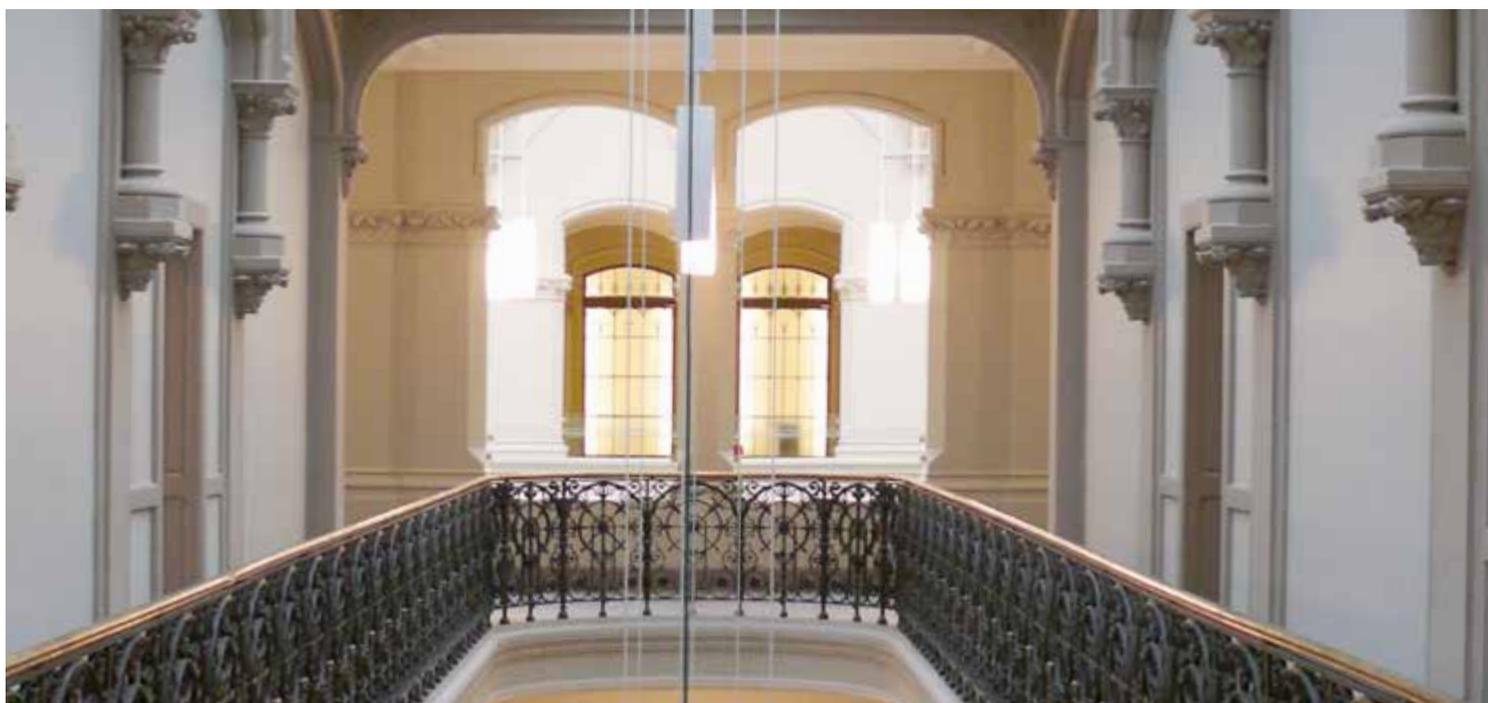


Economic Review

September 2013



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ISSN 1780-664X

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The Belgian economy in global value chains

An exploratory analysis

C. Duprez
L. Dresse^(*)

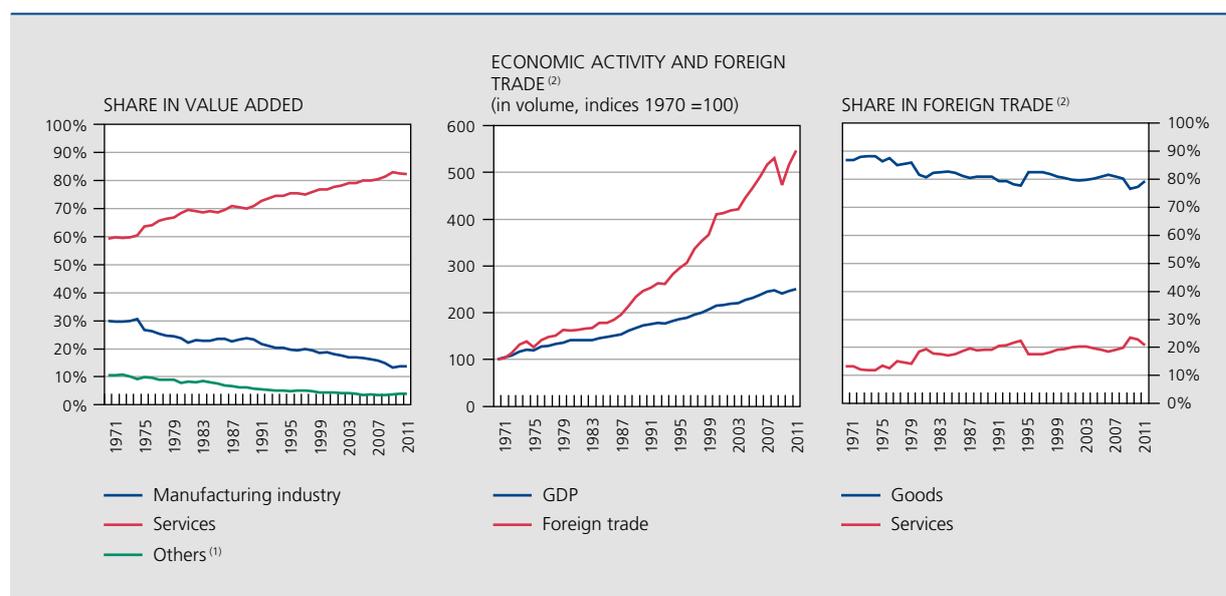
Introduction

Over the past four decades, the structure of developed economies' production and trade has been marked by two major trends. On the one hand, the manufacturing industry's importance has declined in terms of both jobs and value added in favour of service activities. On the

other hand, goods continue to play a predominant role in international trade. Furthermore, growth in trade has out-paced economic growth. Belgium has not been impervious to these trends. Indeed, the manufacturing industry's share in total employment has fallen by 20.1 percentage points, from 31.8% in 1970 to 11.7% in 2012, and its share in nominal value added has dropped from 30% to 13.3%. Over the same period, the volume of exports and imports has more than quintupled, while GDP has

^(*) The authors would like to thank Carine Swartenbroeckx, Martine Druant, Jan De Mulder and Jean-Paul Duprez for their contributions.

CHART 1 INDUSTRY'S CONTRASTING POSITION IN THE BELGIAN ECONOMY



Source: NAI.

(1) Includes the branches of agriculture and fishing, extraction, electricity and natural gas production and distribution, water, wastewater and waste. It should be noted that construction is part of the services sector.

(2) Average of imports and exports of goods and services.

risen by a factor of only 2.5. This huge increase in foreign trade is only marginally attributable to growth in imports and exports of services⁽¹⁾, as the share of goods has been stable at around 80 %.

Considered separately, this phenomenon of de-industrialisation or the turn towards a service-oriented economy, on the one hand, and the rise of globalisation largely driven by industry on the other, may seem contradictory. And yet, it has been amply demonstrated in numerous reports and articles, notably in the Economic Review⁽²⁾, that they have been overwhelmingly influenced by a shared group of technological and institutional factors. In particular, the development of means of transport and information technology and the lowering of customs barriers have all facilitated international trade. In countries with an international-scale port infrastructure, such as Belgium, the flow of merchandise in transit has thus increased. Furthermore, by stimulating international competition and offering firms easier access to a vast array of intermediary inputs from abroad⁽³⁾, the rise of international trade has triggered productivity gains in industry, which has freed up factors of production to develop service activities.

Services, on the other hand, have been less influenced by these forces. The international trade in services runs up against some natural barriers. Unlike merchandise, which can be stored, certain types of services require a close proximity in space or in time between the provider and the consumer. Administrative barriers are another impediment to their development, and stricter regulations are even desirable in the case of a natural monopoly or

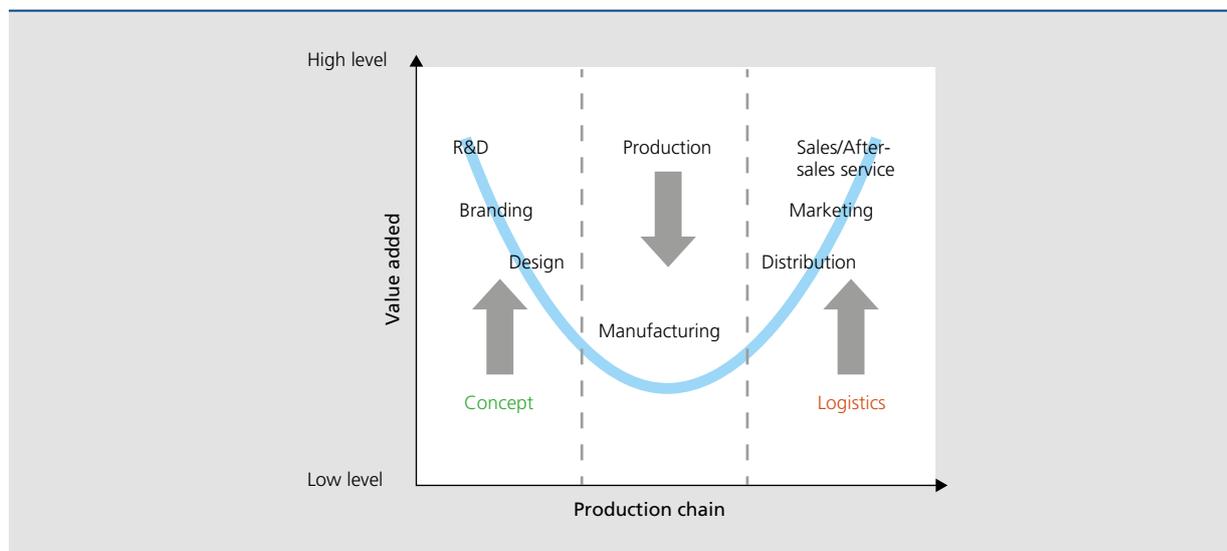
a public good, which is the case with some parts of the services sector.

However, some services are closely linked with the production and foreign trade of industrial goods in the context of the process of dividing up the value creation chain internationally. Advances in information and telecommunication technology have made it easier to manage the production process remotely and to incorporate services, often indirectly, into industrial production. In 2010, the share of value from the services sector at the global level amounted to nearly 40% of the total amount of industrial products intended for export. The smiling curve illustrates this trend. Services at the upstream end of the value chain, i.e. R&D, branding and design, as well as those at the downstream end, notably distribution, marketing and sales, today represent a substantial share of the value of industrial products. For certain products, particularly IT products, the proportion has actually risen substantially over time.

Today, firms have tremendous recourse to external inputs, sometimes imported ones, and in some cases subcontract certain activities. This trend, which is both fuelled by globalisation and productivity gains and reinforces them, reflects the disconnection between successive activities

- (1) In Belgium, the international trade of services involves principally travel, especially on the import side; transport; and miscellaneous business services (Duprez, 2011).
- (2) See, notably, Robert and Dresse (2005) for an analysis at the Belgian level. Huwart and Verdier (2013) have conducted a very detailed study at the global level.
- (3) An intermediate input is a good or service used in the production process to be transformed into an output, which may be destined for consumption or investment purposes in the domestic market, or may be exported.

CHART 2 SHARE OF SERVICES IN THE PRODUCTION PROCESS: THE SMILING CURVE



Source : Acer's Stan Shih : Empowering Technology - Making Your Life Easier, in De Backer (2013).

and tasks, each making up a link in itself in the production chain. Ultimately, the chain is growing progressively more fragmented, organising itself into occasionally complex networks of international relations, sometimes linear, sometimes concentric built around production nodes (Baldwin and Venables, 2010).

Apple products are an oft-cited example of this phenomenon. As sometimes indicated on the products, they are designed in California but assembled in China. The export price of the product when it leaves China, however, does not include much compensation for the Chinese company doing the assembling, because the parts and components come from South Korea, Japan, Germany and in some cases even the US (Xing and Detert, 2010; Dedrick *et al.*, 2010). Other examples also highlight the complex network of relationships among firms. In 1996, IBM found itself at the centre of a constellation of nearly a thousand listed companies. US clothing retail chain Gap employs around 3,000 factories around the world to fill its racks (Huwart and Verdier, 2013).

At the heart of these trends, multinational corporations have exploited the potential for making their production more efficient to the hilt, pairing their efforts with greater cost control. Capitalising on technological and economic advances and the comparative advantages offered by each production site, they have been full participants in the process of linking together production chains across national borders. The ability to locate certain production phases in countries where the tax, labour and environmental laws are more lax has also contributed to this trend. Lastly, the emergence of new economies with promising growth potential has pushed multinationals to set up operations around the world. These new sources of production and consumption have also fed the flow of merchandise between parent companies and their foreign subsidiaries, which in 2010 accounted for more than 80 % of world trade (UNCTAD, 2013).

While these trends have been observed for many years now, until recently it was impossible to precisely gauge their extent due to the lack of a suitable statistical tool. Traditional statistical systems provide detailed information on international flows of merchandise using foreign trade data, and on relations between branches of activity within the economy by using input-output tables, but they hardly make it possible to identify the international scope of these relations in an integral way. This obstacle has now been partially overcome with the publication of data on global value creation chains. Admittedly, the methodology used to compile the data is not completely transparent, and the data are still recent and subject to revision. Even so, they bring to light elements that help

us better understand the prevalence of goods in international trade in light of the relative importance of services in the economy.

To do so, this article presents and discusses the value added approach against the backdrop of these new statistics. After describing the principles used to compile the data in the first section, it looks at where the Belgian economy stands in the fragmented international production chain. Section 2 explains that its role is characterised by its specific traits as a hub for flows of goods between European economies and the rest of the world. Section 3 illustrates the degree to which domestic branches of activity are involved in value added chains, analysing both the manufacturing industry and the services sector. In addition to the lessons learned from this exploratory use of the new data, the conclusion presents potential avenues for future research and analysis.

1. A new statistical tool: global value chains

A desire to better understand the realities of foreign trade has sparked interest in the development of a suitable statistical tool. Among other projects⁽¹⁾, the OECD and WTO have collaborated to develop a new database on value chains⁽²⁾. In practice, development has centred on a global input-output table. Two principal sources were used to compile the table. The supply and use tables⁽³⁾ and input-output tables⁽⁴⁾ of the national economies studied were linked together with the help of foreign trade data. The use of the two types of table made it possible to determine, for each branch of each economy, the intermediate inputs used in production. The foreign trade data, detailed by country and by type of good, made it possible to identify the suppliers of intermediate inputs (using import data) and the direct recipients of exported goods (using

(1) Others are also working on aggregate input-output matrices similar to that of the OECD/WTO. The UNCTAD-Eora GVC database includes 187 countries, with the number of branches dependent upon the country in question, and covering the period 1990 to 2010. The Asian International I-O Tables developed by IDE-JETRO cover 76 branches in 10 Asian countries, with data collected every five years starting in 1975. The World Input-Output Database (WIOD) project, led by a consortium of research institutes financed by the European Union, contains annual data for 35 branches in 40 countries for the period 1995 to 2009. Furthermore, numerous academic research efforts rely on the Global Trade Analysis Project (GTAP) database created by Purdue University covering 57 branches in 129 countries for the years 2004 and 2007.

(2) For more detail, see OECD/WTO (2012).

(3) The supply-use tables, produced annually, supply a detailed description of the domestic production process and the transactions of goods in the national economy by branch of activity and by product group. They give insight into the structure of production costs, the revenue generated during the production process, the flows of goods and services produced in the national economy, and the flows of goods and services to and from foreign countries. They are asymmetrical, meaning that they pair product groups with branches of activity.

(4) The input-output tables, produced in Belgium every five years, offer detailed insight into production, cost structure, productivity, the use of various inputs in production, and the interdependence of branches of activity. Unlike the supply and use tables, input-output tables are symmetrical, meaning that they pair either product groups with product groups, or branches of activity with branches of activity.

export data). By going through the information for all the economies, it is possible to recreate the production chains.

This combination of various data sources, carried out in a multi-country framework as coherently as possible, allows us to approach the link between foreign trade and the value added generated within each economy in a more relevant way. A simplified imaginary scenario illustrates the thought process. Let us assume that country A exports € 90 of goods and services to country B. These are used as inputs for production that is then exported to country C for a total of € 100.

In the simplified example illustrated in chart 3, global exports amount to € 190 (90 + 100), while the total value added generated by the production of goods and services traded internationally amounts to € 100 (90 + 10). The difference comes from double-counting the inputs that A supplies to B, which, once transformed, are re-exported to C. Based on foreign trade statistics, country B is the biggest exporter, even though its share of value added in global foreign trade flows is marginal.

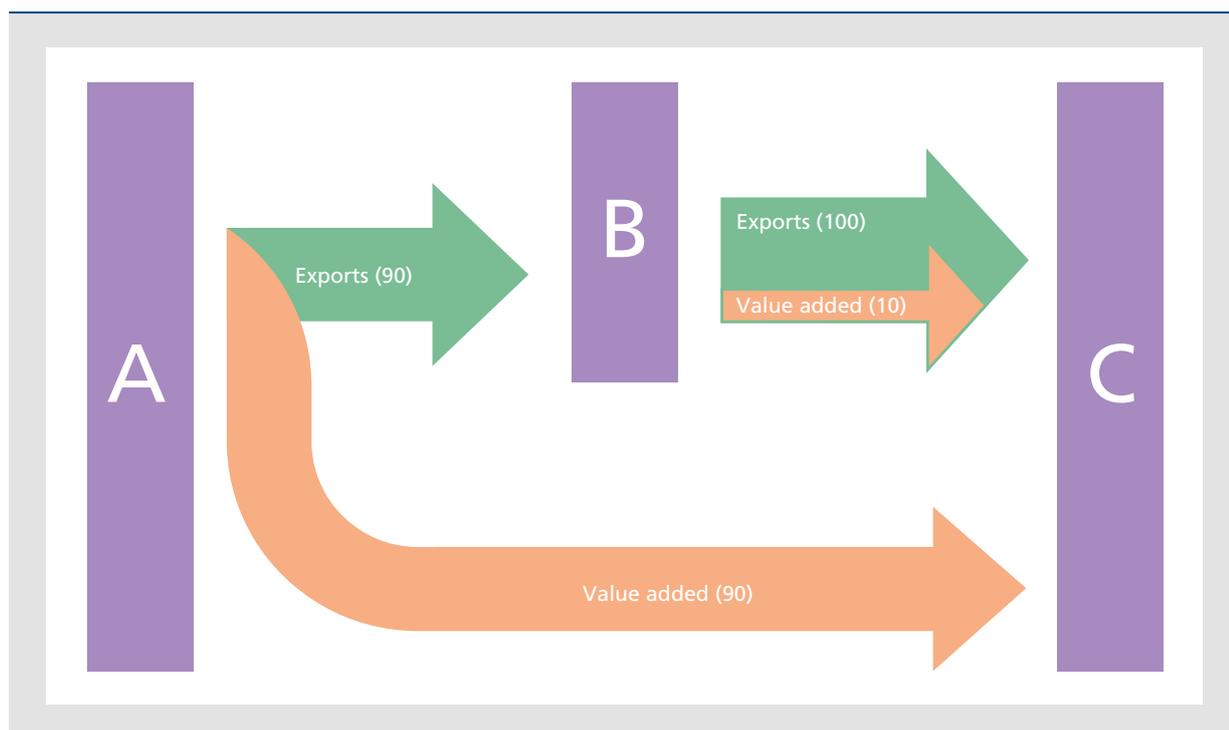
However, it is interesting to note that the total trade balances remain identical whether they are evaluated in terms of net exports or net value added. The trade balance represents production net of consumption, i.e. two aggregates that are not influenced by re-exports.

These balances come to, respectively, a € 90 surplus for A, a € 10 surplus for B and a € 100 deficit for C. But the bilateral trade balances differ depending upon which approach is used (Stehrer, 2012). Because they identify only the direct supplier and not the supplier further upstream in the production chain, foreign trade data show a trade deficit for C vis-à-vis B of € 100, whereas in reality, C is consuming production that mostly came from A. An evaluation from the standpoint of value added reveals C's deficit vis-à-vis A.

For illustrative purposes, the switch from the traditional indicator linking exports to GDP to an indicator showing the amount of domestic value added exported in GDP shows significantly stronger similarity between countries in terms of the degree of international openness. The ranking is also changed somewhat. For example, among all 58 countries covered by the OECD/WTO data, only a selection of which is presented in chart 4, Belgium ranks 9th according to the export indicator and 18th according to the value added indicator, with respective ratios of 71.7 % and 34.5 % of GDP in 2009.

In the May 2013 release of the OECD/WTO database, the one used for this article, a series of indicators are publicly available, but the full database is not accessible. The indicators cover the economic relations between 18 branches of activity in 58 countries. Overall, the database covers

CHART 3 MEASURING INTERNATIONAL TRADE FROM THE STANDPOINT OF VALUE ADDED



more than 90 % of world trade and more than 95 % of world GDP. The data were compiled every five years starting in 1995 and annually from 2008 onwards. Given that not all of the national data for 2010 have been published, the most recent data are those from 2009.

The rest of this article draws mainly on these most recent data. They do not appear to be characterised by specific cyclical factors that may have extraordinarily amplified the observed phenomena. As noted by Foster-McGregor and Stehrer (2013), the foreign value added content of exports fell marginally in 2009 compared with the period before the 2008-2009 crisis. Between 2009 and 2011, the situation appears to have stabilised, and in some countries even returned nearly to pre-crisis levels. Furthermore, as shown in chart 4, most economies' degree of openness in 1995 was already similar to their 2009 levels, underlining that the integration of national economies is not a recent phenomenon.

