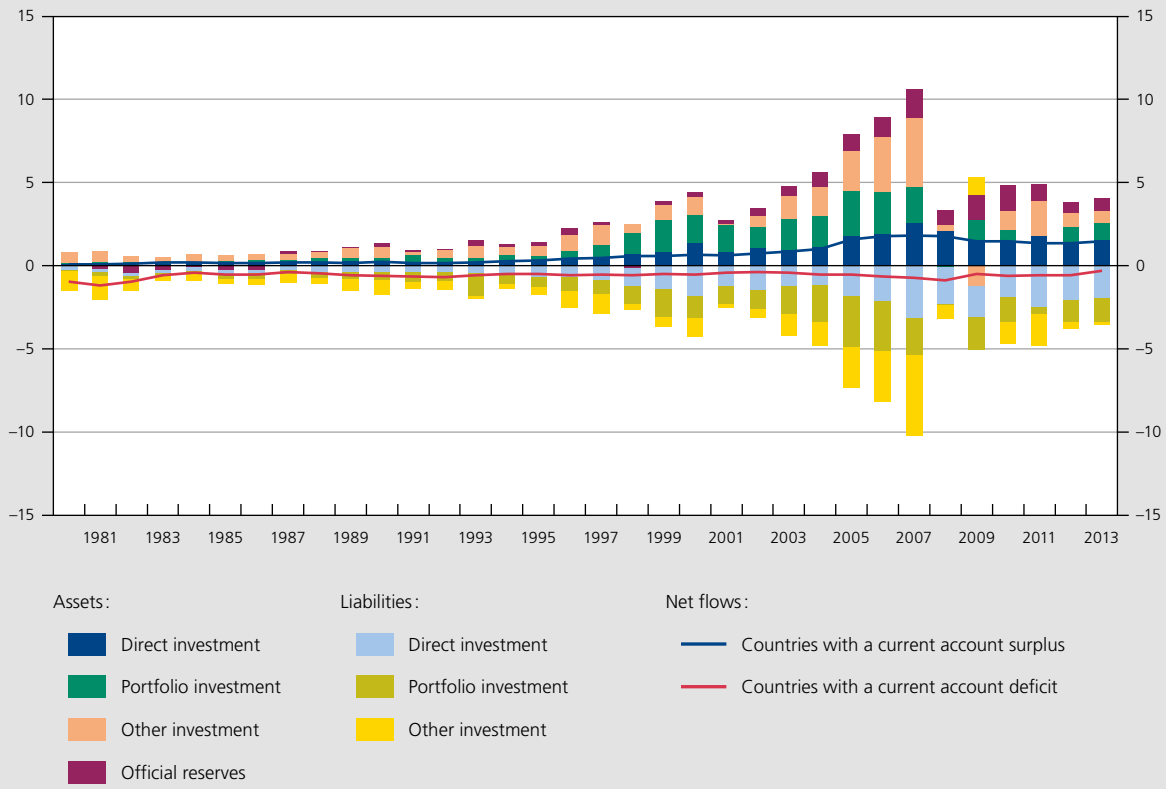
First, since 2008, there has been a persistent shrinking of cross-border interbank transactions, attributable to both supply and demand factors. Banks operating internationally, particularly in the euro area and in the United Kingdom, have refocused on markets at home or nearby, and have cut back substantially on cross-border transactions with a view to general balance sheet repair. Demand for credit is still weak owing to the continuing fragile macroeconomic environment in most advanced countries, while households and businesses are tending to deleverage rather than increase their debt levels. Also, since 2010, there has been a considerable rise in international issuance of corporate debt instruments in emerging economies. The strong international demand for these debt securities was fuelled in particular by a search for yield, while credit quality was steadily declining (BIS, 2014). Finally, the global accumulation of foreign exchange reserves is continuing. Following the 2007 peak and the slowdown in 2008, the formation of reserves rapidly gathered pace again in 2009 and 2010. Since then it has slackened slightly, though the annual formation of reserves still remains substantial at around 0.7 % of global GDP.

In view of their scale, these capital flows are clearly a potentially vital factor in an economy's vulnerability, especially if, over the years, they lead to the accumulation of large outstanding gross positions. In that respect, mismatches in the currency and maturity structure are important because, in the case of large outstanding amounts,

(1) The gross financial flows recorded in the balance of payments statistics – referred to in this article – represent amounts which have already been netted. The gross outflow of capital is in fact the difference between total purchases and total sales of foreign assets by residents. The gross capital inflow is the difference between total purchases and total sales of domestic assets by non-residents.

(2) The distinction between portfolio investment and foreign direct investment depends on the size of the participation held by an investor in the enterprise concerned. If that participation is 10 % or less, the capital flows are regarded as portfolio investments.

CHART 2 GLOBAL INTERNATIONAL GROSS AND NET CAPITAL FLOWS
(in % of world GDP)



Sources: IMF International Financial Statistics, IMF WEO.

small fluctuations in interest and/or exchange rates can have a serious impact. Here it should be noted that such mismatches may also occur in a current account which is in balance or in surplus, so that it is not just countries with a current account deficit that may be vulnerable.

2.2 Measuring economic fragility: net and gross capital flows

As this section will show, the recent financial crisis clearly illustrated that international capital flows are not necessarily related to current account imbalances. It is therefore preferable to supplement an analysis of global current account imbalances with an assessment of gross capital flows and positions.

Research into the financial crisis offers the following insights: 1) (net) capital flows of countries with a current account surplus, in this instance the emerging Asian economies and Japan, were not necessarily the direct source of funding for the credit expansion/boom in countries with a current deficit, namely the United States; 2) before and during the financial crisis, the current account imbalances between the euro area and the United States were fairly small, but the European banks still built up substantial financial positions in the form of mortgage-backed securities and American government bonds, making them vulnerable to economic developments in the United States.

These insights are supported by a conceptual distinction made in section 2.2.1 between saving and financing, and by the explanations put forward in section 2.2.2 for some empirical facts about the financial crisis.

2.2.1 Saving versus financing

Before the outbreak of the financial crisis, the assumed connection between global current account imbalances and the financing of the strong expansion of lending in countries with a current account deficit was often rationalised by the excess savings theory. That theory was based on two assumptions. First, there are net capital flows from countries with a current account surplus to countries with

a current deficit, fuelling excessive credit expansion in the latter; second, the growth of savings worldwide compared to global investment is due mainly to the surplus countries, and especially the emerging Asian economies; that has led to a fall in real interest rates, primarily in the United States.

The sometimes divergent reasons underlying this theory were discussed in detail in the economic literature, and Chinn (2013) presents a good overview: the variations in saving and investment were due to differences in fiscal policy – very expansionary in the United States – and demographic disparities, especially population ageing in the West; higher productivity in the United States and the associated consumption smoothing; the Asian economies geared to exports in conjunction with exchange rate interventions in support of the export sector; and the savings glut, with emerging economies' financial markets being insufficiently developed to absorb domestic savings.

A combination of some or all of the above factors is often put forward, but a common feature of all the arguments is that regions or countries with a current account which is more or less in balance do not play a role and are therefore not regarded as vulnerable themselves, still less as a source of vulnerability for other economies. However, Borio and Disyatat (2011) point out that there is not necessarily any direct link between net capital flows or the current account balance and the global intermediation of funding flows.

The distinction between saving and financing is crucial to their argument. Saving is a national accounts concept defined as income which is not consumed. Saving therefore encompasses the contribution of final expenditure other than consumption to total income (or output). In a closed economy, saving only occurs if something is produced but not consumed, namely investment. However, this concept of saving certainly does not tell us everything about whether or not funding is available for investment. If the resources generated in a particular period are insufficient, it is necessary to resort to one's own financial assets or to borrowings. Thus, there need not be any link between saving (and investment) in the sense of the national accounts and movements – and fluctuations – in the financial assets and liabilities. Indeed, a particular volume of savings may be associated with large and divergent changes in financial assets and liabilities as recorded by the flow of funds in the national accounts.

In the case of open economies, the distinction between saving and financing is most clearly expressed in net capital flows as opposed to gross capital flows. Net capital flows comprise only the result of bilateral trade in goods and services. They offer no information on the much larger gross flow movements which also include purely financial transactions, yet the latter make up the bulk of cross-border financial transactions (Obstfeld, 2012a). That is why the movement in the current account balance says little about a country's role in international financial flows, the degree to which investment spending is funded by domestic or foreign resources, and the impact of cross-border capital flows on domestic financial conditions. While a current account surplus does mean that net claims on the rest of the world are increasing, a balanced current account only indicates that domestic output is equal to domestic expenditure, but does not necessarily mean that domestic saving is directly financing domestic investment. Thus, though the current account is balanced, a domestic company may contract a loan from a foreign bank to finance its investment. If the deposits resulting from the investment expenditure are also placed with a foreign bank, then that only generates mutually offsetting gross capital flows.

The main point to emerge from this is that it is impossible to draw any conclusions about financing patterns and cross-border financial intermediation on the basis of net balance of payments flows. In other words, a country with a current account surplus is not necessarily funding the investment and expenditure of countries with a current account deficit. At the level of the national accounts, however, it is true that countries with a current account deficit offset the saving of surplus countries by consuming more. For the world as a whole, the deficits and surpluses therefore tally, except for some statistical variations. Nonetheless, the underlying consumption and investment expenditure at the root of these imbalances can be funded in many ways. In the case of a current account deficit implying financial liabilities for goods and services, the deficit country certainly has to borrow from the rest of the world, but the counterparty holding these claims is not necessarily a resident of a country with a current account surplus. That is clear from the analysis of gross capital flows during the recent financial crisis and in the preceding period.

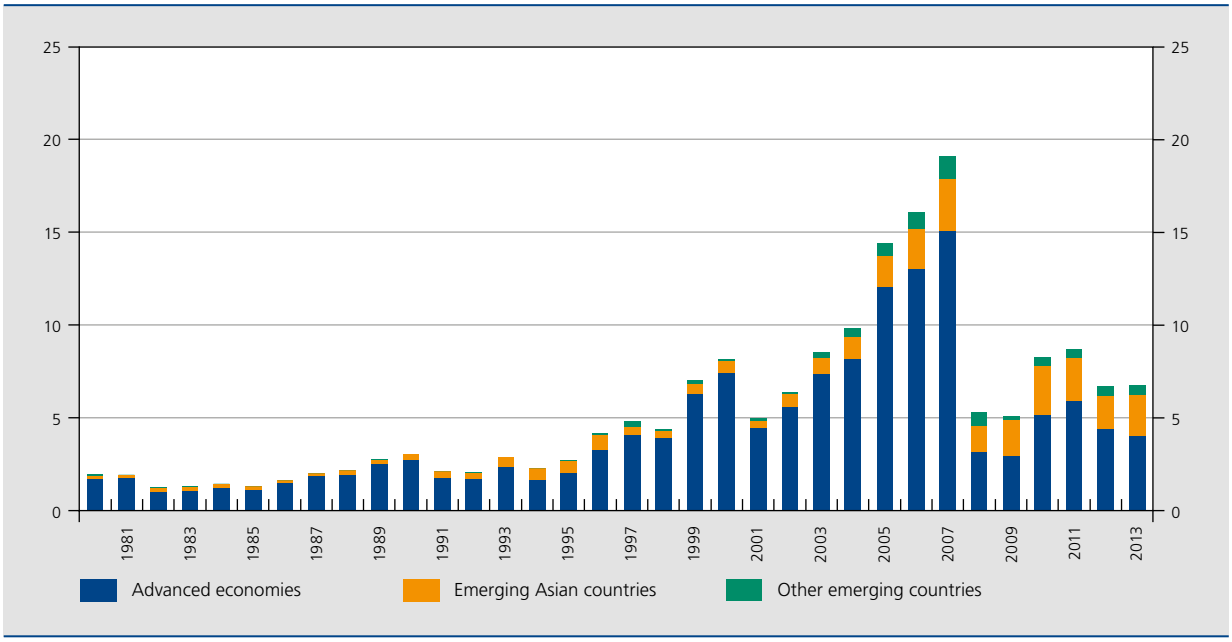
2.2.2 Gross capital flows during the financial crisis

There are several reasons why an analysis based purely on global current account imbalances proved inadequate for detecting the vulnerabilities of economies before and during the financial crisis.

First, the surge in gross capital flows worldwide (see section 2.1) in the 1990s and up to the outbreak of the financial crisis in 2008 was due mainly to the growth of capital flows between the advanced economies. Although

CHART 3 INTERNATIONAL GROSS CAPITAL FLOWS

(in % of global GDP, sum of inflows and outflows)



Sources: IMF International Financial Statistics, IMF WEO.

those economies accounted for an ever-diminishing share of world trade, they still represented at least 75 % of gross capital flows before the crisis, and roughly 60 % after the crisis. Within the group of emerging economies, Asia is seeing the strongest growth. The relative size of these flows compared to the net capital flows or current account balances and their geographical structure already undermine to some extent the theory of excess savings as a key explanation for the financial crisis. According to that theory, it is mainly the emerging countries that have determined and influenced financial conditions throughout the world, whereas their role in global gross capital flows has been rather limited.

Also, the US balance of payments statistics confirm that, during the pre-crisis period, the current account balances did not play a dominant role in financial movements. While the US current account deficit was growing, gross capital flows expanded three times as fast. The United States recorded both substantial capital outflows from American residents and substantial capital inflows on the part of non-residents. That would probably also have been the case if the American current account had been in balance.

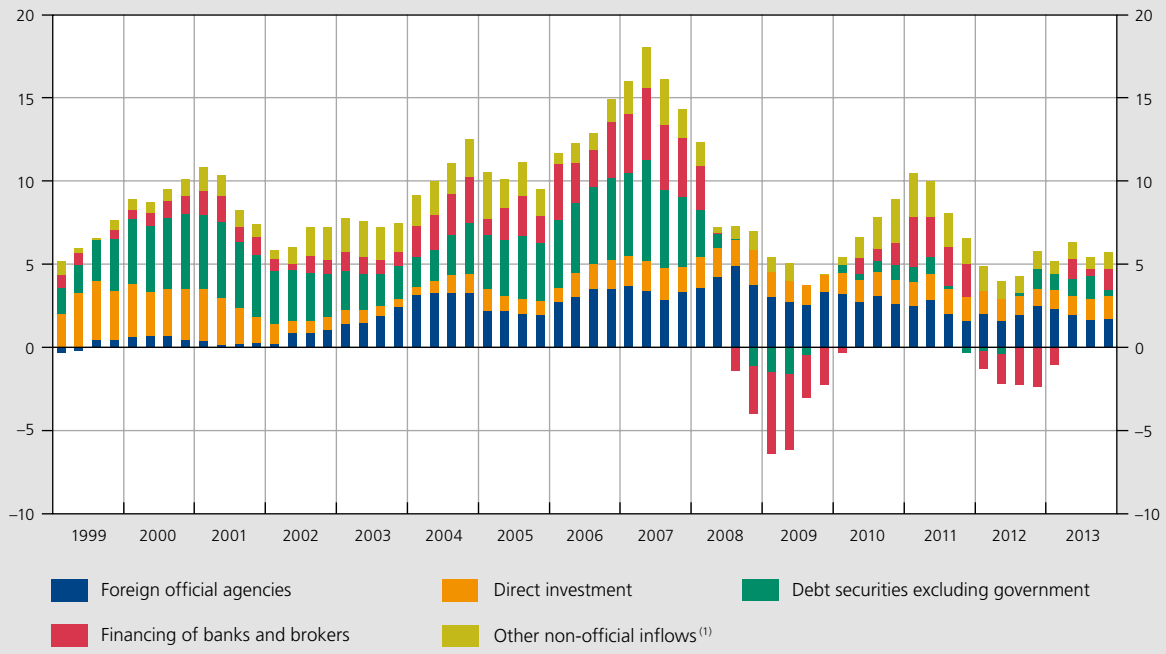
The rationalisation of the excess savings theory via the global savings glut is based partly on the large accumulation of reserves in US dollars – particularly in the form of American government bonds – principally by Asian central banks. However, it is evident from the US balance of payments statistics that the increase in gross capital inflows was attributable largely to the private sector. It was purchases of American securities other than government paper that formed the main capital inflow. From the 2000s onwards, private foreign investors also began to play a steadily increasing role in the financing of American banks and brokers. That development reflects the strong rise in cross-border interbank transactions which were in turn a key factor in the financial crisis.

The American balance of payments statistics on the geographical origin of foreign capital inflows into the United States show that Europe was the main source of finance. Not only did banks in the euro area and the United Kingdom invest substantially in long-term American assets, they also financed those investments by issuing short-term paper in US dollars, such as asset-backed commercial paper (Noeth & Sengupta, 2012). As a result, gross capital flows expanded while net capital flows remained unchanged. The United Kingdom's current account was in deficit, and that of the euro area was more or less in balance[1]. The emerging Asian economies,

(1) The capital flows from the United Kingdom partly reflect the role of London as a financial centre. On the basis of consolidated BIS statistics, Borio and Disyatat (2011) confirm the importance of European banks in the capital inflows into the United States.

CHART 4 UNITED STATES: GROSS CAPITAL INFLOWS BY TYPE

(in % of GDP, moving averages over four quarters)



Source: BEA.

(1) The other non-official inflows comprise American government bonds and other assets held by non-residents other than official agencies.

and especially China, or countries with a large current account surplus such as Japan and the OPEC countries, accounted for only a minor share of the capital inflows into the United States. The geographical breakdown of the gross flows therefore refutes the view that the United States obtained funding mainly from countries with a large current account surplus.

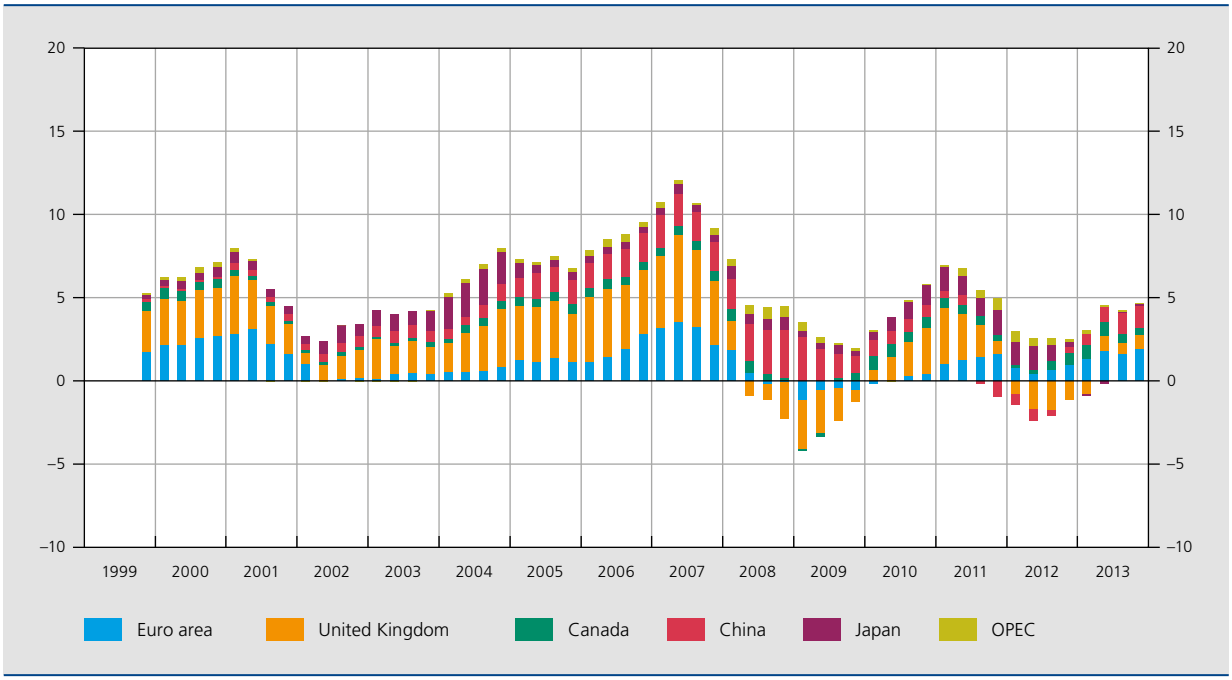
While the US current account deficit only declined slightly during and after the financial crisis, gross capital flows were much more volatile. That volatility reveals the disruption of cross-border interbank transactions, primarily with the United Kingdom and the euro area. It is noticeable that the capital flows from China, Japan and the OPEC countries were maintained during the crisis, indicating that official flows were a stabilising factor rather than a source of volatility for the US balance of payments.

All in all, the analysis of gross capital flows reveals a different picture of the global imbalances as an indicator of countries' economic vulnerability, especially in the case of the American economy. In the period preceding the financial crisis, the Asian countries evidently played a much smaller role in financing credit expansion in the United States, while the European banks performed a vital function in that respect. The analysis based purely on current account imbalances disregarded the role of those banks in the American credit expansion. At the same time, close attention focused on the formation of foreign exchange reserves, but in the end that was only a minor factor in the crisis.

Nevertheless, another chapter of the financial crisis, namely the European sovereign debt crisis, shows that apart from gross capital flows, net positions are still important for assessing a country's economic vulnerability. In the run-up to the financial crisis, the international exposure of banks in the core euro area countries, such as Germany, France, Belgium and the Netherlands, increased not only in relation to the United States but also in relation to the peripheral euro area countries. However, in comparison with the exposure to the United States, the type of financial intermediation is different in the case of the peripheral countries: the banks built up assets in the peripheral countries, but obtained their funding elsewhere. Hale & Obstfeld (2014) demonstrate that a considerable share of the capital inflows into the euro area came via the banks in the core countries and was directed towards

CHART 5 UNITED STATES: GROSS CAPITAL INFLOWS BY REGION

(in % of GDP, moving averages over four quarters)



Source: BEA.

the peripheral countries. The gross capital flows from and to the peripheral countries therefore did not offset one another, so that those countries were net importers of capital. The balance of payments statistics show a sharp increase in "other investment", particularly interbank transactions, that contributed to the strong expansion of credit in the peripheral countries.

Using a new database, Hobza & Zeugner (2014) describe the bilateral financial flows of the euro area. They confirm that, in the pre-crisis period, bank balance sheets in the core countries expanded strongly as a result of the international exposure to both the peripheral euro area countries and the rest of the world. In contrast, the rising deficits in the peripheral countries were financed almost exclusively by core countries with a surplus, but also by capital flows from France and the United Kingdom, countries with a current account deficit. The authors take the view that the imbalances within the euro area were caused mainly by financial flows rather than by the traditional factor, namely trade flows between surplus and deficit countries.

At the start of the crisis, capital flowed back to the surplus countries, particularly Germany, but France largely offset these outflows. It was not until the capital flows originating from France dried up and/or went into reverse from 2011 onwards that the sovereign debt crisis intensified. From then on, the peripheral countries had to resort to ECB funding and the official "assistance" of the IMF and the European aid funds – the EFSF and the ESM – in order to continue meeting their financial needs (de Sola Perea and Van Nieuwenhuyze, 2014).

3. Financial integration and vulnerabilities in emerging economies

Last year, emerging economies were seriously exposed to the financial market turmoil. Some countries proved to be more vulnerable than others to fluctuations in market sentiment. The traditional explanation points to divergences in fundamentals such as growth, inflation, the state of public finances and above all, the current account balance, as an indication of the degree to which a country must resort to foreign sources of finance.

However, this section illustrates once again that focusing too exclusively on the fundamentals, and more particularly on the current account which is a net concept, cannot provide an adequate explanation and that the size and composition of the gross capital flows and positions also play an important role.

We shall first examine the progress of the financial integration in emerging economies over the past decade before analysing the events which have unfolded since the summer of 2013.

3.1 Developments from 2004 to 2012

3.1.1 Continuing financial globalisation in emerging economies

During the past decade, the financial markets in emerging economies have become much deeper and have been increasingly integrated into the global financial system. As mentioned in the previous section, most capital movements nevertheless still take place between advanced economies, though the emerging economies' share in global gross capital flows has risen significantly since the financial crisis.

On the assets side of emerging economies' international investment position, the public sector often plays a dominant role via the accumulation of foreign reserves. Those reserves contain a large proportion of secure short-term government paper issued by advanced countries, though the yields are generally low. On the liabilities side, there is greater diversity, and the rest of this article will concentrate on that aspect.

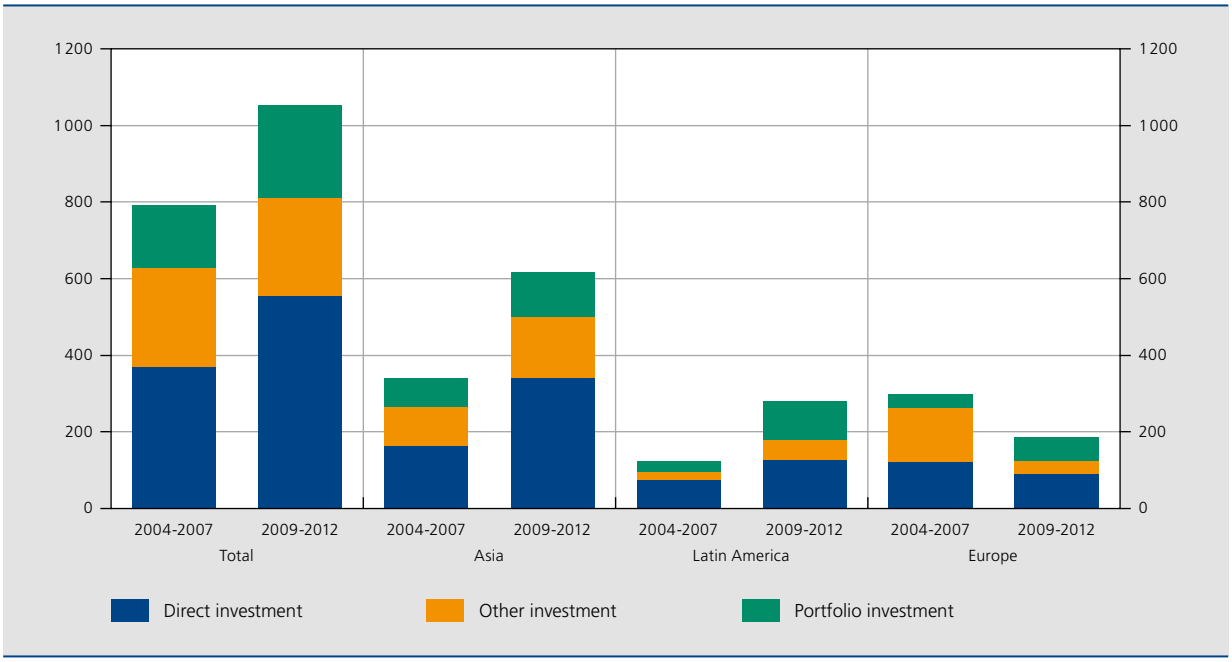
Between 2004 and 2007, emerging economies saw a surge in foreign capital inflows amounting to roughly $ 800 billion a year. The financial crisis of 2008 briefly interrupted those inflows, but from mid-2009 they gathered pace again and actually exceeded the pre-crisis figure (averaging around $ 1 100 billion a year). However, the revival was not equally rapid and strong in all regions.

It was mainly in emerging Europe that capital inflows remained weak, with a particularly meagre contribution from "other investment" (including interbank loans). One reason was that banks operating internationally, particularly those from the euro area which are strongly represented in that region, cut back their financing in the wake of the crisis[1]. In addition to supply factors, demand factors also played a key role. Before the crisis, bank capital flows had still permitted ample lending, but they had thus contributed to the creation of macroeconomic and financial imbalances. The financial crisis triggered a correction of those imbalances which had a serious impact on most economies in the region, since they had to cope with a lengthy period of restructuring and deleveraging. At the same time, most Latin American and Asian economies, as well as Turkey and Russia, saw a relatively rapid

(1) Bank assets held by foreign banks exceed 50 % of GDP in almost all countries of this region, reflecting dominant market shares which may reach 90 % in certain countries (IMF, 2013b).

CHART 6 FOREIGN CAPITAL INFLOWS TO EMERGING ECONOMIES

(in $ billion, annual averages)



Sources: IMF (2014b) and own calculations.

economic recovery attributable partly to the implementation of massive stimulation policies. The better growth figures for those economies were in stark contrast to the persistent economic crisis in the countries of Central and Eastern Europe, suffering from the consequences of the malaise in the euro area.

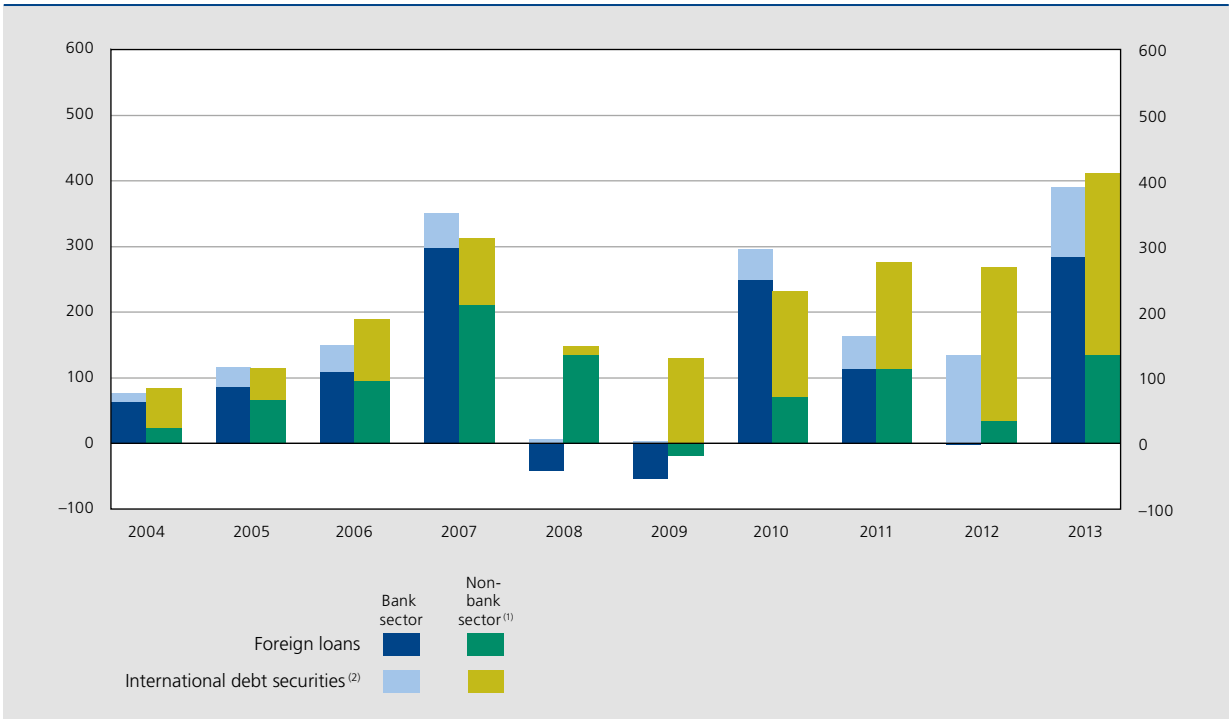
3.1.2 From bank financing to market financing

Overall, the financing mix of emerging economies excluding Asia shows that the flows forming part of "other investment" have recently given way slightly in favour of portfolio investment, while direct investment has continued to dominate total flows. In the period 2004-2007, banks operating internationally, based largely in advanced economies, played a central role in financial intermediation. The capital flows from these internationally active banks to banks – often subsidiaries – in emerging economies increased strongly during that period. Following a contraction during the financial crisis, these bank flows were rather volatile. To compensate for that, emerging economies issued more debt securities. There was a particularly noticeable increase in net issues of international debt instruments by the non-bank sector.

The switch from bank financing to market financing is attributable to a range of factors. In the aftermath of the crisis, internationally active banks were obliged to repair their balance sheets and were therefore less inclined to raise finance outside their core markets. In addition, banks have to comply with the more stringent Basel III regulations, and that may have further curbed their lending. Finally, partly as a result of the unconventional monetary policy measures in the advanced economies, long-term yields on the main bond markets slumped to a record low, so that investors worldwide went in search of more lucrative asset classes, including those of the emerging economies which, furthermore, generally offered better growth prospects than the advanced countries. In addition to country-specific pull factors (namely fundamentals, credit ratings, growth prospects), global push factors also played a significant role in directing financial flows to emerging economies. According to the World Bank (2014), these two factors account for 40 % and 60 % respectively of the increase in capital flows to emerging economies between 2009 and 2013.

The keen interest among foreign investors was a major factor in the further development and deepening of the

CHART 7 FOREIGN FINANCING OF EMERGING ECONOMIES
(in $ billion)



Source: BIS.
(1) The non-bank sector includes both the private and the public sector.
(2) The data on international debt securities are based on the borrower's nationality and not, as usual, on the borrower's place of residence.

financial markets in emerging economies. Two recent developments stand out: the increase in the market financing of non-financial corporations, and the greater scope for governments to issue debt instruments in local currency.