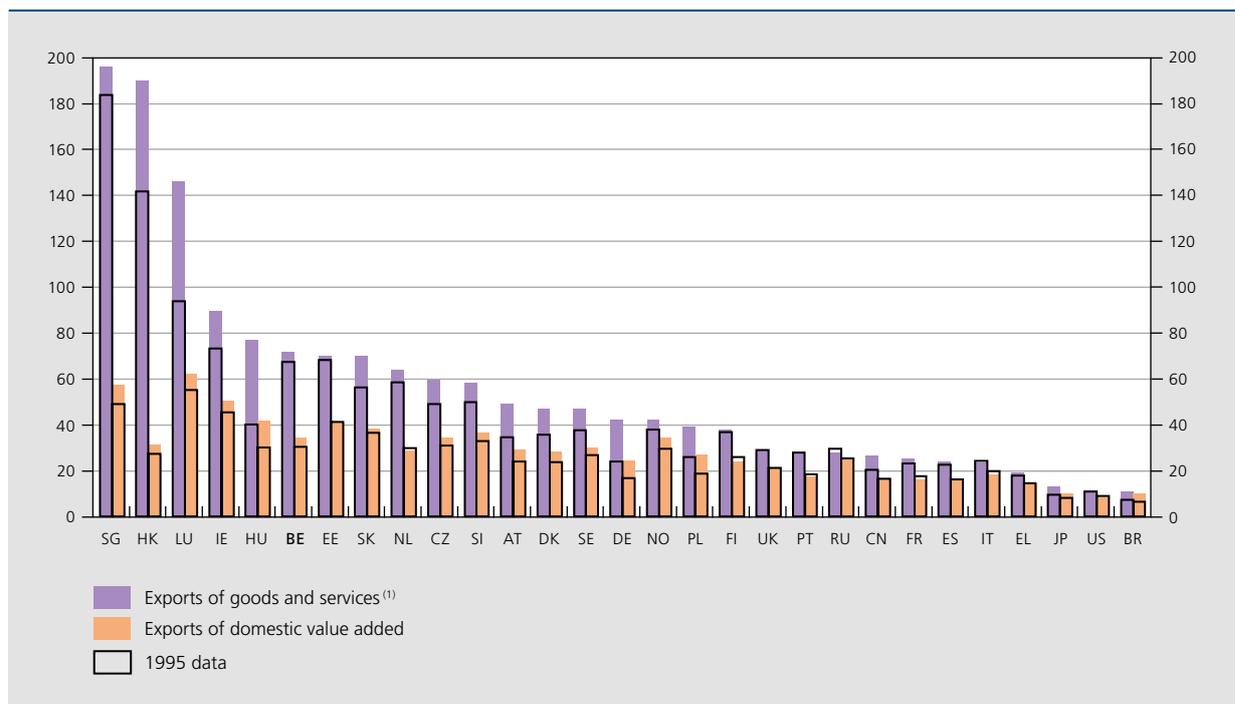
The value added approach, however, has certain methodological limits. In particular, in the foreign trade data, the exports recorded from country X to country Y rarely correspond to the imports recorded by country Y from country X. This asymmetry in the "mirror" data, in which

both relate to the same flow, is a statistical anomaly that makes building a global input-output matrix more complicated. It requires (sometimes important) trade-offs to be made. That said, the verification work that has been done shows that these trade-offs have a marginal impact for Belgium, as the values taken from the OECD/ WTO database correspond to the statistics available in the input-output and supply-use tables of the National Accounts Institute (NAI). However, they may have a significant influence when calculating the data on value added generated in countries that are upstream or downstream in the value chain. Furthermore, when analysing input-output tables, it is important to keep in mind that each branch of the economy is compiled so as to represent an average firm belonging to the branch. In reality, firms in the same branch may present very different characteristics with respect to employment, value added, use of inputs, destination of exports, and so on.

2. Re-exporting merchandise

The fragmentation of production processes beyond national borders creates a multiplier effect in the international trade of merchandise. This comes into play particularly

CHART 4 MEASURES OF THE DEGREE OF INTERNATIONAL OPENNESS
(as a % of GDP, 2009 data unless otherwise indicated)



Sources: World Bank, EC, OECD, NBB.
(1) According to balance of payments data.

when merchandise only passes through a country without going through any transformation activity. The import and subsequent re-export of goods is a substantial phenomenon in Belgium and is given particular attention when national statistics are compiled.

With the port of Antwerp, notably, Belgium has infrastructure that acts as a point of entry and exit for merchandise on a scale that goes far beyond Belgium, meaning that the infrastructure serves a large portion of the European market. Re-exportation involves merchandise, as re-exports of services are probably marginal and not subject to much measurement. Statistics compiled according to the so-called community concept show that of all merchandise entering Belgium, a substantial share is intended for re-export without any processing inside the country.

Belgian statistics make a distinction based on the whether or not the firm doing the re-exporting is a resident of the country. A certain number of foreign firms with a Belgian VAT number clear merchandise through customs and then send it abroad. Because their economic presence in Belgium is limited to this single role, these companies are considered non-resident entities for the purposes of Belgian statistics, and are thus excluded (NAI-NBB, 2009, 2012). Based on import prices⁽¹⁾ transit activities carried out by non-resident firms in 2005 amounted to 27.8 % of the value of all merchandise entering Belgium.

Stripping the non-resident transit trade out of the goods imports data gives the so-called national concept statistics, in the sense that they were necessarily generated by a resident. This is the concept used to draw up balance of payments statistics and Belgian national accounts. However, certain resident companies are also involved in re-exporting merchandise, whose estimated value in 2005 came to 25.5 % of Community concept imports, or 35.5 % of national concept imports. As these percentages show, re-exports significantly inflate the international trade of goods for countries such as Belgium that are trade route hubs.

While tricky because data are not perfectly comparable internationally, an analysis of the situation in the three neighbouring countries based notably on input-output tables shows that re-exports are also a major phenomenon in the Netherlands, where they accounted for over 55 % of the value of Community concept imports in 2005. Re-exports are also common in Germany, representing around 20 % of merchandise entering the country, whereas they are less of a phenomenon in France, at close to 11 %⁽²⁾. The OECD/WTO data on value chains can be used to evaluate these flows for a broader array of countries.

Based on these estimates, chart 5 gives a rough idea of the estimated share of re-exports among total exports of goods in 2009⁽³⁾.

It is interesting to note that, in general, international institutions and academic and public researchers base their studies of foreign trade, and exports in particular, on Community concept data, which thus encompass all re-export flows, including those of non-residents. These data are available for a large number of countries, whereas the creation of national concept statistics are a uniquely Belgian practice. In Belgium, as elsewhere, imported merchandise intended for re-export artificially inflates foreign trade. For this reason, but also because re-exports are influenced by specific determinants – such as the presence of a port or a location along trade routes – we exclude them from the rest of our analysis. In keeping with the method for calculating value chain statistics, we will focus exclusively on export-oriented domestic production⁽⁴⁾. For the rest of this article, then, the term exports of goods and services will mean those generated by domestic production, i.e. excluding re-exported merchandise.

3. The position of Belgian branches of activity in global value chains

Ultimately, Belgian producers' participation in global value chains is measured by the size of their exports of goods and services. These reflect their ability to find a place in globalised production processes and to meet the demand of end-markets. However, the traditional view of exports, in which an exporting country produces goods domestically to satisfy consumer or investment demand in the destination country, is woefully outdated. Today, it is hard to identify the origin of goods and services and their final destination in terms of demand. On the one hand, upstream in the chain, exports can be subsequently re-exported to third countries, sometimes after processing but not necessarily. On the other hand, in their production activities, notably those intended for export, companies incorporate not only their own added value by using their factors of production, but also domestic inputs from other branches of the economy, as well as inputs from abroad⁽⁵⁾. At the company level, it is a combination of intermediate

(1) Using import prices avoids the tricky issue of the margin earned on re-exports, for which a precise breakdown by type of flow is not always available.

(2) These observations are confirmed by the relative importance of maritime ports in the trade of merchandise (Mathys, 2013; Eurostat, 2013).

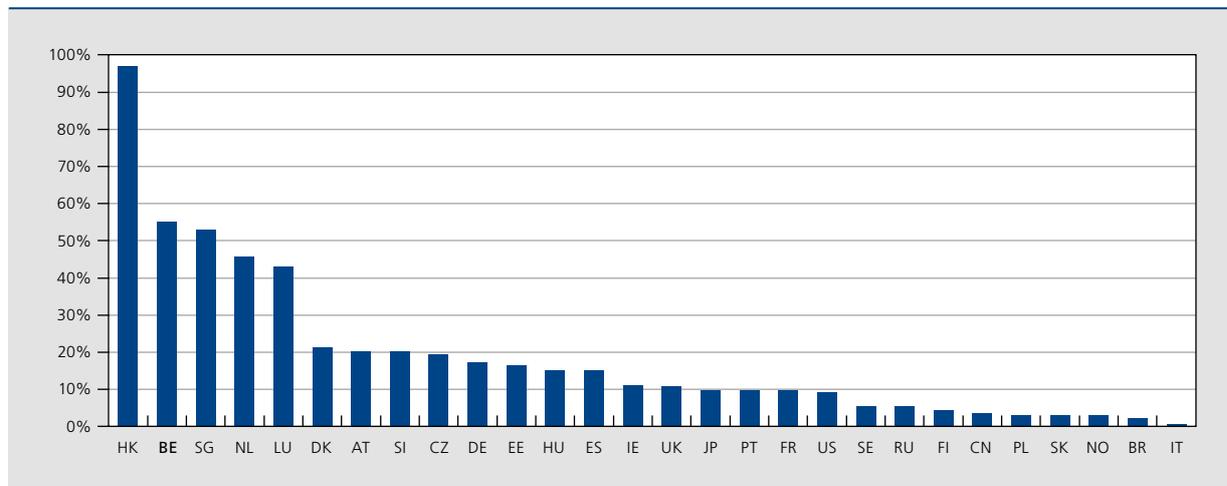
(3) There are divergences from the percentages calculated for neighbouring countries. The method and data used are slightly different. Furthermore, the evaluation looked at exports and the year 2009. However, the scale of the phenomenon is broadly identical.

(4) Any transport or logistics services provided by the national firms and the sales margins of residents which are earned from re-export activities are, however, included in domestic production for export.

(5) Companies also incorporate inputs from other firms belonging to the same branch of the economy. However, these are not measured in the input-output tables, and thus are not included in the data on value chains.

CHART 5 IMPORTANCE OF RE-EXPORTED MERCHANDISE AS A SHARE OF TOTAL EXPORTS

(share of goods exports according to the Community concept of foreign trade, 2009 data)



Sources: UNCTAD, OECD.

inputs and the company's own factors of production that determine its competitiveness.

These various characteristics are discussed in this section, using statistics for Belgium taken from the OECD/WTO database. This initial exploration of data on Belgium forms a complement to those presented in a more general manner in the OECD's publications (see, notably, De Backer and Miroudot, 2012) and those of the UNCTAD (2013). It shows the position of Belgium in the value chains by providing an initial identification of the branches and countries located upstream and downstream in the production chains of which Belgium is a part. We will tackle three specific questions from an exploratory descriptive standpoint, i.e. the general extent to which imports are used in the production of export goods and services; specifically, the extent to which services activities go into manufacturing exports; and lastly, the initial origin of imports and the final destination of exports.

3.1 The role of intermediate imports

Domestic production intended for export includes, in Belgium and in numerous other countries, a significant proportion of intermediate imports. At the global level, the share of foreign value added in exports, which measures the proportion of foreign intermediate goods and services used, thus amounts to roughly 28% (UNCTAD, 2013). As suggested in chart 4, the economies that incorporate proportionally less domestic value added in their exports are the most open. A corollary of this is that these

economies rely more on foreign value added. The foreign intermediate goods and services used in production inflate these countries' export figures. In chart 6, thus, it makes sense that the most open countries, i.e. those with the largest circles, are in the right-hand part of the chart, which includes the highest percentages of foreign value added incorporated in goods and services exports.

A large share of intermediate imports also signals that a country is located towards the end of the production chain. Thus, these countries are also generally those whose exports are intended for direct final consumption by their recipients rather than for use as inputs in the recipients' production for export (for this last indicator, see Hummels *et al.*, 2001). Thus, they are located towards the bottom of chart 6, as their exports are only marginally used as intermediate inputs for production abroad intended for export. All in all, a country located in the lower right quadrant is towards the end of the production chain, i.e. close to the final consumer. Such is the case of Luxembourg and Ireland, which are producers of final goods and, especially, services. Conversely, the countries towards the beginning of the production chain, i.e. those producing commodities, are located in the top left quadrant of the chart. Russia and Norway, rich in energy resources and raw materials, naturally supply intermediate inputs and employ little foreign value added in their production.

The specific characteristics of each economy influence its degree of participation and its place in multinational value creation chains. Small countries generally rely more

heavily on foreign inputs because domestic resources are not always sufficient to ensure a full range of intermediate products and services. Furthermore, countries with an international-scale port infrastructure, such as Singapore, Belgium or the Netherlands, capitalise on their competitive advantage in terms of supply costs to incorporate more foreign inputs.

A more detailed examination of Belgium's position relative to countries with similar characteristics, however, shows that it relies to a relatively large extent on foreign intermediate inputs. Apart from the factors cited above, this may be because it specialises to a great extent in the industrial branches that consume large amounts of raw materials. In turn, Belgian exports are also situated at an intermediate stage in the production process. They are thus, like those of comparable countries, used as inputs in the exports produced by other economies.

3.2 The services content of industrial exports

When we analyse the intermediate imports in each of the branches of the Belgian economy more closely, two significant findings stand out. The first is that exports of the manufacturing industry branches have a higher foreign value added (VA) content. Compared with services companies, manufacturers use more imported intermediate

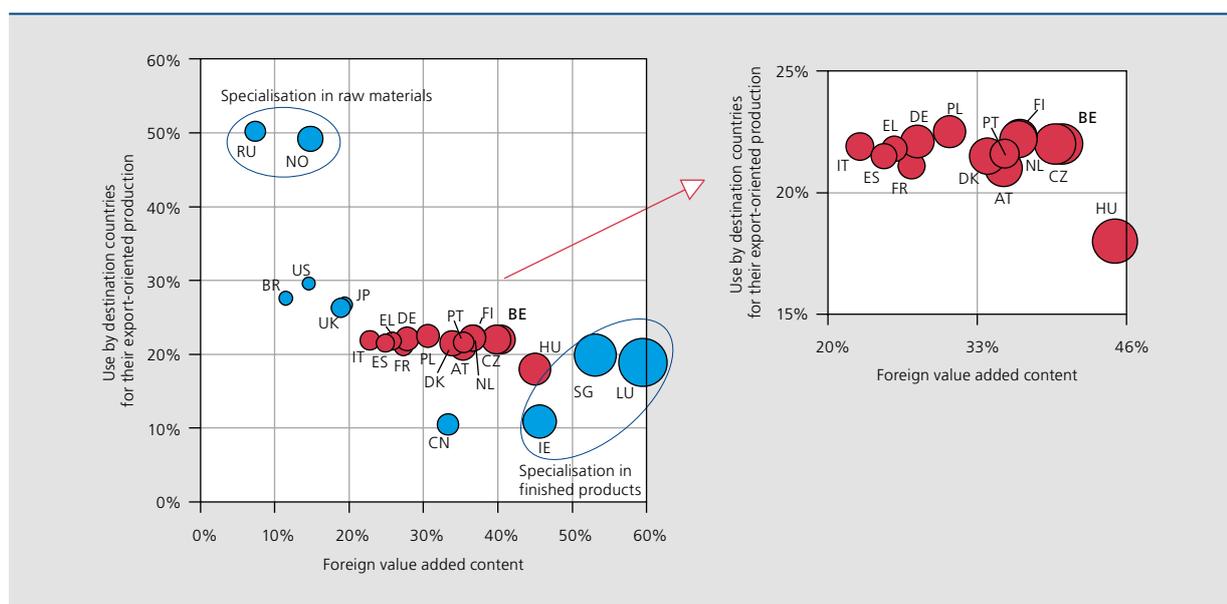
inputs. On average, the share of these imports in the total amount exported by the manufacturing industry came to 42 % in 2009. This heavy dependence on foreign goods and services is not unique to Belgian industry; it is a fact of life in many other countries (Johnson and Noguera, 2012).

In addition to the 42 % that comes from abroad, it turns out that an average of 32 % of the total value added put into industrial exports comes from the branch in question, whereas 25 % is from other branches of the Belgian economy⁽¹⁾. Even though these percentages depend directly on the way the branches are defined and their degree of aggregation, they illustrate a fragmentation of value chains within the country's borders that is similar to what is going on at the international level.

The second lesson has to do with the indirect importance of services to industrial exports. In 2009, intermediate inputs from the services branch represented nearly 36 % of the value of manufacturing industry exports, of which practically half came from abroad. Services thus make up a vital part of production for export. In this respect, they play an integral role in the economy's external competitiveness.

(1) The remaining 1 % corresponds to re-imported inputs.

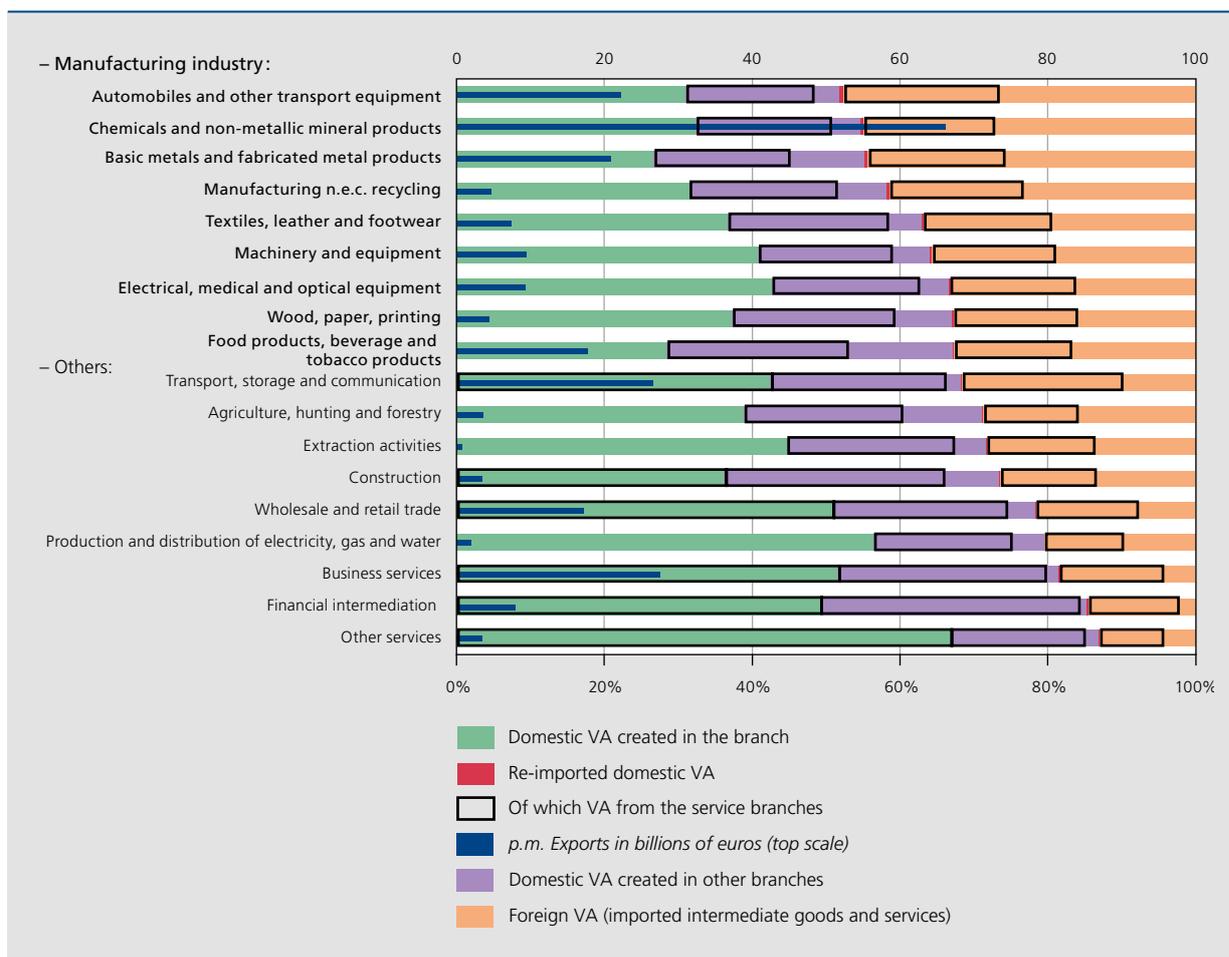
CHART 6 POSITIONING IN THE VALUE CHAINS
(share of goods and services exports, 2008 data; the size of the circle is proportional to exports of goods and services expressed as a % of GDP)



Sources: World Bank, EC, OECD.

CHART 7 VALUE ADDED COMPONENTS BY BRANCH OF THE ECONOMY

(2009 data, in % of branch exports unless otherwise indicated)



Source: OECD.

This use of subcontracting for service activities is part of a broader trend towards specialisation, with each company focusing on its core activities and calling upon external suppliers for the other inputs, in particular services related to industrial activities. This trend is also one of the factors underlying the trend towards industrial decline illustrated in chart 1. Whereas before, different types of activities were performed within a single industrial firm, more and more services and related activities are outsourced. This situation is evident in the majority of advanced economies, although to differing degrees. For example, in 2009 in France, industrial exports incorporated 44 % of value added created by the services branches, compared with respectively 38 % and 35 % in Germany and the Netherlands.

(1) Real estate and rental companies included.

Of the intermediate services used by the manufacturing industry in Belgium for its export-oriented production, 37 % were created in wholesale and retail trade (including hotels, restaurants and catering), 34 % in business services⁽¹⁾, 16 % in transport, storage and communication, 7 % in financial intermediation, and the rest – roughly 6 % – in the other services branches. These proportions vary somewhat, however, depending upon whether or not the intermediate services are produced domestically. Among services inputs from abroad, the share of transport, storage and communications is higher, whereas that of wholesale and retail trade is lower.

Overall, while manufactured goods still represent the lion's share of exports, their production includes a wide array of inputs that are imported or come from other branches of the economy. They rely on value added generated directly by labour and capital at work in other branches of activity,

particularly the services branches. All these factors work together to determine the external competitiveness of manufacturing companies.

3.3 The initial origin of inputs and final destination of exports

The traditional approach to the question of goods' input origin and export destination is to use foreign trade data⁽¹⁾. This source defines the direct supplier country by way of import data. Unlike these statistics, which only tell the previous link in the chain, the new data on production chains reveal all the upstream supplier countries. Each country's participation is quantified by calculating the value added content that they successively create during the production of inputs. Similarly, whereas traditional export data show the immediate destination, i.e. the next link in the production chain, value chain analysis determines the final destination country of the value added created by Belgian industry. By referring to chart 3, and assuming that Belgian industry is represented by C, the import data can identify the € 100 from B, whereas the

production chain data can retrace the € 90 from A and the € 10 from B. In the same way, with the new statistics it is possible to know who the final consumers of the exported value added are, i.e. those located at the very end of the value chain. If Belgian industry is represented by A in chart 3, country C then represents the final consumer in place of country B.

Table 1 shows a comparison between, on the one hand, the data on the origin of inputs used in Belgian industry and the final destination of the value added it creates, and on the other hand, foreign trade statistics. It turns out that the European Union in general, and neighbouring countries in particular, decline in relative importance. This is due to the fact that the re-exports recorded in goods exports are sent to neighbouring countries, thus inflating their role as outlets for the Belgium economy. In addition, certain products exported by Belgium to, for example, Germany, are transformed and then re-exported to third countries. Ultimately, the euro area and the EU

(1) For services, the balance of payments data also offer this breakdown, although it is based on a survey of a limited sample of firms.

TABLE 1 ORIGIN OF INTERMEDIATE INPUTS AND FINAL DESTINATION OF EXPORTS
(in %, 2009 data)

	Upstream		Downstream		
	Origin of the foreign VA incorporated into Belgian industrial exports	<i>p.m.</i> Imports of goods ⁽¹⁾	Final destination of the VA exported by Belgian industry	<i>p.m.</i> Exports of goods ⁽¹⁾	<i>p.m.</i> Potential annual growth from 2013 to 2015
EU27	60.7	74.4	64.6	75.5	1.2 ⁽²⁾
Euro area	48.9	63.0	48.1	62.5	0.9
Germany	13.0	16.7	10.1	16.8	1.2
France	9.9	13.1	14.6	18.1	1.5
Netherlands	11.8	22.7	5.5	13.7	1.4
Italy	3.7	3.4	7.6	4.2	0.0
Spain	2.4	2.4	4.0	3.1	0.4
United Kingdom	6.3	6.0	10.0	7.1	1.7
Norway	2.7	1.5	0.6	0.5	2.8
United States	8.9	4.3	6.8	4.3	2.0
Russia	4.0	1.9	1.8	0.9	3.3
China	2.5	2.8	2.4	1.9	8.3
Japan	3.0	2.8	1.3	0.6	0.8
India	1.2	1.1	1.8	2.4	6.8
Rest of the world	17.0	11.1	20.7	13.9	3.9

Sources: OECD, NAI.