More corporate bond issuance, including offshore

Faced with scarcer bank lending and encouraged by the stronger demand from international investors, firms in emerging economies made extensive use of the international capital markets to satisfy their funding needs. At the end of 2013, the outstanding amount of international corporate debt securities in the emerging economies came to around $ 1 100 billion, or more than double the end-2007 figure[1]. Since market financing often features longer maturities than bank financing, it implies a lower refinancing risk. Thus, in each of the next six years, only one-tenth of this corporate debt will reach maturity.

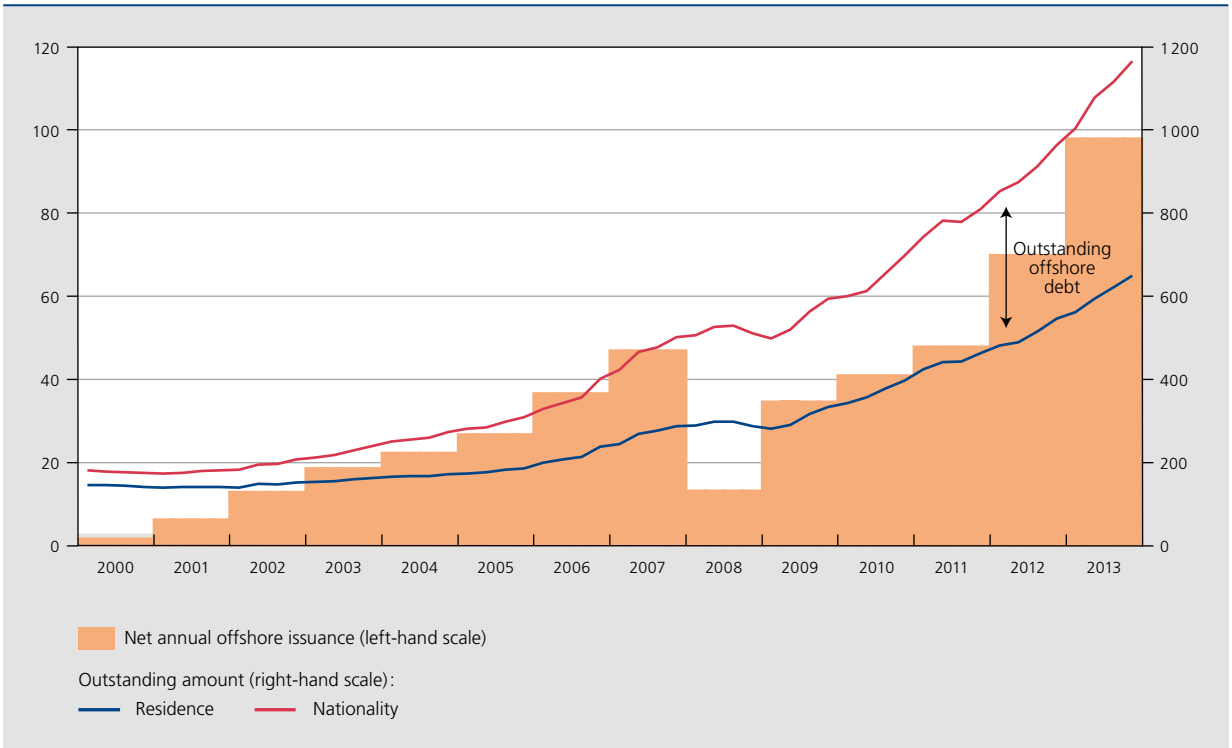
(1) The governments of emerging economies also operate on the international debt markets, albeit to a lesser degree, and the recent expansion of their debt was also less marked. Thus, the outstanding amount of international government debt instruments of the emerging economies has risen by almost 60 % since the end of 2007, reaching $ 750 billion at the end of 2013.

Foreign subsidiaries of firms established in emerging economies accounted for a large part of the debt issuance; thus, at the end of 2013, roughly 40 % of the outstanding debt had been issued offshore. The strong expansion of offshore issuance since the financial crisis is attributable mainly to firms which have their head office in China or Brazil.

It should be remembered that these offshore issues are not included in the balance of payments data since those data are compiled on the basis of the issuer's residence (namely the country in which the subsidiary is established) and not on the basis of the issuer's nationality (namely the country where the subsidiary has its head office). Foreign debt figures based on balance of payments data therefore underestimate the true outstanding amount of external corporate debt. Furthermore, offshore issues are generally denominated in foreign currency, which may increase a country's vulnerability in regard to currency mismatches and hence exchange rate fluctuations. That is a significant risk. For instance, the proportion of offshore corporate debt issued in a foreign currency is 84 % for China and almost 100 % for Brazil (McCauley *et al.*, 2013).

CHART 8 INTERNATIONAL DEBT SECURITIES OF THE NON-BANK PRIVATE SECTOR IN EMERGING ECONOMIES

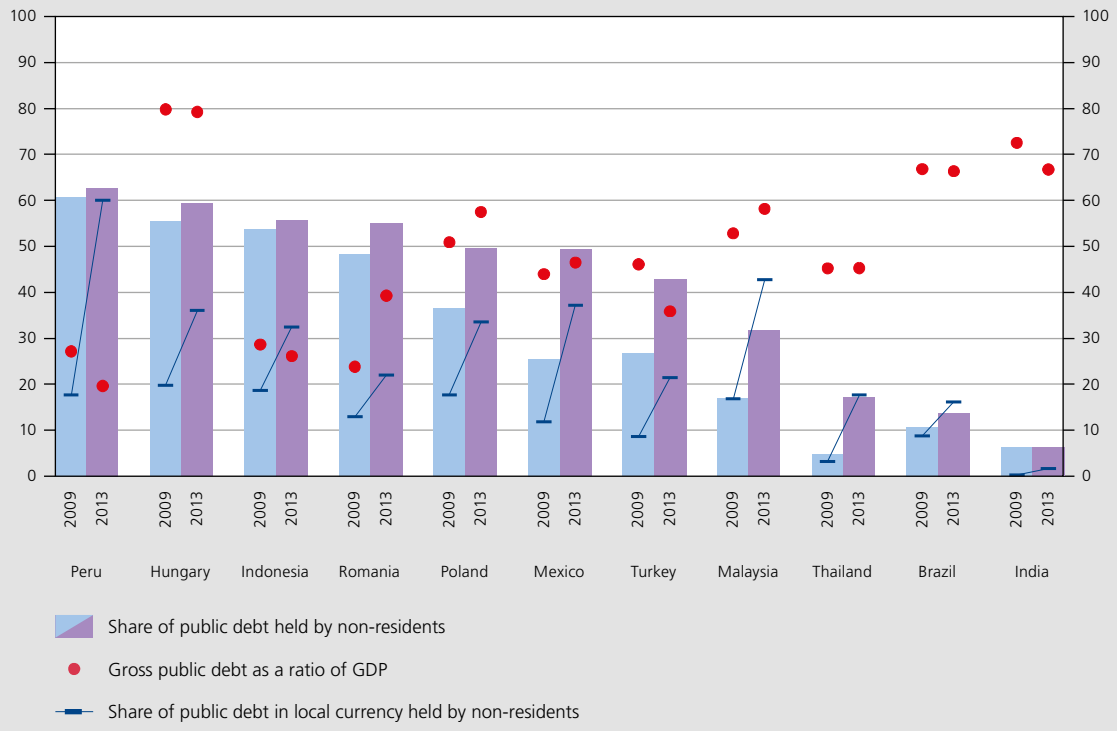
(in $ billion)



Source: BIS.

CHART 9 FOREIGN PRESENCE ON THE PUBLIC DEBT MARKETS OF THE EMERGING ECONOMIES

(in %)



Sources: IMF, Arslanalp & Tsuda (2014).

Growth of government bond issuance in local currency

Since the financial crisis, the foreign presence on the government debt market of emerging economies has also escalated. Thus, the share of non-residents in Thailand's outstanding public debt has quadrupled; in Malaysia and Mexico, that share has almost doubled. In emerging Europe, the rise in foreign participation has been smaller since it was already at a high level, reflecting the close financial integration within Europe. At the end of 2012, it was estimated that foreign investors held around $ 1 000 billion of the public debt of the main emerging economies (compared to $ 500 billion in 2010), of which 80 % originated from foreign non-bank financial institutions, namely large institutional investors, hedge funds and sovereign wealth funds (see Arslanalp & Tsuda, 2014)[1].

Combined with keener foreign interest in the public debt of emerging economies, the growing local investor base made it easier for governments of those countries to issue bonds in their local currency, greatly reducing the risk of currency mismatches[2]. The local public debt market expanded from $ 3 100 billion in 2009 to $ 4 900 billion in 2012, with Brazil, China and India accounting for more than 67 % of that (see World Bank, 2013). It was mainly on these local debt markets that foreign investors considerably strengthened their positions; in many countries they have doubled their positions since 2009. Thus, in 2013, foreign holdings (for which data are available) on the government bond markets in local currency of the emerging economies represented on average 27 % of the total in 2013, compared to just 12 % in 2009. In Peru and Malaysia, non-residents actually hold more than 40 % of government bonds in local currency.

3.1.3 Creation of potential vulnerabilities

Although capital inflows do offer advantages for emerging economies, they also entail a number of risks.

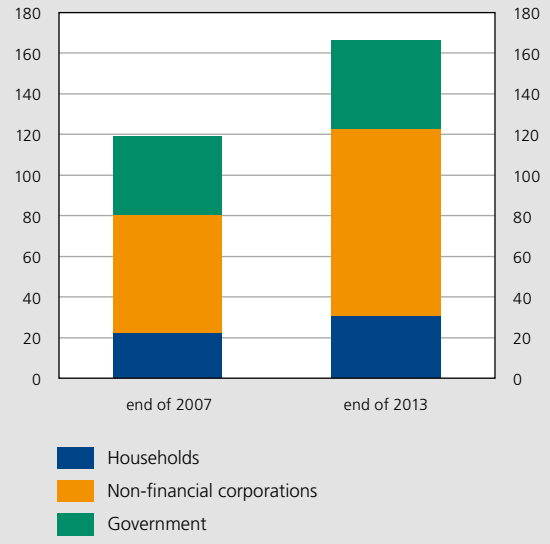
(1) For their study, Arslanalp & Tsuda (2014) used data for 24 large emerging economies which together make up the major part of the investable universe for the public debt of emerging economies.

(2) Firms in emerging markets also issued ever-increasing amounts of debt in local currency. However, foreign shares in that debt remain small, since these markets are illiquid and foreigners are less willing to accept the exchange rate risk as well as the liquidity and corporate credit risks.

First, a growing presence of foreign investors may increase the volatility of the local financial markets. For instance, increased foreign capital inflows make the emerging economies more sensitive to a sudden contraction or reversal of these flows. Liquidity flows of foreign origin tend to be highly pro-cyclical, which means that in good times they are cheap and abundant but rapidly dry up in the event of bad news, e.g. a worldwide rise in interest rates or any deterioration in the domestic fundamentals. That is what happened in the summer of 2013 (see below). It is also noticeable that in good times when there is ample liquidity, investors make fewer distinctions between emerging economies on the basis of their fundamentals, but in bad times they are more inclined to do so. Consequently, in times of adversity, countries with weak fundamentals experience relatively greater volatility. Moreover, excessive inflows over a protracted period may even contribute almost imperceptibly to a deterioration in the fundamentals, e.g. by the formation of asset price bubbles, until a general reversal in investor sentiment suddenly highlights these imbalances.

In addition, the increased presence of foreign investors on local financial markets is no guarantee of more liquid markets. On the Hungarian, Indonesian and Malaysian public debt markets in local currency, there was actually a decline in liquidity (IMF, 2013c). On less liquid markets, a relatively small reallocation of an investor's portfolio may have significant repercussions on prices.

CHART 10 DEBT RATIO OF EMERGING ECONOMIES
(in % of GDP)



Source: BIS (2014).

As already stated, the switch from bank to market financing has not reduced the risk of currency mismatches in the private sector: quite the reverse. Thus, more than 90 % of the international debt securities of firms in emerging economies are denominated in foreign currencies (BIS, 2014).

Finally, the large inflow of cheap liquidity to emerging economies helped to ease financial conditions, which in turn boosted asset valuations and debt accumulation. Many emerging economies therefore face macroeconomic and financial imbalances. Since 2007, both firms and governments have seen their debt ratio increase, by an average of 58 % and 14 % respectively. All this means that emerging economies are more vulnerable to a normalisation of interest rate levels and a reversal of capital flows, which could increase the cost of financing.

3.2 Developments since May 2013

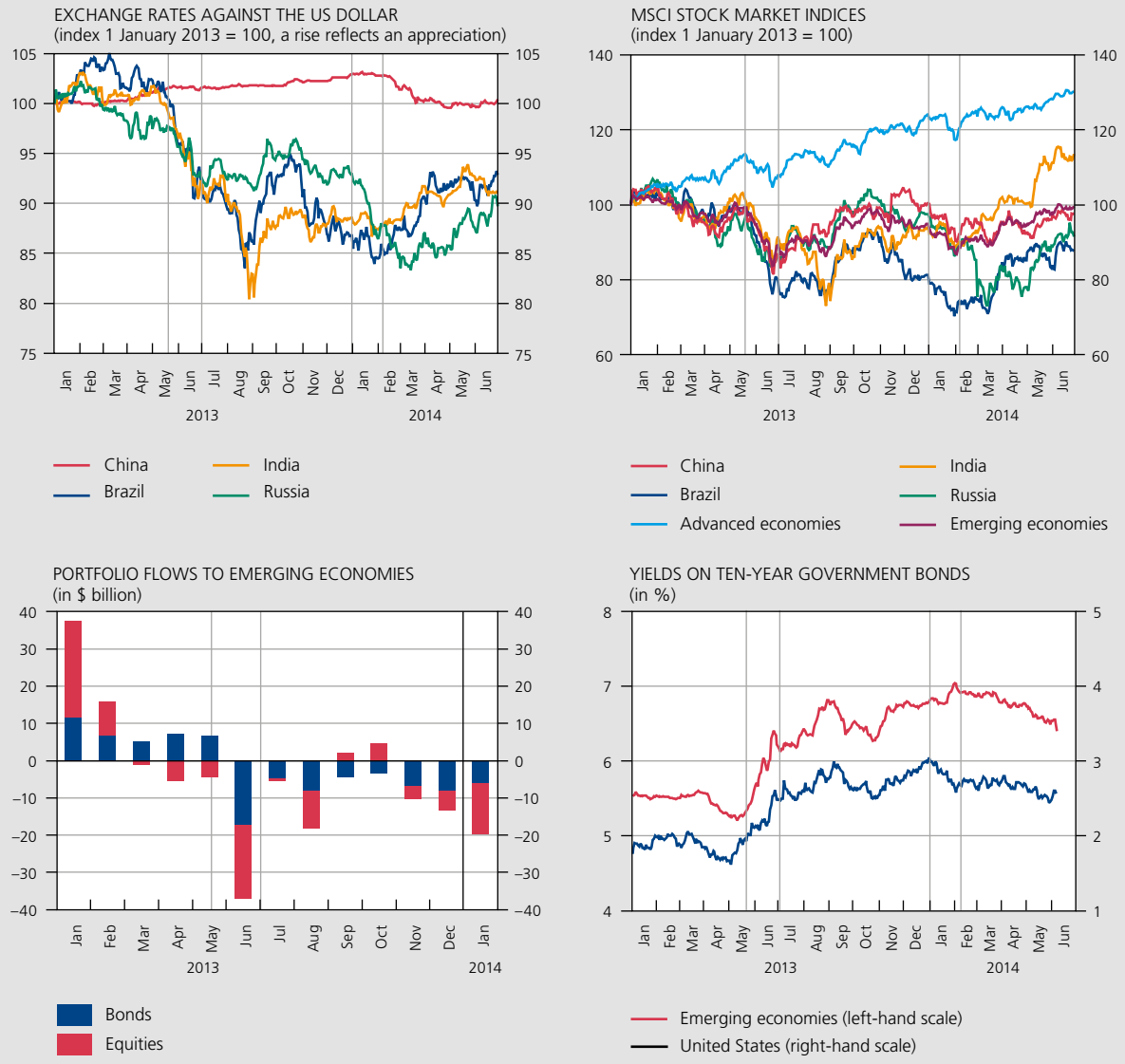
3.2.1 Announcement of a possible normalisation of US monetary policy causes turmoil on emerging economies' financial markets

On 22 May 2013, after a long period of exceptionally accommodative monetary policy in the advanced countries, Ben Bernanke – who was then Chairman of the Federal Reserve – took the financial markets by surprise when he announced that the Fed might reduce its monthly purchases of securities in the near future. The markets interpreted this signal as an indication that the abundant supply of cheap liquidity provided by the Federal Reserve could come to an end sooner than expected, unleashing turmoil on financial markets throughout the world. This period of market stress brought a decline in appetite for risk, a sharp depreciation of some currencies, rising bond yields, falling share prices, and higher financing costs worldwide.

Generally speaking, the emerging markets suffered heavier losses than the advanced economies. Thus, between the end of May and the end of June 2013, the emerging market share indices were down by around 16 %, against a fall of just 7 % for the advanced economies. Over the same period, the Brazilian and Indian currencies depreciated by around 10 % against the US dollar; the Russian rouble depreciated by around 5 %, whereas the Chinese yuan continued to appreciate.

Market expectations of an imminent adjustment to the Federal Reserve's monetary policy therefore led to a tightening of financial conditions worldwide, even before it had actually scaled down its purchase of securities

CHART 11 DEVELOPMENTS ON THE INTERNATIONAL FINANCIAL MARKETS (1)



Sources: Thomson Reuters Datastream, EPFR, BIS.
(1) The vertical lines correspond respectively to the following dates: 22 May 2013, 1 July 2013, 1 January 2014 and 3 February 2014.

or raised its interest rates. At the beginning of July 2013, in order to restore calm, both the European Central Bank and its American and English counterparts gave an assurance that their monetary policy would remain accommodative for some time to come. This forward guidance brought a considerable easing of tension on the financial markets of the advanced economies. However, the stress on the financial markets of the emerging economies lingered on. Thus, from July 2013, the equity markets in the advanced economies bounced back strongly, whereas those in the emerging economies remained rather volatile. Capital flows towards the advanced economies also recovered quickly, while the emerging economies saw a further outflow of funds. The pressure on the exchange rates of some emerging economies (such as Brazil and India) therefore persisted throughout the summer.

Apart from the vulnerabilities already discussed, the markets considered that there had been excessive convergence between the yields and risk premiums of the emerging economies and those of the advanced

economies[1]. In addition, the domestic situation accounted for only a third of these narrow differentials, whereas external factors were the reason for most of the convergence (see IMF, 2013c). A revaluation was therefore necessary. Moreover, many emerging economies also had weaker growth prospects, in contrast to the advanced economies where activity was at last beginning to pick up.

While the autumn proved to be a calmer period for the financial markets, there was nevertheless lingering uncertainty over the emerging economies. At the end of January 2013, risk aversion therefore increased again, triggering a second wave of capital flight.

3.2.2 Various determinants of volatility over three periods

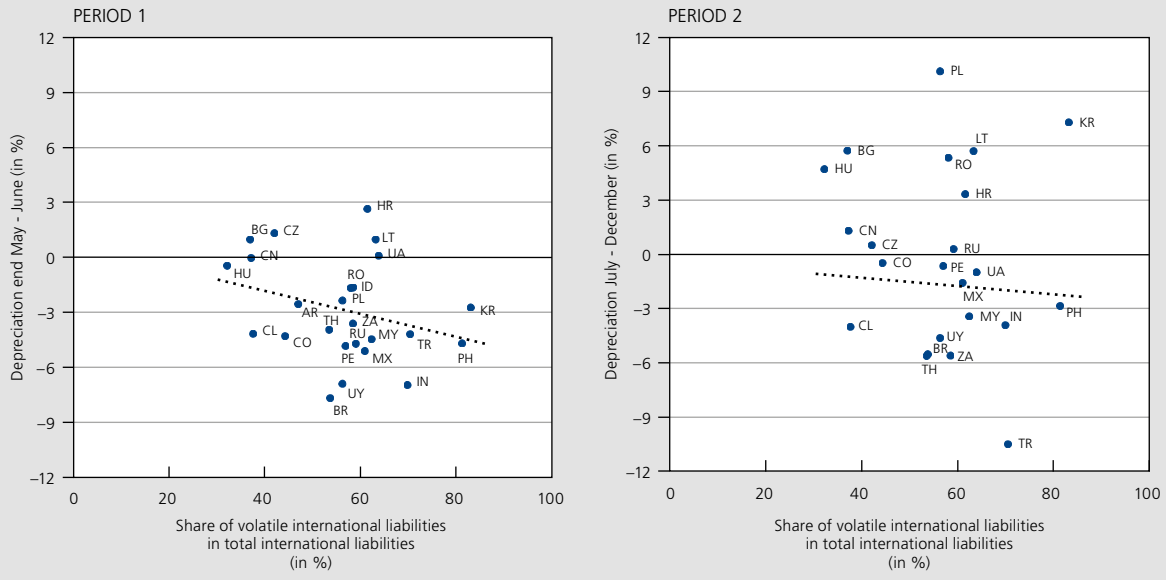
The literature on the importance of fundamentals as a reason for market reactions during the recent periods of financial market volatility in the emerging economies is still at an early stage. Yet it is already evident that the variables determining the volatility on the financial markets of emerging economies have changed over time. At first, push factors were also more dominant, but they subsequently gave way to pull factors.

(1) For instance, in May 2013, the yields on ten-year government bonds issued by Indonesia, Mexico and the Philippines were more than 300 basis points below the average for the period 2005-2012.

Period 1 (end May to June 2013): initial reaction affects all emerging economies, but especially those with a larger, volatile debt position

From the end of May to June 2013, all emerging economies, including those with sounder fundamentals, experienced turbulence on their financial markets. Countries with a current account surplus (such as Korea, Malaysia, the Philippines, and Russia) were also not immune to this turmoil, and their exchange rates came under downward pressure comparable to that experienced by deficit countries (such as Chile, Colombia, Peru, South Africa and Turkey – see chart 13, left). Conversely, countries with a debt position comprising more liquid components proved to be more vulnerable than the others. If, following the example of Eichengreen & Gupta (2014), we take as a proxy the ratio between the stock of portfolio and other investment liabilities and the total international liabilities, we find that the exchange rates of countries with a higher ratio such as Brazil, India, Mexico and Turkey (with a current account deficit) and Korea, Malaysia, the Philippines and Russia (with a current account surplus) were harder hit than those of countries with a relatively less liquid foreign debt (see chart 12, left). The reason is that investors wanted to dispose as quickly as possible of their emerging economy positions, which had escalated in the post-crisis period; that was achievable most easily – and without excessive losses – by reducing the most liquid positions. Furthermore, a parallel exercise based on the total foreign

CHART 12 VOLATILE EXTERNAL LIABILITIES AND EXCHANGE RATES



Sources: IMF, Thomson Reuters Datastream.

capital inflows in the years preceding the summer of 2013 reveals that countries which had recorded strong inflows experienced greater volatility on their financial markets (Mishra *et al.*, 2014). Those countries were apparently more sensitive to a change in global financial conditions, because investors had initially acquired the largest positions there, and therefore incurred the biggest risks. That explains why countries with sound fundamentals also came under relatively severe pressure during the May-June period (Aizenman *et al.*, 2014). This confirms once again the importance of the size and composition of gross positions in the assessment of a country's vulnerability.

Period 2 (July to December 2013): greater differentiation based on fundamentals

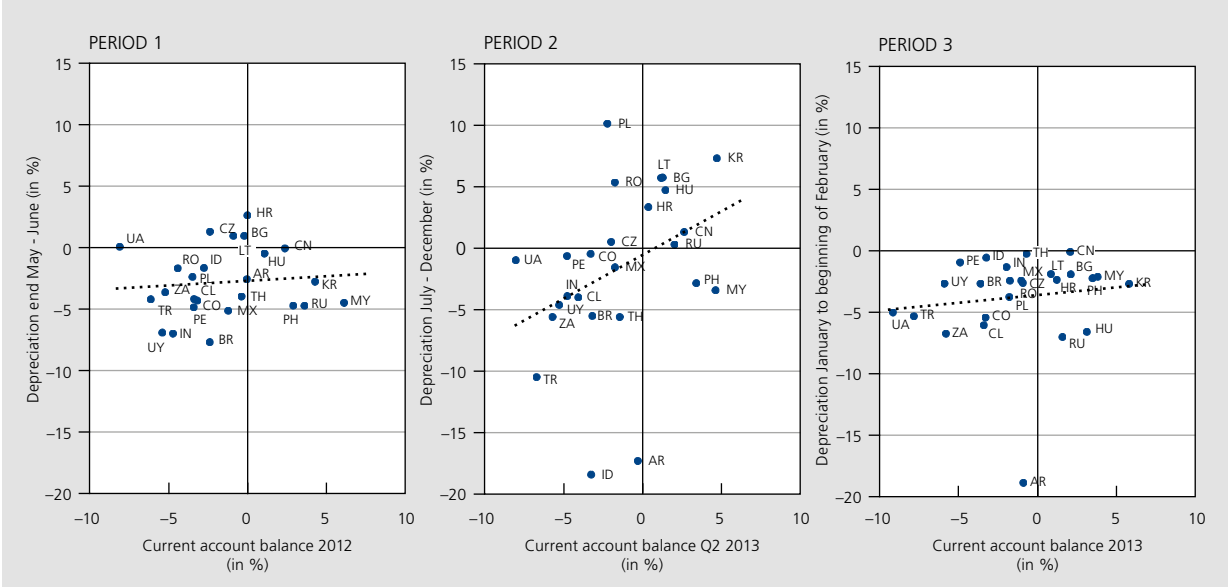
As the summer progressed, investors began to differentiate to a greater degree between emerging economies with strong fundamentals and those with weak fundamentals. This indicates that, following their initial reaction, they realised that fragile economies would find it harder to adapt to a less favourable financial environment. More specifically, investors focused on countries with a large current account deficit which were particularly sensitive to sudden capital outflows. That slightly weakened the link between financial market liquidity and pressure on exchange rates (see chart 12, right), whereas the connection with the current account balance was more obvious (see chart 13, left compared to centre). Thus, Brazil, India, Indonesia, South Africa and Turkey saw their currencies depreciate most sharply during the period July-December 2013. There were also marked depreciations in countries with high inflation and rapid credit expansion.

Countries such as Brazil, India, Indonesia, Russia and Turkey were therefore obliged to raise their key interest rates, introduce capital controls, and/or adopt restrictive macroprudential and fiscal measures. India, Indonesia and Russia among others also deployed their reserves. Conversely, countries with a positive external balance and low inflation, including most emerging countries in Asia and Central and Eastern Europe, were regarded as relatively secure. They therefore experienced little downward pressure on their exchange rate, while some actually encountered upward pressure. That enabled them to maintain their accommodative monetary and fiscal policies and some of them could even ease their policy to stimulate their less dynamic economic activity.

Period 3 (January to 3 February 2014): increasing significance of political tensions and divergent economic prospects

While the capital flight in the summer of 2013 had been caused by a global shock, namely the anticipation of a normalisation of US monetary policy, the financial volatility at the beginning of 2014 was due to specific developments in emerging economies themselves. Thus, in many

CHART 13 CURRENT ACCOUNT AND EXCHANGE RATE



Sources: IMF, national statistics, Thomson Reuters Datastream.

countries, economic activity got off to a weak start, a Chinese shadow bank almost went bankrupt, contributing to a growing awareness of the financial vulnerabilities that had developed in the emerging economies, political friction was intensifying (Thailand, Turkey, Ukraine) and, on 23 January, the Argentine central bank suspended support for the peso, which promptly lost 10 % of its value against the US dollar in a single day. All these circumstances together led to a renewed surge in volatility in the emerging economies at the end of January. Although the losses on equities and bonds were not as heavy as in the summer of 2013, the currency depreciations were on a comparable scale.

Attention now focused mainly on the emerging economies facing political tensions or weak growth prospects. In addition, countries with a large current account deficit continued to be penalised. To keep depreciations within bounds, a number of central banks took even more vigorous action than in the preceding period. For instance, in January 2014, the Russian central bank again sold off reserves. These actions stabilised exchange rates but – combined with the rising political tensions – they also blurred the connection between the scale of the exchange rate depreciation and the indicators that reveal macroeconomic imbalances (see chart 13, right). It is also noteworthy that countries which have implemented policy measures since May 2013 (India and Indonesia) have proved more resilient.

From February onwards, currencies and equities in the emerging economies gradually made up much of the ground lost in January, while at the same time the bond spreads narrowed. Against the backdrop of the renewed appetite for risk, investors in search of yield once again turned to emerging economies. However, confidence remains fragile, as any publication of new information may have adverse effects on emerging economies. Also, we have yet to see the impact of an interest rate hike by the Federal Reserve.

The recent periods of volatility have shown that the emerging economies and capital flows to those countries are still very sensitive to a sudden reversal in investor sentiment, even though most of those economies now have more flexible exchange rates, sounder fundamentals and better capitalised financial institutions than in the late 1990s. However, the above analysis shows that such fundamentals, particularly a current account surplus, are not sufficient to guard against financial market tension. In fact, the strong expansion of gross capital flows and positions since the financial crisis has led to increased vulnerability in emerging economies. The Federal Reserve's announcement that it might scale down its purchases of securities heightened awareness of those vulnerabilities and led to tougher financial conditions in emerging economies. A normalisation of interest rates in the United States could make the situation worse and thus reveal additional vulnerabilities not previously apparent, because the availability of data on the gross flows and positions of emerging economies is still limited, making it difficult to identify vulnerabilities in advance.

Conclusion

The current account (net concept) remains an essential variable in the analysis of a country's economic and financial vulnerabilities. The rapid progress of financial globalisation, as revealed by the unprecedented expansion of international gross capital flows, does bring advantages but it also creates additional risks which are not always taken into account by net concepts. Hence, a broader analysis framework which also incorporates gross concepts is required.

This article has demonstrated the importance of both indicators on the basis of two events : the financial crisis and the recent volatility on the financial markets of emerging economies. This analysis has shown that both net and gross concepts are relevant indicators, each shedding a different light on the location of potential risks.

While the current account has long been an established indicator, it is only since the financial crisis that gross capital flows and positions have attracted significantly greater interest. A start was therefore made recently on compiling and making available better statistics for identifying risks relating to currency and maturity mismatches, since there is still great uncertainty on that subject at present. More transparency in regard to imbalances in gross positions could help policy-makers to devise and implement targeted measures to address these vulnerabilities. Greater transparency also helps investors to make a better assessment of the risks connected with certain markets, so that the valuation of financial assets can be aligned more closely with the underlying fundamentals.

Bibliography

Aizenman J., M. Binici and M.M. Hutchison (2014), *The transmission of Federal Reserve tapering news to emerging financial markets*, NBER, Working Paper 19980.

Arslanalp S. and T. Tsuda (2014), *Tracking global demand for emerging market sovereign debt*, IMF, Working Paper 14/39.

Blanchard O.J., H. Faruqee and M. Das (2010), "The initial impact of the crisis on emerging market countries", *Brookings Papers on Economic Activity 41*, 263-307.

Blanchard O.J. and G.M. Milesi Ferretti (2009), *Global imbalances in midstream?*, Staff Position Note 09/29.

Borio C. and P. Disyatat (2011), *Global imbalances and the financial crisis: Link or no link?*, BIS, Working Papers 346.

BIS (2014), *84th Annual Report*.

Butzen P., W. Melyn and W. Vandevyvere (2010), "Rebalancing global demand", NBB, *Economic Review*, September, 21-38.

Chinn M.D. (2013), "Global imbalances", in G. Caprio (ed), *The Evidence and Impact of Financial Globalization* 3, Oxford, Elsevier, 67-79.

de Sola Perea M. and C. Van Nieuwenhuyze (2014), "Financial integration and fragmentation in the euro area", NBB, *Economic Review*, June, 99-125.

Eichengreen B. and P. Gupta (2014), Tapering talk: *The impact of expectations of reduced Federal Reserve security purchases on emerging markets*, World Bank, Policy Research Working Paper Series 6754.

Frankel J.A. and G. Saravelos (2010), *Are leading indicators of financial crises useful for assessing country vulnerability? Evidence from the 2008-09 global crisis*, NBER, Working Paper 16047.

Gourinchas P.O. (2011), *Global imbalances and global liquidity, Paper presented at the Federal Reserve Bank of San Francisco Asia Economic Policy Conference*, November, 28-30.

Gourinchas P.O. and M. Obstfeld (2012), "Stories of the twentieth century for the twenty-first", *American Economic Journal: Macroeconomics* 4, 226-265.

Hale G. and M. Obstfeld (2014), *The euro and the geography of international debt flows*, CEPR, Discussion Paper 9337.