(1) National concept.

(2) Excluding BG, CY, LT, LV, MT and RO.

represented respectively 48.1 % and 64.6 % of exports of Belgian industry value added in 2009, whereas their direct weights in exports were respectively 62.5 % and 75.5 %. On the import side, the Netherlands' role decreases significantly when switching from direct trade data to value added data, as it is also a transit point for inputs used in Belgium, particularly for energy products. Conversely, the UK, the US and various Asian countries take on greater importance as outlets for Belgian industry than what is shown in the foreign trade statistics. Even though care needs to be taken in several respects when comparing the two sets of data⁽¹⁾, the analysis does establish that the value added by Belgian industry is exported to multiple destinations. The mapping in chart 8 paints a more detailed picture.

Taking into account Belgian exporters' contribution, both direct and indirect, to foreign final demand, the shift from foreign trade data to that of exported value added makes it possible to compare, to some extent, the geographic

distribution of outlets with the relative weights of the principal sources of world growth. Naturally, gravity considerations such as geographic proximity or membership in an integrated currency and trading area explain why nearby economies continue to dominate (see Amador *et al.*, 2013). There is no avoiding the fact that, for Belgium, the growth potential of neighbouring economies appears to be relatively weak compared with other economic zones.

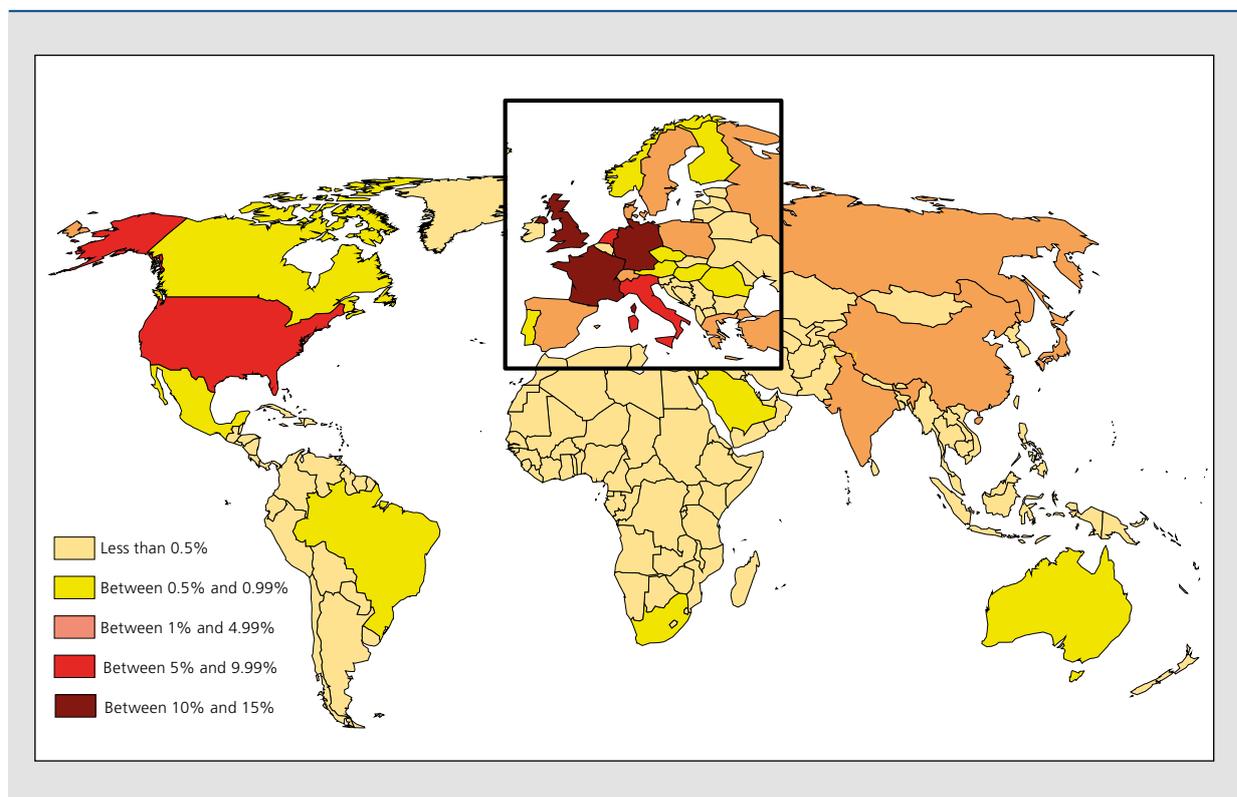
Initial conclusions and avenues for future analysis

With its integrated approach, the study of global value added chains makes it possible to understand the phenomena of globalisation and the shift to a services-based economy within a coherent framework. In particular, an initial exploration of the data assembled recently by the OECD/WTO provided some interesting insight with respect to Belgium, chiefly:

- The prevalence of goods in foreign trade is partly due to the re-export of merchandise, which is estimated to represent around one-third of imports of goods as

(1) The merchandise includes products from branches other than just the manufacturing industry. In addition, the value added of industry can be exported indirectly via the services branch, even though this appears to be marginal in the statistics.

CHART 8 FINAL DESTINATIONS OF VALUE ADDED EXPORTED BY BELGIUM'S MANUFACTURING INDUSTRY
(as a %, 2009 data)



Source: OECD.

recorded in the national accounts. This phenomenon is particularly pronounced in Belgium because, with Antwerp, it has one of the European market's principal entry and exit points.

- Domestic production for export, with re-exported imports stripped out, contains a substantial amount of foreign value added content in the form of imported intermediate inputs. The level was close to 40 % of Belgian manufacturing industry exports in 2009.
- Manufacturing industry exports also rely heavily on intermediate services, both domestic and foreign, to the tune of around 35 %. Services are thus indirectly incorporated into industrial goods exports. In this respect, they are a vital part of the economy's external competitiveness.
- The importance of European countries in general, and neighbouring countries in particular, as outlets for Belgian industrial exports must be put into context relative to the image given by foreign trade data.

Some of these conclusions, when quantified, confirm some of what we already knew or assumed. The first few conclusions help reconcile the seeming paradox of industry's place in the economy as illustrated in Chart 1, i.e. that the share of goods in foreign trade is close to 80 % whereas services activities dominate the economy. Conceptually, they underline that the economic interpretation of export data is muddled by the phenomenon of multiple counting when a single good or a single component incorporated into a good travels across multiple borders (Koopman *et al.*, 2012). Other observations constitute new insights, notably those related to the origin of inputs or the final destination of exported value added. New conclusions will undoubtedly be drawn as the data are refined, or as the period and the geographic scope considered are enlarged.

In this regard, analysis of value chains is a useful complement for putting traditional studies of export performance or deindustrialisation into a broader perspective. However, it cannot replace those studies, notably because it needs to employ complex, extended and – at this stage – not necessarily harmonised systems of statistical data on value chains. The various available sources used to create a global input-output table are, in fact, not always coherent, which leads to statistical trade-offs that can have a substantial influence on outcomes. Before using these data for any economic policy purposes, it would be good to thoroughly validate the data by comparing them with all of the available aggregates. In addition, the data on value chains are only available after a delay of three to

four years because they are dependent upon the availability of statistics for all of the economies studied. This delay limits the potential for using these data to monitor current economic evolution. Lastly, the breakdown by branch of activity is also not very precise, once again because it relies on the existence of detailed national aggregates. The data broken down by type of goods traded and, to a lesser extent, by type of services in the balance of payments are thus still the preferred sources of detailed information. Furthermore, differences between firms, even within certain branches, are a reason to continue analysis based on data for individual firms.

Despite these weaknesses and limits, it is still interesting to think about the prospects for research and analysis that this new approach opens up. At this point, several possible avenues appear to be emerging.

The data in the global input-output table provides a useful complement to the data from the national table for creating an overall view of Belgian production processes, both domestic production and export production. Furthermore, the 2010 input-output matrix for Belgium, elaborated by the Federal Planning Bureau, will be available in the coming months.

The breakdown of value chains makes it possible to retrace the ways economies are interconnected. This information may prove useful for better understanding how shocks spread between economies. The spread of supply shocks that occur early in the chain, or demand shocks that occur downstream, can thus be better measured. Because it highlights the multiplier effect of foreign trade, the use of these data also provides explanations for the abrupt drop in trade during the 2008-2009 crisis (Altomonte *et al.*, 2012). As part of economic forecasting exercises, these data might improve the accuracy of foreign trade estimates, at the very least by supplying a better assessment of risks.

With the recent publication of these new statistics, which allow for an alternate measurement of external trade flows, we have new elements with which to analyse competitiveness. Indicators acting as alternatives or complements to existing indicators could thus be employed. The share of value added in global exports could be a useful complement to existing indicators of share in global exports⁽¹⁾. An economy's area of specialisation could be defined in the light of data on exported value added (Koopman *et al.*, 2010). The trade balance broken down

(1) The share of a country's exports in global exports is an indicator traditionally used to measure an economy's external competitiveness. This is why it was chosen by the European Commission for its Scoreboard for monitoring macroeconomic imbalances.

by product type could be juxtaposed with a trade balance of domestic value added, measuring exports of domestic value added with regard to imports of foreign value added, and for each branch of the economy.

Analysing value chains also raises a certain number of questions regarding an economy's ability to capture value added and labour-intensive production phases. Because it lacks raw materials and has a high average level of human capital, as well as high labour costs, the challenge

for Belgium is clearly to develop the technological tools and recognised expertise it needs to attract or retain the most technical and specialised stages of the production chain. The question of how to adapt the functioning and structure of the economy so that it can take advantage of changes in global conditions remains a crucial one. Based on an initial analysis of the value added chains, the issue appears more multifaceted than ever, and researchers will have to take into account a vast number of dimensions in an integrated manner.

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Decoupled and resilient? The changing role of emerging market economies in an interconnected world

Ch. Buelens^(*)

Introduction

The global economy has been going through an extraordinary transition phase over the past two to three decades. This period has been marked by stronger integration among economies, spurred on by falling trade and communication costs, but above all by the rising prominence of emerging market and developing economies (EMDE), which as a group have enjoyed persistently higher growth than advanced economies (AE)⁽¹⁾. Their handling of the global financial crisis in 2008 by and large supported the strong impression they left in the period before the crisis: while they were certainly not spared from the adverse impact of the crisis, they generally bounced back much faster from it than AEs, even if not all regions have fully recovered yet.

EMDEs' rising global presence has mechanically lifted their influence on economic variables, such as world growth, prices, trade and financial flows. At the same time, it has also remodelled the global economic order, giving the "systemically important emerging markets" (Rana, 2013) a greater role in global economic governance, notably within the framework of the G20, and reinforcing dialogue and cooperation between them (at annual BRIC summits, for instance).

The contrasting growth performance of EMDEs and AEs has repeatedly raised the question about the sustainability of the (high) growth path followed by EMDEs. Interest has in particular focused on the extent to which their business cycles have decoupled from those in AEs. In the same vein, the strong growth performance of EMDEs

has also heightened interest in their resilience, defined as an individual country's capacity to sustain periods of growth and to minimise the recovery duration following an adverse shock. After having gone through some very deep financial crises in the 1990s, many EMDEs have indeed overhauled their policy frameworks and institutions, something which appears to have been particularly rewarding in the recent crisis.

The EMDE aggregate is extremely heterogeneous. While entering into details for individual countries would go beyond the scope of this article, the singular role of China is worth highlighting from the outset, given its size and impressive growth performance, enjoying a real growth rate of 10% per annum on average since 1990. Accounting for one-fifth of the global population, its share in global GDP (in nominal terms) went up from 1.8% in 1990 to 11.5% in 2012, making it the second largest economy in the world today, even if living standards still remain relatively low. Many of the general conclusions about EMDEs are hence likely to be driven or be strongly affected by economic developments in China.

^(*) The author would like to thank P. Butzen, A. Coleau, S. Cheliotou, E. De Prest and H. Zimmer for their comments and discussions. The opinions expressed herein and any errors are my own.

⁽¹⁾ For the purpose of this article (and unless otherwise mentioned) the classification established by the IMF in 2013 is used. Reference is mostly made to the broad aggregate of emerging market and developing economies (EMDE), composed of 153 countries, and the different regional aggregates making it up: central and eastern Europe (CEE, 14 countries); Commonwealth of Independent States (CIS, 12); Developing Asia (28); Latin America and the Caribbean (LAC, 32); the Middle East and North Africa (MENA, 20 countries), Middle East, North Africa, Afghanistan and Pakistan (MENAAP, 22); sub-Saharan Africa (SSA, 45). Note that different authors sometimes use different classifications (notably separating emerging markets on the one hand and developing economies on the other) or sub-groups of the latter that may affect the comparability of certain figures. A popular country grouping used by many observers (and occasionally in this article) are the so-called BRIC countries (Brazil, Russia, India and China).

The objective of this article is first to illustrate how EMDEs' growing weight in the global economy and the multiplication of their ties with other parts of the world have reshaped the global economic landscape. Secondly, it examines how this affects their possible decoupling from AEs and how greater resilience at the country level has influenced this process. This article therefore examines general changes in business cycles and policy frameworks which have arisen in past decades. Specific events or individual countries are mentioned only by way of illustration. Similarly, an analysis of the current financial market tensions facing various EMDEs, and the lively debate over policy options and policy coordination are beyond the scope of this article. However, these recent developments confirm the article's findings, namely the importance of good fundamentals and appropriate policy frameworks, as expectations concerning a gradual dismantling of quantitative easing by the US central bank have led to pressure particularly on the currency of a number of EMDEs with weaker fundamentals. This affected countries such as India, which are heavily dependent on foreign capital to finance a substantial current account deficit.

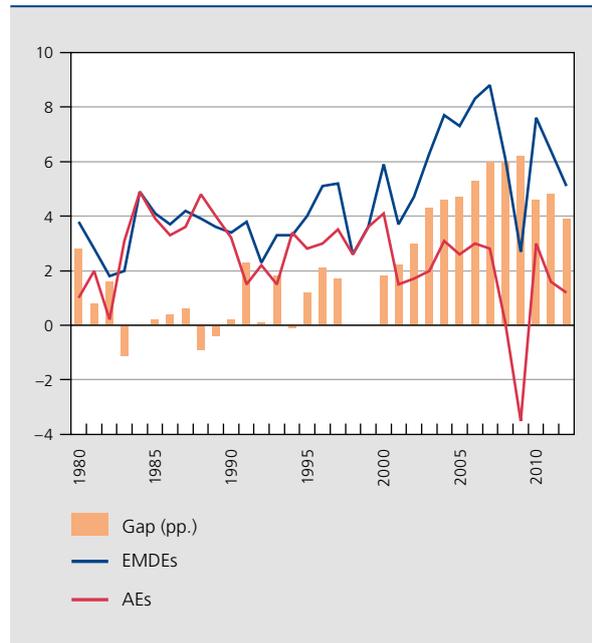
This article is structured as follows. Section 1 considers the longer-term growth patterns of EMDEs and their constituent regions and analyses the impact that the global financial and economic crisis of 2008 had on them. Section 2 looks at the implications of the larger weight of EMDEs for the world economy, illustrating this with a few examples. Given the contrasting developments of the two groups, the next section addresses the hypothesis of EMDEs' business cycle decoupling from AEs. In particular, it discusses the compatibility of the decoupling concept with the growing mutual connections of economies among each other. As benefits of integration and exposure to shocks often come as two sides of the same coin, individual countries need to find ways to help them maximise the former, while reducing the frequency or the disruptive potential of the latter. This leads to the concept of resilience, which is further analysed in section 4.

1. Growth patterns before and during the great recession

1.1 Divergent growth patterns between EMDEs and AEs

Growth differentials between EMDEs, on the one hand, and AEs, on the other, were relatively modest during the 1980s. Although the average growth differential widened from 0.4 to 0.9 percentage points in favour of EMDEs in the following decade, that gap was not stable and

CHART 1 REAL GDP GROWTH IN EMDEs AND AEs (%)



Source: IMF.

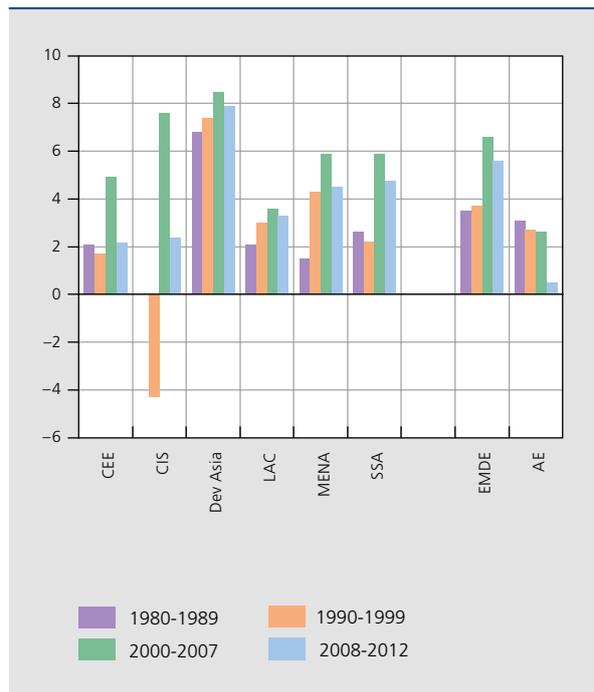
occasionally the advantage continued to swing between the two groups. Real growth in EMDEs started to significantly and persistently outpace that of AEs from 2000 onwards (see chart 1): the widening growth differential reflected both faster growth in EMDEs, which recorded an average growth rate of 6.2% per year between 2000 and 2012 (up by 2.5 percentage points from the 1990s), as well as a slowdown in AEs, which grew at an average rate of 1.8% during the same period (down by 0.9 percentage points from the 1990s).

The EMDE aggregate of course blurs a considerable degree of heterogeneity among the constituent regions and countries⁽¹⁾. As chart 2 shows, growth patterns have been quite mixed across regions. Over the three decades considered here, Developing Asia in particular set itself apart with fast and steady growth – temporarily interrupted by the 1997 Asian crisis – with China and India pacing ahead at average rates of respectively 10% and 6%. China's 2012 output was more than three times higher than its 2000 level and almost 9 times that of 1990⁽²⁾. The other regions followed slower and generally more uneven growth paths: in the CIS countries, growth took off only in the 2000s on the back of high commodity prices.

(1) Given their population and territorial size, internal heterogeneity is also a prominent characteristic of many of the larger EMDEs.

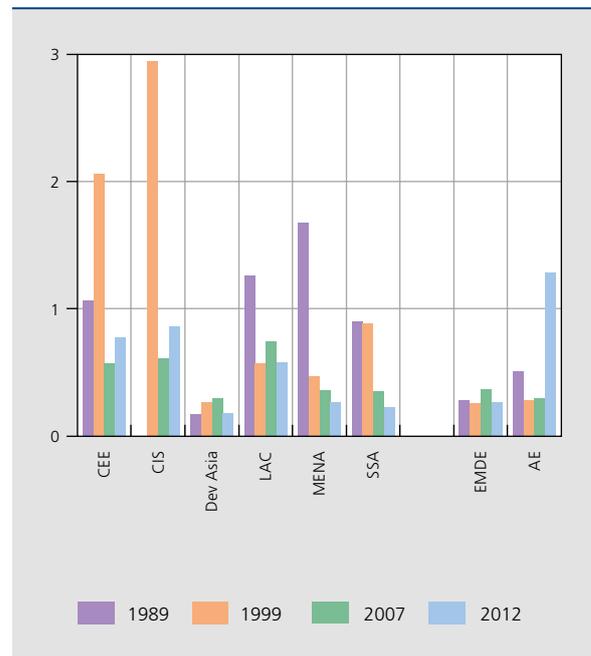
(2) The additional output that China produced in 2011 relative to 2010 was about equivalent to the entire GDP of Spain in 2011.

CHART 2 REAL GDP GROWTH BY REGION
(annual averages, %)



Source: IMF.

CHART 3 GROWTH VOLATILITY BY REGION
(coefficient of variation)



Source: IMF.

Note: Coefficient of variation over 10-year period ending in the reported year.

Russia, whose economy contracted at an annual average rate of 5.1% in the transition decade of the 1990s, only returned to its 1990 output level during the course of 2007, after expanding at an annual average rate of 5.2% since 2000. Sub-Saharan Africa, meanwhile, experienced a strong acceleration in growth after entering the new millennium, benefiting from strong demand for its natural resources. Still, it is worth noting that, in spite of differences in speed, the growth acceleration seen since 2000 is a general phenomenon across EMDE regions.

EMDEs' growth profiles also have become smoother over the past two decades, contrasting with the past when they were generally uneven and abruptly changing. In the decade starting in 2000, EMDEs thus spent more than 80 percent of the time in expansion – the highest proportion on record, and more than AEs. This is the consequence of both higher trend growth and of a reduction in growth variability (IMF, 2012), reflecting higher resilience, as discussed in section 4. Indeed, volatility lessened in general between the early 1990s and 2007, both for regional aggregates (chart 3) and individual countries.

1.2 The impact of the crisis on EMDEs

Higher growth rates during the great recession and a speedier and more vigorous post-crisis rebound indicate that EMDEs have weathered the global financial crisis better than AEs. This observation nonetheless merits being adequately qualified and put in perspective.

After the demise of Lehman Brothers and the outbreak of the global financial crisis in 2008, followed by a collapse in trade and a drying-up of cross-border capital flows (see chart 9), economic activity dropped around the globe, and growth in virtually every country decelerated between 2007 and 2009 (see chart 4). While EMDEs as a group succeeded in maintaining a positive growth rate of 2.7% in 2009, contrasting with the AEs' contraction of 3.5%, the respective growth collapse – i.e. the growth deceleration measured by the percentage-point reduction in growth between 2007 and 2009 – was nonetheless comparable in magnitude for both aggregates (respectively –6.1 and –6.3 percentage points, see table 1). This observation is confirmed by the parallel collapse in growth of industrial production (Didier *et al.* 2012). Chart 5 (based on IMF, 2012), showing the path of per capita output for the median country in the different EMDE regions and for AEs after the peak preceding the great recession,

confirms that the initial adverse impact of the crisis was comparable, if not sometimes larger, in EMDEs (CEE and CIS countries stand out).

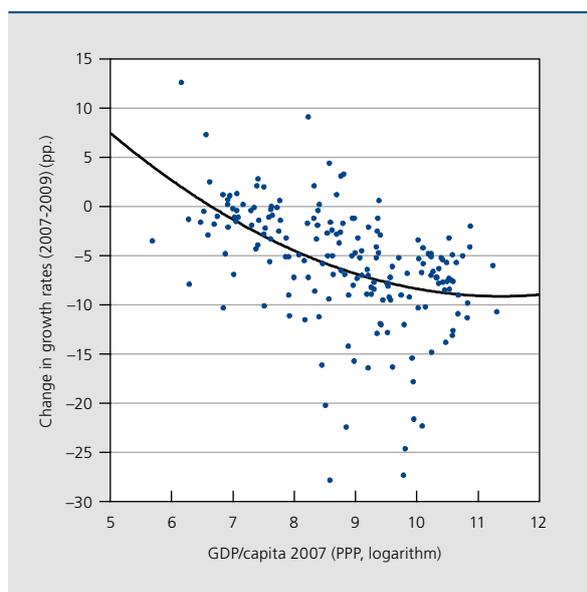
Conclusions on a general EMDE pattern during the downturn are misleading, as the positive aggregate growth figure for 2009 essentially reflects a continuing expansion in activity in Developing Asia – where the counter-cyclical policy response has sometimes been considerable, as for example in China – and to a lesser extent in MENA and SSA countries. Meanwhile, other EMDEs, notably in the CIS and in central and eastern Europe, suffered considerably more from the crisis than their peers or indeed AEs (see table 1). Within the latter region, the Baltic states (Estonia, Latvia and Lithuania) stand out, after contracting by 15.5 % in 2009 (average) and seeing their growth drop by 24.5 percentage points from the 2007 rate. On the other side of the Atlantic, the economic performance of EMDEs relative to neighbouring AEs was also mixed. The LACs’ overall contraction in 2009 (–1.5 %) was for example milder than that of the US (–3.1 %). The Mexican economy, meanwhile, underperformed in comparison to the US, both in terms of growth (–6 %) and growth collapse (–9.2 percentage points compared with –5.0).

Other indicators highlight the disproportionately large effect of the crisis on countries in the middle of the per capita GDP distribution, i.e. emerging economies. Didier *et al.* (2011) point to the existence of a positive but non-linear relationship between pre-crisis GDP per capita and the collapse of growth during the crisis (reproduced in chart 4). Accordingly, low-income economies at the bottom end of the distribution eluded the full impact of the downturn, “benefiting” from their relative isolation on global goods and capital markets⁽¹⁾. Likewise, the impact on economies at the high end of the distribution was relatively contained given their income levels, owing to an immediate and vigorous response by fiscal and monetary policy authorities.

As a group, EMDEs have recovered faster from the crisis than their more advanced counterparts. This is reflected by an earlier return to the pre-crisis GDP level. The 2012 output of EMDEs exceeded that of 2007 by 31 %, whereas real GDP in AEs stood a mere 2.3 % above the pre-crisis level (see table 1). While Asian economies kept their front-runner status during the recovery, many of the individual economies that had experienced a contraction during the crisis, such as Russia, Mexico or Turkey,

(1) This point illustrates well the trade-offs of economic integration (further discussed in section 3): economic benefits come at the price of heightened shock-exposure – isolation from adverse shocks comes at the expense of the opportunity cost of non-integration.

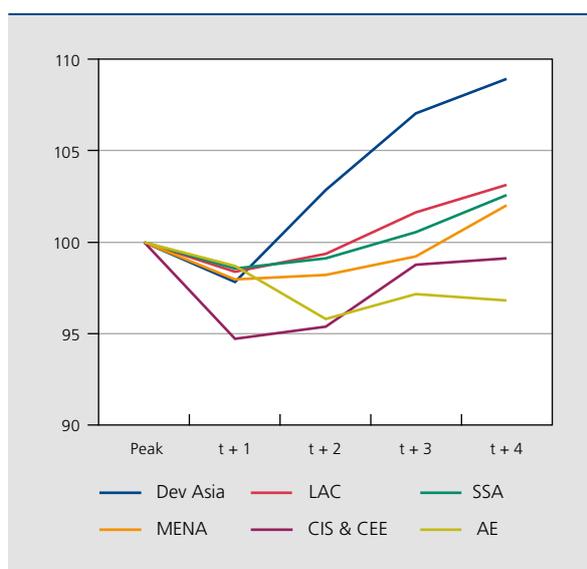
CHART 4 REAL GDP GROWTH COLLAPSE (2007-2009) BY INCOME LEVEL



Sources: Didier *et al.* (2011), IMF.

bounced back to their pre-crisis level of output by 2010. AEs in contrast only achieved this one year later (euro area GDP, meanwhile, is still below its 2007 output figure and is not forecast to return to this level until 2015). Across the EMDE regions, the economic recovery has been more modest and protracted in the CIS and CEE, partly due

CHART 5 DYNAMICS OF GDP PER CAPITA DURING THE GREAT RECESSION IN DIFFERENT EMDE REGIONS



Source: IMF (2012).

Note: Median output per capita; peak = 100; years on x axis.

TABLE 1 GDP GROWTH COLLAPSE AND RECOVERY IN EMDEs DURING THE GREAT RECESSION

	Real growth			Growth collapse	Recovery	Current level	
	(in %)					(percentage points)	(percentage points)
	2007	2009	2010	2009-2007	2010-2009	2012	2013 e
CEE	5.4	-3.6	4.6	-9.0	8.2	111.1	113.6
CIS	8.9	-6.4	4.9	-15.3	11.3	112.0	115.8
Dev. Asia	11.6	6.9	9.9	-4.7	3.0	146.1	156.4
LAC	5.8	-1.5	6.1	-7.3	7.6	117.3	121.3
MENAAP	6.3	2.9	5.3	-3.4	2.4	123.8	127.6
SSA	7.0	2.7	5.4	-4.3	2.7	126.1	133.2
EMDEs	8.8	2.7	7.6	-6.1	4.9	131.1	138.1
AEs	2.8	-3.5	3.0	-6.3	6.5	102.3	103.5
World	5.4	-0.6	5.2	-6.0	5.8	115.4	119.2
BR	6.1	-0.3	7.5	-6.4	7.8	116.8	120.3
RU	8.5	-7.8	4.5	-16.3	12.3	109.3	113.0
IN	10.1	5.0	11.2	-5.1	6.2	138.9	146.8
CN	14.2	9.2	10.4	-5.0	1.2	155.7	168.1
SA	5.5	-1.5	3.1	-7.0	4.6	111.6	114.7
MX	3.2	-6.0	5.3	-9.2	11.3	108.1	111.8
TR	4.7	-4.8	9.2	-9.5	14.0	116.5	120.5
Euro area	3.0	-4.4	2.0	-7.4	6.4	98.7	98.4
United States	1.9	-3.1	2.4	-5.0	5.5	102.9	104.9

Source: IMF.

to their trade and financial exposure to the euro area. In spite of recent high growth rates, in 2012 the Baltic states, for example, were still lagging behind their 2007 real GDP level.

2. The global implications of EMDEs' stronger economic weight

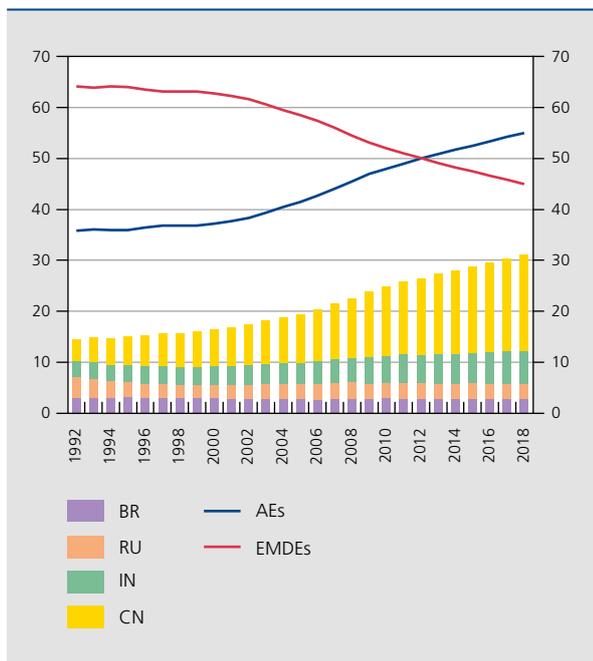
Lastingly higher growth rates have logically translated into an increase in the relative economic weight of EMDEs. Accounting for only about one-third of world output in the 1990s, their contribution gradually rose, putting them on par with AEs by the year 2012 (see chart 6). This parity, however, is still a far cry from the distribution of the world population, 85 % of which currently lives in EMDEs. Chart 7 plots the cumulative proportion of world population, ranked by GDP per capita, against the cumulative proportion of their income (Lorenz curve) in different years. While the income inequality across the globe only lessened marginally during the 1980s and 1990s, it declined more substantially in the 2000s, as many EMDE economies took off, reflected by the sizeable inward shift

of the Lorenz curve. Given the EMDEs' catching-up potential, faster growth is generally expected to continue in the medium term: according to IMF projections (WEO, April 2013), they should overtake AEs in size as of 2013 and account for 55 % of global output by 2018⁽¹⁾.

Chart 6 also shows that EMDEs' rising share in world GDP is largely due to the BRIC countries and China above all. The share of the remaining countries has been fairly stable. The strong growth of Asian economies in particular implies that the geographic distribution of economic activity across the planet is changing. Danny Quah (2011) explains how the reshuffling in the relative contributions to global output has shifted the location of the world economy's centre of gravity over time. While in 1980 this point was situated in the mid-Atlantic between Europe and America, it has gradually moved eastwards and is projected to settle between China and India by 2050. Unsurprisingly, this point lies in the vicinity of the

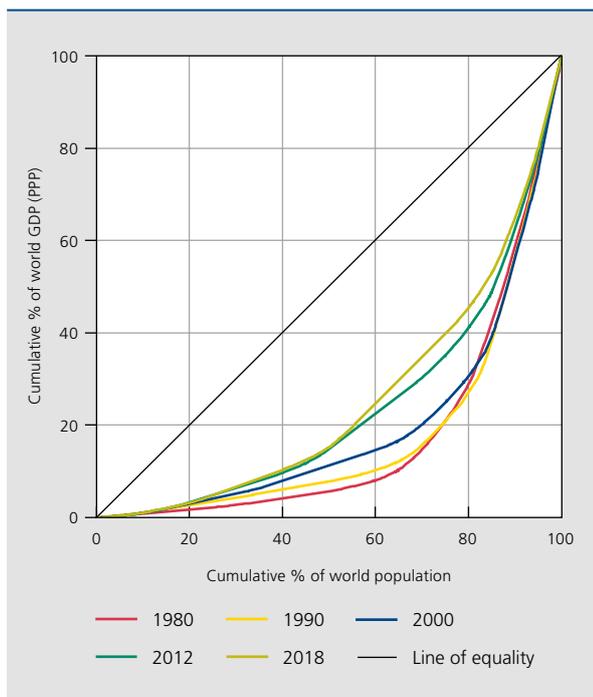
(1) Lawrence (2013) discusses a series of studies with a forecasting period up to 2030, in which there is general agreement that there will still be some disparity in growth between the AEs and the EMDEs in the foreseeable future. However, there is no consensus on the speed of convergence, given that this is not an automatic process and countries often see their growth rates slow down as soon as they have reached a certain standard income level (Agénor and Canuto, 2012).

CHART 6 GEOGRAPHICAL DISTRIBUTION OF WORLD GDP BASED ON PPP (%)



Source: IMF (projections as of 2013).

CHART 7 LORENZ CURVE OF WORLD GDP



Source: IMF.

Note: Countries with incomplete GDP data are excluded. GDP/capita is assumed to be equal within each country.

‘demographic centre of gravity’, with which the Earth’s economic centre of gravity would coincide if income levels converged everywhere around the world (i.e. coinciding with the hypothetical line of equality in chart 7).

The strong growth differentials between EMDEs and AEs indeed have to be viewed in the light of a substantial difference in living standards (measured in terms of per capita GDP based on purchasing power parity)⁽¹⁾. As shown in chart 8, the catching-up process seems to be an important explanatory factor behind the EMDEs’ growth over the past two decades, as countries with lower initial income levels generally enjoyed higher growth rates. Meanwhile, poverty still remains a major issue in many of these countries (World Bank, 2013), and even though income levels have risen in EMDEs over the years – substantially in some cases – they still lag considerably behind those observed in AEs. The average income of a Chinese citizen in 2012 thus corresponded to about four times his income of 2000 (in PPP terms), but amounted merely to around 18% of the average income of a US citizen or to one-quarter of that of a Belgian citizen. Given the heterogeneity among countries, the distribution of living standards across EMDEs, relative to the US, was also wide in 2012, ranging from 4.9% in sub-Saharan Africa to 31.8% in central and eastern Europe.

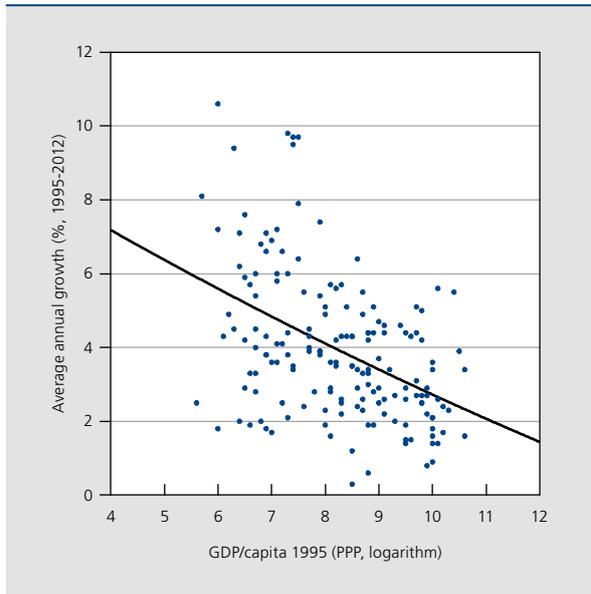
The larger economic weight of EMDEs has been changing the parameters of the global economic landscape, as their influence on global economic developments and outcomes has widened almost mechanically. This impact has been felt in the recent past, for example through their more prominent role in global trade, their contribution to the build-up of macroeconomic imbalances (and hence to financial stability risks) or their impact on global supply and demand patterns. With some of the EMDEs having effectively crossed the threshold to become large open economies, their economic fundamentals and domestic policies hence matter increasingly outside their own borders, be it in advanced or in other emerging economies.

The intensification of international trade has been one of the main features of the globalisation period. Exports measured as a share of world GDP steadily progressed from 15% in 1990 to over 25% on the eve of the global financial crisis (see chart 9)⁽²⁾. At the same time,

(1) While GDP per capita is the most relevant output measure used for welfare analysis, it is nonetheless an imperfect indicator. Indeed, it represents a theoretical allocation of GDP and does not account for income inequalities, which are very high within some emerging economies. In China, for example, high overall inequality comes in the form of regional disparities between urban (coastal) provinces on the one hand, where living standards sometimes reach levels comparable to some EU-15 countries, and the poorer rural provinces on the other. As authorities have begun to tackle this issue, inequality has stabilised in recent years, albeit at a high level (OECD, 2013). Inequality has traditionally also been particularly pronounced in many African and Latin American countries, which top the rankings in terms of the Gini coefficient (World Bank World Development Indicators).

(2) Figures in this paragraph are based on WTO, World Bank and IMF data.

CHART 8 FASTER GROWTH IN COUNTRIES WITH LOWER INCOMES



Source: IMF.

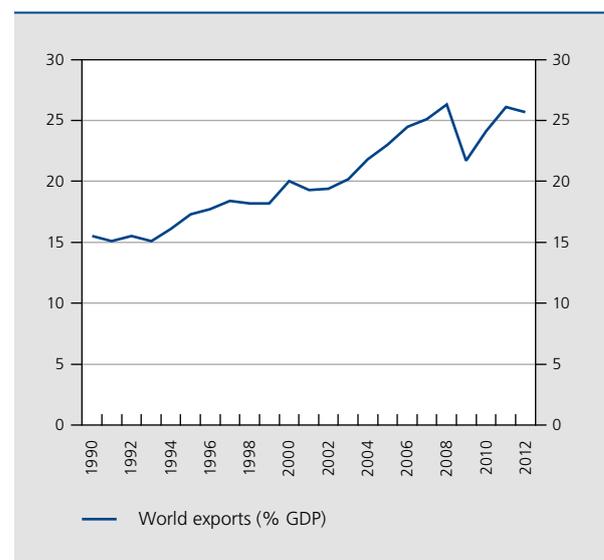
export market shares have been reshuffled, as EMDEs' participation in the global trading system has become ever more significant (see chart 10). The joint share of the BRIC countries climbed from 3% in 1990 to 7% in 2000, from where it rocketed to almost 17% in 2012. The corollary of this is a decrease in export market shares of AEs, notably the US and the EU (considering extra-EU exports only). Within EMDEs, China again stands out, having become the world's largest exporter in a matter of years. The other BRIC countries meanwhile have also gained export market share, but they account for a much lower proportion of world trade. These gains came along with an increased export orientation of their domestic economies, as reflected in the growing ratio of exports to GDP in all BRICs. The stronger participation of EMDEs in world trade is also visible on the import side. While the US remained the world's largest importer in 2012 with 12% of world imports, the BRIC countries' share rose from slightly below 3% in 1990 to around 15% in 2012 – China accounted for about one-tenth of world imports. While more than half of its imports were sourced in other Asian countries, one-fifth originated in Africa, Latin America and the Middle East, reflecting an intensification in trade among EMDEs, and most notably China's reliance on commodities from those particular regions. Importantly, the changing pattern in international trade is not just a volume effect explained by the emergence of new trade partners, but also reflects growing structural links among economies. Indeed, production chains have

increasingly become fragmented across borders and trade in intermediary goods has risen considerably (hence the strong intra-Asian trade links), as the recent studies on global value chains clearly confirm (e.g. OECD, 2013b).

Besides trade, the growing interconnection is also visible in terms of capital flows, notably direct investment. For example, while the share of the four BRIC countries in global foreign direct investment (FDI) had grown from 1 or 2% in the 1990s to 9% by 2009, the proportion going to low-income countries (LICs) has been particularly dynamic (Machila and Tabeke, 2011).

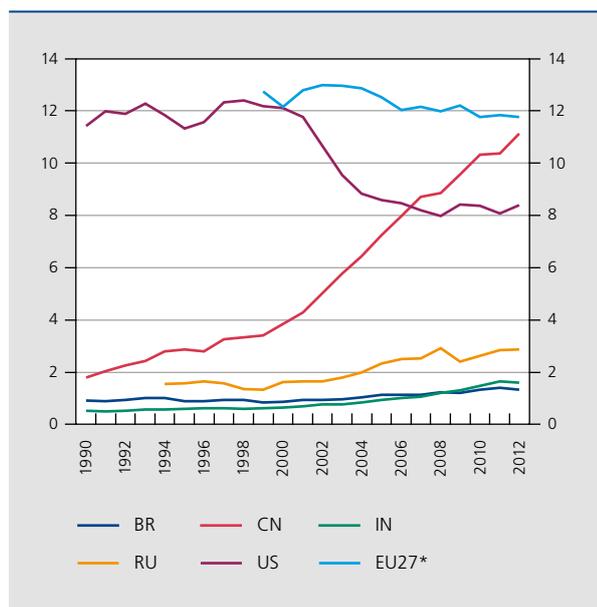
The current account imbalances which built up during the 2000s and were a characteristic feature of the global economy at the start of the 2008/2009 financial crisis are another symptom of the growing influence of EMDEs. During the pre-crisis period, capital outflows originating mainly from emerging markets – notably Asian economies and oil exporters – contributed to the financing of a large and growing current account deficit in the US. These uphill capital flows were driven by a combination of factors, including resistance to nominal exchange rate appreciation by some countries, a lack of domestic investment opportunities in others, precautionary savings, high oil prices and an accumulation of foreign reserves. While establishing a direct causality between the current account imbalances on the one hand and the financial crisis on the other would certainly be too narrow a view (Borio and Disyatat, 2011), the bottom line is that global

CHART 9 SHARE OF EXPORTS (% of world GDP)



Sources: IMF, WTO.

CHART 10 GEOGRAPHICAL BREAKDOWN OF WORLD EXPORTS BY EXPORTER (%)



Source: WTO.
Note: EU27 excludes intra-Community exports.

imbalances can pose substantial financial stability risks, and that EMDEs are sufficiently large to be a driving force behind their accumulation.

The global influence of EMDEs is also visible in prices of traded goods, and by extension global inflation dynamics (Simola, 2012; Eickmeier and Kühnlenz, 2013). On the supply side, lower production costs in many EMDEs have exerted dampening effects on prices of manufactured products, impacting on inflation in AEs via the import channel. Competitive pressure triggered by EMDE imports have also put the profit margins of some AE firms under strain, indirectly amplifying downward pressure on the general price level. But growing domestic demand from the EMDEs also implies stronger pressure being exerted on some globally traded goods, including commodities, capital and consumer goods. Investment to support ongoing industrialisation and urbanisation processes has indeed been very commodity-intensive and has consequently been a driving force behind the price increases observed throughout the last decade. For example, the share of investment in China's GDP came to almost 50%⁽¹⁾. In 2010, China's share in global consumption of base metals (e.g. copper, aluminium), of which it also became the dominant importer, or coal, amounted to around 40%⁽²⁾. Besides investment, growing disposable incomes have also reshaped personal consumption profiles in EMDEs. This is notably visible in food consumption patterns,

where higher demand for meat, and consequently for animal feed requirements, is adding to price pressures in certain food categories (OECD-FAO, 2013). Meanwhile, the increased ownership of personal vehicles translates into a higher private demand for fuel⁽³⁾. Looking ahead, emerging markets' impact on the prices of commodity prices is thus likely to become even greater, even if some countries may gradually depart from a commodity-intensive investment-led growth model and shift to a consumption-led one. The shift may impact individual commodities to a different extent, but the larger weight in global demand implies that a reshuffling in the composition of domestic demand is unlikely to pass unnoticed.

The consequences of higher commodity prices of course vary depending whether countries are commodity importers or exporters. For many EMDEs, the more intense domestic investment in some of their counterparts have constituted an important growth driver, by boosting external demand⁽⁴⁾, improving their terms of trade and contributing to an expansion of foreign investment. Indeed, as described by Mlachila and Takebe (2011), FDI from BRICs – above all from China – into economies in sub-Saharan Africa has been primarily directed into natural resource industries (i.e. oil and mining) and has often been accompanied by complementary infrastructure projects (roads and ports).

3. Business cycle decoupling in an increasingly integrated world economy

Persistent growth differentials between EMDEs and AEs prior to the crisis gave rise at the time to a debate on the degree of economic "decoupling" of the two groups from each other. The interest notably focused on whether EMDEs would withstand a slowdown in AEs or join them in a synchronised downward business cycle move. The general impact of the 2008/2009 crisis has temporarily answered this question (see section 1), but the differentiated post-crisis rebound, which has by and large been swifter in EMDEs, has nevertheless raised it again (e.g. Leduc and Spiegel, 2013).

(1) The figure refers to 2011. This represents more than 5% of world GDP in nominal terms, exceeding Germany's GDP. By way of comparison, the equivalent rate in the US was 15%.

(2) Despite this growing weight, AEs are generally still the main drivers of price changes (Simola, 2012). The United States' impact on commodity markets is hence even greater than China's (Roache, 2012).

(3) The motor vehicle density in China almost quadrupled from 15 (per thousand people) in 2003 to 57 in 2010 (World Bank WDI database). To reach a motor vehicle density comparable to that of Brazil (209) or Belgium (560), for example, around 200 or 670 million additional vehicles would be necessary.

(4) Latin American commodity exporters – such as Brazil (iron ore, soybeans) and Chile (copper) – and many CIS economies (gas, oil) have thus all benefited.