Hobza A. and S. Zeugner (2014), *The "imbalanced balance" and its unravelling: Current accounts and bilateral financial flows in the euro area*, EC, Economic Papers 520.

IMF (2014a), "Recovery strengthens, remains uneven", *World Economic Outlook*, April.

IMF (2014b), "Moving from liquidity- to growth-driven markets", *Global Financial Stability Report*, April.

IMF (2013a), *Imbalances and Growth: Update of Staff Sustainability Assessments for G20 Mutual Assessment Process*, September.

IMF (2013b), "Financing future growth: The evolving role of banking systems in CESEE", *Central, Eastern and Southeastern Europe – Regional Economic Issues*, April.

IMF (2013c), "Transition challenges to stability", *Global Financial Stability Report*, October.

Jordà O., M. Schularick and A.M. Taylor (2011), "Financial crises, credit booms, and external imbalances: 140 years of lessons", *IMF Economic Review* 59, 340-378.

McCauley R.N., C. Upper and A. Villar (2013), "Emerging market debt securities issuance in offshore centres", *BIS Quarterly Review Q3*, 22-23.

Mishra P., K. Moriyama, P. N'Diaye and L. Nguyen (2014), *Impact of Fed tapering announcements on emerging markets*, IMF Working Paper 14/109.

Noeth B. and R. Sengupta (2012), "Global European banks and the financial crisis", *Federal Reserve Bank of St. Louis Review* 94 (6), 457-480.

Obstfeld M. (2012a), "Financial flows, financial crises, and global imbalances", *Journal of International Money and Finance* 31 (3), 469-480.

Obstfeld M. (2012b), *Does the current account still matter?*, NBER Working Paper 17877.

Ollivaud P. and Schwellnus C. (2013), *The post-crisis narrowing of international imbalances – cyclical or durable?*, OECD, Economics Department Working Papers 1062.

World Bank (2014), "Capital flows and risks in developing countries" in *Global Economic Prospects: Coping with policy normalization in high-income countries*, 96-119.

World Bank (2013), *Recent developments in local currency bond markets*, October (https://www.g20.org).

Household debt : evolution and distribution

Ph. Du Caju
Th. Roelandt
Ch. Van Nieuwenhuyze
M.-D. Zachary

Introduction

In recent decades, household debt in most euro area countries has risen considerably both in absolute terms and in relation to GDP. Belgium is no exception to this international trend. In nominal terms, Belgian household debt has doubled in the past ten years to reach € 217 billion at the beginning of 2014. As a result, the household debt ratio also climbed from 40 to 56.5 % of GDP during that period. Despite this upward trend, however, the debt ratio at the beginning of 2014 was still below that of households in the euro area (63.7 % of GDP).

It is important to monitor the debt ratio closely, as a rising debt ratio may have significant implications for (the volatility of) macroeconomic activity, and possibly also for financial stability if the debt position becomes unsustainable (i.e. if sufficiently large numbers of households default). The usual method of monitoring these risks, and in particular assessing the sustainability of the debt, involves indicators which relate the debt level to the resources available to the borrowers. For that purpose, one can rely on both liquidity ratios, i.e. flows (debt-service-to-income ratio expressing repayments in relation to income) and solvency ratios, i.e. outstanding amounts (debt-to-asset ratio), or a combination of these two concepts (debt-to-income ratio). Debt levels and debt ratios are often estimated on the basis of macroeconomic statistics (national accounts) in view of their timeliness and international comparability. However, these statistics have a major drawback in that they are compiled for the household sector as a whole, so that some risks specific to certain types of households may go undetected (e.g. in the case of uneven distribution of incomes, assets or debt).

This article tries to overcome that drawback by also using microeconomic data to examine the risks inherent in household debt. For that purpose, the writers base their work on the Household Finance and Consumption Survey (HFCS), in which households were questioned in 2010 about their financial situation, plus the Central Individual Credit Register (CICR), which records both the loan contracts and defaults. These data have the advantage of measuring the financial health at the level of the household or individual. The microeconomic data, and particularly those from the HFCS, also make it possible to link debt to socio-economic variables, such as age and income. In the CICR, that analysis is only possible on the basis of age, permitting the identification of vulnerable groups within a population. Moreover, debt sustainability often also depends on these socio-economic variables, and particularly on age. Young people frequently expect to see their income increase during their career, so that they can generally afford a heavier debt in relation to their current income, particularly as they need to make substantial investments. This aspect has to be taken into account in assessing sustainability. Thus, there may be demographic reasons for a high debt ratio at the level of the economy as a whole (e.g. if there is a larger proportion of young people in the population).

The article gives a detailed account of the evolution and distribution of Belgian household debt. It is arranged as follows. Section 1 explains, in theory, why and at what point households take on debt. Section 2 presents the indicators for assessing debt sustainability, and takes a closer look at the databases used, which can be divided into macroeconomic data sources (national accounts) and those providing microeconomic data (HFCS, CICR).

Section 3 uses these sources to investigate the evolution and distribution of debt in Belgium and in the euro area, distinguishing between mortgage loans (secured) and consumer credit (unsecured). Section 4 uses debt ratios and thresholds to identify households with excess debt in the various age and income categories. It also examines how debt sustainability responds to a range of shocks (income, interest rate and asset price shocks) both on the basis of the HFCS and *ex post* on the basis of defaults recorded by the CICR. Finally, the conclusion gives a brief summary of the main findings of the analysis.

1. Theory : the role of debt for households

Economic theory, and in particular the life cycle theory (Ando and Modigliani, 1963), considers the accumulation and repayment of debt during life as a normal – even crucial – process for individual households. According to the life cycle hypothesis, consumers aim at a stable consumption corresponding to the resources which they expect to have at their disposal during their life (permanent income). This consumption smoothing throughout life is possible only by building up and repaying debt via financial intermediation, whereby the resources of economic agents with a temporary surplus (disposable income exceeding permanent income) can be allocated to agents with a deficit (disposable income less than permanent income). In so far as this process is accompanied by a more efficient allocation of consumption, it enhances the well-being of both the debtor and the creditor. Since income normally increases during working life, young households generally borrow a relatively large amount compared to their disposable income. At the same time, at an early stage in their life they make substantial investments (such as buying a home), which entails taking on debt.

However, the life cycle theory is based on the assumption of a population of perfectly rational consumers, who also know exactly what resources they will accumulate during their life. In practice, the future income situation is often unknown – perhaps with over-optimistic expectations – and major adverse economic shocks may occur, such as a rise in unemployment, a fall in asset prices or a reduction in productivity, all factors which may become persistent. These shocks may reveal that the debt level is based on an over-estimate of permanent income, and therefore constitutes excess debt. Thus, excess debt levels are often the consequence of over-optimistic expectations and/or failure to take account of risks concerning the future progress of the economy and/or the personal situation (e.g. in regard to the individual's health), and are always bound to affect part of the population.

However, it is necessary to prevent excess debt from becoming systemic and concerning a large section of the population. Apart from personal suffering and loss of well-being for the individual or the household, a high debt level may have considerable detrimental effects for the economy as a whole. In macroeconomic terms, a high debt level may make household consumption more sensitive to (unexpected) interest rate or income shocks, etc. In so far as these (negative) shocks are reflected in household consumption (owing to financial restrictions and/or an inadequate capital buffer), this greater volatility may seriously damage well-being. In the event of a financial bust, these shocks may also trigger a deleveraging trend which in turn is liable to reinforce the downward economic spiral (known as a "balance sheet recession"). In addition, excessive debt levels may impair financial stability, as failure to honour commitments leads to a loss of value for creditors, often concentrated in the banking sector, especially in the case of household debt. Finally, excess debt often exacerbates inequality between economic agents, so that a change in fiscal and/or monetary policy could have significant (and perhaps unintended) distribution effects between debtors and creditors.

In order to examine whether households face immoderate or excessive debt, it is necessary to look at what is happening at microeconomic level, as well as considering the macroeconomic aspect, as the financial stability of households needs to be assessed case by case, in contrast to the financial position of governments, for example. In this regard, the distribution aspects are crucial. Household debt at the level of the sector as a whole may be accompanied by substantial income flows or assets concentrated among non-indebted households. The macroeconomic figures have the advantage of providing a timely picture of general trends, while the microeconomic data permit a more accurate evaluation of the risks associated with the debt of (certain groups of) households.

2. Debt indicators

The theoretical framework of the life cycle shows that, in order to assess debt sustainability, it is necessary to take account of various factors. Apart from debt, interest rates and disposable income, there are other important variables such as age and level of education (linked to expected or permanent income), or assets. Hence the need to make use of multiple sources (both microeconomic and macroeconomic).

Debt sustainability is generally assessed not only according to the debt level (measured in euros or in relation to GDP) but also on the basis of indicators which link debt

to the debtors' available resources. For that purpose, it is possible to use both liquidity ratios and solvency ratios, or a combination of the two concepts. In the economic literature, the most common indicators – which are also used in this article are as follows :

– debt-to-income ratio : outstanding debt in relation to income ; this indicator measures the number of yearly incomes (net or gross) needed to repay the outstanding debt.
– debt-service-to-income ratio : the amount of capital and interest to be repaid in relation to income ; this indicator measures the proportion of income (net or gross) allocated to debt repayment.
– debt-to-asset ratio : the outstanding debt in relation to all financial and immovable assets ; this indicator measures whether the debt incurred can be repaid by liquidating the available (movable and immovable) assets.

The indicators range between zero (no debt) and infinity (no assets or income). The higher the ratio, the greater the risk of the debt becoming unsustainable. Section 4.1 defines thresholds for these indicators beyond which debt is considered unsustainable. The indicators for assessing the size of the debt in relation to income (debt-to-income ratio and debt-service-to-income ratio) concern the liquidity position of households, and make it possible to determine whether the household can meet its commitments with its current income flow. More specifically, they define the households' repayment effort, either in terms of the proportion of current income devoted to debt repayment (debt-service-to income ratio), or from the point of view of the time required to repay the entire debt (debt-to-income ratio). The indicator linking debt to assets concerns household solvency and assesses the proportion of the debt that can be repaid by liquidating assets immediately, assuming that is possible. These indicators are subject to different macroeconomic shocks. Thus, an interest rate shock will essentially affect the debt-service-to-income ratio, whereas a fall in property prices will primarily affect the debt-to-asset-ratio. Excess debt generally implies that both the liquidity and the solvency of households are affected. Thus, a household with a high debt-to-income ratio may be unable to meet its commitments with its current income, but does not have a debt problem since it can sell assets to pay off the debt. Conversely, a household with weak solvency may never encounter problems if it has a sufficiently large, permanent and secure income flow.

It is important to measure these indicators on the basis of both macroeconomic and microeconomic information. The macroeconomic indicators are devised for the sector as a whole and therefore disregard distribution aspects. If the distribution of debt, income and/or assets is uneven, that may conceal certain problems. The microeconomic information on distribution is therefore vital to supplement the macroeconomic analysis. For their part, the microeconomic indicators give the values for indebted households, so that the risks for the economy as a whole may be overestimated. Since the microeconomic information is confined to the group of indebted households, the resulting median or average values are generally higher than the macroeconomic indicators. For a number of indicators, and especially for the debt-service-to-income ratio, microeconomic data are likewise an important supplement to macroeconomic data. For instance, capital repayments are not recorded fully, if at all, in the macroeconomic statistics and they can only be determined on the basis of a range of assumptions, notably concerning the maturity of the outstanding debt. The microeconomic information, which is based on survey data, offers a direct reading of this indicator and/or makes it possible to test the assumptions contained in the macroeconomic information.

The macroeconomic information on debt, income and assets is based largely on the national financial (and non-financial) accounts. The main advantage of these data is that they offer a complete picture of households and are available rapidly. They also lend themselves to international comparison, particularly within the EU where the statistics are compiled by the same harmonised methodology, namely the European System of National and Regional Accounts (ESA). In the case of the financial accounts, the national accounts permit a subdivision by sector (households, corporations, etc.) and by financial instrument (loans, equities, etc.). Nonetheless, the macroeconomic statistics also have their drawbacks. Thus, the analysis has to take account of sometimes significant revisions, and also suffers from a number of gaps which have repercussions on the assessment of debt sustainability. For instance, these statistics do not record the value of the housing stock. However, most of the institutions compiling statistics, including the NAI for Belgium and the ECB for the euro area, have produced good quality estimates lately. Another shortcoming of the national accounts concerns the recording of the repayment burden, particularly the capital redemption, so that assumptions must inevitably be used (see section 3.3).

This article also analyses debt on the basis of two microeconomic sources. The first is the Central Individual Credit Register (CICR) which provides rapidly available time series on individual borrowers. Its job is to record all borrowings (positive central register), consumer credit (instalment loans and hire purchase), mortgage loans concluded for private purposes by individuals, and any defaults relating to such credit (negative central register).

Authorised overdrafts, namely credit facilities which enable consumers to exceed the amount available on their current accounts, are also recorded. Furthermore, lenders are required to consult the register before granting any credit to individuals, encouraging a more responsible approach. Since these data must be recorded by law, they are exhaustive; they are available per type of credit (mortgage loans and consumer credit: instalment loans, hire purchase and credit facilities) and can be broken down according to the borrowers' age, number of contracts or initial contract amount.

However, the CICR contains hardly any further information on borrowers. For instance, it says little about the borrowers' socio-economic characteristics (only their age) and nothing about their income or assets. To overcome these defects it is necessary to use supplementary, more structural data. The second microeconomic source, the HFCS, fills these gaps. The data come from a survey on the financial behaviour of households in the euro area, conducted by a research network set up specifically for the purpose (Household Finance and Consumption Network – HFCN). The Bank's Economic Review has already given a detailed account of the operation of the HFCN and the organisation of the HFCS in Belgium (see Du Caju, 2012 and 2013). The interviews for the first wave were conducted in 2010 in most countries, including Belgium. Altogether, more than 62 000 households were polled in the euro area, including 2 364 in Belgium. The survey data at household level offer the advantages of permitting separate examination of the group of indebted households and supplying information on the distribution of debt across those households, possibly broken down according to the various characteristics of the types of household considered. Conversely, they have the drawback of never being exhaustive (e.g. because of incomplete reporting by the persons questioned) and being published infrequently and after some delay. That is why the survey data always supplement but never replace the macroeconomic statistics.

3. Evolution and distribution of household debt

This section deals with the composition and pattern of household debt and calculates the debt indicators defined above for Belgium and for the euro area. On the basis of microeconomic data (HFCS), the authors also calculate these indicators for Belgium for a number of age groups and income categories. This subdivision can identify vulnerable groups. According to the life cycle theory, the level of debt varies according to age, in particular, highlighting the need to assess debt sustainability per age group. An analysis by income is also relevant, as the same debt-to-income ratio may entail a greater risk for low-income households since their savings ratio is generally low and they therefore probably have only limited assets. In addition, if they encounter a negative shock, these households risk having to cut back sooner on essentials as their "margin" of non-essential consumption is relatively small.

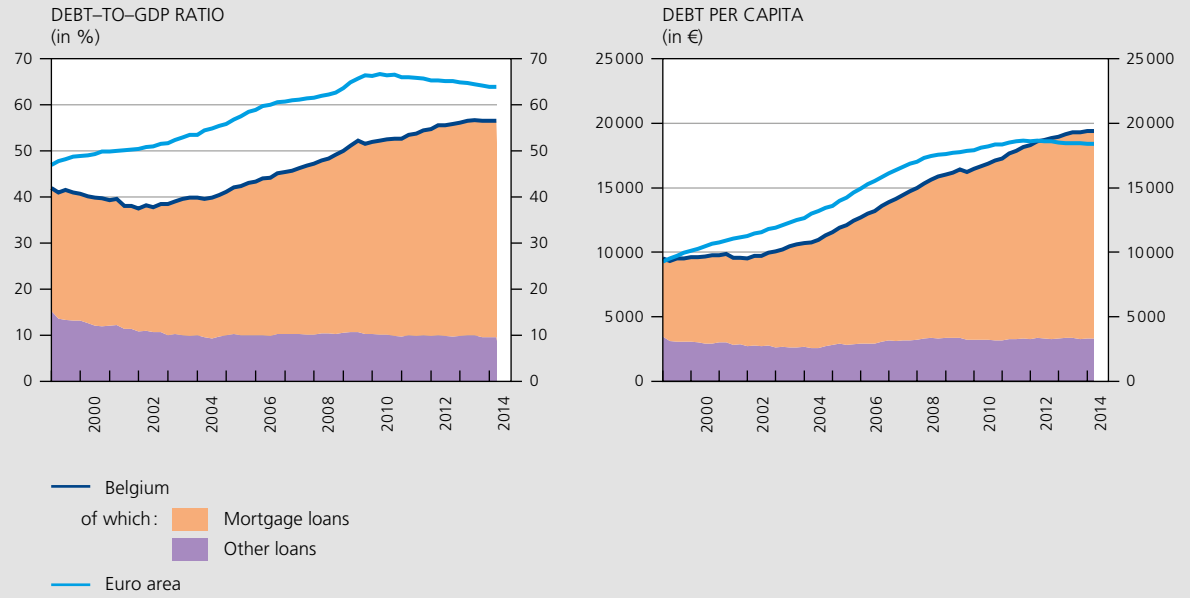
3.1 Household debt levels

Over the past decade the absolute nominal debt of Belgian households has doubled to reach € 217 billion, raising the household debt ratio from 40 % of GDP in 2003 to 56.5 % at the beginning of 2014. A comparable increase was seen in the euro area, at least up to mid-2010 when the crisis forced households in some countries to reduce their debt levels. Despite a noticeable upward trend, the debt ratio in Belgium at the beginning of 2014 was still below the figure for the euro area (63.7 % of GDP). Viewed in relation to the population, the debt continues to pursue an upward trend, though in this case the rise is exaggerated by inflation. However, unlike the debt ratio, the debt level per capita in Belgium (€ 19 400) exceeded that in the euro area at the beginning of 2014 (€ 18 400). Compared to the debt ratio as a percentage of GDP, however, the per capita debt level says less about the associated risks since it is not related to income and/or assets. It should be noted that the level of financial assets per capita of Belgian households is considerably higher (€ 98 500) than for households in the euro area (€ 62 900). Similarly, per capita disposable income in Belgium (€ 21 400) exceeds the figure for the euro area (€ 19 000).

The macroeconomic assessment of the financial position of households in Belgium is therefore relatively favourable, particularly taking account of the relatively low debt level and the high level of assets which they own. Be that as it may, from a macroprudential point of view it is necessary to pay attention to the fact that the debt ratio is still rising significantly, given the macrofinancial risks mentioned above (see section 2), and particularly the increased sensitivity of household spending to fluctuations in interest rates, unemployment and asset prices. Moreover, it may be that favourable macroeconomic figures – i.e. the figures for the economy as a whole – conceal more serious problems for indebted households or for a subgroup of that population.

In Belgium as in the euro area, the main reason for the rise in household debt is the significant increase in mortgage lending (Bruggeman and Van Nieuwenhuyze, 2013). At the beginning of 2014, mortgage loans represented

CHART 1 MACROECONOMIC EVOLUTION IN HOUSEHOLD DEBT LEVELS



Sources: ECB, NBB.

47 % of GDP, whereas they were in the region of 30 % of GDP in the first half of the 2000s. The marked increase in property prices has driven up the average amount borrowed. Consumer credit has remained stable at around 10 % of GDP.

This upward trend in the debt ratio over the past decade is often attributed to the easing of credit access conditions for households, resulting partly from a series of financial innovations (such as the extension of loan maturities). In addition, the increase in the debt occurred in a context of favourable financial conditions (for example, in relation to interest rates or loan-to-value ratios). These conditions were often encouraged by low nominal and real interest rates and by fierce competition between banks, reflected in particular in narrow margins on mortgage loans. The growth of mortgage loans is also linked to tax factors, in view of the often more favourable treatment of interest charges that some governments have introduced over the years. Thus, the expansion of mortgage lending in Belgium since 2005 has coincided with the introduction of a new tax treatment for mortgage loans contracted from that date onwards, bringing a more transparent advantage for those loans in the form of the "housing bonus". In addition, since 2009, one element of the "recovery plan" established a range of tax incentives for energy-saving investments ("green loans"). From 2009 to 2011, when most of those measures were suspended, these concessions led to a steep rise in the number of loans for renovation purposes. These factors enabled households to afford larger loans for the same level of income or assets.

The above statistics, based on the financial accounts, give some insight into the financial situation of all residents or households, whether they have debt or not. However, the data taken from the HFCS for 2010 reveal that less than half of households have debt. Participation in the credit market – i.e. the proportion of households with one or more loans – stands at 44.8 % in Belgium compared to 43.7 % in the euro area. Taking these indebted households on their own, and more specifically the value of the outstanding debt for a household in the middle of the distribution, we obtain a conditional median value for the outstanding debt. In Belgium, a "median" household has a debt of € 39 300 (median value), compared to € 21 500 in the euro area.

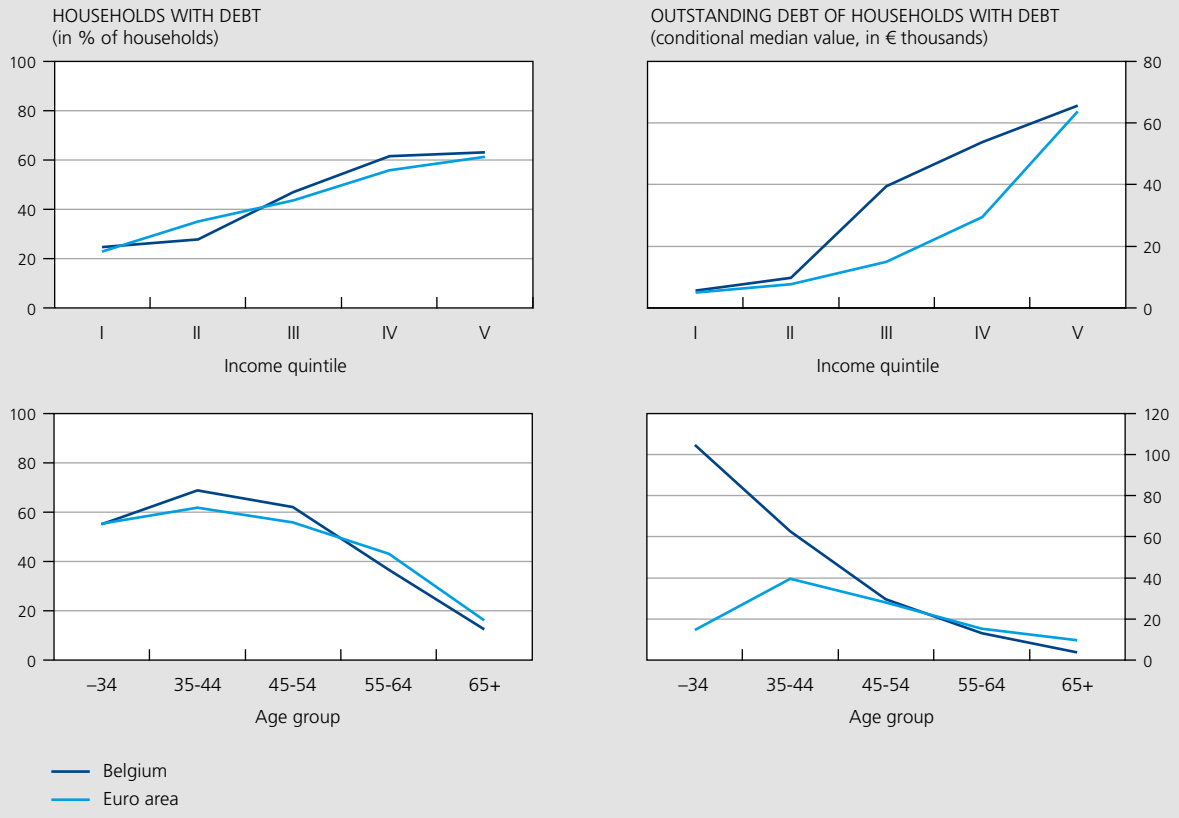
The debt level of Belgian households can be examined in more detail by dividing households according to age group and income quintile, the first quintile comprising the 20 % of households with the lowest incomes and so on, up to the fifth quintile containing the 20 % of households with the highest incomes. Unsurprisingly, credit market participation increases with income: households with a larger income are more inclined to contract and repay loans. In addition, the banks are more willing to lend

to them. The income profile of credit market participation in Belgium is comparable to the general profile in the euro area. It is mainly in the central income quintiles that the median outstanding amount for a household with debt in Belgium is higher than the figure for the euro area.

In Belgium as in the euro area, the age profile of credit market participation is bell-shaped. Participation increases initially with age, reaching a peak for the 35-44 age group, before subsiding. This pattern illustrates the life cycle mentioned above. In the euro area, the bell-shaped profile of the participation rate is also reflected in the outstanding amount of the debt of the various age groups. In Belgium, in contrast to the euro area, the youngest indebted households are also typically those with the largest outstanding debt. The reason lies in the differing home ownership profiles and the associated mortgage loans. In relative terms, the rate of home ownership is higher for Belgian households (69.9 %) than for euro area households (60.1 %), a discrepancy which is particularly marked for the youngest age group: in Belgium, 46.4 % of households in which the reference person is under 35 years of age own their home, compared to just 31.9 % in the euro area. Moreover, property in Belgium is more expensive on average, and the associated loans are therefore larger than in the euro area.

The income and age profiles of household debt vary according to the type of loan. Households can contract mortgage loans against the collateral of their own home or other property. The non-mortgage debt taken into account by the HFCS includes credit lines and overdrafts, outstanding amounts on credit cards and other loans, such as car loans and other consumer credit (see HFCN, 2013). Focusing on Belgian households and considering the factors 'income' and 'age' together, we find that it is mainly the youngest households in the highest income quintiles that contract mortgage loans (over three-quarters of such households, compared to three in ten for the population as a whole) and that, in relative terms, those households have the largest outstanding debt (on average, double the median for the population

CHART 2 HOUSEHOLD PARTICIPATION RATE AND DEBT LEVELS
(breakdown by income quintile and age group)



Source: NBB (HFCS).

CHART 3 HOUSEHOLD DEBT LEVELS IN BELGIUM

(breakdown by type of debt, income quintile and age group)

Households with mortgage debt
(in % of households)

	I	II	III	IV	V	Total
–34	8.4	26.4	41.7	71.9	75.5	41.1
35-44	14.3	12.8	62.9	67.3	80.3	55.2
45-54	32.1	19.7	42.7	58.4	51.7	43.9
55-64	n.	18.6	23.1	16.8	27.6	18.1
65+	3.2	3.5	n.	n.	n.	3.0
Total	9.2	13.2	31.1	46.8	52.4	30.5

Outstanding amount of mortgage debt
(conditional median value, in €)

	I	II	III	IV	V	Total
–34	94 000	99 000	128 000	125 000	140 000	125 000
35-44	55 000	76 345	60 000	57 706	90 000	70 000
45-54	18 504	69 728	40 000	36 700	49 500	40 000
55-64	n.	30 000	25 000	20 000	30 000	25 000
65+	18 000	11 000	n.	n.	n.	18 000
Total	50 000	65 119	63 000	75 180	75 000	70 000

Households with non-mortgage debt
(in % of households)

	I	II	III	IV	V	Total
–34	17.2	27.3	31.9	36.2	19.3	26.4
35-44	20.7	19.3	52.7	31.0	30.4	31.3
45-54	24.0	43.0	24.3	39.8	31.8	32.7
55-64	24.3	18.2	26.1	27.9	31.8	25.4
65+	12.7	7.4	12.0	7.7	6.4	10.1
Total	18.0	19.2	27.0	28.8	27.8	24.2

Outstanding amount of non-mortgage debt
(conditional median value, in €)

	I	II	III	IV	V	Total
–34	1 500	3 000	7 200	7 330	7 500	5 750
35-44	1 300	4 500	4 500	9 062	7 300	6 000
45-54	5 000	3 000	3 500	6 906	10 000	7 000
55-64	2 200	2 400	4 300	2 500	7 847	5 000
65+	1 100	1 200	7 200	4 000	3 750	2 725
Total	2 000	2 765	5 000	7 000	8 280	5 037

Source: NBB (HFCS).

as a whole). Also, in comparison with the euro area, low-income Belgian households with a current mortgage loan have a larger outstanding debt, on average (see Du Caju, 2013). Non-mortgage loans are distributed more evenly across the various income and age groups, although they are slightly less common for the older age groups and the lower-income households. The highest outstanding amounts occur in the case of young households and households of average age from the highest income quintile. However, the amounts concerned are still fairly small, in median values. Moreover, young households in the euro area contract non-mortgage loans far more often than the corresponding households in Belgium (see Du Caju, 2013).

3.2 Debt in relation to income: the debt-to-income ratio

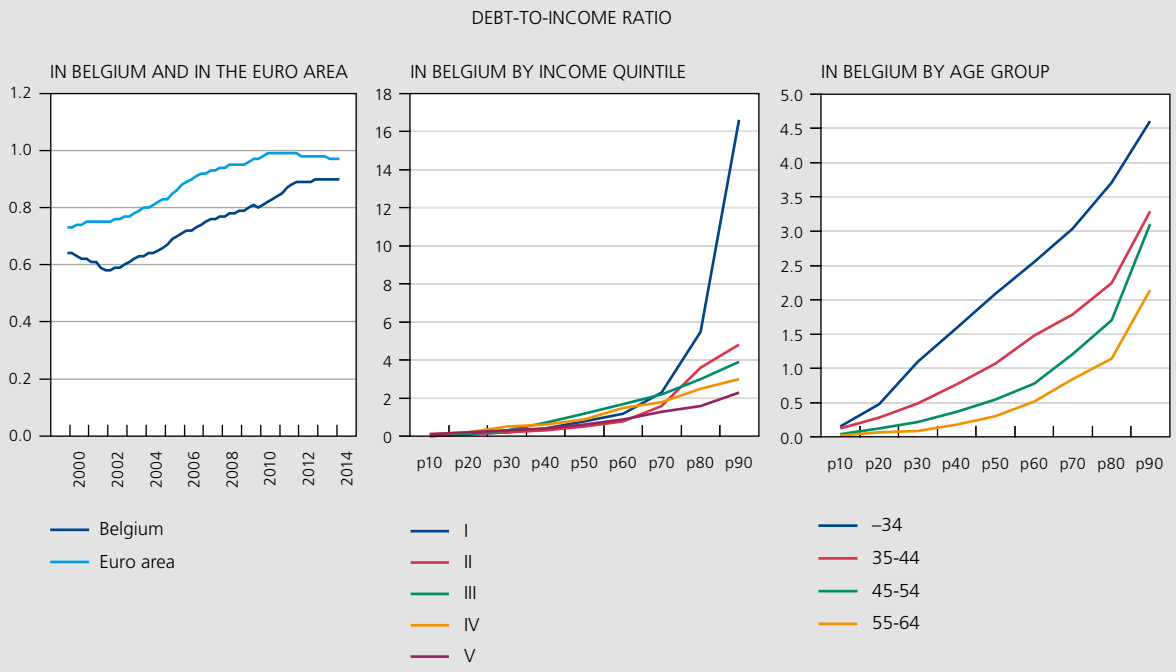
The level of the outstanding amount of household debt does not in itself offer any information on the households' ability to repay the debt. That is why debt has to be viewed in the context of the resources which households have at their disposal to repay it. The first indicator used in this context relates debt to income. The debt-to-income ratio expresses the relationship between the outstanding debt level and households' disposable income. It estimates the number of years' income necessary to repay the outstanding debt and can be considered a more detailed measurement of the debt as a percentage of GDP: debt is now compared to household income rather than the income generated by the economy as a whole.

The macroeconomic view obtained by linking debt to income is comparable to the view of the debt ratio expressed as a percentage of GDP. In the past decade, that ratio has risen significantly from 0.64 in 2004 to 0.90 at the beginning of 2014, though it is still below the figure for the euro area.

However, when assessing this indicator at macroeconomic level, it is necessary to bear in mind that it is calculated for the entire household sector, and that debt is therefore expressed in relation to overall income, i.e. not just the income of indebted households but also that of households with no debt. Moreover, the average does not reveal anything about the distribution of debt in relation to income within the population. Thus, the analysis based on this macroeconomic indicator may underestimate the debt-to-income ratio of indebted households, and the risks inherent in household debt. The microeconomic data permit a more accurate interpretation of this indicator. The HFCS asks households about their gross income, which includes not just labour incomes but also transfer incomes (pensions and miscellaneous benefits) and property incomes (rental income, interest, dividends).

CHART 4 HOUSEHOLD DEBT IN RELATION TO INCOME: THE DEBT-TO-INCOME RATIO

(macroeconomic and microeconomic views)



Sources: ECB, NBB (HFCS).

In Belgium, the median indebted household (in the middle of the distribution) has a debt-to-income ratio of 0.80, whereas this conditional median value is only 0.62 in the euro area.