Decoupling is defined as “the emergence of a business-cycle dynamic that is relatively independent of global demand trends and that is driven mainly by autonomous changes in internal demand” (Asian Development Bank (ADB), 2007). Lasting economic divergences among countries at a time of deepening ties between each other may at first glance seem contradictory – notably since economic integration essentially constitutes a form of structural coupling. In contrast to a situation of autarchy, which would isolate a country from outside influences⁽¹⁾, opening up borders entails a multiplication and deepening of the connections a country effectively or potentially maintains with the rest of the world. This raises the question of which factors, shocks or circumstances could prompt a decoupling of business cycles. This section briefly discusses, from a conceptual viewpoint, how economic integration affects growth, shock transmission and business cycle synchronicity, and presents some empirical findings from the economic literature.

3.1 Conceptual considerations regarding the impact of economic integration

3.1.1 Two sides of integration: growth driver and shock transmission channel

For an individual country, economic integration can generate potential benefits, the extent of which generally depends on the difference in its relative endowment of factors compared to other countries, and its ability to redeploy them across sectors. By exploiting their comparative advantage or making use of economies of scale, countries can engage in mutually beneficial inter- or intra-industry trade. Meanwhile, by accessing international capital markets, they can overcome domestic shortfalls in savings through capital imports or profitably invest their excess savings abroad.

Economic integration can contribute to an economy's ability to grow and, in the case of EMDEs, narrow their income gap with respect to AEs. Asian economies have demonstrated this over the past decades by relying on export-led growth models. But the permeability of borders also exposes an economy to the vagaries of external demand, changes in risk appetite and the consequences of foreign policy decisions. Importantly, the channels through which adverse shocks unfold are often exactly the same as those delivering the benefits⁽²⁾. Risks typically grow when some channels are excessively relied upon: while specialising in the production of a given traded product or focusing on a particular export market may at first spur growth, it may make a country vulnerable to a loss of external demand or a terms-of-trade shock. Likewise, while incoming capital

may help to smooth consumption or finance productive projects, it may also contribute to the build-up of over-capacity in some sectors or fuel asset price bubbles. Similarly, excessive reliance of domestic banking systems on foreign funding makes domestic credit supply dependent on the sound functioning of credit markets abroad. Countries of central, eastern and south-eastern Europe, for example, with largely foreign-funded (and foreign-owned) banking systems have suffered from a drying-up of capital inflows following the protracted crisis in the euro area (limited in part by banks' commitments under the so-called Vienna initiative to maintain their exposure to the region), which led to stalled credit growth and ultimately exacerbated the contraction of output.

3.1.2 Relative economic size and direction of shocks

In an interconnected world, countries can be either at the origin or at the receiving end of a shock – this is true for positive and adverse shocks alike. Generally speaking, relative size matters and the ADB definition indicates that decoupling is essentially the prerogative of a large economy with sufficiently autonomous domestic demand to disconnect itself from global demand. Taking account of EMDEs' increasing relative economic weight and the growing share of trade and capital flowing among them, the one-directional influence of AEs is gradually diminishing. Section 2 provides a number of examples through which EMDEs have been influencing global economic developments recently, suggesting that interdependence is indeed becoming increasingly two-sided. This appears to be confirmed by current concerns about the consequences for AEs of a slowdown of the Chinese economy.

3.2 Review of empirical findings on EMDE decoupling

From a theoretical point of view, the effect of economic integration on the synchronisation of business cycles is ambiguous, as it essentially depends on the structures which emerge from the integration process itself and on the nature of cross-border shocks (Baxter and Kouparitsas, 2005). Strong trade and financial connections may foster specialisation and ultimately reduce the co-movements in output, notably when there are frequent sector-specific shocks. Conversely, aggregate demand shocks at the level of individual countries may be transmitted across borders via trade and capital channels, this time actually

(1) See the more limited impact of the global financial crisis on the relatively isolated low-income economies described above.

(2) This presupposes an effective functioning of these channels. Home biases (resulting from consumer preferences or regulations) or risk awareness can limit them.

promoting the co-movement of output patterns. It should be noted that this would also be the case for countries highly specialised in complementary activities that are integrated into transnational production processes⁽¹⁾.

The empirical evidence regarding the business cycle synchronicity between AEs and EMDEs also delivers ambiguous results. Kose *et al.* (2008), for example, analyse the cyclical interdependence over the period 1960-2005 across 106 countries, classed as industrial countries, emerging markets and other developing economies⁽²⁾. They find that between 1985 and 2005 (the “globalisation period”) business cycles among industrial countries and among emerging markets became more closely aligned compared to the period running from 1960 to 1984, suggesting that cyclical convergence of the countries within each group has intensified⁽³⁾. A global factor also explains a small but significant share of macroeconomic fluctuations, which points to the existence of a global business cycle. The decline in its relative importance over time, however, points to a decoupling of the business cycle movements between the two groups. Siklos (2012) reaches more ambiguous conclusions regarding co-movements in business cycles, stressing their sensitivity to the periods covered and the regions analysed.

A number of authors have examined business cycle co-movements with a focus on certain geographical regions, particularly Asia. Pula and Peltonen (2009) and ADB (2007), for example, find no evidence of any structural or cyclical decoupling of Asian economies from AEs. On the contrary, the ADB observes that Asian economies’ business cycles have become more synchronised with industrial economies and also among each other. They attribute this to greater intra-Asian economic interdependence, as evidenced by shared cross-border production processes, which itself is actually the result of stronger integration of the region as a whole into the world economy. Cesa-Bianchi *et al.* (2012) find a growing synchronisation between growth in China and different Latin American economies and show that the latter’s cycles have now become more sensitive to China – the long-term impact of a shock to Chinese GDP has increased threefold since the mid-1990s – and conversely less to the US, which nevertheless retains considerable influence. This evidence supports the view of closer business cycle alignment among

EMDEs, but also suggests that the decoupling observed by other authors (e.g. Kose *et al.*, 2008) might to a large extent be related to the emergence of China as a major driver of world growth, rather than to any widespread autonomous decoupling of individual EMDEs’ business cycles from the AEs.

3.3 Some reflections on the concept of decoupling

First, a polar representation contrasting decoupling and convergence seems to ignore some of the realities of an interconnected world composed of a growing number of large players. Siklos (2012, p.6) thus asks whether it is “useful to think in terms of coupling (to)/decoupling (from)?”, and prefers to regard business cycles between AEs and EMDEs as being subject to mutual interdependence. Still, a number of open issues are worth discussing:

Transitory or permanent? Even though decoupling does not mean that the regions that are compared do not share common growth drivers, it implies however that these are blurred by other factors to an extent that is compatible with unsynchronised business cycles. That in turn raises the question whether differences in the relative strength of growth drivers are a permanent/structural phenomenon, a transitory divergence resulting from idiosyncratic shocks or the consequence of different initial economic conditions. Charts 7 and 8 illustrate the latter. EMDE growth in recent years has taken place within a catching-up context and supported by specific growth models. The potential margin for catching up (and hence differentials in growth rates) is still sizeable and it remains to be seen how business cycle co-movements will be affected once growth rates reach some steady-state level.

General or China-specific? Should decoupling be regarded as an idiosyncratic phenomenon applicable to individual EMDEs in general, or does it reflect the emergence of China as a major global player? As mentioned above, China has indeed become an important driver of growth for many EMDEs, and started to exert stronger influence on their business cycles, as shown by Cesa-Bianchi *et al.* (2012). This would support the assumption that EMDEs (excluding China) have essentially swapped the economies to which they are tied. Consequently, this would also entail that a slowdown in China would also be felt across EMDEs. Yet, the coupling to China could also prove conditional on its particular growth model, which has created forms of structural coupling with many EMDEs: a reorientation of its growth model could therefore end in potentially detrimental decoupling for many of them.

(1) The effect of integration on the synchronous behaviour of different macroeconomic aggregates meanwhile is likely to differ: downhill capital flows should for example limit the correlation of investment, while consumption correlation should increase as a result of the income risk diversification that financial integration allows.

(2) They break down the countries’ macroeconomic fluctuations within the framework of a dynamic factor model into a global, a group-specific and a country factor and estimate the relative contribution of each.

(3) This is consistent with Baxter and Kouparitsas (2005), who find that bilateral business cycle co-movements are higher when both countries are industrialised or both are developing countries.

The role of counter-cyclical policies. A further question relates to the link between business cycle synchronicity and counter-cyclical policies implemented at national level. The absence of coupled growth patterns may indeed result either from asymmetric shocks or from a differentiated reaction to a common shock. The case of China is again very enlightening in this respect. Due to its strong reliance on exports to AEs (Chinese exports to the EU, North America and Japan currently correspond to more than 15 % of its GDP), it was particularly exposed to the global trade collapse of 2008/2009, when its export share in GDP contracted by over 8 percentage points to 26 %. Owing to a colossal fiscal and monetary stimulus, it managed to swiftly compensate the shortfall in its exports by higher investment and thus to maintain growth at 9.2 % in 2009. As will be discussed in the next section, the capacity to pursue counter-cyclical policies is a major factor behind an economy's resilience. As such, resilience would actually foster the decoupling process. That said, the margin for a counter-cyclical policy response is typically limited and, the longer recessions abroad last, the more difficult it becomes to offset possible shortfalls in external demand and capital inflows⁽¹⁾. This is obviously a topical problem in the present context of subdued growth in AEs, and it questions the permanent character of decoupling.

(1) Furthermore, a large stimulus may itself become the source of unsustainable developments. In China, for example, strong credit expansion has led to overheating symptoms and sectoral imbalances, as well as the current concerns about property prices and excessive off-balance sheet financing by the banking system and local governments (OECD, 2013).

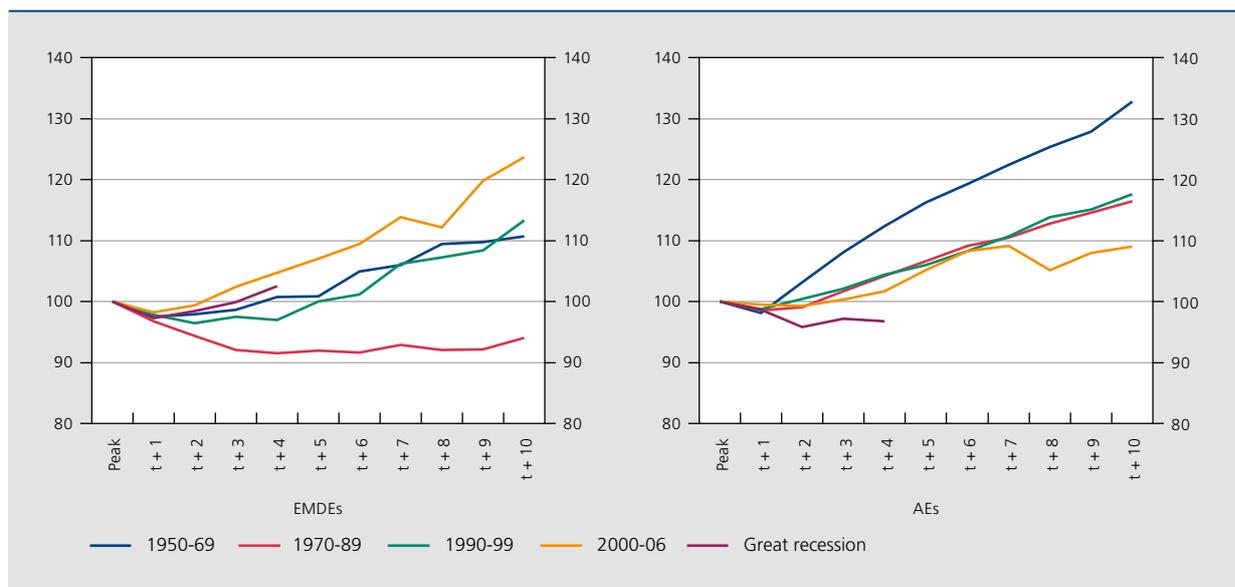
4. Factors behind EMDEs' stronger resilience

The integration of EMDEs into the global trading system and world capital markets has brought them considerable benefits over the past decades (see section 2). Despite higher exposure to adverse external shocks, they appear at the same time to have become more resilient. In 2012, the IMF defined resilience as an economy's "ability to sustain longer and stronger expansions and to experience shorter and shallower downturns and more rapid recoveries".

Chart 11 (IMF, 2012) illustrates the stronger resilience of EMDEs, showing the dynamics of per capita output following a peak at different periods in time. It suggests that, since the year 2000, EMDEs have indeed experienced shorter and shallower downturns and quicker recoveries than in previous decades. This greater robustness continues to hold for the great recession period. Remarkably, since the turn of the millennium, EMDEs have outperformed AEs in terms of both brevity of recessions and vigour of expansions.

EMDEs hence seem to be better armed nowadays against shocks that are potentially disruptive and that increase the likelihood of an expansion phase coming to an end. The IMF (2012) identifies two domestic shocks (banking crises and credit booms) as well as a set of external shocks (a surge in global uncertainty; a rise in US interest rates; advanced economy recessions; a drop in the terms of trade; a sudden stop in capital flows) which it finds significantly

CHART 11 DYNAMICS OF OUTPUT PER CAPITA FOLLOWING PEAKS



Source: IMF (2012).
Note: Median output per capita; peak = 100; years on x axis.

increase the probability of ending an expansion⁽¹⁾. Efforts to strengthen a country's resilience should therefore focus on minimising the likelihood of domestic shocks occurring – for instance through adequate prudential supervision (to prevent banking crises) or the establishment of clear financial stability mandates (to avert credit booms). While external shocks are typically beyond domestic policy-makers' control, they can nevertheless set up conditions to help mitigate their potential disruptive impact⁽²⁾.

While identifying different adverse shocks is a prerequisite for adequately dealing with them, political economy constraints may in some cases obstruct the implementation of the necessary preventive measures⁽³⁾. If nothing else, the

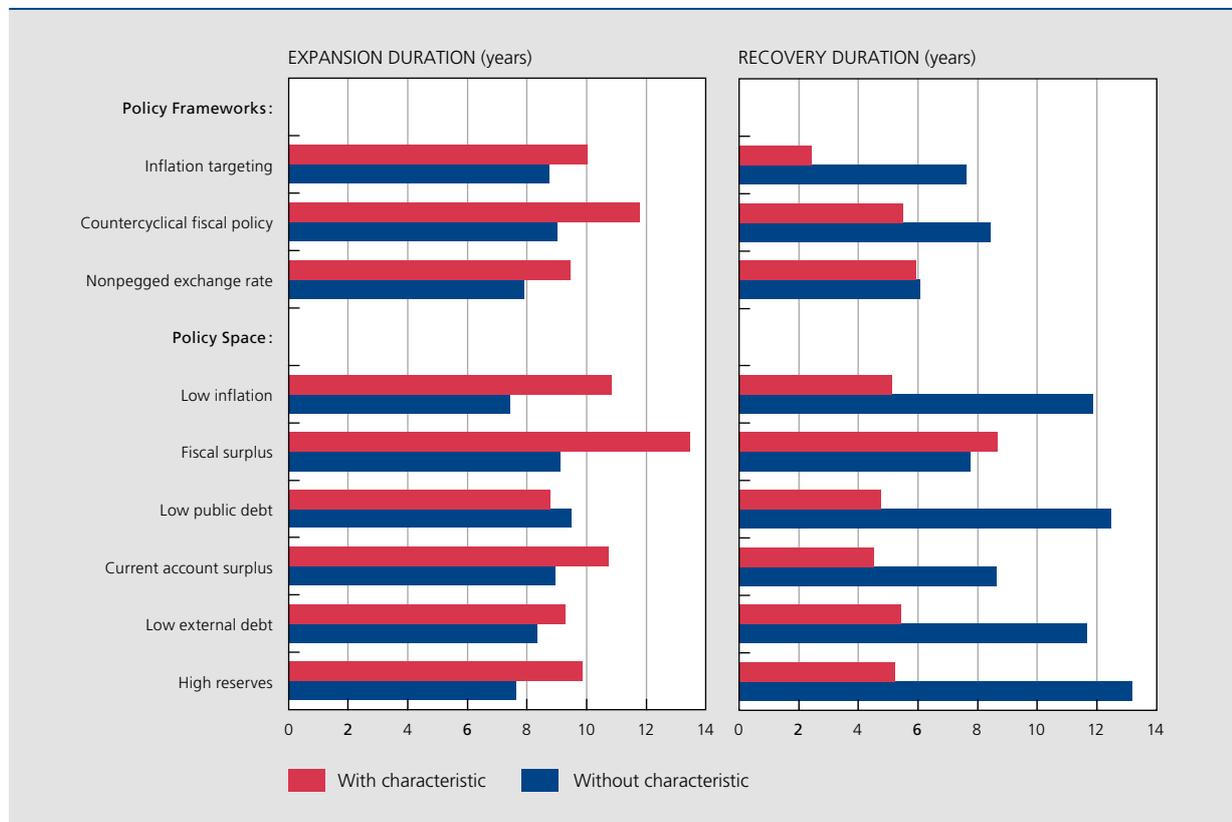
painful experiences of severe financial and economic crises in a number of EMDEs after 1990 – Mexico (1994), Asian countries (1997), Russia (1998), Turkey (2001), Argentina (2001) – have raised both the necessary risk awareness and loosened implementation constraints. They effectively triggered institutional overhauls and led to the adoption of sounder policy frameworks⁽⁴⁾, which were often successfully put to the test during the 2008/2009 crisis, when many EMDEs were in a position to partially offset the decline in external demand and in capital inflows. This reaction constituted a significant break with respect to their own past. The remainder of this section briefly discusses some of the features behind this strengthened resilience, namely the role of policy frameworks, structural characteristics and institutional features.

- (1) The impact is particularly strong for the domestic shocks, as well as sudden stops and AE recessions. The latter finding further questions the decoupling hypothesis discussed above.
- (2) Note, however, that a domestic shock is likely to represent an external shock for someone else, and vice versa. In an integrated world, preventing domestic shocks hence becomes a matter of common interest and would justify the adoption of global rules and regulatory standards.
- (3) In general, this can occur when the costs of a preventive measure are clearly defined and sometimes assigned to a particular (vocal) group, while the social benefits, albeit larger, are spread too widely across society to garner the necessary support (e.g. higher capital requirements may represent a cost to the financial industry, but may strengthen the overall degree of financial stability).
- (4) In some cases, the adoption of institutional reforms was a condition for receiving financial assistance by multilateral donors.

4.1 Economic policy frameworks and policy space

Counter-cyclical fiscal policy frameworks and, as a corollary, the availability of fiscal policy space (i.e. fiscal surpluses and low public debt) are associated with

CHART 12 EFFECTS OF POLICIES ON EXPANSION DURATION AND SPEED OF RECOVERY IN EMDEs



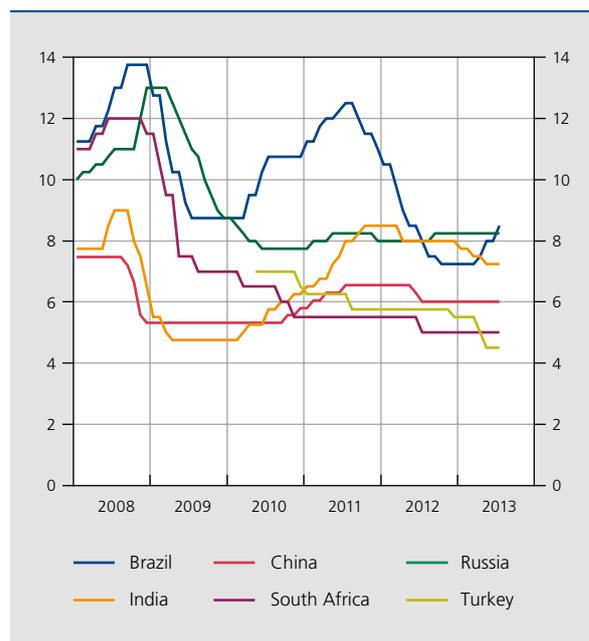
Source: IMF (2012).

longer expansions and shorter downturns, as shown in IMF (2012). Conversely, countries lacking these characteristics typically experience shorter expansions and longer recoveries (see chart 12). Since 2000, a large number of EMDEs – such as Chile and Brazil – have effectively adopted such frameworks (Frankel *et al.*, 2012), shifting away from the pro-cyclical fiscal policies of the past (1960-1999) – the latter were *inter alia* the consequence of imperfect credit market access preventing fiscal expansion during downturns, or of political pressures to raise government expenditure or to cut taxes in good times. Frankel *et al.* explain this “graduation” by the improved overall institutional quality in EMDEs and better fiscal policy frameworks in particular, for example comprising independent fiscal institutions (e.g. forecasting commissions) and fiscal policy rules based on cyclically-adjusted primary balances, as has been the case in Chile.

A similar counter-cyclical reorientation occurred on the monetary policy side (BIS, 2012; Vegh and Vuletin, 2012). The successful shift to inflation-targeting frameworks indeed provided central banks in many EMDEs with the credibility and space (i.e. low inflation) to pursue accommodative policies in response to adverse shocks. Their reactions during the global financial crisis are a case in point: like their AE counterparts, they slashed interest rates as the crisis erupted, often to historical lows, as has been the case in Brazil, South Africa or Turkey, which also adopted a set of new “unconventional” policy instruments⁽¹⁾. While in some countries the scope for keeping interest rates at low levels has been eroded subsequently by inflationary pressures or accelerating credit growth (e.g. India, Russia, and more recently Brazil), other EMDEs have nonetheless managed to keep rates low (see chart 13). This policy reaction departs from similar episodes in the past, when many EMDEs were often left with no other option but to tighten monetary policy to prevent capital from streaming out and stop their currencies from depreciating. While such policies may have been inevitable due to the prevailing circumstances – e.g. a fixed exchange rate regime, weak fundamentals (e.g. significant currency mismatches) – they exacerbated contractions in aggregate demand.

This last point also makes clear, however, that the feasibility of a counter-cyclical monetary policy response is conditional on the exchange rate regime and a country's external position. In other words, any “fears of free falling” (Vegh and Vuletin, 2012) need to be averted beforehand. Following the experience of the 1990s, many EMDEs indeed switched to more flexible exchange rate regimes, acting as automatic external adjustment mechanisms, and improved their external positions (Didier *et al.*, 2011; IMF, 2012). For example, by lowering the

CHART 13 POLICY INTEREST RATES IN SELECTED EMDEs (% , 01/2008-07/2013)



Source: Datastream.

share of foreign-currency-denominated debt⁽²⁾, the risks of adverse balance-sheet effects of currency fluctuations were reduced, while countries in some regions (e.g. Latin America and the Caribbean) managed to extend the average maturity of their international debt. Meanwhile, reliance on external financing was itself cut back through an improvement in the current account positions of many countries. Finally, the structure of the foreign asset and liability position was transformed: while liabilities now more often take the form of equity (rather than debt; see below), many EMDEs themselves started to accumulate debt assets abroad, as reflected in higher stocks of foreign reserves on their asset side⁽³⁾. These characteristics – a flexible exchange rate regime, current account surpluses, low external debt and high reserves – are all generally associated with higher resilience (see chart 12). Cardarelli *et al.* (2010), for example, show that lower current accounts, counter-cyclical fiscal policies and nominal exchange rate

(1) See Kara (2012) for a descriptive analysis of the new monetary policy framework.
(2) The capacity to issue debt in domestic currencies is of course dependent on the strength of fundamentals.
(3) Foreign exchange reserves can be viewed as a self-insurance mechanism against capital flow reversals: by lowering a country's perceived credit risk and allaying doubts about its solvency, they should thus help preserve investors' willingness to finance it and to roll over its debt. Should external sources of financing nonetheless dry up, they constitute a first line of defence, which can be temporarily tapped, notably to service short-term debt or support orderly adjustments, thereby mitigating self-reinforcing financial stress or contagion. Holding reserves comes at a cost, however: their accumulation may (sometimes intentionally) distort the exchange rate and (if unsterilised) contribute to inflationary pressures. The high reserves can contribute to global imbalances, notably when they result from financing large current account deficits abroad (section 2). Finally, there is an opportunity cost to holding reserves (rather than investing in higher-yield assets).

flexibility have either reduced the likelihood of a sudden stop in capital inflows or put countries in a better position to deal with any such shock (notably as exchange rate appreciations would curb capital inflows in the first place).