If we examine the situation of Belgian households in more detail, and focus on the distribution per income quintile and per age group, the HFCS shows that debt in relation to income can reach quite a high level, especially for households in the lowest income quintile. Thus, 20 % of indebted households in this income quintile have a debt-to-income ratio of more than 5. However, it should be noted that only a quarter of households in this quintile is indebted, so the highest deciles of this ratio concern a small number of households, and the values are therefore estimated on the basis of a relatively small number of observations. The debt-to-income ratio is also substantial for the youngest households, and that applies to the whole distribution. In accordance with the life cycle theory, that ratio declines with age. Thus, 10 % of the youngest indebted households have a debt-to-income ratio of more than 4.5. It should be noted that just over half of households in this age group are indebted. It is therefore evident that the highest ratios may occur in the case of young and/or low-income households. Apart from the level of the highest ratios (which is difficult to estimate), it is the number of households with a ratio in excess of a critical value that is particularly important, as is demonstrated below (see section 4.1).

3.3 The repayment burden: the debt-service-to-income ratio

The debt-service-to-income ratio measures the proportion of income that has to be reserved for paying off the debt (capital and interest). As this indicator compares two flow variables, it provides the most direct estimate of the liquidity position of households. Moreover, it is easy to interpret. If, in an extreme case, the ratio is more than 1, that means that the household concerned clearly faces liquidity problems and that, if it lacks liquid assets or additional credit, it cannot meet its commitments. In practice, since households also have to cover other expenditure, the problems will arise at an earlier stage, namely at a considerably lower level of that indicator.

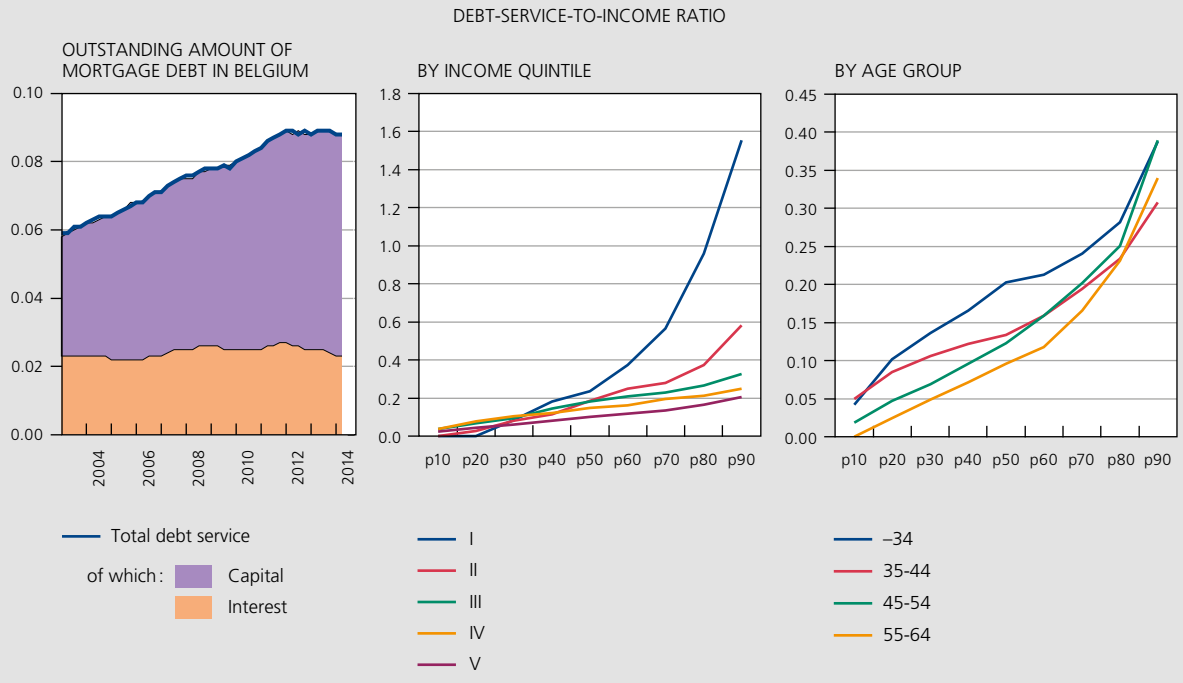
The macroeconomic analysis of this indicator is hampered by the fact that the repayment cost is not recorded in the national accounts. The only available data are the

outstanding debt (financial accounts) and the interest (income accounts). However, on the basis of the outstanding debt and the average implicit interest rate on that debt (MIR survey), it is possible to obtain an indicative estimate of the repayment burden by making a number of specific assumptions regarding the average residual term and the method of repaying these borrowings. For simplicity, this study only calculates the repayment burden relating to outstanding mortgage loans. In Belgium, mortgage loans have the advantage that they are normally repaid in fixed monthly instalments, and the average residual term is relatively stable. This analysis assumes that the average residual term is ten years. Under these assumptions, the debt-service-to-income ratio in Belgium has risen steadily over the past decade, from 6 % of total disposable income in 2004 to 9 % at the beginning of 2014. A breakdown of this cost between capital repayments and interest shows that the increase is due entirely to higher capital repayments. Despite the increasing debt volume, interest charges have remained stable overall, possibly as a result of the more favourable financing conditions during the period concerned. It should be noted that this ratio is calculated in relation to total disposable income, so that it also includes the income of households with no debt.

The microeconomic data from the HFCS show that the distribution of the debt-service-to-income ratio in Belgium is comparable to that in the euro area. However, as in the case of debt in relation to income, it appears that the median indebted Belgian household has a slightly higher ratio than the equivalent household in the euro area: in Belgium, the conditional median value of the debt-service-to-income ratio is 0.14, compared to 0.11 in the euro area. The distribution of the debt-service-to-income ratio per quintile is fairly marked. The ratio can reach very high values for a low-income household. Thus, in the case of 20 % of indebted households in the lowest income quintile, the ratio exceeds 0.80. However, it should be borne in mind that only a quarter of households in this income quintile is indebted. In the case of the debt-service-to-income ratio, the highest deciles therefore concern a small number of households, and the estimate is based on a relatively small number of observations. Nonetheless, those households face a heavy repayment burden. In some cases, they may be households with favourable future income prospects or access to other resources for repaying their debt (such as help from their family), or they may be households which have suffered an adverse income shock. The breakdown by age group shows that the debt-service-to-income ratio tends to be

CHART 5 DEBT REPAYMENTS IN RELATION TO HOUSEHOLD INCOME: THE DEBT-SERVICE-TO-INCOME RATIO

(macroeconomic and microeconomic views for Belgium)



Sources: ECB, NBB (HFCS).

higher in the case of the youngest households. However, the differences are not as marked as in the case of the debt-to-income ratio.

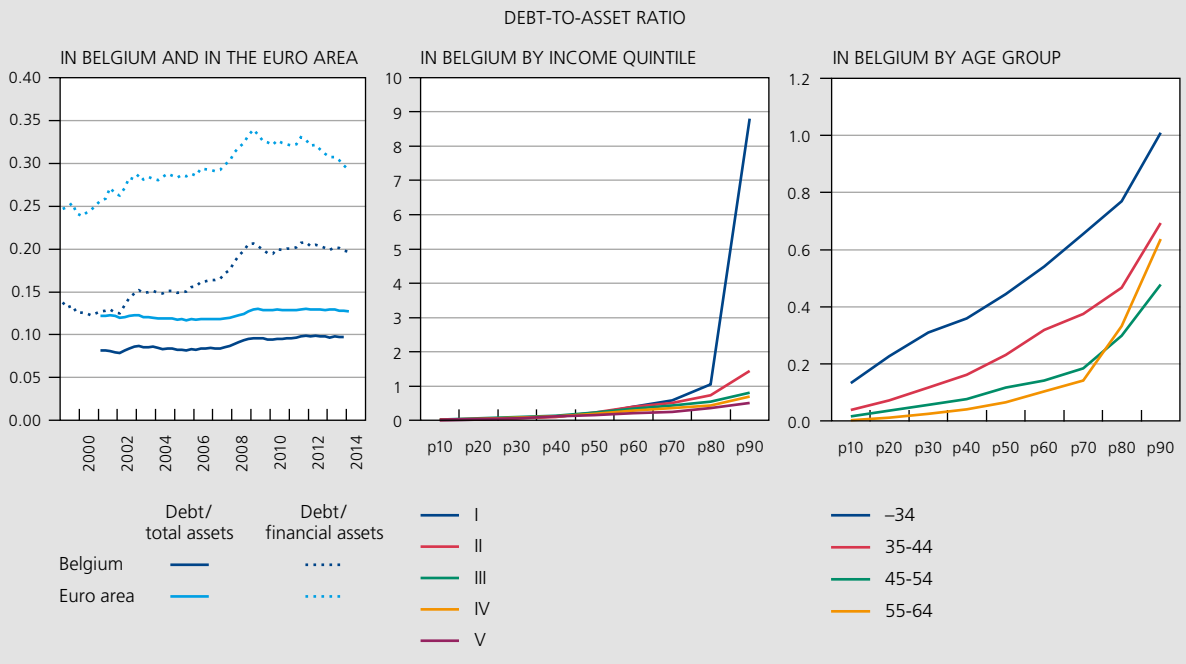
3.4 Debt in relation to assets: the debt-to-asset ratio

The debt-to-asset ratio compares debt to assets. As already stated, this ratio measures household solvency. In cases where the debt-to-income ratio or the debt-service-to-income ratio reaches alarming levels, that does not necessarily mean that the households cannot meet their commitments, particularly if they have a low debt-to-asset ratio and therefore sufficient assets that can be realised. The debt-to-asset ratio can be defined in the broad sense or in the strict sense, depending on whether the debt is compared to total assets (financial assets and property) or to financial assets (which are more liquid). A ratio (defined in the broad sense) of more than 1 is generally a sign that the household is in difficulty. If the household's income flows are not high enough, it will be unable to meet its commitments.

For both the euro area and Belgium, the macroeconomic estimates of the debt-to-asset ratio are well below 1, indicating that, on average, there are more than sufficient assets to cover the liabilities. This reflects the fact that households have positive net assets. The low debt-to-asset ratio in Belgium compared to the euro area is due to the lower debt ratio of Belgian households, but also and above all to their relatively substantial financial and non-financial assets (as a ratio of GDP). At the beginning of 2014, the financial assets of Belgian households were estimated at 287 % of GDP, compared to 218 % for households in the euro area. The value of their immovable property – measured according to the estimates of the NAI (Belgium) and the ECB (euro area) – came to around 300 % of GDP for both Belgium and the euro area. Since the immovable property is frequently the household's own home, it is very often impossible to use it to repay the debt without selling it, a decision which causes serious upheaval for the household. The concept defined in the strict sense (debt in relation to financial assets) is more relevant here. In that regard, Belgium is in an extremely favourable position, even though the ratio has risen over the past decade from 0.15 to 0.20.

The macroeconomic view indicating relatively good asset coverage for Belgian household debt compared to the euro area is borne out by the microeconomic analysis conducted on the basis of the HFCS. A median indebted

CHART 6 HOUSEHOLDS' DEBT IN RELATION TO THEIR ASSETS: THE DEBT-TO-ASSET RATIO
(macroeconomic and microeconomic views)



Sources: ECB, NBB (HFCS).

Belgian household has a debt-to-asset ratio of 0.18, compared to 0.22 in the euro area. That ratio is lower in Belgium throughout the distribution, but particularly for the highest ratios. In the euro area, 10 % of indebted households (the highest decile) have a debt-to-asset ratio of more than 1. In Belgium, that figure for the highest decile is less than 0.80. As in the case of the debt-to-income ratio and the debt-service-to-income ratio, the debt-to-asset ratio is highest for young households and for the households with the lowest incomes.

4. Household debt burden

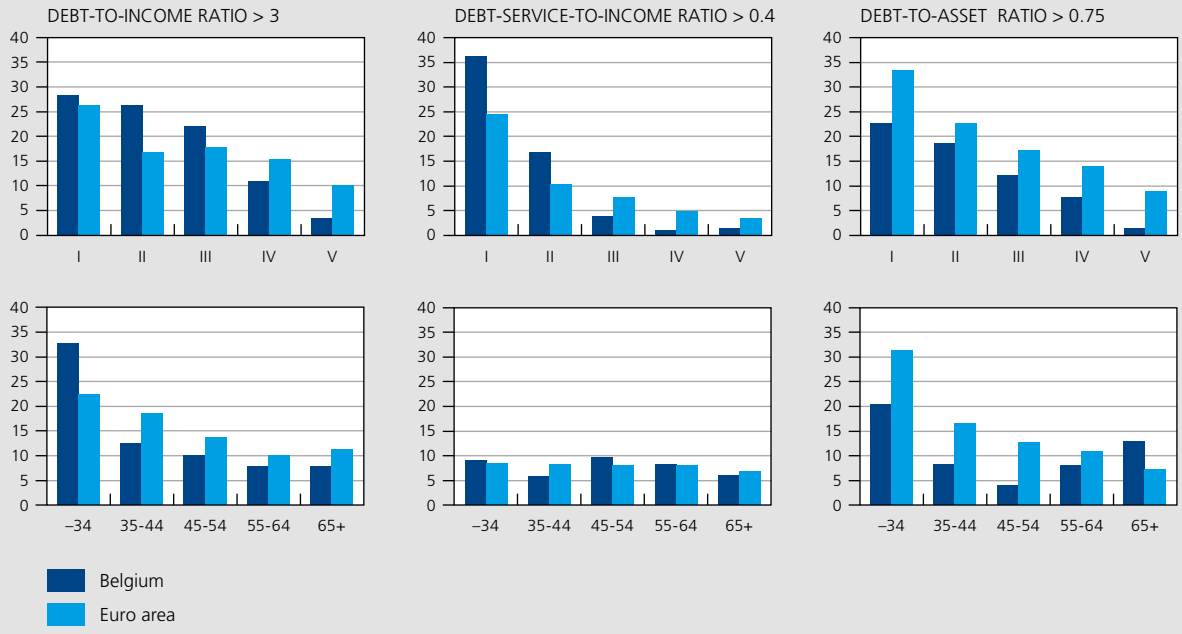
So far, we have discussed the distribution of three indicators measuring the degree of household debt : the debt-to-income ratio, the debt-service-to-income ratio and the debt-to-asset ratio. Each of these indicators reflects the ability of households to repay their outstanding debt. It is interesting to examine the number (and type) of households which, on the basis of these ratios, run the risk of repayment problems. That is why, for each of these indicators, we shall focus on the thresholds beyond which households begin to run a relatively bigger risk.

Although there is no rigorous theory underlying the determination of critical values applicable to the ratios calculated above, the thresholds mentioned in the literature vary little from one source to another (see, for example, HFCN, 2013 and Ampudia *et al.*, 2014). Thus, households considered to be in difficulty are those whose debt is not fully covered by assets and which, after liquidating their assets, are still unable to repay their debt. For the debt-to-asset ratio, the threshold can therefore assumed to be 1. However, it is not always easy to realise assets in full for the value estimated by the household itself, especially in the case of real estate. That is why the critical value is often set at 0.75 for the debt-to-asset ratio, including by the HFCN (2013b). For the debt-to-income ratio, it is harder to determine a critical value because this is a ratio relating a stock variable (the outstanding debt) to a flow variable (annual income). The values are often set at a ratio ranging from 3 for gross income (see HFCN, 2013b) to 6 for net income (see Ampudia *et al.*, 2014). For the debt-service-to-income ratio, 0.3 and 0.4 are the threshold values often used (see once again HFCN, 2013b and Ampudia *et al.*, 2014).

4.1 Households with critical values for debt indicators

We examine each of the three debt ratios separately. For the ratios relating to income, the number of households

CHART 7 HOUSEHOLDS WITH EXCESS DEBT, BY INCOME QUINTILE AND AGE GROUP
(in % of households with debt)



Sources : NBB (HFCS).

with an increased risk in Belgium is relatively similar to the figure for the euro area. The proportion of households with a debt-to-income ratio of more than 3 is 15 % of indebted households in Belgium and 16 % in the euro area. The proportion of households with a debt-service-to-income ratio of more than 0.4 is 8 % of indebted households in both Belgium and the euro area. The debt-to-asset ratio exceeds 0.75 for 10 % of indebted households in Belgium, against 17 % in the euro area. The high value of the assets of Belgian households and the more even distribution of those assets (particularly property) in the population provide a relatively larger buffer in Belgium than in the euro area.

The likelihood of a high (or excessive) debt ratio is not the same for all groups of households. Thus, there are differences both between income groups and between age groups [1]. The proportion of households with a problematic debt ratio declines with income for all three ratios. In the lowest income quintile, over a fifth of households have a debt-to-asset ratio of more than 0.75, over a quarter have a debt-to-income ratio of more than 3, and over a third have a debt-service-to-income ratio of more than 0.4. In the highest income quintile, less than 3 % of households exceed the critical value for each of the three indicators. International comparison shows that the proportion of households with a critical value for the debt-to-asset ratio is lower in Belgium than in the euro area for all income groups. The proportion of households with a critical value for the indicators relating to income is larger in Belgium than in the euro area for the lowest income quintiles. There are also differences between age groups. Young households, in particular, are exposed to a potential risk concerning the debt-to-asset ratio and the debt-to-income ratio. Thus, in the youngest age group in Belgium, around a fifth of indebted households have a debt-to-asset ratio of more than 0.75, compared to around a third in the euro area. In the case of the debt-to-income ratio, the position is reversed : in the youngest age group, there are more households with a higher risk in Belgium, namely about a third compared to around a fifth in the euro area.

If we take the data on the number of households with critical debt ratios, broken down by income and age, and combine them with the data on credit market participation and the conditional median values of the outstanding debt, likewise broken down by income and age, we obtain an overall picture which allows us to estimate the risks. However, it should be noted that, since the household breakdown is obtained by combining age and

(1) In this article, solely the link between debt ratios and income or age is examined. However, the findings are also confirmed in a multivariate analysis which takes account of other factors (such as household size, level of education and the labour market situation) as well as income and age (see Du Caju *et al.*, 2014).

CHART 8 HOUSEHOLDS WITH EXCESS DEBT, BY TYPE OF DEBT, INCOME AND AGE

(in % of households with debt)

Debt-to-income ratio > 3

	I	II	III	IV	V	Total
–34	96.3	86.4	76.2	26.1	26.0	**41.8**
35-44	87.3	62.9	18.8	7.1	6.8	**13.9**
45-54	46.1	65.9	12.8	6.7	3.0	**13.7**
55-64	n.	27.8	9.8	4.6	0.0	**13.8**
65+	25.5	26.1	n.	n.	n.	**44.4**
Total	**66.7**	**55.8**	**31.1**	**12.8**	**4.1**	**20.5**

Debt-service-to-income ratio > 0.4

Households with mortgage debt [1]

	I	II	III	IV	V	Total
–34	89.3	30.2	9.7	0.0	0.0	**10.2**
35-44	100.0	33.7	2.1	2.3	2.7	**7.0**
45-54	75.2	48.2	6.7	2.3	2.5	**12.0**
55-64	60.1	31.9	0.0	0.0	0.0	**10.8**
65+	19.6	13.2	16.2	0.0	0.0	**12.6**
Total	**75.6**	**33.7**	**5.5**	**1.5**	**1.9**	**9.7**

Households with non-mortgage debt [2]

	I	II	III	IV	V	Total
–34	26.7	24.3	3.7	0.0	0.0	**9.5**
35-44	7.5	9.1	2.1	3.6	1.3	**3.4**
45-54	51.3	17.1	8.1	0.0	0.0	**8.7**
55-64	28.4	6.8	0.0	0.0	0.0	**6.5**
65+	9.7	0.0	2.7	0.0	0.0	**4.0**
Total	**23.0**	**13.0**	**3.0**	**1.0**	**0.0**	**7.0**

Debt-to-asset ratio > 0.75

	I	II	III	IV	V	Total
–34	23.7	28.7	24.1	14.6	2.6	**15.8**
35-44	0.0	7.2	4.3	3.6	0.7	**2.6**
45-54	1.6	2.1	1.7	1.9	0.0	**1.1**
55-64	n.	0.0	2.2	0.0	3.3	**3.2**
65+	0.0	0.0	n.	n.	n.	**0.9**
Total	**8.4**	**8.6**	**8.6**	**6.1**	**1.0**	**5.2**

	I	II	III	IV	V	Total
–34	13.8	27.2	32.7	6.3	7.2	**18.2**
35-44	9.4	34.3	14.1	13.1	5.2	**12.7**
45-54	23.8	13.5	4.8	4.2	0.1	**6.3**
55-64	14.6	4.0	0.0	0.0	0.0	**3.4**
65+	9.7	0.0	1.0	0.0	0.0	**3.6**
Total	**23.1**	**12.9**	**3.4**	**1.1**	**0.4**	**6.6**

	I	II	III	IV	V	Total
–34	61.7	62.0	11.8	7.5	5.9	**26.6**
35-44	37.0	34.0	8.4	16.8	2.5	**14.1**
45-54	15.2	14.3	4.4	5.5	2.0	**6.8**
55-64	27.3	16.1	11.3	3.3	2.9	**11.2**
65+	11.0	14.1	35.0	0.0	0.0	**16.1**
Total	**31.0**	**25.6**	**12.3**	**8.9**	**2.6**	**14.2**

Source: NBB (HFCS).

(1) These are households with at least one mortgage loan, regardless of whether they also have non-mortgage loans.

(2) These are households with at least one non-mortgage loan, regardless of whether they also have mortgage loans.

income, the number of observations per group is sometimes rather low, making the estimates less accurate.

If we start by examining households with a mortgage loan[1], it is evident that households with critical debt ratios are found mainly among the youngest, lowest-income households. In these groups, more than three-quarters of households with a current mortgage loan have a debt-service-to-income ratio and a debt-to-income ratio which may cause problems. However, it is also specifically in these groups that the number of households with a mortgage loan is smaller (less than one household in four) and the outstanding amount of these loans is generally small. Moreover, the debt-to-asset ratio of the great majority of households in this category is not usually excessive. That is why most of them have sufficient assets to draw on to repay their debt. Nonetheless, a property crisis could put that buffer under strain. Within the group of low-income, young households with a mortgage loan, some therefore experience difficulty in repaying their debt out of current income. However, as these groups comprise relatively few households with a mortgage loan, and as most of the loans are adequately covered by assets, these problems do not necessarily have serious macroeconomic or prudential implications. Conversely, it is mainly young households in the highest income quintiles that are most likely to borrow, and who borrow the largest amounts. This is the group with the highest rate of mortgage loans and the largest median outstanding amounts. Nonetheless, hardly any households in these groups have risky debt ratios. Thus, in these groups (well) under 10 % of households have a debt-service-to-income ratio of more than 0.4. Most households are therefore quite able to repay their debt out of their income flows. Obviously, in that case the income flows must be secure.

As explained above (see section 3), non-mortgage credit is distributed more evenly across households, in terms of both participation and outstanding amounts. However, as in the case of households with a mortgage loan, within the group of households with a non-mortgage loan[2] it is once again young low-income households that most frequently have a high (or excessive) debt-service-to-income ratio and debt-to-income ratio. Since the outstanding amounts are smaller in the case of non-mortgage debt, there are fewer households within this group with an excessive debt ratio than in the case of mortgage loans. On the other hand, for many young low-income households (in excess of 60 %), this debt is not adequately covered by assets (debt-to-asset ratio of more than 0.75). Ultimately, therefore, the default risk is higher in this case, especially if these households suffer an adverse income shock, such as the loss of a job. In view of the typically rather low outstanding amounts, any macroeconomic implications of these problems are limited, though that does not reduce the social consequences for the households affected.

(1) These are households with at least one mortgage loan, regardless of whether they also have non-mortgage loans.
(2) These are households with at least one non-mortgage loan, regardless of whether they also have mortgage loans.

Box – The impact of macroeconomic shocks on the sustainability of household debt

From the point of view of both macroeconomic and prudential policy, it is necessary to be able to estimate the impact of various types of macroeconomic shocks on the sustainability of household debt. At macroeconomic level, a deterioration in sustainability may have detrimental consequences for household expenditure if it is due to a tightening of lending conditions and/or initiates a deleveraging trend. From the prudential policy angle, in view of the weight of outstanding mortgage loans to households in the total bank balance sheet, it is important to know the sensitivity of credit risk (and hence financial institutions' profitability) to a change in the macroeconomic environment (macroeconomic stress tests).

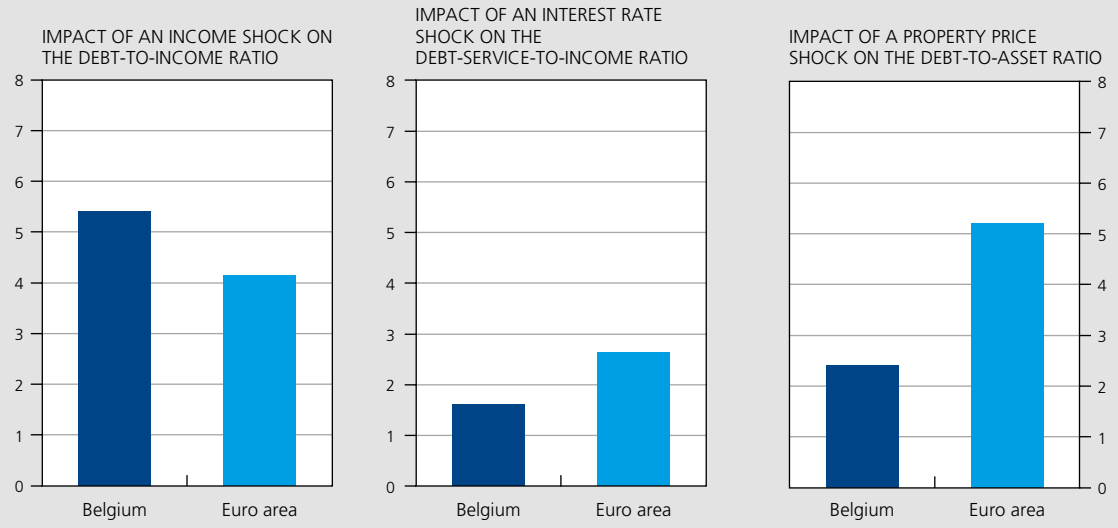
This box aims to identify for the Belgian economy the impact of a series of significant shocks (namely income shocks, interest rate shocks and property price shocks) on household debt ratios on the basis of the microeconomic data from the HFCS. As is evident from a recent study by Ampudia, van Vlokhoven and Zochowski (2014), these data can be used to simulate – on the basis of several assumptions – the impact of shocks on debt at household level, taking account of the socio-economic characteristics of households and the distribution of income, debt and assets within the population. These data provide microeconomic backing for the results of macroeconomic stress tests, for example.

In this box, the results derived from the HFCS are also supplemented with information obtained by linking macroeconomic variables to the pattern of aggregate arrears as recorded by the CICR. Although that analysis has no microeconomic foundation, it offers the advantage of measuring the impact on sustainability *ex post*, in that it is based on the actual arrears.

On the basis of the HFCS data, Ampudia *et al.* (2014) examined for the euro area countries the effect on the debt-to-income ratio, the debt-service-to-income ratio and the debt-to-asset ratio respectively of the following factors:
- an income shock: a 10 % fall in the number of persons employed, with unemployment benefits compensating for labour incomes;
- an interest rate shock: a 300 basis point rise in the interest on variable-rate mortgage loans;
- a property price shock: a 20 % fall in property prices.

INCREASE IN HOUSEHOLD DEBT RATIOS FOLLOWING ADVERSE SHOCKS

(change in the median ratio for indebted households, in percentage points)

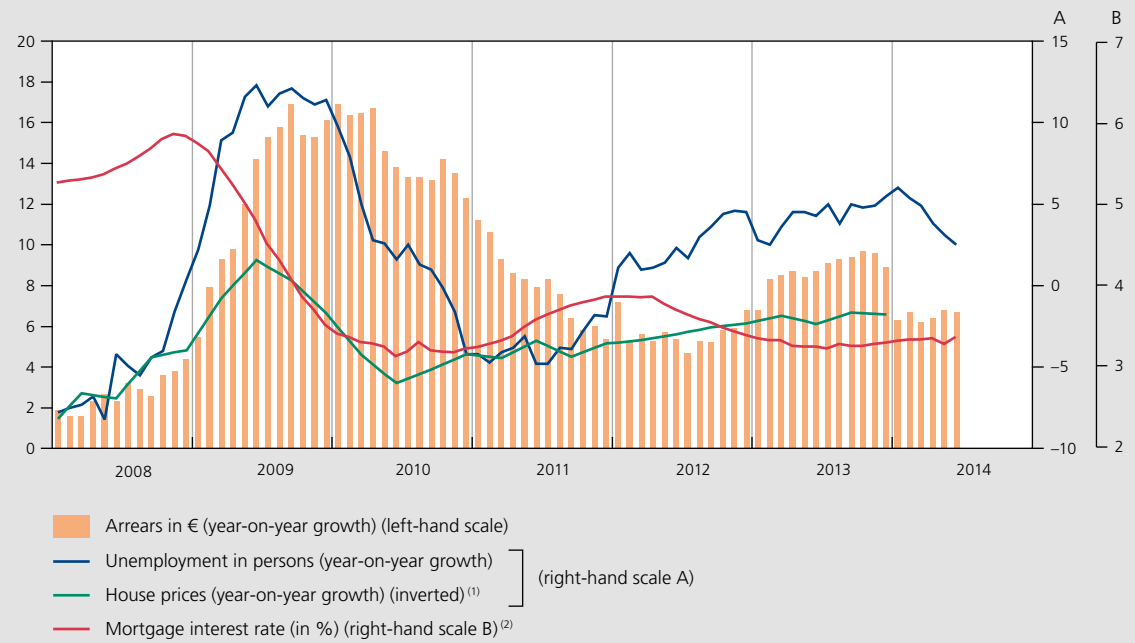


Source: Ampudia *et al.* (2014).

The impact of an income shock on the median value of the debt-to-income ratio is relatively large in Belgium compared to the euro area (5.4 against 4.1 percentage points). However, the effect of the other shocks (interest rate and property price shocks) is smaller in comparison with both the income shock and the figures for the euro area. The interest rate shock causes a bigger increase in the debt-service-to-income ratio in the euro area (2.6 percentage points) than in Belgium (1.6 percentage points). The fall in property prices also has a more marked influence in the euro area, where the rise in the debt-to-asset ratio is 5.2 percentage points compared to 2.5 percentage points for Belgium. The results of this study suggest that (indebted) Belgian households are comparatively more sensitive to income shocks than households in the euro area. In microeconomic terms, these findings are attributable to the fact that in Belgium certain groups already have relatively high debt-to-income ratios, and these consist mainly of younger households. Generally speaking, younger households have not yet built up assets, or not enough assets that they could realise in the face of a negative income shock. Conversely, there is less sensitivity to an interest rate or property price shock, possibly because of the small proportion of debt at variable interest rates and the fairly good asset coverage of Belgian household debt (and hence a low debt-to-asset ratio).

The evolution of arrears of Belgian households confirms these findings overall. Defaults – recorded monthly by the CICR since January 2007 – offer *ex post* verification of how the macroeconomic environment influences household debt sustainability. For that purpose, the correlation between defaults and macroeconomic variables is measured throughout the cycle. The cyclical profile of the nominal arrears (amounts in €) is obtained by calculating year-on-year growth rates. The effect of the crisis is immediately apparent: from 2008 to 2010, arrears increased sharply. The income shock is illustrated by the change in unemployment in persons (year-on-year growth). The interest rate shock is reflected in the movement in the average interest rate on outstanding amounts of mortgage loans (with an initial fixed-interest period of up to one year). Asset prices are represented by the year-on-year growth of residential property prices.

MACROECONOMIC ENVIRONMENT AND HOUSEHOLD DEFAULTS



Sources: NEO, NBB (MIR, CICR).
(1) Nominal house prices, all housing taken together, quarterly observations interpolated linearly on a monthly basis.
(2) Average bank rate on the outstanding amount of mortgage loans with an initial fixed-interest period of up to one year.

During the limited period for which data are available, the fluctuations in arrears in Belgium are most closely correlated with unemployment (0.62). The two series follow a similar pattern over time, with unemployment slightly leading the defaults. Conversely, the increase in arrears is not linked to the interest rate, which pursues a downward trend throughout the period. However, the arrears do reflect the expected link with house price fluctuations. When house prices rise less strongly or decline, arrears show a more marked increase, though the correlation (–0.43) is less than in the case of unemployment. This *ex post* analysis confirms that, for the period 2008-2014, the persistent income shocks measured by the changes in unemployment generally had a significant influence on Belgian household debt sustainability.