4.2 Structural characteristics

The structural characteristics of an economy, such as trade openness or capital inflow composition, also determine its shock exposure and hence its resilience. Relying on some booming export (e.g. commodity related) or domestic (e.g. housing) sectors may drive growth in the short term, but may also divert both resources and policy attention away from activities that would perhaps contribute to more sustainable growth in the longer run and hamper a country's adjustment capacity. The diversification of economic sectors or of trading partners can help mitigate the drop in demand stemming from one trading partner or specific to one sector. A greater reorientation and focus on their peers seems to have helped many EMDEs to cushion the effects of the recent crisis, even if it may have been at the expense of new vulnerabilities in the form of dependence on commodity exports and particular export markets, such as China.

The composition of capital inflows also determines the sudden stop risks a country faces. Episodes of large capital inflows tend to be accompanied by faster growth in the short term (Cardarelli *et al.*, 2010), but often end abruptly, which may then result in economic downturns, as shown above⁽¹⁾. Foreign direct investment (FDI) has typically proved to be the most stable flow to EMDEs and plays almost no role in sudden-stop episodes (Levchenko and Mauro, 2007). A larger proportion of FDI should thus contribute to an economy's resilience. Encouragingly, compared to waves of capital flows to EMDEs in the 1990s, the share of FDI relative to portfolio and other flows has actually become predominant in the 2000s (Cardarelli *et al.*, 2010)⁽²⁾.

The IMF (2012) examines the association between different structural characteristics and, respectively, the length of an expansion and the speed of recovery. It finds that the length of an expansionary phase increases with the proportion of FDI in capital inflows and declines with the degree of income inequality, which is considerable in some EMDEs. Meanwhile, the speed of recovery is positively associated with larger trade openness, export diversification, a higher capital account openness and a higher proportion of FDI. Didier *et al.* (2011) also study the impact of country characteristics on growth collapse and recovery and find that economies that are more open to trade and more financially open suffered a larger

growth collapse in 2008/2009. However, these two features are also associated with quicker recoveries, clearly confirming the dual nature of openness emphasised in the previous section.

4.3 Growth potential and institutional quality

The "ability to sustain longer and stronger expansions" is inextricably linked to a country's growth potential so resilience also has to be viewed in that light. Catching-up has been an important driver behind faster growth in EMDEs and hence plays a part in the observed resilience. The "dividend" from starting out from a low level of development essentially results from the abundance of factors that can initially be drawn into activities where they generate high (but diminishing) returns, and from the possibility of importing technology from abroad. Yet, the scope for such kind of growth is by definition limited, and actually appears to slow down and get more complicated as countries reach middle-income levels (Eichengreen *et al.*, 2013). To avoid falling into such "middle-income growth traps", countries have to focus on setting up institutions and infrastructure conducive to productivity growth and eventually to rising living standards. Analysing countries that have averted that "trap", Agénor and Canuto (2012) emphasise the importance of advanced infrastructure (essentially communication infrastructure), institutions, such as the strong enforcement of property rights, and labour market rules that do not encumber an optimal matching of workers and jobs. These conclusions are supported by previous research that has pointed up a positive association between the quality of institutions and investment on the one hand and growth on the other (see Aron, 2000).

5. Conclusions and challenges to come

The significance of EMDEs for the world economy has grown enormously over the past few decades. This has been evident in their growing share of world trade and capital flows and in their ability to influence demand, prices and financial stability at the global level. At the same time, their persistently higher, less volatile and possibly less synchronised growth profile, has stood in contrast with that of AEs. Their stronger resilience than in the past appears to have benefited from the adoption of better policy frameworks, institutions and the implementation of counter-cyclical economic policies. While EMDEs were

(1) This partly explains the worries expressed by some EMDEs regarding the very accommodative monetary policies currently pursued in AEs.

(2) Furthermore, FDI has other desirable properties, such as potentially generating spillovers (technology, human capital, fiscal revenues, etc.), which may be beneficial for growth in the host economy.

certainly not spared from the 2008/2009 global financial crisis, these features have helped them to limit its adverse impact and handle the crisis better than similar events in the past, when external shocks were often magnified domestically. Furthermore, and despite some regional exceptions, such as central and eastern Europe, EMDEs generally tended to bounce back more rapidly and vigorously from the great recession than AEs.

Resilience is to a large extent the result of factors which domestic policy-makers can directly control or at least influence, for example by adopting good policy frameworks and ensuring that macroeconomic fundamentals remain strong. Even in countries with a large catching-up potential, high growth cannot be taken for granted, as the period before 2000 has shown. It is thus countries' own responsibility to improve their growth potential in a sustainable way and to remove any obstacles to growth. This may in some cases consist in tackling red tape or corruption, or ensuring a level playing field between private and state-owned enterprises in others. Furthermore, countries also need to exhibit a sufficient degree of flexibility to react to the ongoing transformations in their external environment. However, putting in place strong institutions and setting up competent enforcement authorities (financial market regulators, competition authorities, patent offices, etc.) requires time and is costly. Permanent resilience is thus an illusory concept, not least as the availability of policy space, which is one of the factors contributing to it, is limited and buffers need to be rebuilt once they have been exhausted. In a strongly interlinked global economy, where the benefits of integration and the disruptions are often transmitted through the same

channel, a reasonable degree of prudence and moderation is thus recommended in order to avoid over-reliance on foreign capital or excessive dependence on specific export markets or products.

This article has also shown how the one-directional influence of AEs has been gradually diminishing and it has provided a number of examples through which EMDEs have been influencing global economic developments recently. This does actually suggest that the interdependence between EMDEs and AEs is becoming increasingly two-sided. The article has also stressed the singular role that China has come to play for EMDEs in particular and in the world economy more generally. It now remains to be seen to what extent the traditional coupling and shock-transmission patterns are likely to be affected over time.

Looking ahead, the relative weight of EMDEs is expected to grow further. The pace and nature of that process is surrounded by many unknowns, however. While AEs, and notably the euro area, continue to struggle with the aftermath of the financial crisis, many EMDEs are themselves reviewing their growth model. In the short run, meanwhile, the EMDEs' resilience is likely to be tested further, as suggested by the recent downward revision in the growth projections for 2013 and 2014, for both for EMDEs and AEs (IMF WEO, July 2013 update). At the same time, the strong policy response to the crisis by China is now increasingly appearing as a potential source of destabilisation. Given the mutual inter-dependence among EMDEs on the one hand and between EMDEs and AEs on the other, this may again translate into more synchronised co-movements of business cycles.

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Structure and distribution of household wealth: an analysis based on the HFCS

Ph. Du Caju^(*)

Introduction

The total financial wealth of households can be deduced from the financial accounts. Those accounts give an overview of the claims and debts of the national institutional sectors – non-financial corporations, financial corporations, governments and households – in relation to one another, and of the national economy in relation to the rest of the world. They form an integral part of the system of national accounts. The total real wealth of households can be assessed on the basis of estimates of property ownership and property prices⁽¹⁾. However, these macroeconomic information sources reveal little about the distribution of wealth among households. That requires data at household level. Since there is no asset register in Belgium, and since registers of that sort maintained in other countries never offer a complete picture of all types of assets, it is necessary to conduct surveys in order to gain an idea of the distribution and structure of household wealth. Until recently, there was little or no microeconomic information of that type available in Belgium. That has changed with the creation of a Household Finance and Consumption Network (HFCN) in the Eurosystem. This network conducts a survey on household wealth and consumption (Household Finance and Consumption Survey, HFCS) in all euro area countries. This article uses the final results of the first wave of that survey to analyse the structure and distribution of household wealth.

The article is in four sections. The first section explains the creation of the HFCN and the background to it, before examining the content and organisation of the HFCS. The second section analyses the structure of household

wealth, distinguishing between real and financial assets. The HFCS is based on a broad definition of the real and financial assets of households and systematically asks households whether they own a particular type of asset and how much it is worth. The survey therefore supplies information not only on the participation rate (households' participation in the various forms of investment) but also on the value of those investments. The third section deals with household debt. This mainly concerns mortgage debt (contracted for the purpose of buying the household's own principal residence or other property), but also takes account of non-mortgage debt such as credit lines and bank overdrafts, debit balances on credit cards, and other forms of credit (consumer credit, car loans, etc.). Finally the fourth section analyses the net wealth of households, paying particular attention to the distribution of the net wealth among households and comparing that with the income distribution. This section also presents a comparison with other euro area countries. The conclusion sums up the main findings on the basis of this new information source.

^(*) The author thanks Laurent Van Belle for the statistical treatment of the data.

⁽¹⁾ Cf. Poullet Gh. (2013), "Real estate wealth by institutional sector", NBB, Economic Review, June, 87-101. These estimates give an idea of total real estate wealth in Belgium.

1. The Household Finance and Consumption Network and the corresponding survey

The financial accounts are the classic macroeconomic data source most commonly used for the purpose of analysing the financial situation, and more specifically the financial assets, of households. Since this macroeconomic data source tells us nothing about the distribution of household wealth, it is now supplemented with data from surveys at household level.

1.1 Context of the HFCN and the HFCS

In 2008, the Governing Council of the European Central Bank (ECB) decided to conduct a survey on the financial behaviour of households (Household Finance and Consumption Survey, HFCS) in the euro area. A specific research network, called the Household Finance and Consumption Network (HFCN), was set up for that purpose. It comprises researchers, statisticians and survey specialists from the ECB, the national central banks (NCBs) and various national statistical institutes, as well as external consultants. The National Bank of Belgium is responsible for the Belgian part of the survey, conducted jointly by the Research Department and the General Statistics Department. The aim of the network is to supplement the existing macroeconomic data obtained from the financial accounts with microeconomic data at household level. This facilitates specific scientific research and policy analyses to learn about aspects relating to the distribution of assets and liabilities. In specific cases, individual data might also be used to improve the financial accounts.

An article⁽¹⁾ in the Bank's June 2012 Economic Review has already given a detailed account of the operation of the HFCN and the organisation of the HFCS in Belgium. This article reiterates some of the essential points. The HFCN organises a harmonised survey of the financial behaviour of households in all euro area countries. It is based partly on the surveys which already exist in certain countries (e.g. in France, Italy, the Netherlands and Spain, and in the United States). The first wave of the HFCS was conducted in all euro area countries except Ireland and Estonia, which will be included from the second wave. For the first wave, interviews were conducted in 2010 in most countries, including Belgium. Altogether, more than

62 000 households were polled in the euro area, of which 2 364 were in Belgium. The next wave will take place in 2014 in most countries. The plan is to conduct this type of survey every three years in future. For each subsequent survey, some of the households which took part in previous waves will be interviewed again. That will result in a panel of households which will be monitored over time. In addition, that panel makes the survey dynamic, so that it also offers new scope for analysis and research for the purpose of determining policy.

The raw data from the first wave were processed within the HFCN, in accordance with the procedures, rules and timing specified by the network. This mainly concerned "imputation" and "anonymisation" of the data. Imputation consists in assigning a notional – but realistic – value to data missing from the responses of the interviewees by reference to other information available in the survey. Such imputation is statistically inevitable, since a household's decision not to answer certain questions cannot be considered a matter of chance. For instance, the wealthier households may be likely to be the most reticent to disclose the value of some of their assets. Consequently, the results could be distorted, and imputation is the only way to rectify that bias. This process has to be harmonised between countries, and that is very time-consuming.

Moreover, the data must be anonymised by a consistent method before being made available. Indeed, the protection of the private data of households taking part in the survey is an absolute priority. Statistical anonymisation means not only that the data on the respondent's identity must be deleted, but also that everything possible must be done to ensure that the information supplied by the survey cannot be used to trace particular households or individuals. Once again, the aim is to standardise the rules as far as possible, for all countries and all surveys. Finally, households in the sample are weighted according to their share in the total population. All the results presented here are based on imputed, weighted data.

For most countries (including Belgium), 2010 is the year of the fieldwork and the reference year. In some countries, the survey was conducted a little earlier or a little later, depending on the timing of pre-existing surveys of the same type. For future waves, the HFCN will endeavour to synchronise the timing of the fieldwork to a greater degree. Once the raw data had been collected, the NCB and ECB statisticians processed the input (a time-consuming procedure). The data were edited (e.g. by adding information from other sources and by correcting inconsistencies) and missing values were imputed. The data were published in April 2013⁽²⁾.

(1) See Du Caju Ph. (2012), "Asset formation by households during the financial crisis", NBB, Economic Review, June, 87-101.

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

The HFCS is intended to support the Eurosystem's policy analysis, particularly in relation to monetary policy and financial stability. Data which reflect the heterogeneity of the household sector, such as those collected by the HFCS, can usefully supplement the macroeconomic data (e.g. the national accounts) by adding information on distribution (notably on the asymmetric distribution of wealth). As such, the HFCS data permit analysis of the behaviour of specific groups of households which are of interest from the point of view of policy, e.g. the lowest and highest income and wealth deciles, households with excessive debts, and households facing credit constraints. The financial crisis has demonstrated that certain types of household – those with heavy debts – have a fairly significant influence on macroeconomic events. In addition, the relatively small group comprising the wealthiest households has a disproportionate impact on the overall statistics. Moreover, households face severe idiosyncratic shocks (such as job losses), and different types of household may vary considerably in their response. These variations are only shown up by microeconomic data. In Belgium in particular, where microeconomic data on household wealth are scarce, the HFCS provides a great deal of new information.

The ultimate aim of the Eurosystem's monetary policy is price stability. Strategic instruments such as the interest rate level are used to achieve that. However, a change in the interest rate may have an impact which varies from one household group to another, depending on whether the households are lenders or borrowers, owners or tenants. These groups may react differently to policy changes. The transmission of monetary policy may therefore depend on the financial situation of certain groups of households, so it is important for central banks to find out about the distribution of wealth in order to assess monetary policy transmission. Of course, this does not mean that monetary policy can adjust the distribution of wealth. Survey data are used to design and calibrate macroeconomic models incorporating heterogeneous agents in order to learn more about various aspects of the transmission of monetary policy and about financial stability.

The main aim of the HFCS is to gather structural microeconomic information on the assets and liabilities of euro area households. However, the survey also collects data which yield other information (demography, income, etc.) and permit analysis of households' financial decisions. The results of similar surveys already conducted in other

countries have been used to carry out interesting research and analysis, e.g. on the proportion of households with substantial or excessive debts, the asymmetric distribution of wealth in general, and the finding that, in periods of deleveraging, debt-burdened households make larger cuts in their consumption.

This article uses the first results of the HFCS (2010) to present the structure and distribution of household assets. The HFCS only covers private households and is confined to household members resident in the country on the interview date. Households (persons) resident in institutions are disregarded. A household is defined as any individual or group of persons occupying one and the same private dwelling and sharing the living expenses⁽¹⁾. The analysis relates to the following aspects:

- i. *Participation rate*: the percentage of households owning a particular asset component. The participation rate therefore gives the distribution of balance sheet items between households.
- ii. *Conditional median value*: this only concerns households participating in a particular asset component, and indicates the median value of that component in euro for those households. The median is the value of a given balance sheet item such that half of households own less and the other half more. The median therefore indicates the value for a "typical" household. Unlike the average value, the median is not biased by extreme readings. The average value, obtained by taking the total value and dividing it by the number of participating households, is heavily influenced by extreme values. Since the distribution of wealth is fairly uneven, so that there are extreme values which influence the average, median values are preferred as they give a better idea of the "typical" household. The HFCS systematically records the estimated value reported by the households themselves (see below).
- iii. *Comparison*: comparisons are made between euro area countries and between groups of households, e.g. according to the income band or age group. These comparisons give some idea of the distribution of wealth between households.

1.2 Content of the HFCS

The HFCS offers detailed data at household level on various aspects of household wealth (real and financial assets and liabilities) and on related variables such as incomes, pensions, employment, gifts and consumption. The HFCS

(1) For a more detailed definition of the concept "household", see 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.

provides representative data by country, collected according to harmonised procedures in the fifteen participating euro area Member States. In order to accurately establish the overall level of wealth, most countries (including Belgium) have also included in the sample a relatively large number of wealthy households⁽¹⁾. The HFCS questionnaire is fairly detailed. For households with a wide range of assets and financial resources, the interviews could take over an hour (or even much longer). The questionnaire used in Belgium was confined to the core questions of the HFCN harmonised questionnaire, supplemented by just a few ad hoc questions on the impact of the financial crisis, questions which are likewise harmonised at Eurosystem level. This has already been discussed in the June 2012 Economic Review. The questions were answered by the person most familiar with the household's finances.

The questionnaire is in nine sections. The first section contains questions on the household's demographic data. For example, it offers information on the size and type of household, and on the age, sex and level of education of the household members. The second section deals with real assets and their financing. This mainly concerns real estate (primarily the household's main residence) and the associated mortgage loans, plus information on other real possessions, principally vehicles. The third section supplements that with information on non-mortgage debt, such as consumer credit. It also focuses specifically on any credit constraints which households have experienced recently. The fourth section covers own businesses and financial assets. As well as own businesses (including self-employed occupations) and shares in unlisted companies, it concerns all the financial instruments which households may use. The fifth section concerns employment. It looks at the labour market situation of the household members, namely their status (working, retired, etc.), occupation, type of contract, etc. The sixth section covers pensions, and is intended to ascertain the degree to which household members are covered by statutory or supplementary pension systems. The seventh section on household incomes is interested in all income sources, ranging from earned income and benefits of all kinds to other income sources (such as investments). The eighth section concerns transfers between the generations, covering both inheritances and gifts. The ninth section on consumption is reasonably short. This section contains quantitative questions on consumption of food and drink and more qualitative questions about expenditure in general, and its relationship to income. The intention is to extend this

section of the questionnaire for the second wave of the survey. This article uses the results of the main (most detailed) sections of the survey, namely sections 2, 3 and 4 of the questionnaire on both the real and financial assets of households and on their debts. The information supplied by the other sections, especially sections 1 and 6 (household characteristics, demographic data and information on income), is useful mainly for analysing variations in household wealth. The survey data will of course be analysed in other future studies.

It should be noted that the HFCS records asset values as estimated by the households themselves. Where necessary, and if possible, the interviewers encourage households to consult documents such as bank statements, tax returns, etc. Of course, this is not possible for all assets, such as real estate. It was deliberately decided to ask households to give their own valuation of their possessions because the aim is to study the financial behaviour of households. For that it is important to understand how households themselves assess their assets and liabilities, because that is the perception that will determine households' behaviour and decisions. The households' own estimated figure may not always correspond to the real market value, especially in the case of real estate and particularly if the property was not purchased or built recently. In general, however, the households' valuation of their assets appears to tally with the available macroeconomic data sources, even where real estate is concerned (see also section 4). In the end, of course, the survey results depend on the quality of the answers that the interviewers are given.

Next comes an overview of the various assets and liabilities covered by the HFCS, and some key data on Belgian households to place the findings in an overall perspective⁽²⁾. We state how many households own a particular asset, i.e. the participation rate as a percentage of the population, and the median value of that asset item for the participating households.

According to the results of the HFCS, 89.8% of households own real assets. The median value of the real assets of households owning real assets (the conditional median value) is € 220 000. The HFCS distinguishes between real estate and other real assets. Most of the real estate owned consists of the household's main residence (for home owners), and then other property such as second homes, holiday homes or property for letting out. In Belgium, 69.6% of households own their main residence, the conditional median value being € 250 000. In addition, 16.4% of households own other real estate with a median value of € 174 000.

(1) As the assets are concentrated on a relatively small group of wealthy households (which are not necessarily easy to interview), a totally random sample would require a relatively large base in order to be representative of this group as well, and that would soon become very expensive.

(2) The following sections present international comparisons and structural analyses of the distribution in Belgium.

Vehicles are a second real asset category measured by the HFCS, primarily cars but also, for example, motor bikes, boats, aircraft and caravans. In Belgium 77.2 % of households include a vehicle among their real assets, the conditional median value being € 6 200. The HFCS also assesses a whole range of valuables which may form part of a household's real assets. Households are questioned about items belonging to them such as jewellery, art works, antiques and other potentially valuable collections. In Belgium, 15.4 % of households state that they own this type of assets, the median value being € 5 000. Finally, the last significant component of real assets covered by the HFCS: business assets, particularly own unlisted companies, such as self-employed activities and family firms. According to the survey, 6.6 % of Belgian households have this type of assets, the conditional median value being € 50 000 per participating household.

The HFCS considers financial assets in the broad sense, but excluding cash; 98 % of Belgian households have financial assets in this sense. The median value of these assets is € 26 500. They consist mainly of deposits. The published HFCS statistics add sight accounts and savings deposits together. In Belgium, 97.7 % of households own deposits with a conditional median value of € 10 000. Investment funds cover all investments in mutual funds, regardless of the funds' underlying assets (equities, bonds, property, etc.). In Belgium, 17.6 % hold this type of funds in which they invest a median amount of € 20 400. The bonds and savings notes recorded by the HFCS are individual assets, not underlying assets of mutual funds. They may have been issued by a State, a bank or another enterprise. According to the survey, 7.5 % of Belgian households own securities of this type with a conditional median value of € 30 800. As in the case of bonds, the HFCS distinguishes between individual equities and shares or units which form the underlying assets of a mutual investment fund. The equities only concern shares in listed companies. The HFCS records the value of shares in unlisted (family) companies as a component of the real assets. The survey indicates that 14.7 % of Belgian households own shares in which they invest a median amount of € 5 100.

In regard to supplementary pensions and life insurance, the survey only records the value of voluntary individual plans and policies, and disregards the statutory pension and supplementary corporate or sectoral plans or policies. In Belgium, it is therefore only the "third pillar" that is included in the financial assets. The capital value of statutory pensions and corporate or sectoral pensions is often very difficult if not impossible to assess, even though it is feasible to produce macroeconomic estimates of these benefits. In Belgium, 43.3 % of households

have a personal supplementary pension plan or life insurance with a conditional median value of € 19 900. The HFCS also takes account of the value of a range of other products for calculating the total financial assets of households, although it does not report and analyse them separately. This concerns investment accounts managed by third parties, options, futures, index certificates, precious metals etc., and assets with third parties (e.g. loans to families or friends).

The HFCS questions households not only about their assets but also about their debts. The results show that 44.8 % of Belgian households have a current loan and that the median value of the outstanding balance (conditional median value) is € 39 300. The survey distinguishes between mortgage debt and other debts. Thus, 30.5 % of Belgian households have one or more current mortgage loans. The conditional median value of the outstanding balance on these loans is € 69 300. The other debts taken into account by the HFCS are credit lines and bank overdrafts, debit balances on credit cards, and other borrowings such as car loans or consumer credit. In Belgium, 24.2 % of households have contracted a non-mortgage loan, the median value of the debit balance being € 5 200.

2. Real and financial asset components

This section analyses the composition and distribution of household assets. It distinguishes between real assets and financial assets, and then examines the various components of each, which households hold these assets, and what their value is. The tables and charts first present the overall results for Belgium, the euro area and five large euro area countries, namely Germany, Spain, France, Italy and the Netherlands. In some cases, they also give the available results for the other euro area countries. However, it should be noted that the survey will only be conducted in Ireland and Estonia from the second wave onwards, and that no results are available yet for those countries. When the article refers to the euro area as a whole, it therefore always means the euro area excluding those two countries. Apart from the international comparisons, this section examines in more detail the breakdown of assets in Belgium across the various household groups with different income and age profiles.

2.1 Real assets

As already mentioned, the HFCS examines a wide range of real assets, not only real estate but also a whole series of other potential assets. This section summarises the ownership and value of the real assets of households and of five types of real assets, namely the household's main residence, other real estate, vehicles, valuables and self-employment business (including real estate that forms an integral part of the business).

The vast majority of households, both in Belgium (89.8 %) and in the euro area (91.1 %), own real assets, the main item being their own home. In Belgium, according to the HFCS, 69.6 % of households own their home, compared to 60.1 % in the euro area as a whole. The relatively high percentage for Belgium is borne out by other available sources and illustrates the strong preference of Belgian households for buying their own house. Home ownership is generally very common in the southern euro area countries. Participation is lower in the northern countries (see also the table in the annex). Thus, the participation rate is high in Spain (82.7 %) and Italy (68.7 %), but lower in the Netherlands (57.1 %) and France (55.3 %) and lower still in Germany (barely 44.2 %). For the typical household in the home-owning group in Belgium, the dwelling is worth € 250 000 (conditional median value). That is comparable to the figure for the Netherlands (€ 240 000) and higher than in other countries or in the euro area as

a whole (€180 300). The property market situation, and hence the timing of the survey (2010 for most countries), is important here. Since home ownership and the value of the residence form the principal real asset for the majority of households, this aspect will now be examined in more detail. Apart from their own home, 15 to 25 % of households also own other property, with a relatively high participation rate in the southern euro area countries.

Over three-quarters of households own a vehicle. Ownership of valuables varies quite widely between countries; cultural differences, the wording of the question in the survey, and the way in which households interpret it are all relevant factors here⁽¹⁾. Regarding entrepreneurship, only 6.6 % of Belgian households state that they pursue a self-employed activity, against 11.1 % in the euro area. The median value of this asset item is € 50 000 in Belgium, compared to € 30 000 in the euro area as a whole, where the businesses concerned are smaller on average. Once again, participation is higher on average in southern Europe (14.2 % in Spain and 18 % in Italy) than in the north (9.1 % in Germany, 8.9 % in France and 4.8 % in the Netherlands).

(1) In France, for example, vehicles and valuables were considered jointly and households could report any real assets (however small), resulting in a 100 % participation rate.

TABLE 1 PARTICIPATION IN REAL ASSETS

(in % of households, conditional median value in thousand euro in brackets)

	Real assets	Main residence	Other real estate	Vehicles	Valuables	Self-employment business
Belgium	89.8 (220.0)	69.6 (250.0)	16.4 (174.0)	77.2 (6.2)	15.4 (5.0)	6.6 (50.0)
Euro area	91.1 (144.8)	60.1 (180.3)	23.1 (103.4)	75.7 (7.0)	44.4 (3.4)	11.1 (30.0)
Germany	80.2 (89.2)	44.2 (168.0)	17.8 (115.0)	70.9 (7.0)	13.2 (7.2)	9.1 (19.4)
Spain	95.3 (201.7)	82.7 (180.3)	36.2 (120.2)	77.3 (6.1)	17.2 (3.0)	14.2 (50.8)
France	100.0 (124.1)	55.3 (193.8)	24.7 (115.9)		100.0 (4.3)	8.9 (53.1)
Italy	97.7 (176.0)	68.7 (200.0)	24.9 (100.0)	83.3 (8.0)	85.6 (2.0)	18.0 (15.0)
Netherlands	89.8 (198.8)	57.1 (240.0)	6.1 (165.5)	81.3 (6.0)	15.5 (3.5)	4.8 (51.7)

Sources: HFCS, NBB.

The median values of the real assets, and especially of own homes, clearly reveal that the ownership or otherwise of the household's main residence (own home) and its value are the principal factors in the real assets of households. This section examines in more detail the characteristics of households that own real estate and the value of those assets. A breakdown of the rate of participation in real estate (own home) by income and age offers a more detailed picture of home ownership. For that purpose, households in each country are divided into five income-quintiles (incomes being ranked in ascending order from low to high) and six age groups (16 to 34 years, 35 to 44 years, 45 to 54 years, 55 to 64 years, 65 to 74 years, and 75 years or over).

2.1.1 Income profile of home ownership

The HFCS asks households about their gross income which, in addition to labour incomes, includes transfers (pensions and all kinds of benefits) and income derived from assets (rentals, annuities, dividends). The income distribution is described in more detail in section 4.

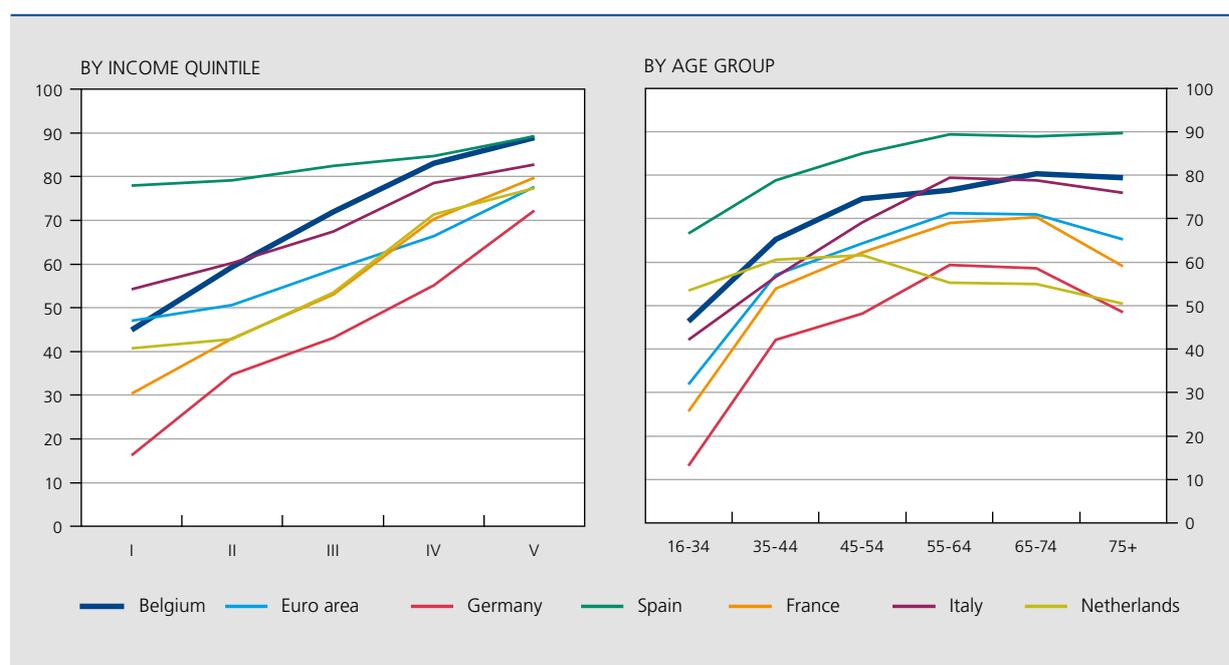
Unsurprisingly, the proportion of higher income households owning their home exceeds the figure for lower income households. Home ownership displays a clearly rising income profile. Thus, the participation rate of the

highest income quintile in Belgium is 88.9 %, while that of the lowest income quintile is only 45 %. Consequently, home ownership in the lowest income group is no higher than in the euro area as a whole (47 %), whereas the participation rate of households with medium and higher incomes in Belgium exceeds the average for the rest of the euro area. Leaving aside the generally higher rate of home ownership in Belgium, the income profile is comparable to that in Germany, France and the Netherlands. It should be noted here that the low participation in Germany concerns all income quintiles. In Italy, and even more so in Spain, where the average participation is relatively high, the income profile of home ownership is flatter. In those countries, over half the households in the lowest income quintile own their home, a proportion which actually rises to 78 % in Spain.

2.1.2 Age profile of home ownership

The HFCS also asks households about the age of the family members. For the purpose of breaking down the household variables (in this case home ownership) according to the characteristics of individual persons (in this case age), it is necessary to designate a reference person in the household whose characteristics then apply to the household as a whole. As in the HFCN publications, this article uses the Canberra Group definitions. The following

CHART 1 HOW MANY HOUSEHOLDS OWN THEIR HOME?
(in % of households)



Sources : HFCS, NBB.

sequence of steps is used to determine a single reference person for the household:

- i. the type of household is defined as: a) one of the spouses or legally cohabiting partners in a household with dependent children, b) one of the spouses or legally cohabiting partners in a household without dependent children, or) a single parent with dependent children;
- ii. the person with the highest income;
- iii. the oldest person.

In the case of a couple, the reference person is therefore the one with the highest income or, if the incomes are equal, the older person.

Since incomes generally increase with age, the income profile of property ownership partly mirrors the age profile. However, other age related factors also play a role, as young people delay purchasing property, and home ownership declines among older people, e.g. because the home is sold or given away. Most countries including Belgium have a similar age profile, with low participation again being evident in all categories in Germany. In the Netherlands it is noticeable that the age profile is almost flat: here, home ownership among young households is as common as among older households. The reason

is that, until recently, interest payments were largely tax deductible in the Netherlands, leading to a large number of mortgage loans over very long periods (up to 40 years, or even longer), often accompanied by repayment of the capital at maturity. That system makes loans – and hence housing – more accessible at a younger age. Of course, this also has an impact on the household debt ratio, which is discussed in section 3 of this article.

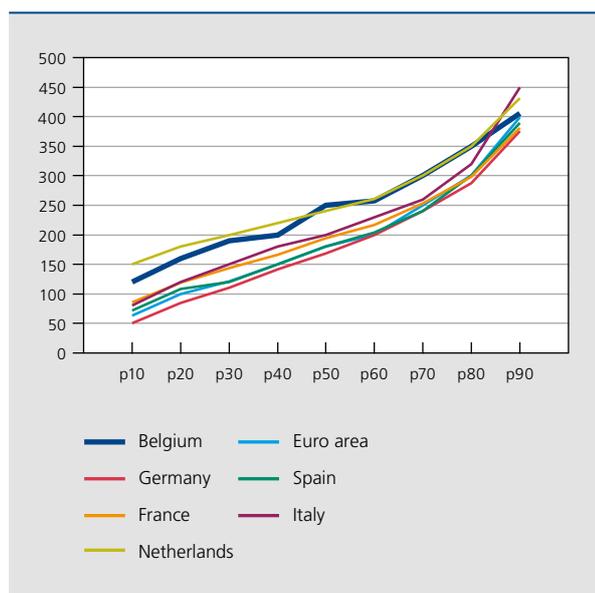
2.1.3 Personal estimates of home values

The extent to which the property owned by households, and more specifically their main residence if they are home owners, contributes to their total assets naturally depends on the value of that property. Since most housing was not sold or built recently, an accurate market value is not available in the majority of cases. Households therefore have to assess the value of their home themselves according to the price that they think they could get if they sold it. That estimate will depend on the property market situation at the time of the survey (2010 in most countries) and the trend in property prices over preceding years. Thus, since 2002, property prices have outpaced the euro area average in Belgium, Cyprus, Spain, France and Luxembourg. Conversely, house prices only rose at a modest pace over the same period in Germany, the Netherlands, Austria and Portugal. These factors influence the valuation that households in those countries put on their property⁽¹⁾.

Belgian households which are home owners estimate the value of their main residence at € 273 100, on average, while the conditional median value is € 250 000. Property in Belgium is therefore valued at a higher figure than in most other euro area countries. The average is € 216 800, with a peak at € 611 900 in Luxembourg and a low point of € 68 700 in Slovakia (see also the table in the annex). The estimated value of homes in Belgium is likewise higher than the average in Germany (€ 205 800), for example, or in France (€ 222 200).

When the main residences of home-owner households are divided into deciles according to their estimated value, we find a relatively even distribution. More specifically, the value of a home in the first decile (at p10) is higher than that of 10 % of the country's homes and lower than that of 90 % of the country's homes; in the case of a home at p90, only 10 % of the country's homes have a higher value. According to the household estimates, Belgian and Dutch homes appear to be worth more than in the rest of the euro area across the board. Italy is the only country where homes in the top decile are worth more than homes in Belgium and the Netherlands. Disregarding the

CHART 2 HOUSEHOLD'S ESTIMATE OF THE VALUE OF THEIR MAIN RESIDENCE
(deciles, in thousand euro)



Sources : HFCS, NBB.

(1) See also section 4.

extreme value for the top decile in Italy, the breakdown is very similar in most countries. According to the results of the HFCS, the main difference between countries concerns the general level of property prices.

2.2 Financial assets

Apart from real assets, the HFCS also covers a broad range of financial assets. For the analysis we distinguish between deposits, mutual funds, bonds, shares, and voluntary pension plans and individual life insurance policies.

Most households hold deposits⁽¹⁾. Conversely, ownership of other financial assets is rather low, especially as – according to economic theory – households spread their wealth across various forms of assets with different risk and return profiles. Thus, both in Belgium and in other countries, fewer than 15% own shares or bonds. In contrast, in the case of supplementary pensions and personal life insurance – the third pension pillar – the participation rate is relatively higher in all countries.

In Belgium, a median household has deposits worth € 10000. Just under 15% of households own individual shares in listed companies, with a median value of only € 5100 per household. Only 7.5% of households own bonds or savings notes, with a median value of € 30800. Share ownership is therefore higher, but the median

amount is lower. Mutual investment funds, which may also comprise equities and/or bonds, are held by 17.6% of Belgian households, with the median household investing € 20 400 (conditional median value). Investment funds are thus more popular in Belgium than in the rest of the euro area. The third pension pillar is a more important financial asset item, being influenced by the value and the certainty or uncertainty of the statutory pension and any supplementary sectoral or corporate pensions. In Belgium, 43.3% of households have financial assets of this kind. For those households, the median value of the assets is € 19 900, which is higher than the average for the euro area. Participation is comparable to that in Germany, but the median value in the latter country is much lower (€ 11 400). In the Netherlands, both the participation rate (49.8%) and the median value (€ 53 200) are relatively high for these financial assets.

2.2.1 Income and age profiles of financial assets in Belgium

This section examines the correlation between income and age, on the one hand, and financial wealth on the other. Although participation in most financial assets is low, it still displays income and age profiles. The value of the financial investments also varies according to household income and age.

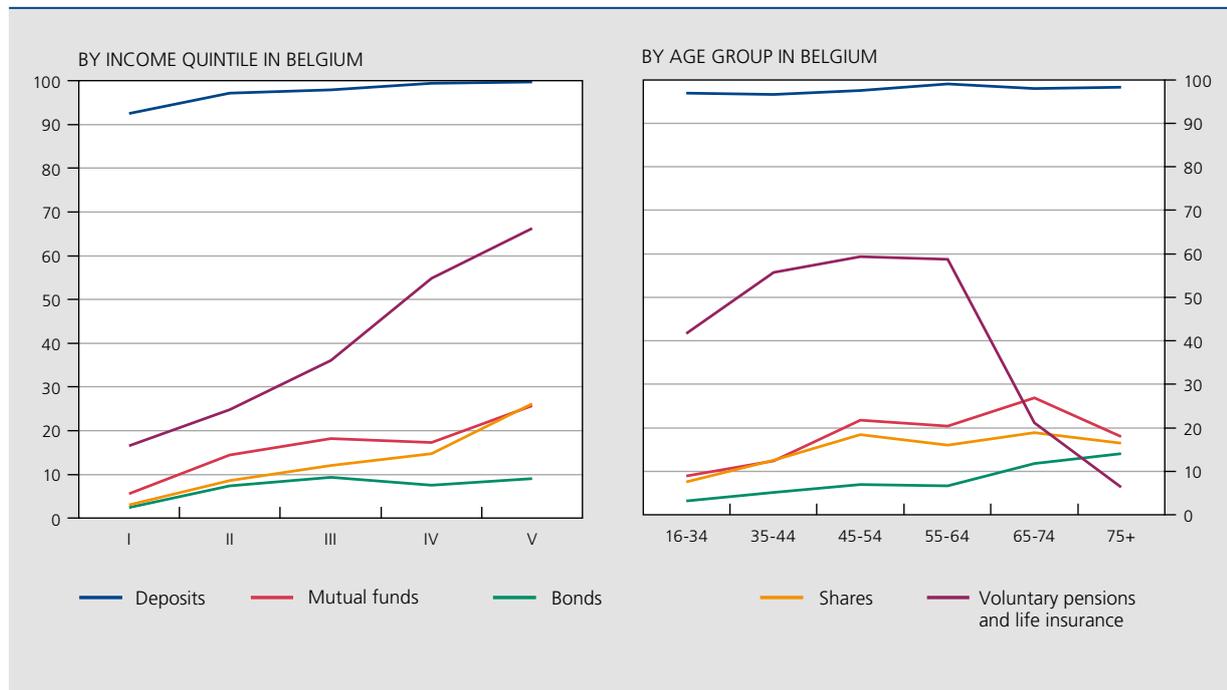
(1) As already stated, deposits in the published HFCS statistics are interpreted in the broad sense: they comprise both sight accounts and savings deposits.

TABLE 2 PARTICIPATION IN FINANCIAL ASSETS
(in % of households, conditional median value in thousand euro in brackets)

	Financial assets	Deposits	Mutual funds	Bonds	Shares	Voluntary pensions and life insurance
Belgium	98.0 (26.5)	97.7 (10.0)	17.6 (20.4)	7.5 (30.8)	14.7 (5.1)	43.3 (19.9)
Euro area	96.8 (11.4)	96.4 (6.1)	11.4 (10.0)	5.3 (18.3)	10.1 (7.0)	33.0 (11.9)
Germany	99.3 (17.1)	99.0 (7.9)	16.9 (10.0)	5.2 (16.0)	10.6 (8.6)	46.5 (11.4)
Spain	98.3 (6.0)	98.1 (3.5)	5.6 (13.9)	1.4 (19.2)	10.4 (6.1)	23.6 (7.4)
France	99.6 (10.7)	99.6 (6.5)	10.7 (6.9)	1.7 (12.0)	14.7 (6.9)	37.5 (10.6)
Italy	92.0 (10.0)	91.8 (5.9)	6.3 (20.0)	14.6 (20.0)	4.6 (10.9)	18.0 (10.1)
Netherlands	97.8 (34.7)	94.2 (10.1)	17.7 (7.1)	6.0 (15.5)	10.4 (5.6)	49.8 (53.2)

Sources: HFCS, NBB.

CHART 3 PARTICIPATION IN FINANCIAL ASSETS
(in % of households)



Sources : HFCS, NBB.

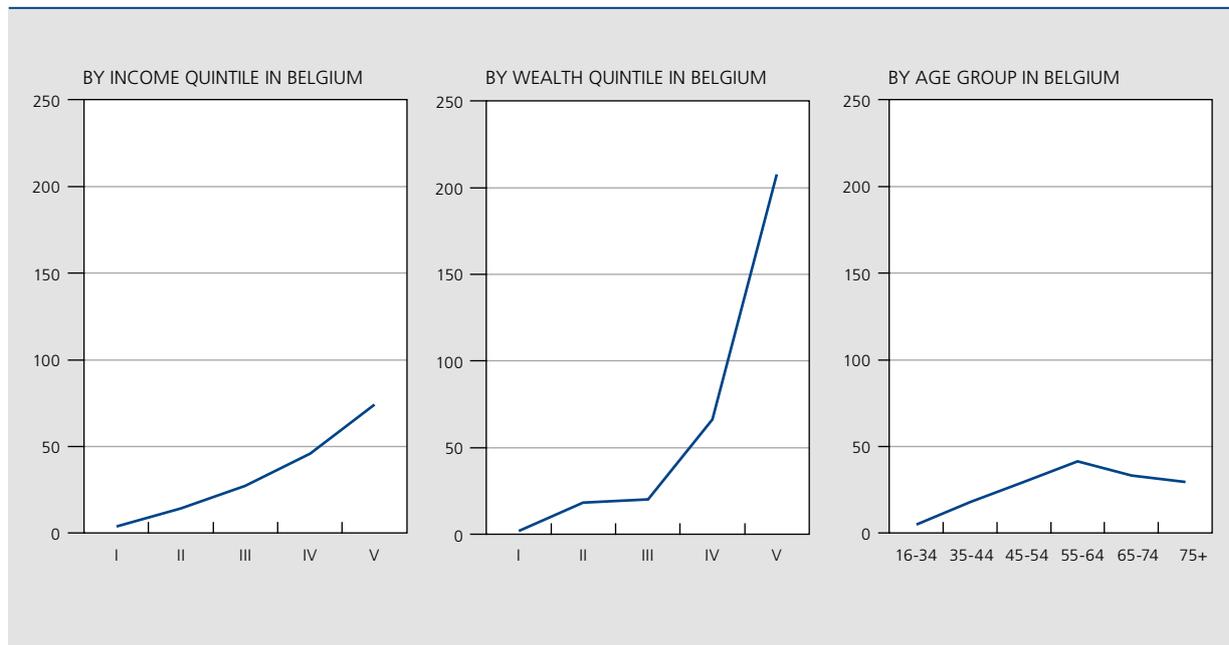
Examination of the income profile of participation in financial assets (other than deposits) reveals that the low participation rate only needs to be qualified somewhat for the highest incomes. It is only in the highest income quintile that more than one in five households owns listed shares or mutual investment fund units. The income profile of participation in the third pension pillar is more pronounced: it ranges from under 20 % for the lowest income quintile to over 60 % for the highest quintile. The holding of deposits (including sight accounts) is common in all income quintiles. In general, financial wealth is therefore not very diversified, particularly for households with relatively low incomes. They “invest” mainly in deposits, while the median portfolio of households with higher incomes is slightly more diversified and also includes equities, bonds and funds as well as individual supplementary pension plans and life insurance.

Wealth is accumulated over the years, with the youngest households having lower cumulative financial wealth, while households of working age focus on building up their assets, and the oldest households deplete their assets in favour of consumption, to supplement their pension. That cycle is already evident in the age profile of participation in financial assets, and particularly in

participation in individual supplementary pension plans. Here, it should be noted that the first wave of the survey offers only cross section data, so that analyses over time are not yet possible. Consequently, the differences between age groups are due not only to a life cycle effect but also to cohort effects, as different generations have different habits. Thus, it is the oldest households that own the most bonds. They are relatively less interested in capital gains and relatively more concerned about liquidity and a fixed income (annuity). However, this need not only mean that as households grow older they invest more in bonds (life cycle effect), it may also indicate that this generation favours that form of investment more than subsequent generations (cohort effect).

It is evident from the median value of the financial assets that the median Belgian household has relatively substantial financial assets, compared to the rest of the euro area (see also the table in the annex). The median value of the financial assets of a Belgian household is € 26 500, compared to € 11 400 for the euro area as a whole. It is only the median households in Luxembourg (€ 27 900) and the Netherlands (€ 34 700) that have larger financial assets. In the Netherlands, that is due mainly to individual supplementary pensions. In Luxembourg, the general affluence of households is a factor.