However, the results need to be interpreted with caution, particularly as we confine ourselves in this article to a graphical analysis, and it is not possible to capture the whole cycle on the basis of the available history. Various

empirical studies (Marcucci and Quagliariello, 2009; Laeven and Majnoni, 2003) report a non-linear relationship between credit risk and the macroeconomic environment. More particularly, the pattern of defaults would be more sensitive to the macroeconomic environment during recessions than in a boom period. In addition, the relationship is likewise determined by the risk assessment models of the financial institutions. In principle, careful risk monitoring – both the risk analysis within banks and in the context of macroprudential policy – should weaken the link between arrears and factors relating to the macroeconomic environment.

4.2 Households with repayment problems

The HFCS data showed that young low-income Belgian households form a group with a higher potential risk of encountering debt problems than other types of households. On the basis of the study by Ampudia *et al.* (2014) (see box above for more details), it also seems that this group is relatively sensitive (compared to the euro area) to (negative) income shocks. Having established that point, it is interesting to look at the CICR data, as they can be used both to verify the findings based on the HFCS and to analyse the degree to which differences in risk profiles emerge and are reflected in divergences in actual debt problems. In particular, we analyse the evolution over time of the average default rate per borrower age group for mortgage loans and consumer credit. Next, we examine the degree to which differences in these developments may be due to variations in the income shock sensitivity of the various generations. In view of the lack of statistical information on income per age group, these shocks are approximated by changes in the unemployment rates of the various age groups.

The extent of household borrowing and any excess debt problems in the population can be viewed overall, notably on the basis of the CICR data, with the aid of various indicators such as the proportion of the population with a loan, the proportion of the population with repayment problems, or the proportion of borrowers or contracts with payment arrears. The CICR data also permit monitoring of developments in recent years, in this case from 2006 to 2013.

From 2006 to 2010, the proportion of the population aged over 18 years recorded by the CICR on account of at least one current loan increased continuously from 46.1 to 56.9 %. If authorised overdrafts are taken into account, that figure climbed to 70.6 % in 2012 [(1)]. This increase in the proportion of the population with debt was also apparent for the various types of loan. Thus, the percentage of the adult population with a mortgage loan rose from 26.5 % in 2006 to 32.2 % in 2012. In the case of consumer credit, the rise was even steeper, from 34.5 % in 2006 to 44.1 % in 2010, then 63.6 % in 2012, with the inclusion of overdrafts. The amounts borrowed also increased over the same period. The average amount of a new mortgage loan stood at € 99 000 at the beginning of 2007, whereas it was € 109 500 at the end of 2013 (+10.7 %). In the case of consumer credit (taking all types together), at the beginning of 2007 a new consumer loan averaged € 9 400, compared to € 10 900 at the end of 2013 (+16.2 %).

With the financial crisis, the expansion of the number of borrowers also brought an increase in defaulting borrowers (among the population over the age of 18 years). However, this increase in defaults was not only due to the expansion in the number of borrowers; the average default rate (measured as the ratio between the number of defaulting borrowers and the total number of debtors over the period in question) has also risen since the crisis. Thus, among the population over the age of 18, the proportion of persons recorded by the negative central register was stable in the years preceding the outbreak of the financial crisis at around 2.8 %. Subsequently, from 2009 to 2012, that proportion rose steadily to reach 3.7 %. Among borrowers as a whole, the default rate fell slightly from 2006 to 2008 before accelerating again. In 2013, it amounted to 5.5 %.

However, since the extent of defaults varies according to the type of credit, it is important to be able to distinguish between mortgage loans and consumer credit. In the case of mortgage loans, the proportion of defaulting borrowers at the end of 2012 came to 0.5 % of the population aged over 18 years. For borrowers in general, the default rate tended to decline until 2008 (1.36 %). In contrast, it increased slowly but steadily thereafter to reach 1.52 % in 2013. In the case of consumer credit (taking all types together), the proportion of defaulting borrowers came to 3.5 % of the adult population at the end of 2012. The average default rate (number of defaulting debtors in

(1) Latest figure available for the population.

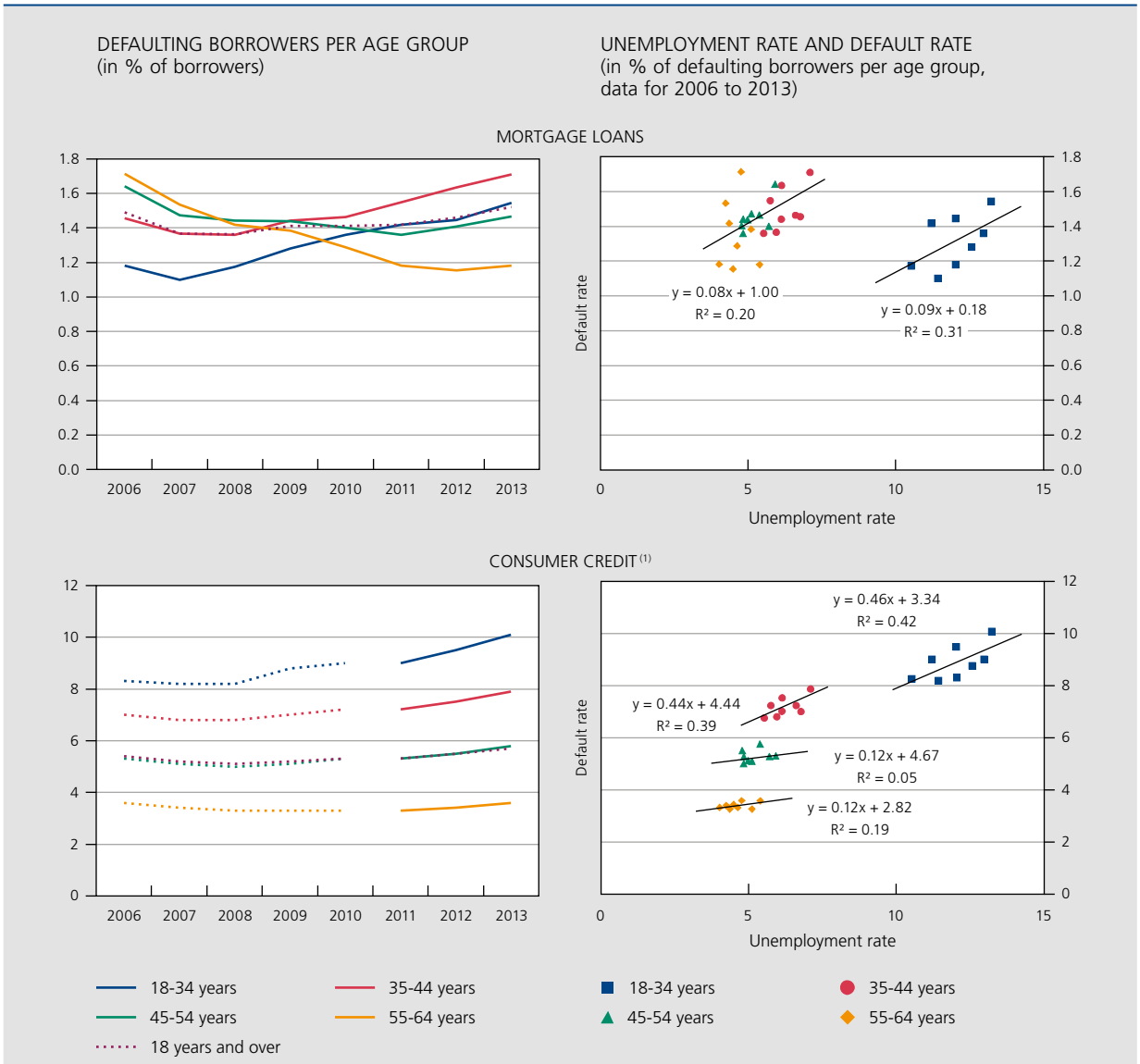
relation to the number of borrowers) has risen constantly since 2008, standing at 5.7 % in 2013.

The default risk also depends on the borrower's age, as is evident from the HFCS data. The CICR series were therefore similarly broken down according to that variable.

The overall default rate on mortgage loans is still relatively low in Belgium. However, the curves vary according to the borrower's age group, as the default rate increases from 2007-2008 for the youngest age groups (18-34 years and 35-44 years), whereas it declines for the oldest age group (55-64 years). In the case of the intermediate age group (45-54 years), the default rate declines up to 2011, then rises at the end of the period. The low default rate on mortgage loans in comparison with defaults on consumer credit probably reflects the concentration of mortgage debt among households earning relatively high incomes.

The changes in the average default rate on mortgage loans may be due in part to – permanent – changes in income. Analysis of developments in unemployment rates in parallel with default rates seems to confirm the existence of a significant positive link between these two

CHART 9 AVERAGE DEFAULT RATES ON HOUSEHOLD LOANS AND THE MACROECONOMIC SITUATION



Sources: DGSEI (LFS), NBB (CICR).

(1) Note: The methodological change introduced in 2011, requiring the CICR to record authorised current account overdrafts, led to a break in the series in the data on consumer credit between 2010 and 2011. In order to eliminate that break, the default rate in 2010 was put at the same value as in 2011. The series was then retropolated over the period 2006-2009 by applying the growth rates of the original series.

variables, and to highlight the relevance of persistent income shocks as a key factor explaining the fluctuations in defaults. More specifically, the results taken from the analysis by age group are as follows. First, there seems to be no structural effect linked to age groups, as default rates on mortgage loans are generally similar whichever generation is considered. Second, there is a positive correlation between the level of the unemployment rate and the default rate for both the youngest generation (18-34 years) and the older age group (35 years and over). The steeper rise in default rates within the groups aged 18-34 years and 35-44 years at the end of the period could be partly due to the differences in the unemployment rate picture for each generation. Finally, however, there seems to be no significant difference in sensitivity compared to a change in the unemployment rate, since the regressions conducted on the two datasets produce relatively similar slopes.

To sum up, in the case of mortgage loans, a decline in income (approximated by a rise in the unemployment rate) is accompanied by an increase in the percentage of defaulting borrowers. Conversely, the youngest generations taken as a whole do not appear to be more affected at present. Likely factors here include the relatively strict regulation of the mortgage loan market in Belgium, and the banks' cautious approach to lending.

In regard to consumer credit (taking all types together), the rise in the default rate over the past three years applies to all generations of borrowers. However, the trend is more marked in the case of the youngest borrowers (18-34 years), of whom one in ten (10.1 %) defaulted on at least one consumer loan in 2013. That proportion was 7.9 % for the 35-44 age group, 5.8 % for the 45-54 age group, 3.6 % for the 55-64 age group and 1.6 % for persons over the age of 64 years.

As in the case of mortgage loans, the average default rate on consumer credit was viewed in conjunction with the level of the unemployment rate (as an approximation for a decline in the level of income) between 2006 and 2013. The overall finding is similar : the default rate tends to rise as the unemployment rate increases, whichever group is considered. However, for this type of credit, and in contrast to mortgage loans, there is a generational effect : the higher average unemployment rate among the youngest generations is in fact reflected in a higher default rate. Moreover, for the generations aged 18-34 years and 35-44 years, the correlation between the percentage of defaulting borrowers and the level of the unemployment rate seems closer than for the older age groups. That could be a sign that young generations are more sensitive to a decline in income, resulting in a more serious impact on their repayment capability. That effect is specific to consumer credit.

Conclusion

This article has analysed the evolution and distribution of Belgian household debt. By making simultaneous use of macroeconomic and microeconomic data, which offer mutually complementary information, it has been possible to draw a number of conclusions about household debt at both aggregate and individual level. We can summarise those conclusions as follows.

The macroeconomic statistics show that the debt situation of Belgian households is fairly favourable compared to the euro area. The various indicators relating to debt are lower in Belgium. However, they reveal a significant, steady rise in household debt over the past ten years. That upward trend needs to be taken into account and monitored in view of its potentially negative impact on economic activity and financial stability, particularly in the event of serious adverse shocks.

However, the microeconomic data reveal that there are certain groups of borrowers with a vulnerable debt-to-income ratio, and the proportion is roughly the same as in the euro area. Furthermore, it is evident from the HFCS data that it is mainly young and low-income households that face a relatively high debt in relation to their income, suggesting a fragile liquidity position. However, these groups make relatively little use of the credit market, and if they have debt, it is often in the form of small loans. On the other hand, Belgian household debt generally has better asset coverage than that in the euro area.

Of the households with an outstanding mortgage loan, it is the youngest low-income groups that have the highest debt in relation to their income. However, most of those households do not face an excessive volume of debt in relation their assets (debt-to-asset ratio). The results show that most households have sufficient assets to pay off their debt in the event of problems. The other types of credit – non-mortgage loans – are more evenly distributed (in terms of both participation and volumes) across households resorting to that type of borrowing. In the case of households with at least one non-mortgage loan, it is again the younger households with a lower-income that often have debt-to-income ratios which are (too) high, possibly because they also have a current mortgage loan. For many young households with a low income who have contracted a non-mortgage loan, the debt is not fully backed by assets. This is therefore the group of households with the highest default risk.

The data from the Central Individual Credit Register point to an increase in default rates in the post-crisis years, although the number of defaults is small in Belgium, at least in the case of mortgage loans. The CICR data also confirm that younger people, in particular, are more likely to be in arrears on their loans. For this group, there is also a closer correlation between repayment problems and the level of unemployment, illustrating their greater sensitivity to income shocks. However, this difference in sensitivity applies specifically to consumer credit.

Bibliography

Ampudia M., H. van Vlokhoven and D. Żochowski (2014), *Financial fragility of euro area households*, ECB Working Paper (forthcoming).

Ando A. and F. Modigliani (1963), "The 'life-cycle' hypothesis of saving : aggregate implications and tests", *American Economic Review*, 53 (1), 55–84.

Bover O., J.M. Cassado, S. Costa, Ph. Du Caju, Y. McCarthy, E. Sierminska, P. Tzamourani, E. Villanueva and T. Zavadil (2013), *The Distribution of Debt Across Euro Area Countries : The Role of Individual Characteristics*, Institutions and Credit Conditions, NBB Working Paper 252.

Bruggeman A. and Ch. Van Nieuwenhuyze (2013), "Size and dynamics of debt positions in Belgium and in the euro area", NBB, *Economic Review*, June, 57-77.

Du Caju Ph. (2012), "Asset formation by households during the financial crisis", NBB, *Economic Review*, June, 87-100.

Du Caju Ph. (2013), "Structure and distribution of household wealth : an analysis based on the HFCS ", NBB, *Economic Review*, September, 41-62.

Du Caju Ph., F. Ryx and I. Tojerow (2014), "What Drives Household Over-indebtedness ? A Microeconometric Perspective", mimeo.

HFCN, Eurosystem Household Finance and Consumption Network (2013), *The Eurosystem Finance and Consumption Survey : Methodological Report for the First Wave*, ECB Statistics Paper Series 1, April.

HFCN, Eurosystem Household Finance and Consumption Network (2013), *The Eurosystem Finance and Consumption Survey : Results from the First Wave*, ECB Statistics Paper Series 2, April.

HFCN, Eurosystem Household Finance and Consumption Network (2013), *The Eurosystem Finance and Consumption Survey : Statistical Tables*, ECB Statistics Paper Series, April.

For more information on the HFCN and the HFCS, see the website of the European Central Bank : http://www.ecb.int/home/html/researcher_hfcn.en.html.

Laeven L. and G. Majnoni (2003), "Loan loss provisioning and economic slowdowns : too much, too late ?", *Journal of Financial Intermediation*, 12 (2), 178–197.

Marcucci J. and M. Quagliariello (2009), "Asymmetric effects of the business cycle on bank credit risk", *Journal of Banking and Finance*, 33 (9), 1624–1635.

Lessons from the US for the institutional design of EMU

P. Butzen
S. Cheliout
H. Geeroms

Introduction

During the preparations for the introduction of the euro, it was already acknowledged that most of the EU Member States did not satisfy the criteria for an Optimum Currency Area (OCA) to the same extent as the 50 American states. The degree of economic convergence, wage and price flexibility and labour mobility between the future euro area members was less than in the case of the American states. According to the OCA theory, in the absence of adequate convergence and flexibility, a monetary union needs solidarity between the member countries via transfers, generally paid out of a common budget. The OCA theory did not initially consider the financial side of the economy, since capital controls were still very common at that time. However, well integrated financial markets offer an alternative means of coping with idiosyncratic shocks. The establishment of a common fund for the resolution of failing banks could also be a form of risk-sharing.

Although the EMU member countries' fulfilment of the OCA criteria was uneven and partial, it was nevertheless decided to embark on monetary union – a project which was as much political as economic. It was assumed that the benefits of this worthwhile project would ultimately increase and its disadvantages would decline, precisely as a result of the introduction of the single currency.

It was hoped that the euro, in combination with the Single Market which was, in principle, to be completed at the beginning of 1993, would intensify Community trade while promoting convergence between the Member States and encouraging financial market integration. It was also assumed that there would be adjustment mechanisms to correct any imbalances. For instance, it was argued that the effects of an overheated economy accompanied by high inflation and current account deficits would eventually be corrected by the negative impact on growth of a loss of competitiveness. Another assumption was that any differences in country risk would be reflected in the pricing of public debt on the financial markets. That would ensure adequate fiscal discipline and limit the contagion effects. The no-bail-out clause in the EU Treaty would be enough to guarantee such differentiation by the financial markets.

The expectation of continuing convergence and the assumption that the financial markets would apply differential pricing were among the factors leading to the establishment of a unique institutional structure for EMU in which monetary policy was unified while fiscal and structural policies remained largely national. The historic proposal by Pierre Werner foresaw more centralised economic coordination, but in the 1990s the political will for this significant transfer of powers to European level proved to be lacking. As a substitute for a form of European economic government, the coordination of fiscal policy was specified in European rules in order to ensure the sustainability of public finances. For the rest of macroeconomic policy and for structural economic policy, there was only provision for a "light" form of coordination without binding rules; it was based on the Treaty article stipulating that the Member States shall consider their economic policy as a matter of common interest. Bank supervision, the resolution of failed banks, and deposit protection remained national responsibilities, with

minimal, voluntary coordination between the competent national authorities.

As expected, once the euro was introduced, thereby eliminating the exchange rate risk between the euro area countries, trade within the euro area increased further and financial integration received an additional boost. However, some of the assumptions made before the introduction of the euro subsequently proved unfounded.

Differential pricing by the financial markets did not happen; following the introduction of the euro, interest rates converged almost completely on the lowest rates, despite divergent economic fundamentals and country-specific risks. The levelling of interest rates also occurred outside the euro area, and for assets other than the public debt. In some euro area countries, this downward convergence was a major factor behind excessive debt levels built up by governments and/or the private sector.

Furthermore, contrary to expectations, the adjustment mechanism via competitiveness proved inadequate, or at least too slow, so that the macroeconomic imbalances continued to grow. The rules on economic coordination were unable to prevent that happening, albeit because they were applied too flexibly, if at all.

On the financial side, the deepening of the Single Market was accompanied by large, expanding and evidently highly volatile cross-border bank capital flows. Moreover, as a result of the liberalisation of financial regulation, some banks grew so large that a national government would hardly have the budgetary resources to afford a rescue operation, whereas Europe had left that responsibility primarily with the Member States.

In such an unstable situation, given the mounting concern over Greek public finances, yield differentials on sovereign debt began to widen significantly between some euro area countries from late 2009 onwards. This culminated in the euro area's sovereign debt crisis, which then escalated as a result of the feedback loop between banks and governments.

Various *ad-hoc* instruments were created, but the financial market turmoil only subsided gradually when, in the summer of 2012, the Eurosystem announced the outright monetary transactions (OMTs). However, this measure does not intend to be a permanent solution to the sovereign debt crisis, though it could offer the policy-makers time to adjust the institutional design of EMU and correct the imbalances in the various Member States.

Meanwhile, much progress has been made in both areas, and there are new proposals on the table. With a view to any lessons which might benefit EMU, this article analyses key aspects of a successful monetary union, more specifically the United States. The American economy is comparable to the euro area in size and development, but there is a need for caution as there are also some major differences, more specifically the fact that the United States is a nation state while the euro area is only a union of sovereign countries.

This article is structured as follows. Section 1 examines the characteristics of the United States and the euro area against the criteria set out by the OCA theory. Section 2 compares the existing banking union in the United States with the one agreed in the euro area. Section 3 investigates how fiscal solidarity works in the US, and whether this mechanism is feasible in Europe. The article ends with some conclusions.

1. The United States and the euro area in the light of the Optimum Currency Area theory

1.1 The Optimum Currency Area theory

Research on monetary unions often refers to the Optimum Currency Area (OCA) theory. This theory specifies the conditions that a monetary union should fulfil so that the advantages of introducing a single currency – such as lower transaction costs – offset the disadvantages of giving up an independent monetary policy, and thus losing the interest rate and exchange rate as policy instruments for cushioning shocks.

The OCA theory was developed in the early 1960s by Mundell, McKinnon and Kenen. Since then, the OCA literature has evolved, and attracted renewed attention in the run-up to EMU (Corsetti, 2008). Some observers doubted whether such a heterogeneous group of countries could form a successful currency union. However, that scepticism was not shared by other observers, who assumed that EMU would bring about gradual economic convergence (endogenous OCA) between the participating countries, ensuring that the project would succeed. Nevertheless, the recent past has clearly exposed the defects in the institutional design of EMU. Although much can be learnt from the OCA theory, EMU remains a complex project which is evolving over time, and often requires unique solutions.

1.1.1 The basic criteria

An optimum currency union can be defined on the basis of a number of "traditional" criteria (Mongelli, 2008). These criteria indicate whether the benefits of monetary integration outweigh the associated costs. If the criteria are fulfilled, the impact of asymmetric shocks will be small because the economic adjustment will run smoothly despite the loss of sovereignty over monetary policy.

1. Ideally, the participating economies form a homogenous group, which means that they must exhibit a high degree of economic **convergence**. In that case, common shocks will have comparable effects, and economies with a similar economic structure will be less prone to asymmetric shocks. Increased integration, and hence openness, generally encourages the convergence process.

2. **Flexible prices and wages** are necessary to reduce the remaining differences between the members of a monetary union and to cushion asymmetric shocks. In view of the reduced scope for policy as a result of the loss of the nominal exchange rate instrument, sufficient flexibility is important to enable countries experiencing a negative shock to adjust their wages and relative prices in order to restore their competitiveness.

3. **Factor mobility, including labour mobility**, may alleviate the pressure on wages and prices in overheated regions. This argument, originally put forward by Mundell, is related to the international trade theory whereby production factor mobility facilitates a reallocation of resources within a region. For example, if labour is sufficiently mobile, that may prevent a negative demand shock from driving up unemployment in some regions, and avoid upward pressure on inflation in other regions where demand is rising. Capital flows permit better grouping of the available resources (pooling of reserves) and better risk spreading between the member countries; foreign holders of a country's assets will have to bear part of any fluctuation in the price of those assets. These flows also make it possible to absorb temporary adverse shocks in a particular country, e.g. by surplus countries lending to the country concerned; they thus facilitate the smoothing of household and corporate expenditure.

   Nonetheless, financial integration is no substitute for a permanent adjustment (e.g. in prices and wages) if that is necessary; in that case, it can only ease the process by helping to weaken the shock's adverse impact on expenditure. Some writers have also qualified that view and warned of the potential destabilising effects of capital flows (e.g. sudden stop).

4. These criteria need to be supplemented by **diversification of production and consumption** and hence, exports, thus reducing the impact of shocks affecting a narrow product range.

5. **Adjustment mechanisms at federal level**, i.e. the level uniting the member countries, can help to reduce the remaining differences, e.g. via transfers from a federal budget.

1.1.2 The "meta" criteria

The "traditional" criteria may be hard to measure, making it difficult to determine whether an OCA exists on the basis of the characteristics identified. Thus, a second, more recent wave of research in the empirical literature has shed light on new "meta" indicators. These concern similarities in the impact of shocks. They attempt to capture all the traditional criteria via their interactions, the underlying intuition being that if the effect of demand or supply shocks and the speed of adjustment are comparable between the partners, that lowers the cost of renouncing sovereignty over monetary policy.

1.1.3 Some limitations and criticisms of the OCA theory

Apart from the difficulty of measurement, it may be hard to assess the "traditional" OCA characteristics against one another, and they may sometimes tend in opposing directions, leading to inconclusive results ("inconclusiveness problem"). For example, a very open economy in terms of trade flows with a group of partner countries would indicate that the adoption of fixed exchange rates with those countries would be beneficial. Nonetheless, if that country also has very low mobility in its production factors, particularly labour, then according to the OCA theory a system of floating exchange rates should be maintained instead.

Moreover, the "traditional" criteria are constructed retrospectively on the basis of past data. They therefore cannot reflect any changes relating to preferences or policy choices, such as the establishment of a monetary union. Various writers have therefore raised the question of the existence of "endogenous" effects, the fact of adopting a common currency and thus initiating a favourable process that eventually leads to greater convergence between the countries (endogeneity hypothesis). In addition, the establishment of an OCA leads to strong and lasting (commercial and political) commitments on the part of its

members, opening the way to investment and closer trade links in the longer term.

That hypothesis was refuted by Krugman's specialisation theory, which states that countries which become increasingly integrated generally tend to specialise in goods and services for which they have a comparative advantage. Increased specialisation implies less diversified production, so that the countries become more vulnerable to asymmetric shocks. This theory takes the opposing view that there is a heavy price to pay for the loss of sovereignty over the monetary policy instrument.

1.2 An OCA appraisal of the United States and the euro area

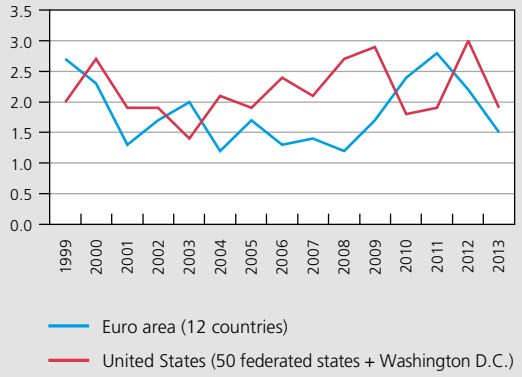
1.2.1 Economic convergence

This dimension can be measured by a range of indicators which check the homogeneity of a currency union. For that purpose, the regional figures of a union's member countries are examined. It is generally assumed that the American economy is much more homogeneous than that of the euro area. However, a quick review of a number of relevant variables shows that the regional differences in the euro area are generally comparable to those in the United States.

In recent decades, growth differentials in the euro area, measured by the standard deviation of GDP growth in the Member States, have been smaller than those in the United States. During the crisis, growth differentials in both regions reached a peak (in the euro area that was due to a deep recession affecting the periphery of the region). Then in 2013, GDP growth differentials in both regions reverted to levels similar to those prevailing before the crisis. The economic convergence within a currency union is also often measured by calculating the correlation between the GDP growth of each member country and that of the union as a whole for a particular period, in an attempt to measure the synchronicity of economic

CHART 1 GDP GROWTH DIFFERENTIALS BETWEEN THE EURO AREA AND THE UNITED STATES

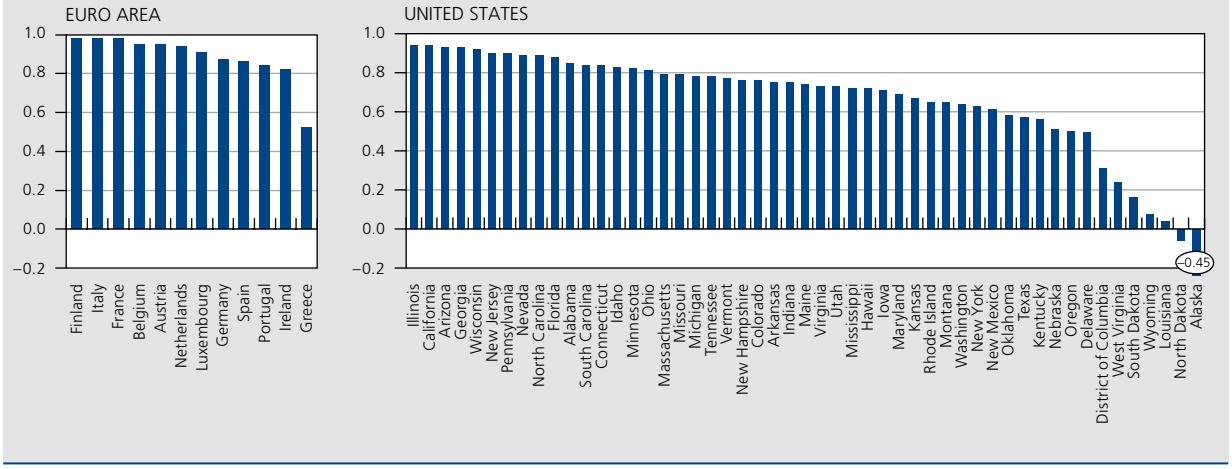
(standard deviation between countries (or federated states) in percentage points of growth)



Sources: EC, BEA.

CHART 2 SYNCHRONICITY OF GROWTH IN THE EURO AREA AND IN THE UNITED STATES

(correlation between the growth of countries (federated states) and growth of the euro area (United States) in the period 1999-2013)



Sources: EC, BEA.

cycles. According to this criterion, economic convergence in the American states is generally comparable to that in the euro area countries.

While the economic cycles in the United States and in the euro area (since the start of EMU) follow a fairly similar pattern, regional differences have persisted over the years in both regions. The underlying reasons for the regional differences in economic performance display similarities in the two regions. In particular, the effects of the crisis on the various euro area countries exhibited a pattern similar to that in the individual American states. The countries and states most seriously affected are those where a start was made on correcting imbalances, or those where certain structural problems had not been addressed before the crisis. In the United States, Nevada, Arizona, Florida and California had seen a steady rise in property prices. When the crisis erupted, property prices there collapsed. Similarly, there was a property bubble in a number of euro area countries before the crisis (Spain, Ireland). The differences in regional performance can also be attributed to structural factors. In the United States, the Great Lakes region is heavily dependent on manufacturing industry. Consequently, growth has been rather weak in recent decades. Similarly, strong structural rigidities in some euro area countries (such as Portugal) led to lower-than-average growth figures.

Before the start of EMU, unit labour costs were also converging in the euro area. Since 1999, the regional dispersion of those labour costs has generally been only slightly lower than in the United States. At the same time, there is still a wide variation between minimum and maximum levels in both regions; detailed data reveal that both unions contain regions where the change in unit labour costs is persistently higher or lower than the average.

In regard to economic convergence, the conclusion is therefore that, in an efficient currency union such as the United States, differences persist which are generally comparable to those in the euro area. Economic heterogeneity is therefore clearly not an argument for the negative view of the viability of the euro area.

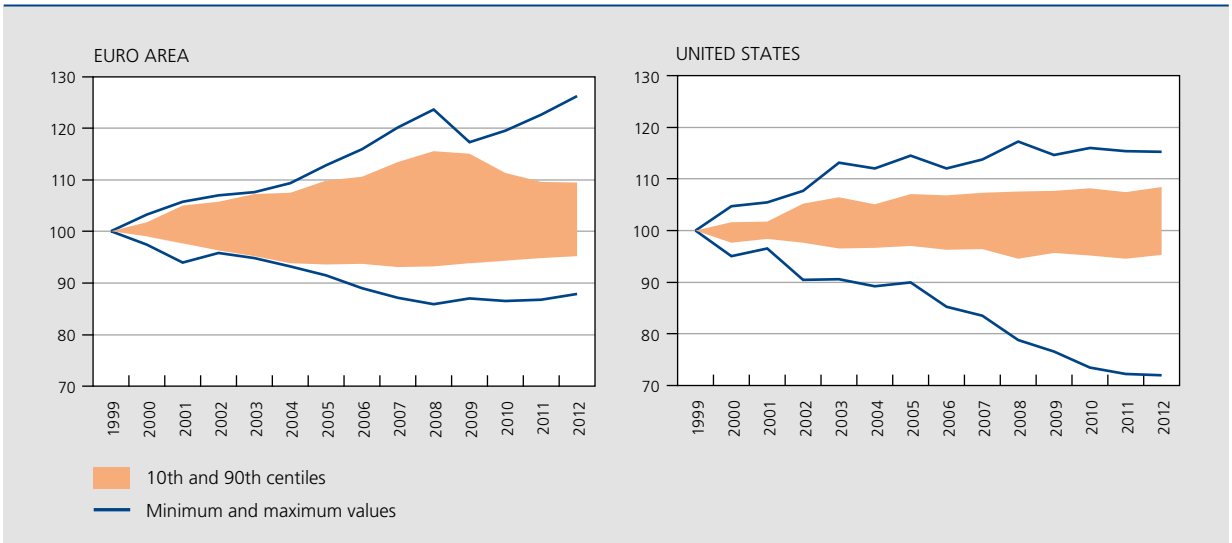
1.2.2 Flexibility

A monetary union where the members are different or face asymmetric shocks, but where production factor mobility and wage/price-setting are sufficiently flexible, can cope with the loss of the exchange rate and monetary policy as adjustment mechanisms.

Regarding the factor labour, the euro area is well behind the United States in fulfilling the flexibility conditions. After comparing the data for 2006, Gakova and Dijkstra (2008) concluded that migration between the American states is roughly double the level of migration between the EU countries, or even higher if EMU is considered. However, there has been some increase in labour mobility within EMU over the years. According to Van Beers *et al.*

CHART 3 DYNAMICS OF UNIT LABOUR COSTS IN THE EURO AREA AND IN THE UNITED STATES

(indices 1999 = 100)



Sources: EC, BEA.

(2014), who analyse a period up to 2012, the capacity to absorb adverse employment shocks thanks to labour mobility is greater in the United States than in Europe, though the difference has diminished in recent years.

A number of factors account for the greater internal mobility of labour in the United States, including institutional factors (a partially federal system of social security, less regulated labour markets, simple transaction procedures on the housing market), cultural factors (moving house is part of the American identity, use of the same language) and demographic factors (younger population).

In regard to wage flexibility, there are great disparities between the euro area countries. However, contrary to the widespread opinion that there is greater flexibility in the United States, a recent and much quoted study indicates that the US is not so different from the euro area (Dickens *et al.*, 2007). Conversely, an ECB study of consumer and producer prices shows that prices are indeed much more rigid in the euro area than in the United States (ECB, 2005).

Capital flows support economic integration and, like mobile labour, may create sufficient flexibility to absorb shocks. Since the establishment of EMU, there has been a big rise in the holding of cross-border assets. Ownership of debt instruments in particular, but also the holding of cross-border equities between member countries, has expanded considerably (Van Beers *et al.*, 2014). That picture is not specific to EMU, because financial integration has also gathered pace at international level. Nonetheless, this development has been more marked in EMU. Foreign bank assets, in particular, form a major component of cross-border assets. The internationalisation of EMU's banking institutions took place via interbank financing and to a small degree via direct lending to consumers in other countries (Sapir and Wolff, 2013). This last market is still relatively segmented at national level (ECB, 2014). In the United States, where the banking market was originally very segmented, successive waves of deregulation and the removal of geographical restrictions have led to intensification of financial flows between the states[1]. According to Morgan *et al.* (2004), the proportion of assets held by banking groups present in more than one state has rapidly grown six-fold (from 10 % in 1975 to 60 % in 1994)[2]. In contrast to the United States, the proliferation of bank regroupings in Europe led to the emergence of large groups competing with one another mainly on the wholesale market, whereas the retail market has remained predominantly national.

Another section of the economic literature tries to measure financial integration from the broader angle of capital mobility. In a region where integration is already advanced, capital can flow freely between members and thus channel surpluses to countries in need of finance, as has happened in the euro area[3]. Owing to data restrictions, it is almost impossible to conduct such an exercise for the American states, and various writers use indirect criteria which hamper comparison with the euro area.

Nevertheless, various recent empirical contributions[4] have examined the role of financial integration in stabilising macroeconomic shocks, and compared the results obtained for the United States and EMU. Although the financial markets in EMU expanded from 2000 up to the crisis, they play a much less significant shock-absorbing role overall than in the United States. As a result of the crisis, private capital flows were actually reversed, especially in the peripheral EMU countries, while other shock absorption channels such as public capital flows or savings took over that role. In the United States, the financial markets have long played a major part in adjustments to macroeconomic shocks.

1.2.3 Adjustment mechanisms at federal level

If an economy experiences an asymmetric shock and the factor markets are unable to absorb that shock entirely, or sufficiently rapidly, the monetary union is still viable so long as there is sufficient solidarity or "shock absorption capacity" at federal level. In most cases, that presupposes greater integration in the direction of a fiscal union. Section 4 examines in detail the current degree of fiscal integration in the euro area compared to the US.

2. The banking union

2.1 The banking landscape in the United States and in the euro area

The financial crisis and the euro crisis highlighted a number of important weaknesses in the euro area, and particularly the interaction between banks and their national governments. That was one of the causes of the problem

(1) Until the 1970's, the existence of restrictive laws on banking activities in the United States led to great geographical fragmentation, broadly corresponding to 50 separate markets. After that, there was a move towards deregulation with the gradual introduction of various amendments and laws authorising the banks to pursue their business in multiple states simultaneously. This transition to an "inter-state" banking system was completed in 1994 with the adoption of the Reigle-Neale Act (Ghironi and Stebunovs (2010).

(2) According to the authors, this percentage may have risen even higher since 1994 as a result of continuing mergers between large banking groups)(e.g. between the Bank of America and NationsBank in 1998); however, the authors note that for the years after 1994 it becomes particularly difficult to obtain an accurate measurement of bank assets per state.

(3) EC (2014) and de Sola Perea and Van Nieuwenhuyze (2014).

(4) Asdrubali *et al.* (1996), Balli and Sorensen (2007), Afonso and Furceri (2008), Furceri and Zdzienicka (2013), and Kalemli-Ozcan *et al.* (2014).

of financial fragmentation and impeded the financing of some economies (de Sola Perea and Van Nieuwenhuyze, 2014). That problem apparently does not exist in the United States, thanks to various factors.

First, the euro area member countries are themselves responsible for supporting their banks and, if necessary, arranging their resolution. In the United States, however, that is a federal responsibility, and the central government also has ample resources for rescuing banks in difficulty. The bank rescue operations in a number of euro area member countries therefore had much more serious repercussions than those felt by the US federal government, especially as banks in the euro area are, on average, larger than in the United States. There are around 6 000 banks operating in each of the two currency areas, but at the end of 2012 the assets of the euro area banks totalled 266 % of GDP, against just 72 % of GDP in the United States. In both the US and the euro area as a whole, the volume of bank assets declined as a percentage of GDP following the financial crisis, though some euro area countries still saw that percentage edge upwards, mainly as a result of the severe impact of the recession on their GDP. Although the smaller balance sheet total of the American banks is due partly to differences in accounting rules, it nevertheless indicates primarily that the US economy is funded in a manner fundamentally different from that of the euro area. In the latter, the banks account for more than 60 % of corporate and household financing, while in the United States this figure is less than 25 %.

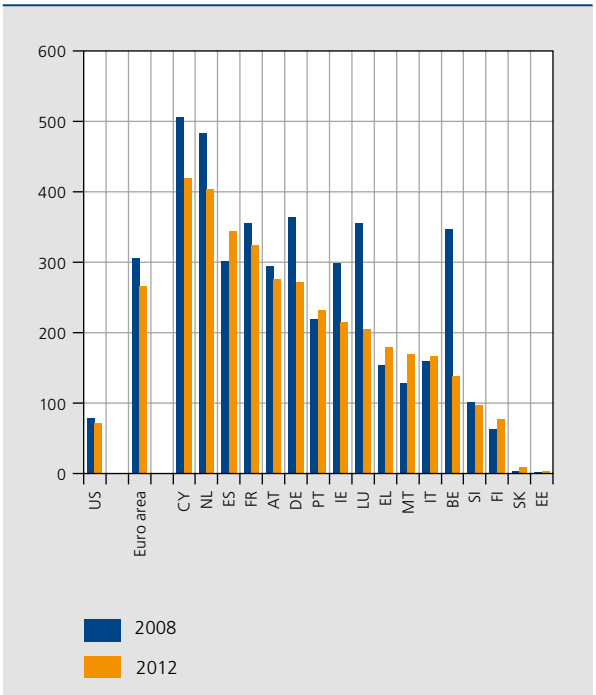
There are two reasons for the much lower level of bank intermediation in the United States:

1. First, the capital markets are larger than in the euro area: the equity markets and the corporate bond market are more developed, one reason being the greater importance of private pension funds.

2. Second, the smaller role of banks in the US is also due to the larger scale of "shadow banking": taken as a whole, the more developed hedge funds and equity funds, money market funds and investment funds in the United States are almost comparable in size to the banking sector itself. In addition, the originate-to-distribute model plays a key role, notably via the banks' widespread issuance of asset-backed securities[1]. In addition, the government-subsidised institutions, Fannie Mae and Freddie Mac, (re)finance more than 50 % of mortgage loans.

A second fundamental problem in the euro area is the large exposure of European banks to the sovereign debt of their own country; that exposure ranges between 10 to 15 % of the national public debt in France and the Netherlands, 24 % in Germany and Italy, and no less than 36 % in Spain, whereas it is only just over 2 % in the United States where the debt is financed mainly by other countries, non-bank financial institutions, households and the central bank. In the strong Member States (Germany and the Netherlands), that exposure has remained stable or even declined since the euro crisis, but that is certainly not the case in the weaker countries, including the programme countries – Ireland, Greece and Spain – and Italy. Moreover, in the euro area, this concerns exposure to the debt of the institution's own country, whereas in the United States the banks are mainly exposed to the debt of the federal government which the financial markets consider highly creditworthy, in contrast to the governments of some of the weaker euro countries. As explained in more detail in the next section, the size of the debt of the American states is limited to 10 to 20 % of GDP, owing to the frequent application of balanced budget rules at state level, and the banks are not really encouraged to include that debt in their portfolios since it is not regarded

CHART 4 SIZE OF AMERICAN AND EUROPEAN BANKS[1]
(assets, in % of GDP)

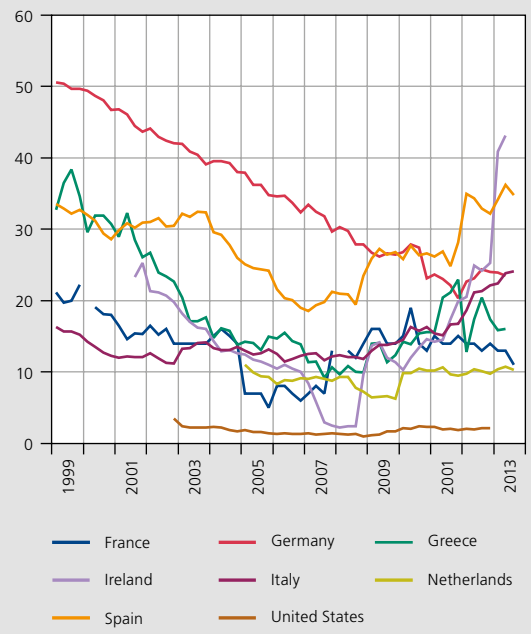


Source: ECB, Banking Structures Report, 2013.
(1) Non-consolidated data, i.e. excluding foreign subsidiaries.

(1) Asset-backed securities (ABS) are financial instruments backed by a portfolio of assets that provides collateral and generates cash flows. An important advantage of ABS is that, by combining less liquid assets, they improve their tradability and thus facilitate financing via the market.

CHART 5 BANKS' EXPOSURE TO THE DEBT OF THEIR OWN GOVERNMENT

(in % of a country's public debt held by domestic banks)



Source: Bruegel.

as risk-free for the purpose of determining their capital requirements. Finally, De Grauwe (2011) has shown that the financing of the public debt in a country that has lost control over its own currency is far more vulnerable to a sudden reversal of capital flows than in a country that still has its own currency, with potential implications for the market's valuation of that public debt and for the balance sheets of the banks.

In the event of a negative shock, the national resolution and financing of banks in difficulty, especially given the size of the banks in the euro area and the fact that those banks have a large exposure to their own government's debt, trigger a negative feedback loop between governments and banks: if a government is regarded as less solvent, then the banks of that country are equally regarded as less solvent because their government has less scope for rescuing them and there is a greater risk of losses for the bank. Conversely: if a bank's balance sheets become less sound, there is an increased risk that the government will have to intervene, with adverse consequences for the debt-GDP ratio and the creditworthiness of the government in question. This all has implications for the operation of the financial markets in the euro area. Even before the financial crisis, the degree of financial integration between the Member States was not optimal, and certainly not what one might expect of an efficient Single Market. Banks in the euro area are still predominantly 'national banks' and the same applies to the financial markets (Sapir and Wolff, 2013). This lack of financial integration in the euro area is due to factors concerning regulatory disparity, such as different tax rules, rules on corporate governance or bankruptcy laws, but primarily also a decentralised system of bank supervision and resolution. However, the financial and euro crisis greatly increased the fragmentation: cross-border capital flows – including interbank flows – dried up, the percentage of government and corporate bonds in non-residents' portfolios declined, and the banks' funding costs began to diverge more widely. All this undermined the efficiency of monetary transmission and had detrimental consequences for the financing of the economy of the weak Member States (de Sola Perea and Van Nieuwenhuyze, 2014).

In the euro area, the top priority is to break the vicious circle between weak banks and weak governments. The first step towards achieving that might be to improve the spread of the public debt across bank and non-bank portfolios, as in the United States. In this connection, there are some (including Weidmann, 2014) who consider that there should be limits on the concentration of the public debt among the banks. One alternative might be for these assets not to be regarded as risk-free for the purpose of determining the banks' capital requirements, as is the case in America for the debt instruments of the individual states. Be that as it may, any change must be very gradual to avoid spooking the markets.

In addition, as in the United States, there is a need for more centralised supervision of financial institutions and a more federal system of assisting or resolving banks in difficulty. The recommendations of the Van Rompuy report dating from the end of 2012 ("Towards a genuine Economic and Monetary Union") also contained these elements, accompanied by the establishment of a single deposit guarantee scheme. The first steps towards this "banking union" have been taken. They will be discussed later in this article on the basis of a comparison with the current institutional structure in the United States.

2.2 Prudential supervision

Prudential supervision in the United States is a complex system that has evolved over the years and has changed a great deal, especially since the financial crisis. Just as is the case in the euro area with the single supervisory mechanism (SSM), federal supervisors (the role of the ECB

in the SSM) and local supervisors (state supervisors) work together in the United States, owing to the large number of financial institutions.

The Federal Deposit and Insurance Corporation (FDIC), which also plays a crucial role in bank resolution (see below), supervises 63 % of all banks in America, which together represent just 17 % of total bank assets. The Office of the Comptroller of the Currency (OCC), an independent agency of the US Treasury and the Federal Reserve which, since the Dodd-Frank Act of 2010, is responsible for all systemic institutions, supervises 36 % of banks and savings institutions, representing more than 80 % of bank assets. Banks which come under the FDIC, but are regarded as "secure" and are relatively small, can be supervised entirely by state supervisors, though ultimate responsibility rests with the FDIC ; this concerns a fairly small number of local banks with few assets. However, one criticism of the American system is that, in some cases, banks are free to choose between a state supervisor and a federal supervisor, which may lead to "regulatory arbitrage" and the choice of the most lenient authority. In addition, multiple federal bodies have competence in the United States.

In the SSM, the ECB exercises direct supervision over almost 120 large, systemic banks that together account for around 85 % of bank assets in the euro area. In the United States, operational prudential supervision operates at federal level to a greater degree than in the euro area. However, the ECB is responsible for all banks, as it may decide at any time to supervise banks which are subject to the authority of the national supervisor in respect of most supervision tasks.

The launch of the SSM is being accompanied by a comprehensive assessment of the banks which are to come under the direct supervision of the ECB ; that assessment includes an Asset Quality Review (AQR) and a stress test. Pending the publication of the assessment results in October 2014, the euro area banks are evidently proceeding with their recapitalisation, and confidence in the banks is improving, as was the aim of this exercise. The experience of the United States reveals that regular, credible stress tests are vital for reinforcing that confidence. Some people consider that annual stress tests ought to be arranged for a group of systemic banks in the euro area as well (Nouy, 2014).

(1) As well as all cross-border banks requiring resolution and banks applying to the Single Resolution Fund or the European Stability Mechanism.

2.3 Bank resolution

In the United States, the institutional framework for bank resolution is simple : the FDIC performs the central role. In the European Union, the resolution process is more complicated. It consists of 2 levels : the Banking Resolution and Recovery Directive (BRRD), which was approved in April 2014 and enters into force at the beginning of 2015, regulates banking resolution for the entire European Union of 28 Member States, while the single resolution mechanism (SRM) applies these rules consistently, on a centralised basis, for all banks which fall under the SSM. Within the SRM, the allocation of tasks is similar to that in the SSM. For banks subject to direct ECB supervision [(1)], decisions are taken by a Single Resolution Board (SRB) while the national resolution authorities retain responsibility for the other banks. This arrangement is based on a Regulation (on which the European Parliament has yet to vote in the autumn of 2014) while the associated Single Resolution Fund (SRF) is legally based on an intergovernmental agreement. That agreement was signed on 21 May 2014 by 26 Member States – with the exception of the United Kingdom and Sweden – but has yet to be ratified ; agreement also has yet to be reached on the precise share-out of the banks' contributions. The American and European systems clearly differ in a number of respects :

In regard to decision-making : in the United States, the FDIC is responsible for initiating resolution, together with the FED and the OCC ; implementation is the responsibility of the FDIC where the decisions are taken by a Board of Directors comprising five federal members. In the United States, both preventive measures and resolution are triggered almost automatically on the basis of a system developed by the FDIC, Prompt Corrective Action (PCA), which defines "capital zones" in which intervention is required. If the risk-weighted assets' (RWA) capital ratio falls below 6 %, the supervisory authority may replace the management, for instance, and impose other corrective measures ; if the ratio drops below 2 %, the FDIC automatically takes over the institution.

In the euro area, decision-making is more complex, the Member States continue to play a role, and there is no automatism. The SRB consists of five "European" members plus the representatives of the national resolution authorities. Most decisions are prepared in an executive session attended by the "European" members plus the representatives of the Member State of the bank in question. The plenary meeting remains responsible for decisions which have a major impact on the Resolution Fund, and may reject decisions made by the executive session, such as those authorising the Resolution Fund to grant a

loan. Each Member State has a right to veto any decisions which would affect its budgetary sovereignty.

It is the ECB that gives notice that a bank is failing or is likely to fail, but the SRB itself may also initiate the resolution process. The SRB then decides the resolution arrangements: which instruments, how much support from the Resolution Fund, etc.

This complicated system is the result of a compromise between the Council and the European Parliament, and differs from the original proposal which gave a bigger role to the Commission in a more centralised mechanism. In practice, it remains to be seen how well the current compromise works in periods of financial stress.

In regard to bail-in: both banking unions have a system whereby, before the government intervenes, a bank is first rescued by a contribution from the shareholders and other creditors; this 'internal rescue' (bail-in) avoids or limits the cost to the taxpayer. Overall, the principles applied are broadly the same, particularly the "no creditor worse off" principle which implies that the creditors should not suffer heavier losses than in a normal bankruptcy procedure. However, the BRRD and the SRM specify that, in principle, a bank's private creditors must contribute towards the bank's rescue for at least 8 % of the liabilities before the national resolution fund or the SRF can intervene or before any other form of public support can be granted; to that end, bank balance sheets must comprise a minimum of such liabilities. In the United States, there is no such minimum threshold of available liabilities.

In regard to resolution funds: the FDIC's resolution fund, the Deposit Insurance Fund (DIF), is used for both bank resolution and deposit protection. It is prefinanced by the banks on the basis of a contribution closely linked to their systemic character. The aim is to create a fund amounting to 1.15 % of the deposits covered by the deposit guarantee scheme ("covered deposits"); that figure will rise to 1.35 % in 2020 and to 2 % in subsequent years. That 2 % would form a fund totalling around $ 81 billion or roughly 0.6 % of the balance sheet total of the banks. The BRRD requires the Member States to establish a fund with a target of 1.0 % of the covered deposits, while the Deposit Guarantee Scheme Directive imposes a target of 0.8 % of the covered deposits for national deposit guarantee funds. Under the European system, the contributions are similarly linked to the size of the balance sheet, adjusted for parameters relating to systemic risk. The two funds can be combined. They must achieve their 'steady-state' level within ten years, i.e. by 2025. 1.8 % of all covered deposits would amount to roughly 0.3 % of the banks' balance sheet total. The national resolution funds, regarded as part of the SRF, will gradually be merged from the beginning of 2016 so that by 2024 they will amount to 1 % of the covered deposits.

In regard to the support mechanism (fiscal backstop): in order to assess the difference between the European and American resolution mechanisms, the credit line available to the FDIC from the US Treasury, which amounts to $ 100 billion (but can be increased to $ 500 billion if necessary), is crucial. The intention is that in a crisis (an event which, by definition, is unpredictable in its timing and scale) the FDIC borrows from the DIF and subsequently arranges repayment of the debts by the banking sector. The credibility of the FDIC is therefore backed by the Treasury. Apart from this facility, in view of the extent of the financial support needed for the banks in the financial crisis, the United States set up the Troubled Asset Relief Programme (TARP) on the basis of the Emergency Economic Stabilization Act adopted at the end of 2008. That programme had multiple objectives, but was in fact an *ad-hoc* fiscal backstop. The initial budget for the TARP was $ 700 billion, but it was cut to $ 475 billion. The conclusion is that the stability of the American banks is guaranteed by a support mechanism which is in fact unlimited, its size being adjusted according to the circumstances.

That is not yet the case in the euro area. At present, the SRM does not provide a fiscal backstop but the Ecofin Council of 18 December 2013 did state that it aimed to reach agreement on this before the end of the transitional phase of the SRF (i.e. before 2024), so that the SRF's borrowing capacity could be increased; however, opinions are still sharply divided at the moment. The main impediment to an effective fiscal backstop for the SRF is of course that the euro area does not have its own budget and its own borrowing capacity. Only the European Stability Mechanism (ESM) could perform that role if necessary. During the transitional phase – until such time as the SRF is fully operational – bridging loans can still be arranged via national resources, loans between the national entities and, if necessary, via the ESM, but in that case via a loan to a particular Member State. If all other options have been exhausted, the ESM can, in the last resort, recapitalise a bank directly (i.e. without adding to the public debt of the country in question) up to a maximum of € 60 billion.

In regard to the effectiveness of bank resolution: fast and effective liquidation of zombie banks and bankrupt credit institutions is vital for the revival of lending to the economy, and reduces the budgetary cost for the government.

In that respect, reference is often made to the better performance of the United States; the FDIC has organised the resolution of 484 banks since the financial crisis, whereas that figure is estimated at around a hundred in the European Union, including fifty or so in the euro area[1]. The average size of a liquidated bank in the US is $ 1.4 billion; it is therefore mainly small banks that have been wound up via the DIF, whereas public resources were used via the TARP for the rescue or resolution of the larger banks. Since 2009, there have been no more banks receiving federal government support in the United States, whereas this number in the EU is still considerable, although it is declining. This all seems to indicate that the American banking sector has recovered faster from the financial crisis of 2007-2008. The main reasons are probably that, in the past, the United States has conducted more credible stress tests (IMF, 2013), and bank supervision and resolution are organised according to a more centralised system, which should ensure a more neutral approach, free of national budgetary constraints, for instance.

2.4 Deposit guarantee

A deposit guarantee scheme helps to avoid a bank run. The American system is comparable with that in the European Union, although at $ 250 000 per deposit and per bank the amount guaranteed is higher than the minimum € 100 000 applicable in the EU. However, a number of EU Member States do guarantee a larger amount, which in some cases is actually unlimited. Moreover, in relation to GDP per capita, the guarantee in the United States is only around 40 % higher than the EU figure of €100 000. In the United States the guarantee is covered via the DIF, the federal agency described above. In the European Union, as already mentioned, the new deposit guarantee scheme (DGS) provides for a pre-financed fund at Member State level. Earlier proposals in the Van Rompuy report for launching a common deposit guarantee fund at European Union or euro area level are no longer on the political agenda.

With the SSM and the SRM, the euro area has taken an important step towards a full banking union, as it exists in the United States. This fosters financial stability, notably by breaking the negative feedback loop between banks and national governments. The European banking union is not an exact copy of its American counterpart, but rather a unique structure which maintains a major role for the national supervisory and resolution authorities. Agreement has yet to be reached on certain aspects, such as a common deposit guarantee fund and a fiscal backstop for the resolution fund.

The creation of a banking union is a cornerstone of a single financial market, but it is not the only component. In other spheres, the existing rules also need to be further harmonised in order to improve the integration of financial markets in the European Union, so that capital can be optimally allocated and risks can be spread across national borders (risk-sharing). Deeper financial integration could also encourage the development of capital markets, and in the euro area it could lead to a more balanced funding mix and risk spreading, with a larger proportion of non-bank financing. This form of risk-sharing could be supplemented by transfers between the Member States via a 'euro area budget', thus creating an insurance mechanism to alleviate asymmetric, country-specific shocks (fiscal risk-sharing). The next section discusses the fiscal union in the United States and the feasibility of further fiscal integration in the euro area.

3. Fiscal union

The United States is sometimes cited as an example by those who advocate providing the euro area with a proper budget for absorbing asymmetric shocks and strengthening the stability of the Union as a whole. The Optimum Currency Area theory (see above) also argues for a significant stabiliser via budget transfers in a monetary union featuring rigid labour markets and low labour mobility.

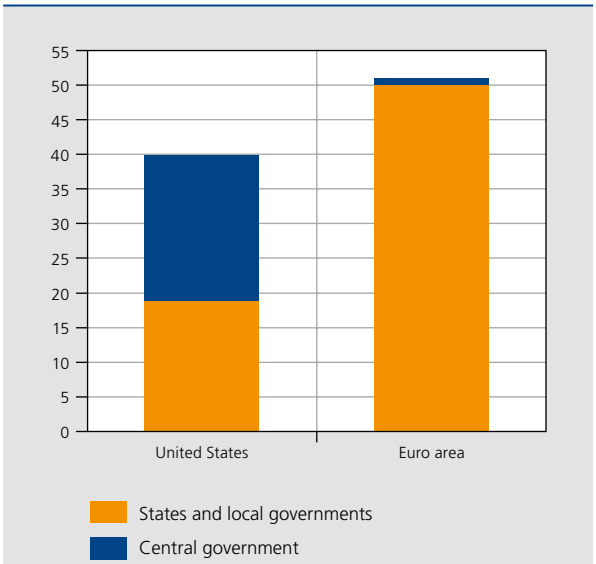
The United States does in fact have a substantial federal budget, which amounted to 21 % of GDP in 2012. In the US, central government revenues and expenditure exceed those of the states and local authorities. In contrast, in the EU, the budget amounts to just 1 % of GDP and 85 % of it comprises contributions from the Member States, whereas the Member States themselves spend almost 50 % of GDP.

In the United States, a large part of federal expenditure is devoted to the operation of the federal public services, public investment and defence, but the bulk of it is intended to cushion the impact of idiosyncratic shocks on individual states. The federal government actually funds most of the social spending, namely basic pensions and part of the health care, so that spending in an individual state does not have to be adjusted to cope with the impact of economic shocks on its own revenues or expenditure. That gives the federal government an efficient instrument for absorbing negative income shocks at sub-federal level. Although unemployment benefits are paid mainly by the states, in the event of severe shocks

(1) Sources: FDIC annual reports and Open.economics.net.

CHART 6 PUBLIC EXPENDITURE IN THE UNITED STATES AND IN THE EURO AREA[1]

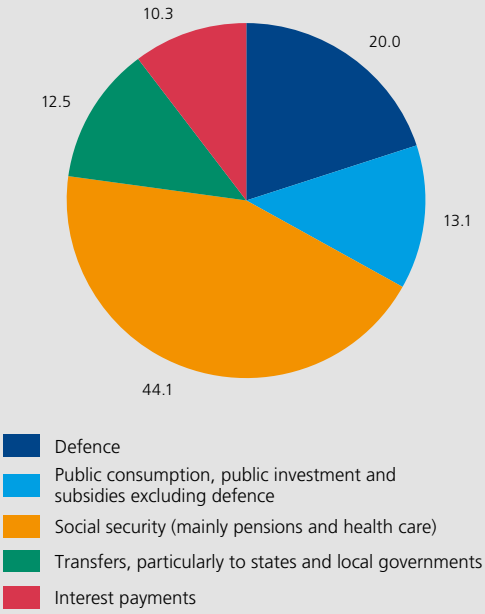
(in % of GDP, 2012)



Sources: OECD Fiscal Decentralisation Database, own calculations based on payments by the EU to the Member States.

(1) For the euro area, central expenditure is confined to the crisis mechanisms (bilateral loans to Greece, EFSM, EFSF, ESM).

CHART 7 FEDERAL GOVERNMENT EXPENDITURE IN THE UNITED STATES



Source: BEA.

those unemployment systems are often supplemented by *ad-hoc* federal government programmes. For instance, in 2008, the Emergency Unemployment Compensation Program was created for states with particularly high unemployment. The transfers from the federal government – the grants-in-aid to state and local governments – comprise over a hundred programmes whereby the federal government partly funds, and thus partly determines, local policy.

The operation of the automatic stabilisers via the social security expenditure therefore offers the American states an insurance mechanism against their own risks (fiscal risk-sharing).

However, fiscal risk-sharing in the United States operates in the first instance via the federal government revenues; these amount to around 55 % of total consolidated public revenues. The operation of the automatic stabilisers ensures that the economic agents in states suffering a negative shock contribute less to the central budget, while the contributions from those of states in a better economic position are relatively bigger. More specifically, in the United States, the federal government's revenues are derived mainly from the tax component most sensitive to the business cycle, namely income tax (personal income tax and corporation tax); state revenues consist mainly of turnover taxes and a personal income tax component, while local government revenues originate primarily from property taxes.

As a result of the 'balanced budget' rules introduced in most of the American states, their debt has been kept below 25 % of GDP. The American public debt, which amounted to 104.3 % of GDP in 2013, is therefore essentially federal government debt.

In stark contrast to the situation in the United States, the already meagre Community budget resources in the European Union can only absorb a very small part of any asymmetric shocks. That applies, for instance, to the European Globalisation Fund with spending amounting to € 150 million a year; Union expenditure consists predominantly of transfers to agriculture, long-term transfers for regional development, and R&D subsidies to firms. Less than 15 % of the EU budget is financed by customs duties and agricultural levies, while almost 85 % comes from contributions from the Member States according to their share in the VAT tax base and the GNI of the Union. This last part is therefore linked to GDP growth, but in view of the small size of the EU budget and the possibility that contributions may not be synchronised with the business

cycle, its stabilising function is limited. The fact that cohesion policy expenditure is concentrated in the poorer Member States while the richer Member States pay a bigger share of the contributions does lead to a transfer from the rich to the poorer Member States in broad terms. However, that transfer is determined by differences in the level of GDP per capita, and furthermore, variations in the business cycle have no influence on the respective transfers. The EU budget is therefore barely capable of absorbing shocks; at most, it has a small redistributive effect. Moreover, the EU budget must always be balanced, and the European Union can only borrow for a small number of specific expenditures, such as the Balance of Payments Facility. The recent tough negotiations between the Member States (particularly between the net contributors and the others) and between the Council and the European Parliament on the medium-term budget (Multiannual Financial Framework, or MFF) clearly demonstrated that there is no willingness at this stage to increase the solidarity between the Member States via this budget. Nevertheless, in the mid-term review of the MFF and the planned debate on the introduction of genuine own resources for the Union in 2016, a form of counter-cyclical contributions might be considered.

It is true that the euro area has acquired crisis mechanisms enabling the euro area Member States, by means of bilateral loans (the Greek aid programme), the EU budget (EFSM), government guarantees (EFSF) or capital participation (ESM), to grant financial assistance amounting to around 4 % of GDP for euro area members in difficulty. However, an essential aspect of fiscal risk-sharing is its *ex-ante* character, because that spreads the burden of an asymmetric shock across the member countries and helps the financial markets in their risk assessment before adverse scenarios materialise and contagion takes hold.

Since it is now possible to intervene more promptly, the existence of these assistance funds is already progress in itself, compared to the situation at the start of the euro crisis, but it is no substitute for the ex-ante mechanisms of fiscal risk-sharing.

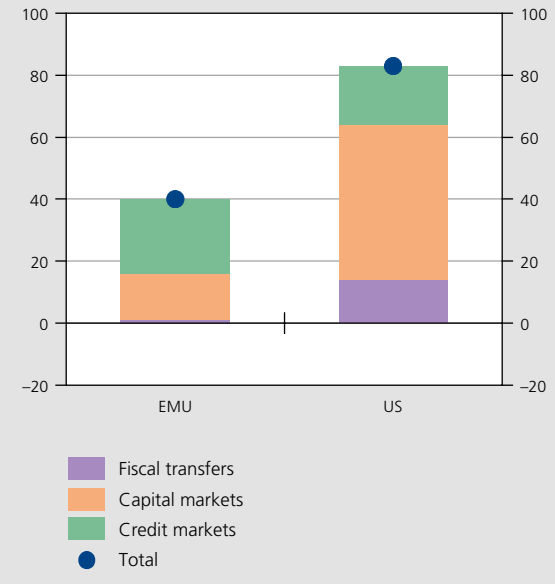
Protection against idiosyncratic shocks via the transfer of government budget resources need not necessarily be very extensive. In the United States, fiscal risk-sharing amounts to only about 15 percentage points of the 80 % total risk-sharing (Allard *et al.*, 2014). It is the financial markets that would provide most of the income protection against risks, though that takes no account of the federal bank resolution funds and any additional fiscal backstop that might be used to rescue local banks in a crisis. In the euro area, the IMF estimates the total risk-sharing at a much lower level, namely just 40 % (again, excluding the SRF). Fiscal risk-sharing is virtually non-existent. Protection against income shocks via the capital markets is more limited than in the United States, and in so far as the financial markets offer protection against income shocks, it operates mainly via the credit markets (cross-border banking activities). As the recent euro debt crisis has shown, this is a less stable risk-sharing channel since the international credit markets tend to dry up in periods of turbulence.

An effective banking union – including a credible fiscal backstop – and smoothly operating European capital markets can already do much to reduce and absorb asymmetric shocks. They can therefore lead to both risk reduction and risk-sharing (Geeroms and Karbownik, 2014). It thus becomes less likely that a Member State's budget will have to bear on its own an exceptionally severe financial sector shock such as the one in 2008.

In addition, the Stability and Growth Pact rules, as also included in the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union, offer substantial scope for a counter-cyclical fiscal policy, so long as the rules are applied and the Member States therefore keep close to their medium-term objective of a structural balance or surplus, and their public debt is on a sustainable path. In that way, the Member States

CHART 8 RISK-SHARING VIA THE FINANCIAL MARKETS OR VIA THE GOVERNMENT

(in % of an income shock absorbed)



Source: IMF.

can create a buffer in fat years to cope with leaner years. Nonetheless, many believe that it could be useful to have a fiscal risk-sharing mechanism as well, for instance by transferring part of the national fiscal policy to European level so that the operation of the automatic stabilisers is not confined to the national level but can take account of the spillover effects of fiscal policy on other Member States. Limiting the negative impact of an asymmetric shock on other Member States is often the primary reason for fiscal risk-sharing, rather than the solidarity aspect.

This type of mechanism can in principle promote a more stable union. The Van Rompuy report also proposed a 'fiscal capacity'. Various specific suggestions were made on the subject[1]: some people developed the idea of a fund available to Member States suffering a negative shock and pre-financed either by all the Member States (the "Rainy Day Fund" proposed by the Tommaso Padoa-Schioppa Group, 2012) or solely by those infringing the fiscal rules (the European Monetary Fund of Mayer and Gros, 2010). Another idea concerns a mechanism whereby Member States with an unemployment rate below the structural level would pay part of the unemployment benefits of countries suffering a negative shock where unemployment exceeds the structural level. In principle, such a system would not lead to permanent transfers but would be fiscally neutral over the business cycle as a whole (Trésor, 2014).

Two key conditions must be met if a fiscal risk-sharing mechanism is to be workable and politically feasible.

First, there must be no question of bad policy being rewarded by transfers, in other words it is essential to avoid or at least minimise moral hazard. Insurance can only be provided against bad luck. That applies to all policy spheres. In the case of fiscal policy, there are two ways of imposing budgetary discipline.

The first option is a credible 'no-bail-out' and fiscal discipline imposed by the financial markets. However, the experience of the United States has shown that certain conditions must be met to ensure that 'no-bail-out' rules work well as a basis for fiscal discipline at sub-federal level. The financial markets will only regard these rules as credible if the potential contagion effects on other states and the need for *ex-post* financial assistance from the federal government and the other states are kept to a minimum. That presupposes that even if a state runs out of funding and can no longer meet its payment obligations, there is no threat to financial stability and, furthermore, the local population is assured at all times of a minimum level of public services and social benefits so that the financial/economic and social costs of the crisis can be kept under control. According to the IMF staff, the existing fiscal risk-sharing between the federal government and the states specifically creates the basis for the credibility of the 'no-bail-out' rule in the US, in contrast to the situation in the euro area. Moreover, in the past the 'no-bail-out' principle was actually applied[2]. Most of the American states have also included balanced budget rules in their legislation, in order to convince financial markets of their creditworthiness. However, such a mechanism requires a relatively large central budget and far-reaching political integration, which is of course easier in a nation state such as the United States than it is in the euro area.

The second option is for the central government to impose rules which it can also adequately enforce. In the European Union, one might even consider a Minister of Finance for the euro area (Trichet, 2011) or a *Budgetkommissar* (Schäuble, 2012). However, that requires a considerable transfer of sovereignty from the Member States and raises questions of democratic legitimacy. It also entails greater political integration. Another possibility is strict monitoring of centrally agreed rules by an independent institution. In recent years the Union's economic governance has already undergone radical revision, notably via the "Six Pack" and the "Two Pack". At that point the European Commission was already accorded a greater role in the supervision of the budget rules and in the new procedure for the prevention of macroeconomic imbalances. However, the Council retained a crucial vote in the decision-making process. Granting more powers to an independent institution could promote the effectiveness of the two procedures and limit the risk of bad policy.

The second key condition for a risk-sharing mechanism is that the Union must not become a union of permanent transfers ("Transferunion"). This means that the permanent redistribution of income is possible only within clearly defined limits. Income redistribution via the European cohesion policy is one example: the amount involved is small, and is fixed by the European Union as a whole in the MFF and in the annual budget, and the transfers are linked to conditions concerning expenditure and cofinancing; furthermore, the European Commission is moreover responsible for monitoring and assessment.

The great problem with all this is how to determine bad policy and bad luck. Simple answers often have their limitations. For instance, the French proposal for an

(1) For a clear overview, see Wolff (2012), A Budget for Europe's Monetary Union, Bruegel Policy Contribution, December.

(2) In the early 19th century the states began to borrow on a large scale, thereby accumulating heavy debts. On the assumption that their debt was implicitly guaranteed by the federation, many states requested a federal bail-out. However, Congress refused and in 1840 a number of states were unable to honour their commitments and had to implement painful adjustment measures (Cf. Bordo *et al.*, 2011).

unemployment benefit scheme tries to make that distinction by taking only cyclical unemployment – assumed to be the result of bad luck – as the basis for the Community payment of unemployment benefits; the part of the unemployment benefits relating to structural unemployment is then due to bad policy (e.g. an excessively rigid labour market) and has to be financed nationally. However, there are various potential methods of determining the cyclical and structural components, and agreement must first be reached on those methods.

Conclusion

This article compares the euro area and the United States in order to draw lessons for improving the Economic and Monetary Union. Although still not perfect, the US comes closer to fulfilling the Optimum Currency Area criteria, and it did not experience the sovereign debt crisis that hit the euro area, partly because the US has federal institutions which are totally or partially lacking in the EU.

The stability of the euro area would improve if the Member States came closer to meeting the criteria of an Optimum Currency Area. That requires more flexible goods and labour markets and greater regional labour mobility. In addition, the Single Market needs to be deepened, and it is necessary to avoid economic imbalances which can generate contagion effects in other Member States. In the absence of a common economic policy like that in the US, there is a need for enforceable coordination of national policies. The necessary instruments have been available for a number of years: the Six Pack and the Two Pack could be further refined if need be, but the key issue now is to ensure that the country-specific recommendations resulting from the European Semester are actually implemented. This concerns a problem of ownership and political responsibility for the stability and prosperity of individual countries and the European Union as a whole.

It is vital to avoid any repeat of a European debt crisis such as that which occurred in 2010. The first requirement here is the completion of the banking union. In that respect, great progress has been achieved with the single supervisory mechanism, the detailed assessment of the banks which fall under it, and the establishment of a single resolution mechanism. However, by means of an amendment to the Treaty, the two tasks of the ECB – monetary policy and prudential supervision – could be kept entirely separate from one another, and the insurance sector could also be placed under common supervision. The resolution mechanism should be complemented with a fiscal backstop, and the third pillar of the banking union, a single deposit guarantee scheme, could help to prevent adverse financial shocks in the euro area. In line with the principle of free capital movements, the financial markets should also be deepened by the creation of a genuine capital union in addition to a banking union. This means that the economy, just as in the United States, is financed more via non-bank channels, which requires among other things further streamlining of national rules and the creation of new financial instruments which are properly supervised and which, by providing potential investors with adequate information, can also help to finance SMEs. That will make it possible to increase 'risk-sharing' between the Member States via the financial markets, thereby reducing the need for budget transfers, which are moreover politically difficult in the European Union.

For the residual risk-sharing need, the US has an important form of debt mutualisation and a federal budget that helps to cushion economic shocks. However, that has evolved over two centuries of political integration, more particularly since Hamilton created the first federal government debt. The euro area implemented its common monetary policy immediately, and with success, but we cannot expect the 18 European nation states to take sufficient steps towards a political union within a relatively short time span, though that is probably necessary for the issuance of common debt and for an agreement on a substantial budget for the euro area or another shock-absorbing mechanism.

The issuance of common debt is a panacea for multiple euro problems and would expand the range of monetary policy instruments, but – like transfers – it is hijacked by the moral hazard problem, and the difficulty of distinguishing between bad policy and bad luck. Until a convincing solution has been found, we can expect such mechanisms to remain politically taboo. Rigorous implementation of the recommendations in the context of the European Semester could foster economic convergence between countries and could also broaden the political support for encouraging richer Member States to show more solidarity. Currency unions have a central budget because they are also political unions; the euro area is an exception to that historical rule. The euro area can survive without a federal budget; the margins inherent in the European fiscal rules, provided they are respected both in good and bad times, make it possible to absorb economic shocks via the national budgets, something that an efficient banking and capital union will do much to assist.

Bibliography

Afonso A. and D. Furceri (2008), "EMU enlargement, stabilisation costs and insurance mechanisms", *Journal of International Money and Finance*, 27(2), 169–187.

Allard C. *et al.* (2013), *Toward a Fiscal Union for the Euro Area*, IMF Staff Discussion, Note 1309, September.

Alvarez L.J. *et al.* (2005), *Sticky prices in the euro area, A summary of new micro evidence*, ECB Working Paper No 563, December.

Asdrubali P., B.E. Sorensen and O. Yosha (1996), "Channels of interstate risk sharing: United States 1963-1990", *The Quarterly Journal of Economics*, 111(4), November, 1081–1110.

Balli F. and B. E. Sorensen (2007), *Risk sharing among OECD and EU countries: The role of capital gains, capital income, transfers, and saving*, MPRA Working Paper No 10223, December.

ECB (2013), *Financial integration in Europe*, April.

ECB (2014), *Financial integration in Europe*, April.

ECB (2013), "Intra-Euro area trade linkages and external adjustment", *Monthly Bulletin*, January, 59–74.

Bordo M. D., A. Markiewicz and L. Jonung (2011), *A Fiscal Union for the Euro: Some Lessons from History*, NBER Working Paper No 17380, September.

Buch C. M. (2000), *Financial market integration in the US: lessons for Europe?* Kieler Arbeitspapiere 1004, September.

Coene L. and G. Langenus (2013), "Belgium: Promoting Fiscal Discipline in a Federal System", in George Kopits, *Restoring Public Debt Sustainability*, Oxford University Press, December.

Corsetti G. (2008), *A modern reconsideration of the theory of OCA*, EC, Economic Papers 308, February.

De Grauwe P. (2011), *The governance of a fragile eurozone*, KULeuven and CEPS, April.

de Sola Perea M. and Ch. Van Nieuwenhuyze (2014), "Financial integration and fragmentation in the euro area", NBB, *Economic Review*, June, 109–138.

Dickens W.T. *et al.* (2007), "How Wages Change: Micro Evidence from the International Wage Flexibility Project", *Journal of Economic Perspectives*, Spring.

Draghi M. (2014), *Hearing at the Committee on Economic and Monetary Affairs of the European Parliament*, Introductory statement, Strasbourg, 14 June.

EC (2012), *A Blueprint for a deep and genuine Economic and Monetary Union – Launching a European Debate*, November.

EC (2012), *Towards a Genuine Economic and Monetary Union*, Report by the President of the European Council, in collaboration with the Presidents of the EC, the Eurogroup and the ECB, December.

EC (2014), *Communication to the European Parliament and the Commission on Long term Financing of the European economy*, 27 March.

ECB (2011), *Remarks at the farewell event*, speech Jean-Claude Trichet, Frankfurt am Main, 19 October.

ECB (2013), *Banking Structures Report*, November.

Eichengreen B. (2014), *The eurozone crisis: the theory of optimum theory bites back*, Notenstein White Papers, March.

Epstein R. et M. Rhodes (2014), *International in Life, National in Death? Banking Nationalism on the Road to Banking Union,* Paper prepared for the ECPR meeting in Salamanca, 10–15 April.

Feld L. P., J. Haucap, W. Möschel, V. Wieland and B. U. Wigger (2012), *Wie viel Koordinierung braucht Europa?*, Stiftung Markwirtschaft, Kronberger Kreis Studien 55.

Furceri D. and A. Zdzienicka (2013), *The Euro Area Crisis: Need for a Supranational Fiscal Risk Sharing Mechanism?*, IMF Working Paper No 198, September.

Gakova Z. and Lewis Dijkstra (2008), *Labour mobility between the regions of the EU-27 and a comparison with the USA*, EU Regional Policy, Note 02.

Geeroms H. (2009), *The Idea of a European Debt Agency*, Commemorative Book for the 80 Years Jubilee of Roman Głowacki, 116–123.

Geeroms H., W. Moesen and S. De Corte (2011), *The European Union at a crossroads: an action plan*, CES, December.

Geeroms H., S. Ide and F. Naert (2014), *The European Union and the Euro. How to Deal with a Currency Built on Dreams*, Intersentia.

Geeroms H. and P. Karbownik (2014), *How to complete the EU's Banking Union?*, Bulletin de documentation Finances, 1st quarter, n° 1.

Ghironi F. and V. Stebunovs (2010), *The domestic and international effects of interstate US banking*, Boston College Working Papers in Economics, 765.

Gros D. (2013), "Banking Union rather than Fiscal Union", Visions for Economic Policy Coordination in Europe, June, 63–71.

Guntram B.W. (2012), *A Budget for Europe's Monetary Union*, Bruegel Policy Contribution, December.

Kalemli-Ozcan S., E. Luttini and B. Sorensen (2014), "Debt Crises and Risk-Sharing: The Role of Markets versus Sovereigns", Scandinavian Journal of Economics, 116(1).

Kaminsky G. (2005), *International Capital Flows, Financial Stability and Growth*, DESA Working Paper 10.

Kenen P. (1969), "The Optimum Currency Area: An Eclectic View", in R.A. Mundell and A.K. Swoboda, *Monetary Problems of the International Economy*, University of Chicago Press.

Lane P. (2013), *Capital flows in the Euro area*, EC Economic Paper 497, April.

Laubach T. (2005), *Fiscal Relations Across Levels of Government in the United States*, OECD Economics Department, Working Paper 462.

Mc Kinnon R. (1963), *Optimum Currency Areas*, American Economic Review 52.

Mayer Th. and D. Gros (2010), *Towards a Euro(pean) Monetary Fund*, CEPS Policy Briefs, 17 May.

Mongelli F.P. (2008), *European economic and monetary integration and the optimum currency area theory*, EC Economic Paper 302, February.

Morgan D., B. Rime and Ph. E. Strahan (2004), *Bank integration and state business cycles*, Stockholm Institute for Financial Research, SIFR Research Report Series 30.

Nouy D. (2014), Interview with Der Spiegel, 30 June.

Ong Li L. and C. Pazarbasioglu (2013), *Credibility and Crisis Stress Testing*, IMF Working Paper 178, August.

Pisany-Ferry J., E. Vihriäla and G. B. Wolff (2013), *Options for a Euro-area fiscal capacity*, Bruegel, 10 January.

Rockoff H. (2000), *How long did it take the United States to become an optimal currency area ?*, NBER Historical Paper 124, April.

Sapir A. and G. B. Wolff (2013), *The neglected side of banking union : reshaping Europe's financial system*, Note presented at the informal ECOFIN, Vilnius, 14 September.

Schäuble W. (2012), *Zukunft der Währungsunion : Masterplan für den Euro*, Spiegel online, 16 October.

Tommaso Padoa-Schioppa Group (2012), *Completing the Euro : a Roadmap Toward fiscal Union in Europe*, 26 June.

Trésor-Eco (2014), *Une assurance chômage pour la zone euro*, letter 132, June.

Trichet J.C. (2011), *Two continents compared*, Speech at the ECB and its Watchers XIII Conference, 10 June.

Van Beers N. *et al.* (2014), *Cross-country insurance mechanisms in currency unions : an empirical assessment*, Bruegel Working Paper 04, March.

Weidmann J. (2014), Speech to the German-British Chamber of Commerce Annual Dinner, London, 23 July.

Wolff B. G. (2012), *A budget for Europe's monetary union*, Bruegel policy contribution, 3 December.

The how and why of a negative interest rate for the deposit facility

M. Kasongo Kashama (*)

Introduction

During the summer of 2014, the Eurosystem cut its inflation projections for the euro area up to 2016. In particular, the projected rise in the harmonised index of consumer prices (HICP) dropped below 1 % for 2014 and is expected to revert very slowly to an inflation rate close to 2 %, i.e. a level compatible with the definition of price stability adopted by the Governing Council of the European Central Bank (ECB). During August, the financial markets also indicated a significant fall in medium-term inflation expectations. Moreover, the decline in current inflation and the fall in other business cycle indicators, including GDP, showed that the euro area's economic recovery was losing momentum. Faced with the risks that a prolonged period of low inflation might present for the maintenance of price stability and, more generally, the revival of activity, the Governing Council decided at its meetings in June and September 2014 to take a significant package of measures. These measures included, among others, two reductions in the key interest rates (taking one of them into negative territory), the targeted longer-term refinancing operations and the asset-backed securities and covered bonds purchase programmes (1).

For some, the striking feature of this series of measures is that the Eurosystem becomes the first central bank of a large currency area to take its deposit rate into negative territory (2). The deposit facility rate, which had stood at 0 % since July 2012, thus declined to –0.1 % from 11 June 2014 before being cut to –0.2 % from 10 September 2014. In simple terms, the negative interest rate means that banks have to pay in order to deposit their excess liquidity with the Eurosystem. It is all the more important to understand this move into uncharted waters since the current financial environment of the euro area features a liquidity surplus on the money market and persistent fragmentation of the banking system.

In that context, this article specifically aims to offer an overall analysis, shedding light on the whys and wherefores behind the decision to remunerate Eurosystem deposits at a negative interest rate. For that purpose, section 1 dwells on the exact scope of the negative interest rate in force since June 2014 and on the role played by the deposit facility rate in the implementation of monetary policy in the euro area. Section 2 then examines the main reasons for choosing this means of easing monetary policy. In the light of the many questions raised by the decision, the last two sections deal with the following specific issues: "Does the negative interest rate penalise savers?" and "Does the negative interest rate entail a cost for the banking sector?".

1. The role of the deposit facility rate

The Governing Council decided to make two cuts in the Eurosystem key interest rates in the summer of 2014, in June and September respectively. First, the interest rate on the main refinancing operations – the weekly open market operations – was cut from 0.25 to 0.15 %, before being reduced to 0.05 % in September. That rate also

(*) The author would like to thank L. Aucremanne, J. Boeckx, M. de Sola Perea, J. De Wit and M. Dossche for their comments and suggestions on this article. The article went to press on 10 September 2014.

(1) For more details on all the measures that the Governing Council adopted in June and September 2014, see the ECB press releases.

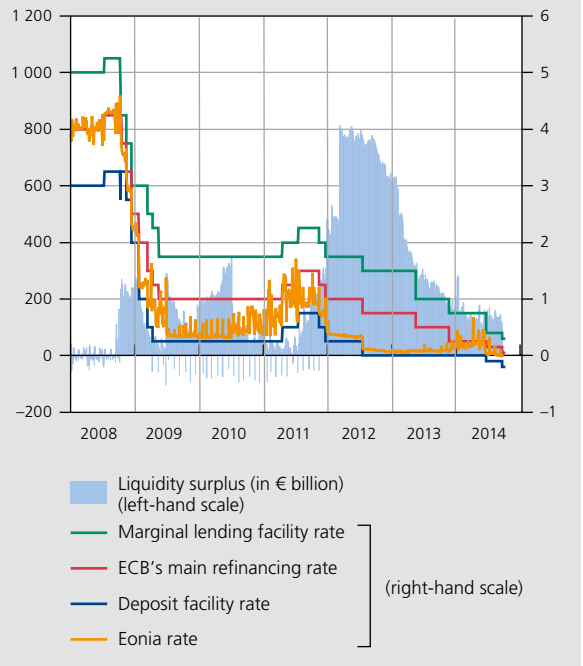
(2) There are three precedents for the negative deposit rate policy in Europe: in Switzerland in the 1970s, in Sweden in 2009, and in Denmark from July 2012 to April 2014.

determines the cost of longer-term refinancing operations (targeted or not). Next, the marginal lending facility rate at which banks can borrow liquidity overnight was reduced from 0.75 to 0.4 %, then established at 0.3 %. Finally, the rate of remuneration on the deposit facility, which enables banks to place their liquidity with the central bank overnight, was cut from 0 to –0.1 %, and then to –0.2 %. In order to avoid arbitrage, the negative interest rate also applies in practice to banks' current account holdings with the Eurosystem over and above their required reserves. Taking the two components mentioned, it is therefore the liquidity surplus as a whole that gives rise to a custody fee.

The consolidated balance sheet of the Eurosystem permits a better understanding of the source of the liquidity surplus. As we just said, that surplus corresponds to the liquidity that banks hold with the Eurosystem, either on the deposit facility or on their current account, over and above their required reserves (see the balance sheet items outlined in green in chart 2). According to an alternative view, the liquidity surplus is also the difference between the net provision of liquidity by the Eurosystem for monetary policy purposes (see the balance sheet items outlined in blue in chart 2) and the consolidated liquidity need of the banking sector (see the balance sheet items outlined in red in chart 2)[1]. Before the financial crisis (see 2007 in chart 2), there was virtually zero liquidity surplus because the banks readily traded their surpluses and deficits between themselves and therefore did not require Eurosystem refinancing except in the sum of their consolidated need. However, in the wake of the financial turmoil, the banks became reluctant to lend to one another. The Eurosystem therefore substantially increased its supply of liquidity so that banks in deficit could obtain refinancing under more generous conditions[2], while those in surplus could place their excess liquidity in the deposit facility or on their current account over and above their required reserves. This implies that the banking sector has more central bank reserves than necessary if the interbank market is operating properly (see September 2014 in chart 2). In the current circumstances, the liquidity surplus can therefore be seen as an indicator of friction between the banks, and is in fact a sign of a need for intermediation via the Eurosystem balance sheet[3]. As a result of the easing of financial tensions once the sovereign debt crisis in the euro area had passed its peak, there was a sharp decline in the liquidity surplus from mid-2012. This tendency was due more particularly to the volume of early repayments of amounts borrowed via the two three-year longer-term refinancing operations.

CHART 1 KEY INTEREST RATES, MONEY MARKET RATE AND LIQUIDITY SURPLUS IN THE EURO AREA

(daily data, % per annum, unless otherwise stated)



Sources: Thomson Reuters Datastream, ECB.

Interestingly, the above analysis highlights the first function of the deposit facility rate, as the consolidated Eurosystem balance sheet shows that euro area banks are always able to deposit liquidity with the central bank. Moreover, the Eurosystem currently also lends funds to the banks to enable them, at the very least, to finance their consolidated liquidity need. The deposit facility rate combined with the rates at which banks borrow from the central bank therefore determines the Eurosystem's intermediation margin, which is analogous with the intermediation margin of commercial banks. In practice, it should be noted that the difference between the rate on the main refinancing operations and the deposit facility rate is the most relevant yardstick for measuring the Eurosystem's intermediation margin. That is particularly true in a system of fixed-rate tenders with full allotment. However, the difference between the marginal lending facility rate and the main refinancing rate is still a factor determining the volatility of money market rates. Moreover,

(1) The consolidated liquidity need arises because liquidity-absorbing autonomous factors outweigh the liquidity-increasing autonomous factors. It is also accentuated by the existence of the reserve requirements. For more details, see Boeckx and Ide (2012).

(2) These more generous conditions apply in terms of quantity, price and maturity, but also collateral. See in particular the Bank's latest annual reports for more details on the measures taken by the Eurosystem during the crisis.

(3) This interpretation is valid only if changes in the liquidity surplus are determined by demand, but no longer applies if the central bank controls the level of excess liquidity, e.g. via massive asset purchases.

CHART 2 CONSOLIDATED AND SIMPLIFIED EUROSYSTEM BALANCE SHEET

(billions of euro)

Assets	2007 (1)	5 Sept. 2014
Liquidity-increasing autonomous factors		
Net external assets	323.7	584.2
Other autonomous factors (net)	106.5	–8.8
Monetary policy instruments		
Main refinancing operations	263.6	111.2
Longer-term refinancing operations	183.3	381.4
Covered Bonds Purchase Programmes and Securities Market Programme	0.0	195.4
Marginal lending facility	0.2	0.1
Total	877.3	1 263.6

Liabilities	2007 (1)	5 Sept. 2014
Liquidity-absorbing autonomous factors		
Banknotes in circulation	629.6	972.6
Government deposits	52.5	70.7
Current account holdings		
Required reserves	187.4	105.2
Current account holdings in excess of required reserves	1.9	88.5
Monetary policy instruments		
Fixed-term deposits	0.0	0.0
Fine-tuning operations (net)	5.4	0.0
Deposit facility	0.5	26.7
Total	877.3	1 263.6

Source: ECB.
(1) 2007 average.

it was specifically in order to limit the variability of the Eonia rate, i.e. the overnight interbank rate in the euro area, that the Governing Council cut the marginal lending facility rate from 0.75 to 0.4 % in June, thus reducing the differential in relation to the main refinancing rate from 50 to 25 basis points.

Apart from its role at the level of the Eurosystem intermediation margin, the deposit facility rate has a second key function: it is the lower limit of fluctuations in the Eonia rate, since no bank will agree to lend overnight to another bank at a lower rate than it can obtain from the Eurosystem. Importantly, this limit becomes the benchmark for money market interest rates in an environment featuring substantial excess liquidity. In such circumstances, the Eonia rate in fact falls from a level close to the main refinancing rate – which prevails under the balanced liquidity conditions in normal times (1) – to a level close to the deposit facility rate.

In brief, the deposit facility rate has an important role in the implementation of Eurosystem monetary policy, particularly in times of crisis. However, it should be noted that there is a lower limit to this interest rate, as the holding of liquidity in the form of banknotes – always "remunerated" at 0 % – is the banks' final alternative to the use of the deposit facility. A negative interest rate is therefore possible for this facility since there are costs and risks entailed in holding cash. Like any other asset, banknotes can be lost, stolen or destroyed. There are also costs associated with their transport and storage, particularly in view of the amounts involved in the euro area banking system. However, the lower the deposit facility rate, the more attractive it becomes for banks to switch to cash, making it potentially pointless to reduce the deposit facility rate any further. In fact, it is difficult to determine exactly the interest rate at which substitution in favour of banknotes begins to apply. However, at the press conference following the Governing Council meeting in September, ECB President Mario Draghi stated that the lower bound in terms of interest rates had been reached and no further technical adjustments could be envisaged. In other words, in the opinion of the Governing Council, 20 basis points below zero correspond to the effective lower bound of the deposit facility rate.

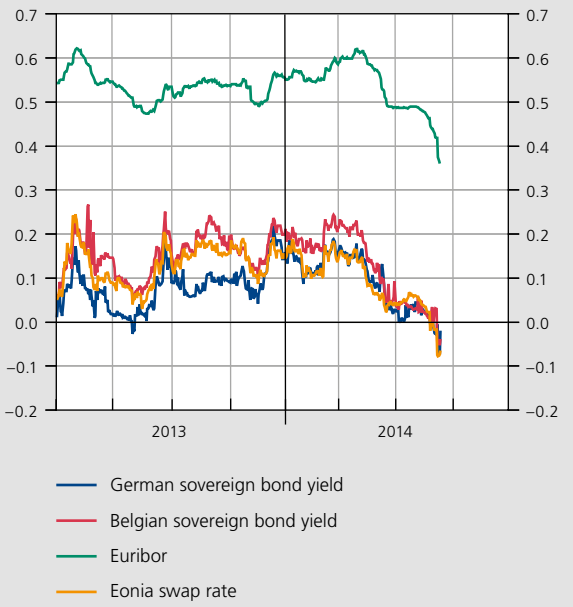
(1) See Aucremanne, Boeckx and Vergote (2007).

2. The reasons for introducing a negative interest rate

The first aim of the Governing Council in cutting the deposit facility rate is to make the monetary policy stance still more accommodative. As already explained, the deposit facility rate is the benchmark interest rate on the money market in the context of excess liquidity prevailing since the financial crisis. By reducing that rate, the Eurosystem therefore exerted direct pressure on the Eonia rate, which is the starting point for the monetary transmission mechanism. The overnight interbank rate thus averaged 0.04 % between the beginning of June and mid-September 2014, compared to 0.21 % between February and May of the same year. At the end of August and the beginning of September, it dropped just below zero for the first time in its history. At the same time, the longer-term interest rates on the money market had been falling since the May Governing Council meeting (after which the possibility of additional measures was suggested). Moreover, they dipped into negative territory from the end of August, in anticipation of the new easing measures in September. Thus, at the beginning of September, the one-year Eonia swap rate stood around 6 basis points below zero. In addition, yields on some government securities of core euro area countries also became negative, as in the case of Germany and Belgium.

CHART 3 ONE-YEAR INTEREST RATES ON EURO AREA FINANCIAL MARKETS

(daily data, % per annum)



Source: Thomson Reuters Datastream.

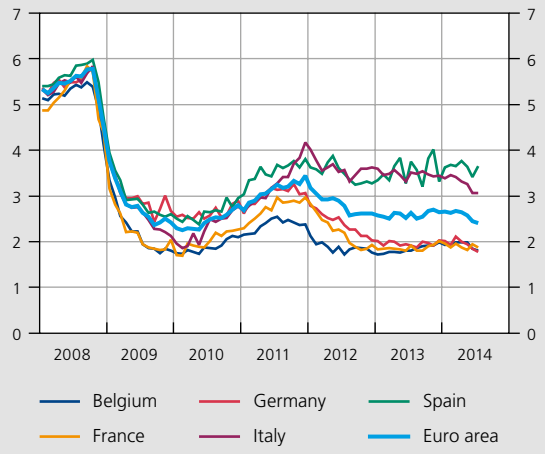
In the process through which monetary policy decisions affect the economy, the impact of the negative interest rate on money market rates is only the first step of a mechanism comprising several channels. In the present context, the Eurosystem expects the monetary stimulus to be transmitted to medium-term interest rates, reinforced by the forward guidance guaranteeing that the key interest rates will be held at their current level for an extended period of time. In addition, in an economic system such as that of the euro area, where businesses and households obtain funding mainly by the banks, the new financial market conditions should also exert downward pressure on bank lending rates. In particular, the other measures announced in June and September, including the targeted longer-term refinancing operations, are intended to ensure appropriate transmission to the banking system. In these circumstances, it is encouraging to see that, since May, there has been some reduction in bank lending rates for non-financial corporations, following months of virtually static rates. Ultimately, the general reduction in interest rates both on the financial markets and in the banking system should – all other things being equal – encourage business investment and household spending, eventually inducing a higher inflation rate.

Another important point is that the decision to introduce a negative deposit facility rate sends a potentially powerful signal to market operators, as the move emphasises that the Governing Council is ready to take all necessary steps – including the adoption of non-standard measures – to fight the risk of a protracted period of low inflation or even deflation. That signal should maintain the credibility of the central bank, thus helping to improve the anchoring of medium-term inflation expectations.

Although the exchange rate is not in itself a target of the Eurosystem's monetary policy, the benefits of transmission of the negative interest rate via the relative value of the euro have also been frequently argued. From that angle, the general decline in financial market interest rates could discourage domestic and foreign investors from placing their liquidity in the euro area. All other things being equal, the subsequent flight of capital from the euro area to economies offering higher returns will foster an exchange rate depreciation and hence a quicker return to an inflation rate close to 2 %. Although the euro depreciated by around 7 % against the US dollar and about 4 % in effective terms between the beginning of May and 10 September 2014, it is hard to estimate exactly how much the introduction of the negative interest rate contributed towards this trend, since also other monetary policy measures were announced in June and September, such as the targeted longer-term refinancing operations and

CHART 4 BANK LENDING RATES IN SEVERAL EURO AREA COUNTRIES

(short-term cost of borrowing indicator for non-financial corporations[1], monthly data, % per annum)



Source: ECB.

(1) Calculated as a weighted average of the interest rate on loans up to one year (including long-term loans at floating rates with an initial interest rate fixation period up to one year) and on overdraft facilities granted by banks to non-financial corporations (see ECB, 2013).

the asset-backed securities and covered bonds purchase programmes. In addition, given the strong appreciation of the euro against other currencies from mid-2012, the exchange rate remains a major and legitimate concern in the current low inflation context.

As well as easing monetary policy, taking the deposit facility rate into negative territory also preserved the smooth functioning of the interbank market following the cuts in the main refinancing rate, as we shall now explain.

Since November 2013, the spread between the main refinancing rate and the deposit facility rate has stood at 25 basis points. As already mentioned, that spread measures the Eurosystem intermediation margin. In normal times, some central bank intermediation is a kind of by-product of the implementation of monetary policy. But in times of financial crisis, and especially in periods of extreme uncertainty on the interbank market, it becomes an integral part of that implementation and also makes a potentially decisive contribution to financial stability. However, if the central bank becomes too involved as an intermediary, it also reduces the incentives for intermediation by the private sector and the recovery of the interbank market.

(1) See Mercier and Papadia (2011).

To clarify that, the situation can be considered from the point of view of two representative banks: bank A, with excess liquidity, and bank B, with a deficit. In this simplified example, bank A has the choice between depositing its excess liquidity with the Eurosystem or lending it on the interbank market to bank B. Bank B also has the option of participating in the Eurosystem refinancing operations to obtain the funds that it lacks (provided it has the necessary collateral). There is therefore a link between the rate at which bank B can borrow liquidity from the central bank and the rate which it is prepared to pay to bank A to obtain it. Conversely, the difference between the latter rate and the deposit facility rate determines the decision by bank A on whether to take part in the interbank transaction. Hence, the narrower the corridor formed by the main refinancing rate and the deposit facility rate, the lower the relative cost of Eurosystem intermediation and, all other things being equal, the greater the decline in the number of interbank transactions[1].

According to these considerations, the two cuts in the deposit facility rate (and its descent into negative territory) in the summer of 2014 were justified as the Eurosystem wanted to lower the cost of the refinancing that it offered and stimulate the demand of banks for the targeted longer-term refinancing operations, but without reducing its intermediation margin. In other words, the deposit facility rate was also reduced because a corridor lower than 25 basis points resulting from the cut in the main refinancing rate alone was considered likely to have an excessively adverse impact on the interbank market.

Interestingly, the above analysis suggests that the reduction in the deposit facility rate to a negative level does not in itself boost activity on the interbank market. That results directly from the fact that the relative cost of Eurosystem intermediation for the banking sector has remained unchanged since June. Moreover, banks with excess liquidity have no more incentive to unload their excess liquidity (e.g. via interbank loans), as the new monetary conditions are in principle transmitted to all classes of assets and liabilities. In view of the economic and financial reality, however, that analysis needs to be qualified. In practice, there are various reasons why some banks may desire to avoid the custody fee introduced by the Eurosystem. Thus, some entities may have to take account of internal rules which prohibit them from holding assets at negative interest rates, so that they are specifically obliged to find alternatives to deposits with the Eurosystem. Moreover, it is possible that credit institutions might be less inclined to pass on the negative interest rate in the rates they pay on their customer deposits. In such circumstances, the difference between returns on their assets and liabilities encourages them to offload their excess

liquidity. In addition, there could be some non-linearity in the behaviour of market operators faced with negative interest rates. Ultimately, it is therefore possible that the negative deposit rate may stimulate the volume of interbank transactions. In the current context, however, that is difficult to assess, since other Governing Council decisions during the summer could also influence the banks' liquidity management.

A negative interest rate on the deposit facility remains a move into uncharted waters and therefore raises many questions. As the previous paragraph shows, its impact on the volume of interbank transactions is theoretically neutral, although some observers suggest that it has a major effect. In the next two sections, we shall examine two other questions relating to the effects of the decision to cut the deposit facility rate below zero: "Does the negative interest rate penalise savers?" and "Does the negative interest rate entail a cost for the banking sector?".

3. Does the negative interest rate penalise savers?

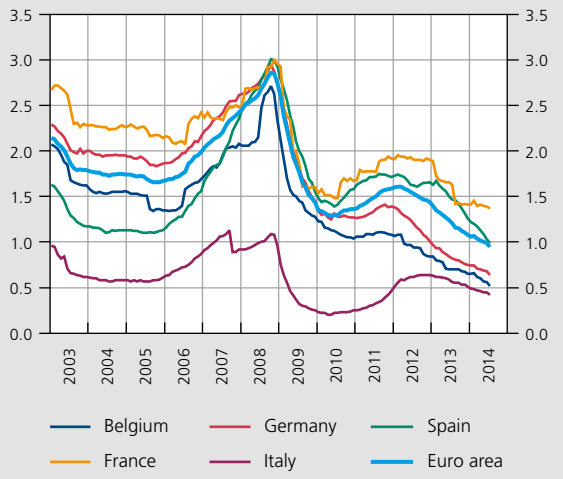
To assess the situation of savers in the euro area, it is natural to begin by analysing the trend in the remuneration of their deposits by financial institutions. Like other money market and financial market interest rates, the rates remunerating household bank deposits have fallen very considerably in most euro area countries, and have now reached historically low levels[1]. More specifically, the steep declines in household deposit rates which began in the autumn of 2008 and in early 2012 mirror the cuts in the Eurosystem key interest rates. Moreover, in June and July 2014, there was a further fall in the average interest rate paid on household savings in the euro area. In short, these developments indicate that the Eurosystem decisions on interest rates following the crisis, including the negative deposit facility rate, exert genuine downward pressure on the return on savings. For the central bank, that is good news since the actual aim of easing monetary policy is to make savings less attractive (and credit more attractive) for economic agents. Thus, by reducing interest rates, the Eurosystem does not really mean to penalise savers but rather to encourage households and businesses to spend their money or invest today rather than tomorrow, since the diagnosis is that current savings are too high to permit economic recovery and a more rapid rise in prices.

(1) The interest rates shown come from the harmonised survey of monetary financial institution interest rates in the euro area (MFI Interest Rates – MIR). It should be noted that differences between countries in the level of the composite interest rates to some extent reflect preferences in terms of maturity and the various national institutional characteristics. They must therefore be interpreted with due caution.

(2) For more details on this principle, see in particular Taylor (1999).

CHART 5 INTEREST RATE ON HOUSEHOLD BANK DEPOSITS[1] IN SEVERAL EURO AREA COUNTRIES

(monthly data, % per annum)



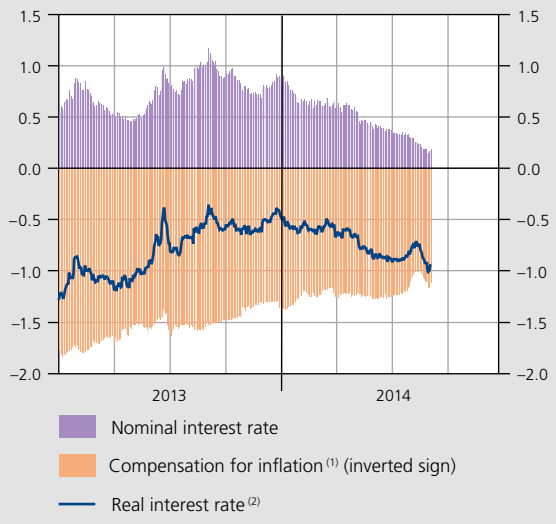
Sources: ECB, NBB.

(1) Composite interest rates based on weighted average rates paid on overnight deposits, deposits redeemable at notice, and term deposits.

In this connection, it should be noted that while the Eurosystem has a direct lever for influencing nominal interest rates, it is in principle real interest rates that are relevant for consumption and investment decisions. The real interest rate corresponds to the nominal rate less compensation for expected inflation. It is therefore possible that a reduction in nominal rates (perhaps below zero) in the face of a general decline in inflation expectations may leave real rates unchanged or even above their original level. Moreover, in practice, since April 2013, real interest rates have come under some upward pressure owing to the pronounced fall in inflation expectations, despite a number of cuts in the key interest rates during that period. More specifically, during the spring and summer of 2013, the rise in the real interest rate was due to an increase in the nominal rate and some decline in inflation expectations. Between November 2013 and April 2014, the real interest rate was more or less stable, as the nominal interest rate reductions were offset by a fall in inflation expectations over the same horizon. According to the Taylor principle – which states that a central bank faced with a fall/rise in inflation expectations has to implement a more than proportionate reduction/increase in the nominal interest rate in order to make the real interest rates move in the right direction and restore economic stability[2] – this finding is enough in itself to justify the package of measures announced in June and reinforced in September, which did indeed lead to a fall in the real interest rate.

CHART 6 BREAKDOWN OF THE REAL INTEREST RATE ON FIVE-YEAR EONIA SWAPS

(daily data, % per annum)



Sources: Thomson Reuters Datastream, NBB.

(1) Measured on the basis of swap contracts covering the inflation risk in the euro area for a five-year period.

(2) Calculated as the difference between the nominal interest rate and compensation for inflation.

To sum up, from a general macroeconomic point of view, the reduction in interest rates is justified by the resulting conditions which are favourable to activity and inflation. In other words, the current low remuneration on savings facilitates an economic recovery in the medium term, and ultimately encourages higher interest rates[1]. To that extent, and taking a long-term view, the lower deposit facility rate does not seem to justify the current concerns or fears of savers.

4. Does the negative interest rate entail a cost for the banking sector?

While some banks may, for one reason or another, want to avoid the negative interest rate on the deposit facility (see above), at the level of the banking system as a whole – which is a closed circuit – the liquidity surplus always has to return to the Eurosystem in one way or another. In other words, for a given level of liquidity surplus, the system cannot avoid the "charge" resulting from a negative deposit rate in the Eurosystem. In this section of the article, we focus on examining in more detail the extent to which the payment of a custody fee may represent a cost for the banking sector.

As already explained, the Eurosystem acts in some ways as a bank for credit institutions: the latter deposit their liquidity there, but they also continuously borrow funds from the Eurosystem. Therefore, in a desire to take account of the overall position of the banking sector, the cost that results from the key *credit* interest rate (on the deposit facility) falling below zero is insolubly linked to the gain resulting from the simultaneous reduction in the key *debit* interest rates (on the refinancing operations and marginal lending facility). If we look at the Eurosystem's consolidated balance sheet presented in the first section of the article, it is immediately apparent that the banking sector is a net borrower in relation to the Eurosystem. In other words, the amount that it borrows via the refinancing operations and the marginal lending facility exceeds the liquidity placed with the Eurosystem over and above the required reserves. That situation always applies – i.e. not just in times of crisis – in that there is a consolidated liquidity deficit which can only be made up by borrowing from the Eurosystem (see above). In such a context, reducing the key interest rates' corridor (including taking the deposit facility rate into negative territory) benefits the banking sector as a whole. For example, using the figures from the consolidated balance sheet of the Eurosystem dated 5 September 2014, the combination of key interest rates prevailing from mid-September (-0.2 %, 0.05 % and 0.3 %) implies, on an annual basis, that bank refinancing via the Eurosystem has a net cost of € 0.42 billion, compared to € 0.97 billion with the corridor applicable at the beginning of June (0 %, 0.25 % and 0.75 %)[2].

Of course, this accounting analysis concerns a simplified view of reality. This reasoning can thus be qualified in two ways.

First, the analysis presents an overall view of the banking sector's position. Therefore, it is possible that the impact of the change in the corridor may vary from one bank to another, depending on whether the institution has a liquidity surplus or deficit. However, such considerations are beyond the scope of the article. That said, it should be noted that the mere fact that the Eurosystem offers to act as an intermediary benefits all banks. That is particularly true for the most vulnerable banks, but also for sound institutions with ample liquidity, as the latter benefited from the safe haven of the Eurosystem deposit facility, particularly at the height of the crisis. It should also be noted that they benefit greatly from the restoration of financial market stability, fostered partly by the massive refinancing of the most vulnerable banks by the central bank.

(1) For more details on the causes and effects of low interest rates, see Boeckx, Cordemans and Dossche (2013).

(2) This calculation takes account of the fact that the reserve requirements are remunerated at the main refinancing rate. It also assumes that the interest rate applicable to the longer-term refinancing operations is the rate on the main refinancing operations.

Second, the analysis based on the consolidated balance sheet is purely static. Taking a more dynamic view, the impact of the negative interest rate is more difficult to estimate. As we have already briefly mentioned in the second part of the article, that potential impact on bank profits arises because, when interest rates are low, banks may prefer not to pass on new rate cuts in their deposit interest rates in order to avoid threatening their deposit base. If, at the same time, bank lending rates and returns on other assets are adjusted downwards, that puts pressure on commercial banks' margins. Of course, the severity of the squeeze on margins depends on the institutional characteristics of the various national banking sectors, including the prevalence of loans granted at variable rates or the size of the margin available for further cuts in deposit interest rates. Alternatively, it is also conceivable that the banks may offset the pressure on their margins by increasing the rates charged on new loans. However, neither the recent figures on bank lending rates in the euro area nor the Danish experience of the negative deposit rate [(1)] would seem to confirm such a distortion in practice.

From the perspective of general equilibrium, it should likewise be noted that the economic stimulus triggered by a negative deposit facility rate (*monetary easing*) also supports the growth of bank profits. Thus, it is noteworthy that the very modest level of interest rates could stimulate household and business demand for loans. It is therefore possible that the growth in the volume of credit could more than offset the fall in bank lending rates. As a result of lower rates, it is also likely that the number of households and businesses in default on repayments will be considerably smaller than in a situation without monetary accommodation. In the end, it is interesting that a more marked favourable effect of monetary easing on bank profits via the channels mentioned above can therefore be expected in the presence of institutional factors encouraging a potentially adverse effect of the negative interest rate on bank margins (e.g. a high proportion of loans at variable rates).

Conclusion

In the package of measures announced in the summer of 2014, the ECB Governing Council moved into uncharted waters by applying remuneration at a negative interest rate to commercial banks' deposits with the Eurosystem over and above their required reserves.

Given its dual role in the implementation of monetary policy, the reduction in the deposit facility interest rate, taking it into negative territory, implies a more accommodative monetary policy stance and safeguards the incentives for interbank trading while reducing the cost of Eurosystem refinancing for the banks.

Although a negative deposit facility rate implies lower returns for savers, a cut in the real interest rate is warranted to support economic activity, and hence inflation. Furthermore, it will permit a return to higher interest rates in the future. The analysis also shows that the net costs of Eurosystem refinancing for the banking system have fallen since the beginning of June, even if the dynamic impact of the negative interest rate on bank profitability is harder to estimate.

Finally, it should be noted that the effectiveness of cutting the deposit facility rate below zero has to be assessed in real time, taking account of the effects of interaction with all the other monetary policy measures announced in June and September. In particular, the targeted longer-term refinancing operations launched in September 2014 should encourage efficient transmission of the negative interest rate to the real economy. In addition, combined with the asset-backed securities and covered bonds purchase programmes, to be launched in October, they should considerably increase the liquidity surplus on the money market, in accordance with ECB President Draghi's stated aim of increasing the Eurosystem's balance sheet to the levels prevailing at the beginning of 2012.

(1) See http://www.bruegel.org/nc/blog/detail/article/1339-negative-deposit-rates-the-danish-experience/.

Bibliography

Aucremanne L., J. Boeckx and O. Vergote (2007), "The liquidity management of the Eurosystem during the period of financial turmoil", NBB, *Economic Review*, December, 29-45.

Bindseil U. and J. Jabłecki (2011a), *A structural model of central bank operations and bank intermediation*, ECB Working Paper 1312.

Bindseil U. and J. Jabłecki (2011b), *The optimal width of the central bank standing facilities corridor and banks' day-to-day liquidity management*, ECB Working Paper 1350.

Boeckx J. and S. Ide (2012), "What can we and can't we infer from the recourse to the deposit facility?", NBB, *Economic Review*, June, 31-38.

Boeckx J., N. Cordemans et M. Dossche (2013), "Causes and implications of the low level of the risk-free interest rate", NBB, *Economic Review*, September, 67-94.

Cordemans N. and M. de Sola Perea (2011), "Central bank rates market rates and retail bank rates in the euro area in the context of the recent crisis", NBB, *Economic Review*, June, 29-54.

Draghi M. (2014), *Introductory statement to the press conference (with Q&A)*, Frankfurt, Germany, 4 September.

ECB (2013), "Assessing the retail bank interest rate pass-through in the euro area at times of financial fragmentation", *Monthly bulletin,* August, 79–95.

ECB (2014), *Why has the ECB introduced a negative interest rate?* (https://www.ecb.europa.eu/home/html/faqinterestrates.fr.html).

Mercier P. and Papadia F. (2011), *The Concrete Euro: Implementing Monetary Policy in the Euro Area*, Oxford University Press, 1st edition.

NBB (2014), *Annual Report 2013*.

Taylor J.B. (1999), *A Historical Analysis of Monetary Policy Rules*, NBER Working Paper 6768.

Summaries of articles

Outlook for the finances of the Communities and Regions

The sixth Belgian State reform completed at legislative level at the beginning of 2014 transfers powers from the federal government to the Communities and Regions. The financing of the Communities and Regions is also being adjusted. The State reform therefore has a significant influence on public finances. The article examines the impact of these changes on the future financial position of the Communities and Regions.

According to the data from the National Accounts Institute concerning the April 2014 general government accounts, the budget of the Communities and Regions as a whole was more or less in balance in 2013. The Flemish Community and the Brussels Capital Region recorded a small surplus while the French Community and the Walloon Region showed a small deficit.

Apart from transferring considerable powers to the Communities and Regions and increasing the fiscal autonomy of the Regions, the revision of the Finance Act also transfers costs from the federal government to the Communities and Regions. In 2015 and 2016, that substantial transfer takes the form of contributions to the consolidation of public finances. In addition, from 2017, the Communities and Regions will be required to make a contribution to population ageing costs. The sixth State reform also makes provision for the refinancing of the Brussels institutions from 2012.

With no change of policy, i.e. before the implementation of the measures adopted in the government agreements concluded in the summer of 2014, the projections indicate a total deficit of around 0.8 % of GDP from 2016. The increase in the deficit in 2015 and 2016 is due mainly to the contributions towards the consolidation of public finances. During the ensuing decade, the deficit is expected to rise to around 1 % of GDP. With the exception of the Brussels Capital Region, which would maintain a small surplus throughout the period, the other main Communities and Regions, namely the Flemish Community, the French Community and the Walloon Region, are predicted to record substantial deficits throughout the period.

Owing to the contributions towards the consolidation of public finances, the main Communities and Regions other than the Brussels Capital Region are required to make a considerable fiscal consolidation effort in order to achieve the target of a balanced budget. The government agreements concluded for 2014-2019 for the Communities and Regions clearly reflect this fiscal context.

JEL codes : H11, H70, H71, H72, H74

Key words : public finance, Belgian State reform, Special Finance Act, Communities and Regions

Value creation in exports. A diagnosis for Belgium

A country's exports are the yardstick against which the external competitiveness of its economy is generally measured. However, consistent with the rise in re-exports and the fragmentation of production chains, the export basket is partly made up of goods and services that have not been manufactured within the exporting country or have been for only a small part. The purpose of the article is to introduce the exported value added approach, while presenting the initial findings for Belgium. A new insight is therefore provided into the degree of openness of the economy, market share developments, trading partners, branches of activity focused on export markets and the balance of trade.

JEL codes: F12, F14, F15

Key words: global value chain, external competitiveness, exported value added

Global imbalances and gross capital flows

The article examines in more detail the measurement of an economy's external vulnerability. An external vulnerability analysis traditionally focuses on the current account balance (a net concept). Countries with a current account deficit and an accumulated net debt position are considered vulnerable to a reversal in external capital flows, known as a sudden stop. In line with the recent economic literature, the article tries to demonstrate the importance of gross flows and positions as well. The strong rise in cross-border gross capital flows over the past two decades has led to an unprecedented accumulation of outstanding international asset and liability positions which may lead to new vulnerabilities in the form of currency, maturity and liquidity mismatches not reflected by the net concept. It is argued that, in order to be complete, an analysis of a country's external vulnerability must use both concepts (net and gross), and illustrates this on the basis of two events: the financial crisis and the recent volatility on the financial markets of the emerging economies.

JEL codes: F32, F34, F36

Key words: international capital flows, global imbalances, current account balance

Household debt: evolution and distribution

A high debt ratio may have important implications for (the volatility of) macroeconomic activity and, when debt levels become unsustainable, possibly on financial stability too. Using macroeconomic (national financial accounts) and microeconomic (Household Finance and Consumption Survey and Central Individual Credit Register) statistics, the article examines changes in and distribution of indebtedness among Belgian households, in comparison with the euro area. According to the macroeconomic statistics, the debt ratio of Belgian households rose strongly over the past decade, although it remained below the euro area average household debt ratio. However, microeconomic statistics suggest that certain groups in Belgium are no better off than in the euro area as a whole. Young and low-income households tend to have relatively high income-related debt ratios, possibly pointing to weak liquidity positions. Compared to the euro area, Belgian households' debt is better covered by their assets. However, this coverage is less extensive for households with consumer debt. The debt position of Belgian households appears to be more sensitive to income-related shocks than to asset price and interest rate shocks. This is corroborated by the close relationship between payment arrears and unemployment.

JEL codes: D14, H31, H63, E44

Key words: household finance, debt distribution, payment arrears

Lessons from the US for the institutional design of EMU

The article compares the euro area and the US in order to draw lessons for improving the Economic and Monetary Union. Although still not perfect, the US comes closer to fulfilling the criteria of the optimum currency area theory, and it did not experience the sovereign debt crisis that hit the euro area, partly because the US has federal institutions which are totally or partially lacking in the EU.

The stability of the euro area would improve if the Member States came closer to meeting the criteria of an optimum currency area. That requires more flexible goods and labour markets and an increase in regional labour mobility. Deepening of the Single Market could make a contribution here, as well as further enhancing the benefits of the single currency by boosting trade. It is also necessary to avoid economic imbalances which can generate contagion effects in other Member States. In the absence of a federal economic policy like that in the US, the existing rules on the coordination of national economic policies, translated annually by the Commission and the Council into the country-specific recommendations of the European Semester, must be actually implemented.

It is vital to avoid any repeat of the sudden reversal of capital flows such as that which occurred in 2010. The primary requirement here is completion of the banking union. In that respect, great progress has been achieved with the single supervisory mechanism and the detailed assessment of the banks which come under it, and with the establishment of a single resolution mechanism. An amendment to the Treaty would permit total separation of the ECB's two tasks – monetary policy and prudential supervision – and allow the insurance sector to be brought under the SSM. The resolution mechanism needs further refinement by the addition of a fiscal backstop. The third pillar of the banking union, a single deposit guarantee scheme, could also help to prevent adverse financial shocks in the euro area. The development of alternatives to bank financing of the economy via a capital union is still necessary to ensure that the 'risk-sharing' between the Member States will take place via the capital markets, thereby reducing the need for budget transfers.

For the residual risk-sharing need, the US has an important form of debt mutualisation and a federal budget that helps to cushion economic shocks. However, that has evolved over two centuries of political integration. The euro area implemented its common monetary policy immediately, and with success, but 18 European nation states cannot be expected to take sufficient steps towards a political union within a relatively short time span, though that is necessary for the issuance of common debt and for an agreement on a significant budget for the euro area or another shock-absorbing mechanism.

The issuance of common debt is a panacea for multiple euro area problems and would expand the range of monetary policy instruments, but – like transfers – it is accompanied by the moral hazard problem. Until a convincing solution has been found, we can expect these instruments to remain politically taboo. Monetary unions have a central budget because they are also political unions; the euro area is an exception to that historical rule. The euro area can survive without a federal budget; provided they are respected, the margins inherent in the European fiscal rules make it possible to absorb economic shocks via the national budgets, something that an efficient banking and capital union will do much to assist.

JEL codes: E630, F15, F22, F33, F36, F53, F55, G280

Key words: optimum currency area, monetary union, banking and capital union

The how and why of a negative interest rate for the deposit facility

Facing increasing risks to price stability in the euro area, the Governing Council of the European Central Bank (ECB) announced a significant package of policy measures in summer 2014. Those

measures include a reduction in the deposit facility rate to a negative level, at –0.1 % from June and then at –0.2 % from September, which constitutes a move into uncharted waters for a major central bank. The article clarifies the purpose of doing this and how the decision is expected to impact on savers and the banking sector.

The Governing Council decided to implement a negative deposit facility rate for two reasons. First, that negative rate was warranted to ease further the monetary policy stance in an environment characterised by a liquidity surplus in the banking sector. Second, the reduction in the ECB's lending rates combined with a cut in the deposit facility rate made it possible to lower the cost of central bank refinancing for euro area banks without having to accept a smaller central bank intermediation margin which would lead to a decline in activity on interbank markets.

As for this measure's alleged negative impact on savers, the article finds that reality is more nuanced than intuition might suggest, since monetary accommodation is expected to support economic activity and hence allow higher interest rates in the future. As for the impact on banks' profitability, the June and September rate decisions imply a lower net Eurosystem refinancing cost for the banking sector as a whole, although the dynamic impact on banks' profitability is more difficult to assess.

JEL codes: E52, E58

Key words: Eurosystem, deposit facility, monetary policy implementation, negative rate

Abstracts from the Working Papers series

259. A macro-financial analysis of the euro area sovereign bond market, by H. Dewachter, L. Iania, M. Lyrio and M. de Sola Perea, June 2014

The authors estimate the 'fundamental' component of euro area sovereign bond yield spreads, i.e. the part of bond spreads that can be justified by country-specific economic factors, euro area economic fundamentals, and international influences. The yield spread decomposition is achieved using a multi-market, no-arbitrage affine term structure model with a unique pricing kernel. More specifically, the canonical representation proposed by Joslin, Singleton, and Zhu (2011) is used and the authors introduce alongside standard spanned factors a set of unspanned macro factors, as in Joslin, Priebsch, and Singleton (2013). The model is applied to yield curve data from Belgium, France, Germany, Italy and Spain over the period 2005-2013. Overall, their results show that economic fundamentals are the dominant drivers behind sovereign bond spreads. Nevertheless, shocks unrelated to the fundamental component of the spread have played an important role in the dynamics of bond spreads since the intensification of the sovereign debt crisis in the summer of 2011.

260. Economic importance of the Belgian ports: Flemish maritime ports, Liège port complex and the port of Brussels – Report 2012, by C. Mathys, June 2014

The paper is an annual publication issued by the Microeconomic Analysis Service of the National Bank of Belgium. The Flemish maritime ports (Antwerp, Ghent, Ostend, Zeebrugge), the Autonomous Port of Liège and the port of Brussels play a major role in their respective regional economies and in the Belgian economy, not only in terms of industrial activity but also as intermodal centres facilitating commodity flows. This release provides an extensive overview of the economic importance and development of these ports for the period 2007-2012, focusing on 2012 and on the three major variables of value added, employment and investment.

261. European competitiveness: A semi-parametric stochastic metafrontier analysis at the firm level, by M. Dumont, B. Merlevede, G. Rayp, M. Verschelde, June 2014

The authors use a semiparametric stochastic metafrontier approach to obtain insight into firm-level competitiveness in Europe. They differ from standard TFP studies at the firm level as they simultaneously allow for inefficiency, noise and do not impose a functional form on the input-output relation. Using AMADEUS firm-level data covering 10 manufacturing sectors from seven EU15

countries, (i) they document substantial, persistent differences in competitiveness (with Belgium and Germany as benchmark countries and Spain lagging behind) and a wide technology gap, (ii) they confirm the absence of convergence in TFP between the seven selected countries, (iii) they confirm that the technology gap is more pronounced for smaller firms, and (iv) they highlight the role of post-entry growth for competitiveness.

262. Employment, hours and optimal monetary policy, by M. Dossche, V. Lewis, C. Poilly, September 2014

The authors characterise optimal monetary policy in a New Keynesian search-and-matching model where multiple-worker firms meet demand in the short run by adjusting hours per worker. Imperfect product market competition and search frictions reduce steady-state hours per worker below the efficient level. Bargaining results in a convex 'wage curve' linking wages to hours. Since the steady-state real marginal wage is low, wages respond little to hours. As a result, firms overuse the hours margin at the expense of hiring, which makes hours too volatile. The Ramsey planner uses inflation as an instrument to dampen fluctuations in inefficient hours.

263. On the conjugacy of off-line and on-line – Sequential Monte Carlo Samplers, by A. Dufays, September 2014

Sequential Monte Carlo (SMC) methods are widely used for filtering purposes of non-linear economic or financial models. Nevertheless, the SMC scope encompasses wider applications such as estimating static model parameters so much that it is becoming a serious alternative to Markov-Chain Monte-Carlo (MCMC) methods. Not only do SMC algorithms draw posterior distributions of static or dynamic parameters but they also provide an estimate of the normalising constant. The tempered and time (TNT) algorithm, developed in the paper, combines (off-line) tempered SMC inference with on-line SMC inference for estimating many slightly different distributions. The method encompasses the Iterated Batch Importance Sampling (IBIS) algorithm and more generally the Resample Move (RM) algorithm. Besides the number of particles, the TNT algorithm self-adjusts its calibrated parameters and relies on a new MCMC kernel that allows for particle interactions. The algorithm is well suited for efficiently back-testing models. The author concludes by comparing in-sample and out-of-sample performances of complex volatility models.

Conventional signs

e.g.	exempli gratia
i.e.	id est
n.e.c.	not elsewhere classified
p.m.	pro memoria

List of abbreviations

Countries or regions

BE	Belgium
DE	Germany
EE	Estonia
IE	Ireland
EL	Greece
ES	Spain
FR	France
IT	Italy
CY	Cyprus
LU	Luxembourg
MT	Malta
NL	Netherlands
AT	Austria
PT	Portugal
SI	Slovenia
SK	Slovakia
FI	Finland
EA	Euro area
BG	Bulgaria
CZ	Czech Republic
DK	Denmark
HR	Croatia
HU	Hungary
LT	Lithuania
PL	Poland
RO	Romania
EU	European Union
AR	Argentina
BR	Brazil
CL	Chile
CN	China
CO	Colombia

ID	Indonesia
IN	India
KR	South Korea
MX	Mexico
MY	Malaysia
PE	Peru
PH	Philippines
RU	Russia
TH	Thailand
TR	Turkey
UA	Ukraine
US	United States
UY	Uruguay
ZA	South Africa

Others

ABS	Asset-backed securities
AQR	Asset quality review
BEA	Bureau of Economic Analysis (United States)
BIS	Bank for International Settlements
BRICS	Brazil, Russia, India, China and South Africa
BRRD	Banking Resolution and Recovery Directive
CEPII	Centre d'études prospectives et d'informations internationales
CICR	Central Individual Credit Register
DGS	Deposit guarantee scheme
DGSEI	Directorate General for Statistics and Economic Information Belgium
DIF	Deposit Insurance Fund
EC	European Commission
ECB	European Central Bank
EFSF	European Financial Stability Facility
EFSM	European Financial Stability Mechanism
EMU	European and Monetary Union
Eonia	Euro Overnight Index Average
EPFR	Emerging Portfolio Fund Research
ESA	European System of Accounts
ESM	European Stability Mechanism
EU	European Union
Euribor	Euro Interbank Offered Rate
FDIC	Federal Deposit and Insurance Corporation
Fed	Federal Reserve
FPB	Federal Planning Bureau
FPS	Federal Public Service
G20	Group of Twenty
GDP	Gross domestic product
GNI	Gross national income
G&S	Goods and services

HCF	High Council of Finance
HFCN	Household Finance and Consumption Network
HFCS	Household Finance and Consumption Survey
HICP	Harmonised index of consumer prices
IMF	International Monetary Fund
LEA	Local employment agency
LFS	Labour Force Survey
MFF	Multiannual Financial Framework
MFI	Monetary financial institution
MIR	Monetary financial institution interest rates
MTO	Medium-term objective
NAI	National Accounts Institute
NATO	North Atlantic Treaty Organization
NBB	National Bank of Belgium
NBER	National Bureau of Economic Research
NEO	National Employment Office
OCA	Optimum Currency Area
OCC	Office of the Comptroller of the Currency
OECD	Organisation for Economic Cooperation and Development
OMT	Outright monetary transactions
OPEC	Organization of the Petroleum Exporting Countries
PCA	Prompt Corrective Action
PIT	Personal income tax
PPP	Public-private partnership
R&D	Research and development
RWA	Risk-weighted asset
SME	Small and medium-sized enterprise
Sofico	Société wallonne de financement complémentaire des infrastructures
SRB	Single Resolution Board
SRF	Single Resolution Fund
SRM	Single resolution mechanism
SSM	Single supervisory mechanism
TARP	Troubled Asset Relief Programme
TiVA	Trade in value added
UNCTAD	United Nations Conference on Trade and Development
VA	Value added
VAT	Value added tax
WEO	World Economic Outlook
WTO	World Trade Organisation

National Bank of Belgium
Limited liability company
RLP Brussels – Company number: 0203.201.340
Registered office: boulevard de Berlaimont 14 – BE-1000 Brussels
www.nbb.be

Publisher

Jan Smets
Director

National Bank of Belgium
Boulevard de Berlaimont 14 – BE-1000 Brussels

Contact for the Review

Luc Dufresne
Secretary-General

Tel. +32 2 221 24 96 – Fax +32 2 221 30 91
luc.dufresne@nbb.be

© Illustrations: National Bank of Belgium

Cover and layout: NBB AG – Prepress & Image

Published in October 2014