CHART 4 MEDIAN VALUE OF FINANCIAL ASSETS
(in thousand euro)



Sources : HFCS, NBB.

The prevalence of households from the higher income groups in the holding of financial assets is already an indication that ownership of these assets is rather unevenly distributed in the population. That uneven distribution is clear if the value of the total financial assets of households is broken down by income, wealth and age. The value of the financial assets of Belgian households varies widely according to income. In the lowest income quintile, the median financial assets come to only € 4 000, and that figure increases with income to a median of € 74 000 in the highest income quintile. Since savings out of income accumulate to build wealth throughout life and across generations (via inheritance), it is instructive to break down the value of the financial assets not only according to households' income but also according to their total net wealth⁽¹⁾. It then emerges that the wealth profile of the financial assets is much more pronounced than the income profile, giving an initial indication of the uneven distribution of wealth. Financial assets are concentrated mainly on the richest households, in this case the highest wealth quintile, which holds median financial assets in excess of € 200 000. Finally, it is clear from the figures that financial assets are built up gradually during working life. The median value ranges from € 5 100 for the youngest households to € 41 600 for those in the 55-64

age group. In the oldest age group, financial assets are gradually reduced, dropping to a median of € 29 600 in the over 75 age group.

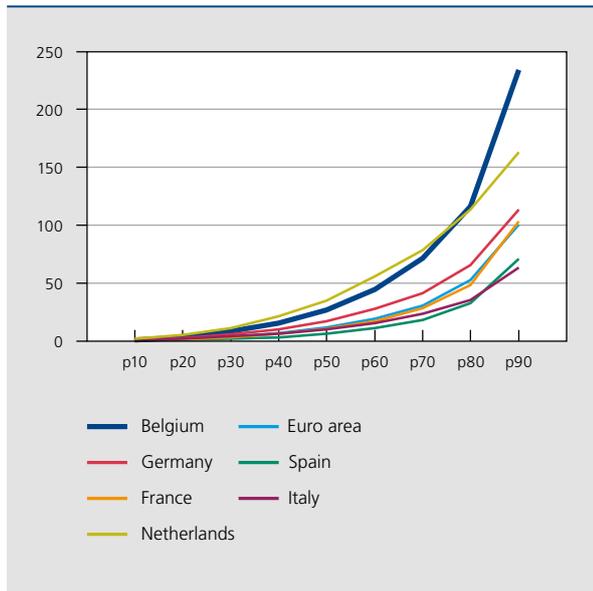
2.2.2 Distribution of financial assets

The uneven distribution of financial assets is already clear from the difference between the average financial assets of households (€ 109 400 in Belgium and € 44 500 in the euro area as a whole) and the median value (€ 26 500 in Belgium and € 11 400 in the euro area as a whole)⁽¹⁾.

We obtain a more detailed picture if we divide the value of the financial wealth into deciles, as we did for the value of real estate in the previous section. We then find fairly modest financial wealth in the lower half of the distribution, after which financial wealth increases sharply and is concentrated mainly in the top decile. A household at p90 (only 10 % of households thus have greater financial wealth) owns financial assets amounting to € 234 300 in Belgium, compared to € 163 300 in the Netherlands, € 113 300 in Germany, € 103 300

(1) This is the value of all assets less the outstanding total amount of debt. See section 4 of this article for an analysis of the net wealth of households.

CHART 5 DISTRIBUTION OF FINANCIAL ASSETS
(deciles, in thousand euro)



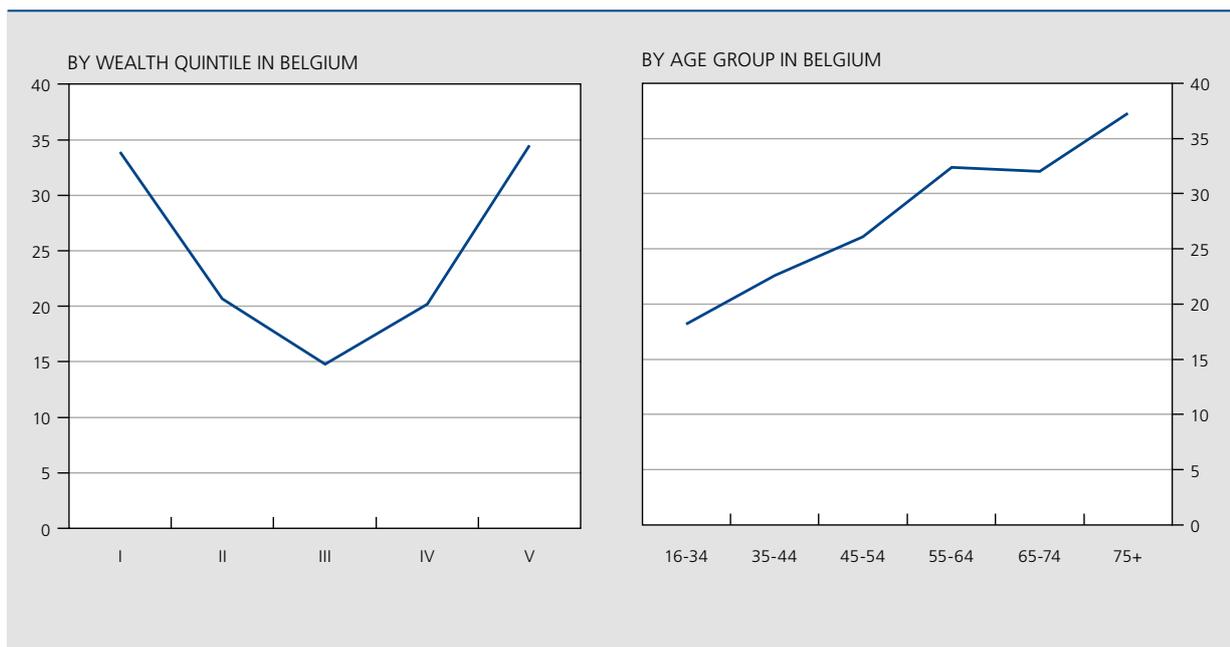
Sources : HFCS, NBB.

in France, € 71 000 in Spain and € 63 100 in Italy. In the euro area as a whole, the p90 value is € 100 600. Although that is much lower than in Belgium, the ratio

between p90 and p50 – a measure of inequality in the upper half of the distribution – is 8.8, both in Belgium and in the euro area as a whole (see also the table in the annex).

To end this section we examine the composition of the total assets, particularly the share represented by the financial assets. According to the HFCS findings, for Belgian households financial assets make up 29.1 % of their total assets or gross wealth. That is higher than in all other euro area countries, where it averages only 16.8 % (see also the table in the annex). However, the weight of the financial assets in the total assets varies according to the level of wealth and household age. On average, households in the lowest wealth quintile hold almost 35 % of their wealth in the form of financial assets. In their case, real estate represents little or no value. The share of the financial assets then declines with income to an average of 15 % for the medium income quintile. These households hold significantly more property, which therefore represents a higher proportion of their assets. The wealthiest households in the top two quintiles-also build up a larger financial portfolio in addition to their real estate. On average, these financial assets represent 35 % for the top income quintile, so that the profile is U-shaped.

CHART 6 SHARE OF FINANCIAL ASSETS IN TOTAL ASSETS
(in % of total assets)



Sources : HFCS, NBB.

3. Debt

The HFCS covers both mortgage and non-mortgage debt. Households may contract mortgages in order to buy their own home or to purchase other real estate. The non-mortgage debt covered by the HFCS comprises credit lines and bank overdrafts, debit balances on credit cards, and other borrowings such as car loans or consumer credit.

This section compares mortgage debt with non-mortgage debt on the basis of an overall comparison between Belgium and the other euro area countries, and a structural analysis of the distribution of debt across Belgian households.

The participation of Belgian households in the credit market (44.8 %) is similar to that of the rest of the euro area (43.7 %). It is relatively modest in Italy (25.2 %). Fewer than 10 % of Italian households have a current mortgage loan, although the number of home-owning households is relatively high (68.7 %). That is attributable partly to the relatively large households (sometimes with several generations under one roof) and to the fairly significant level of inheritances and inter-generational gifts. In the case of households which do have a current mortgage loan, the median balance outstanding

(€ 65 000) is comparable to the figures in Belgium (€ 66 800) and in the rest of the euro area (€ 65 200). In the Netherlands, far more households have contracted loans (65.7 %). Here, too, the difference mainly concerns mortgage loans. In the Netherlands, 43.9 % have taken out a loan for their own home, although only 57.1 % of households are home-owners. Similarly, the median outstanding balance (conditional median) on mortgage loans for own homes is relatively high in the Netherlands (€ 130 000). That is due to the specific institutional characteristics of the Dutch credit market, where many loans are contracted over long or very long terms, sometimes even being spread across multiple generations, and where it is quite common for the whole of the principal to be repaid at maturity. The Netherlands is also the only country where over one-fifth of households have bank overdrafts or credit lines, compared to 6.2 % of Belgian households. Other loans, mainly consumer credit, are used by 15 to 30 % of households, generally for quite small amounts, once again with the exception of the Netherlands, where the median outstanding balance on such loans is € 26 400.

We shall now look at the situation of Belgian households in more detail and examine how the various types of debt are broken down by income level and age. As in the case of assets, we examine the impact of income

TABLE 3 PARTICIPATION IN DEBT
(in % of households, conditional median value in thousand euro in brackets)

	Debt	Mortgage debt		Non-mortgage loans		
		Main residence	Other real estate	Credit lines and overdrafts	Credit cards	Other loans
Belgium	44.8 (39.3)	28.5 (66.8)	3.2 (57.4)	6.2 (1.2)	6.3 (0.7)	17.9 (7.3)
Euro area	43.7 (21.5)	19.4 (65.2)	5.6 (56.8)	10.2 (1.5)	4.3 (0.9)	22.4 (6.1)
Germany	47.4 (12.6)	18.0 (67.0)	6.0 (81.6)	19.8 (1.5)	3.4 (0.5)	21.7 (4.5)
Spain	50.0 (36.0)	26.8 (54.3)	7.3 (80.0)	0.6 (12.0)	7.3 (0.8)	27.2 (8.0)
France	46.9 (18.4)	16.9 (60.9)	10.1 (22.4)	7.0 (0.9)	n. (n.)	28.7 (6.0)
Italy	25.2 (15.0)	9.6 (65.0)	1.6 (25.0)	3.6 (2.3)	1.4 (1.3)	15.3 (6.5)
Netherlands	65.7 (89.1)	43.9 (130.0)	2.5 (102.9)	20.8 (2.1)	4.6 (1.1)	24.6 (26.4)

Sources: HFCS, NBB.

and age separately in a bivariate analysis. However, the qualitative income and age profiles which emerge are also confirmed in a multivariate analysis, in which we consider various explanatory factors simultaneously⁽¹⁾.

3.1 Income profile of Belgian household debt

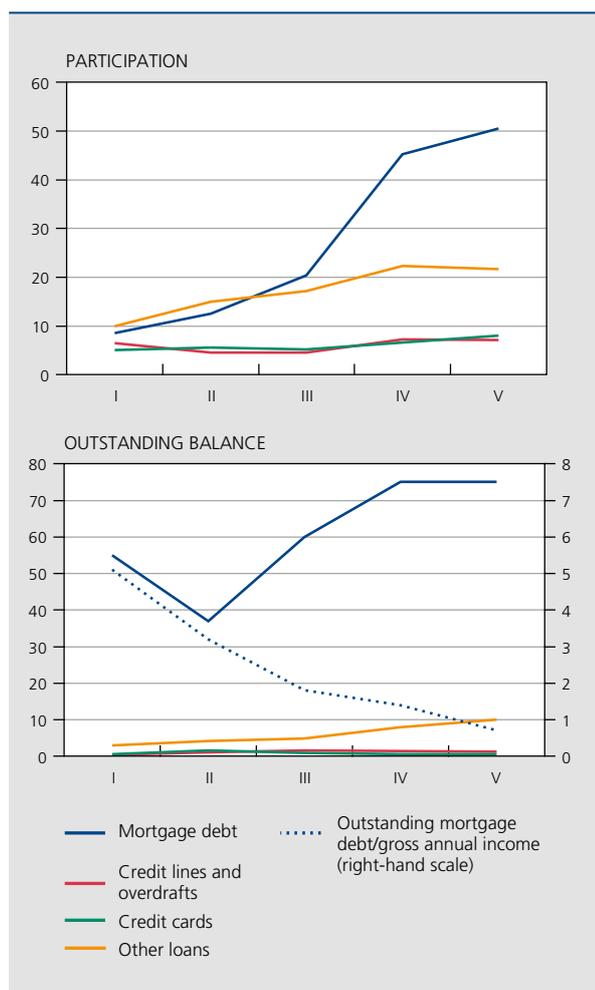
Participation in most forms of credit exhibits a positive income profile: households with higher incomes are more inclined to contract loans, being better able to afford the repayments. It is also easier for them to obtain credit from the bank.

This profile is particularly marked in the case of mortgage loans: in the lowest income quintile, fewer than

10 % of households have a mortgage loan (as not many of them own property); for households in the highest quintile, that figure is over 50 % (they are also much more likely to own their home). Households in the higher income quintiles can also afford larger loans. The outstanding balance on mortgage loans therefore displays a positive correlation with household income, though that does not mean that the debts of households with higher incomes are more onerous. If we examine debt in relation to income, i.e. the outstanding amount of mortgage debt divided by the household's gross annual income (the debt-to-income ratio), it is clear that the ratio declines with income. The median mortgage debt/income ratio in Belgium is 1.3, but for households in the lowest income quintile the median ratio is 5, which means that a "median" household needs five years' gross annual income to repay its debt, and that represents a substantial debt burden. However, this concerns only a small proportion of households in this income quintile (the participation rate is 8.5 %), mainly young households which have just taken out a loan and can often look forward to a higher income in the future. For households in the highest income quintile, the median mortgage debt/income ratio is less than one year.

Participation in other forms of credit, mainly car loans and consumer credit, also increases slightly with income, rising from 10 % in the lowest quintile to just over 20 % for higher incomes. The outstanding amounts are likewise slightly larger for the higher income groups. Participation in other forms of credit (credit lines and bank overdrafts, and debit balances on credit cards) is fairly low for all income groups. The median outstanding amounts are also quite small, and do not exhibit any marked income profile.

CHART 7 BELGIAN HOUSEHOLD DEBT, BY INCOME QUINTILE
(in % of households, conditional median values of the outstanding debt in thousand euro, unless otherwise stated)



Sources : HFCS, NBB.

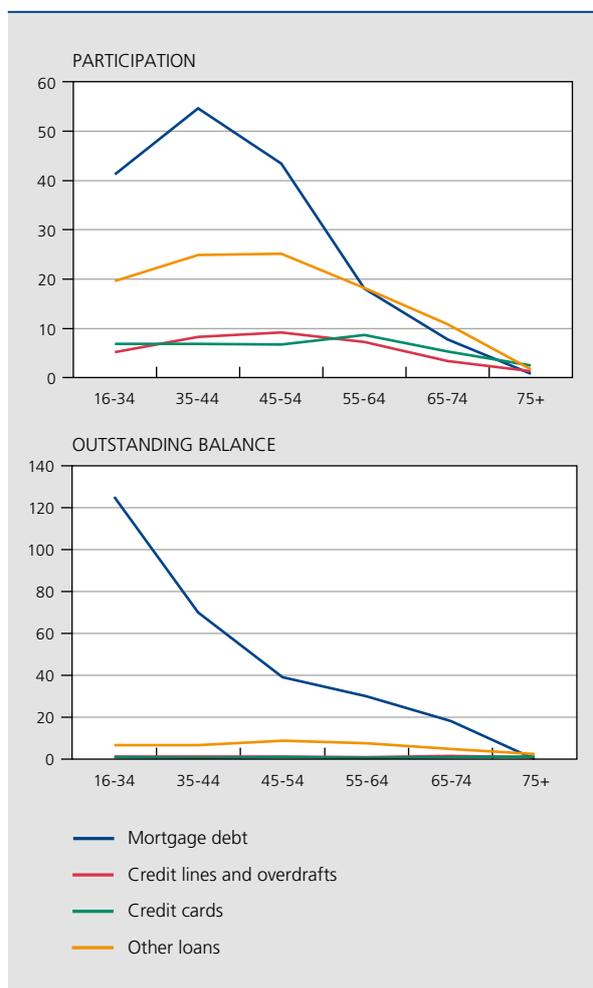
3.2 Age profile of Belgian household debt

Although participation in mortgage debt and the amount of the outstanding balance increase with income, they generally decline with age. While around 40 % of young households have a current mortgage loan, that rises to over half of households in which the reference person is aged between 35 and 44 years, then drops sharply to almost zero among the oldest households. The median outstanding balance is highest for the youngest households (where the reference person is under the age of 35 years), with a conditional median value of just over €120 000. They have only recently taken out a loan and can generally expect their income to increase. The

(1) Cf. Bover O., J.M. Cassado, S. Costa, Ph. Du Caju, Y. McCarthy, E. Sierminska, P. Tzamourani, E. Villanueva and T. Zavadil (forthcoming), The distribution of debt across euro area countries: the role of individual characteristics, institutions and credit conditions, ECB Working Paper.

CHART 8 BELGIAN HOUSEHOLD DEBT, BY AGE GROUP

(in % of households, conditional median values of the outstanding debt in thousand euro)



Sources : HFCS, NBB.

median outstanding mortgage debt is already halved in the case of households in which the reference person is aged between 35 and 44 years, and then falls to low or very low amounts in the case of the oldest households. The wealth of data offered by the HFCS permit a more detailed study of household debt in Belgium and in the euro area. In particular, it is possible to determine which households face excessive debt, and what are the explanatory factors. Such a study is currently in progress.

4. Net wealth of households

Following a review of the various assets and liabilities and their valuation, we can calculate the net wealth of households, which is equal to the value of all their assets

less the total outstanding debts on the liabilities side, as recorded by the HFCS. Here it should be remembered that the capital value of statutory pensions and supplementary corporate or sectoral pensions is not included in the calculation of total net wealth.

4.1 Distribution of income and wealth in Belgium

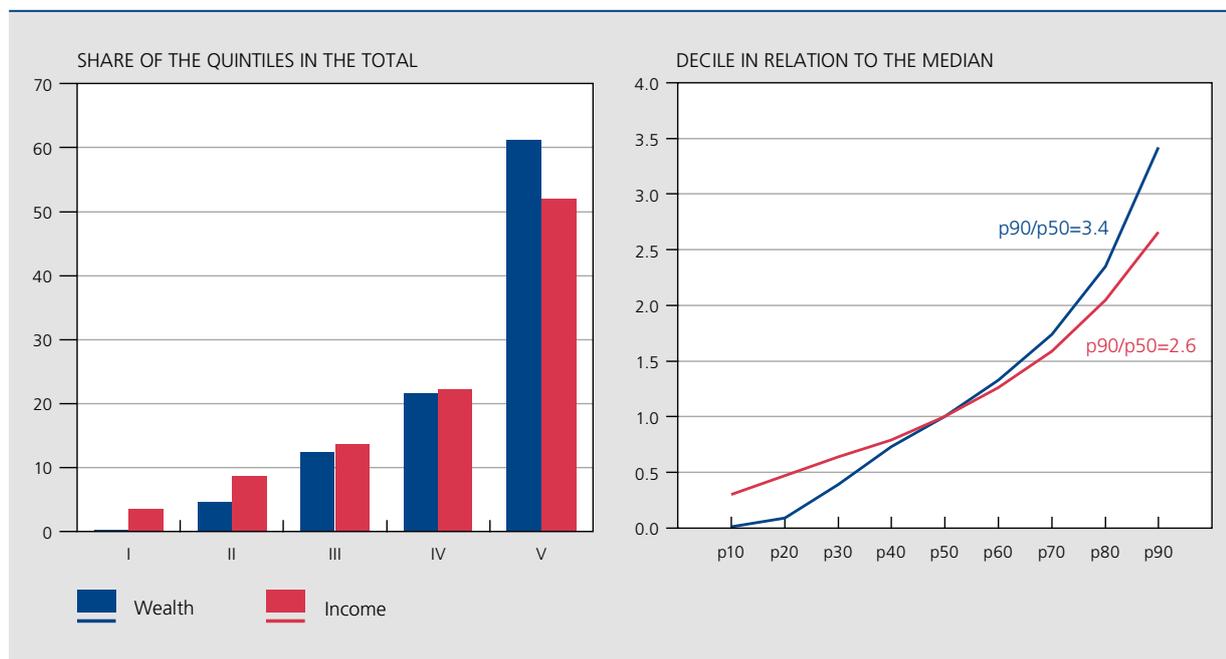
In addition to the data on assets (the main subject of the survey), the HFCS collects information on household income (as a supplementary variable). Wealth is built up by the accumulation of savings from income (apart from the impact of inter-generational and inter-sectoral transfers, e.g. transfers to the government via taxation). This makes it possible to study simultaneously the distribution of wealth and income across households.

In Belgium, the median net wealth of households is € 206 200. The average net wealth is € 338 600. The average is therefore considerably higher than the median, indicating that wealth is unevenly distributed, and substantial wealth is concentrated on a relatively small number of households. The same applies to income, albeit to a lesser extent. A household's median gross annual income is € 33 700, and the average is € 49 500. If households are divided into income quintiles and wealth quintiles we again find that wealth is more unevenly distributed than income. It is evident that the difference between income inequality and wealth inequality appears mainly at the upper and lower extremes of the distribution. Thus, in Belgium the wealthiest 20 % of households own 61.2 % of the total wealth. Similarly, the highest earning 20 % of households receive 52 % of total incomes in Belgium. At the other end of the scale, the poorest 20 % own only 0.2 % of the total wealth of Belgian households, and the 20 % on the lowest incomes account for 3.5 % of total household income in Belgium.

As in the case of real and financial assets, we can divide net wealth into deciles. If the deciles (p10 to p90) are divided by the median (p50) and the results are presented in the form of a chart, we can see the relative inequality of incomes and wealth, and the point in the distribution where the inequality is most noticeable. The p90/p50 ratio is 3.4 for Belgian wealth. This means that a household at position p90 (i.e. a household with net wealth greater than that of 90 % of the country's households, namely a "typical" wealthy household) has net wealth 3.4 times greater than that of a "typical" (median) household. This p90/p50 ratio, which therefore gives an idea of the inequality in the upper half of the distribution, is 2.6 for incomes in Belgium.

CHART 9 INCOME AND WEALTH DISTRIBUTION IN BELGIUM

(in % of the total, unless otherwise stated)



Sources : HFCS, NBB.

4.2 International comparison of wealth distribution

Net wealth therefore varies greatly from one household to another. Some households have hardly any assets, or none at all, while others are very wealthy. Various criteria can be used to summarise and compare the distribution between countries. Both the median and the average are statistics which summarise the distribution of wealth. These two concepts are quite useful, although they give only a very partial idea of the full distribution. Average net wealth is simply the total wealth divided by the number of households. This average is particularly affected by extreme values (outliers). In particular, for the purpose of measuring wealth, where a small percentage of households may own very substantial wealth, the average does not always tell us very much. The median net wealth indicates the middle of the distribution: half of the households have less wealth and the other half have more. The median therefore offers a picture of the average household.

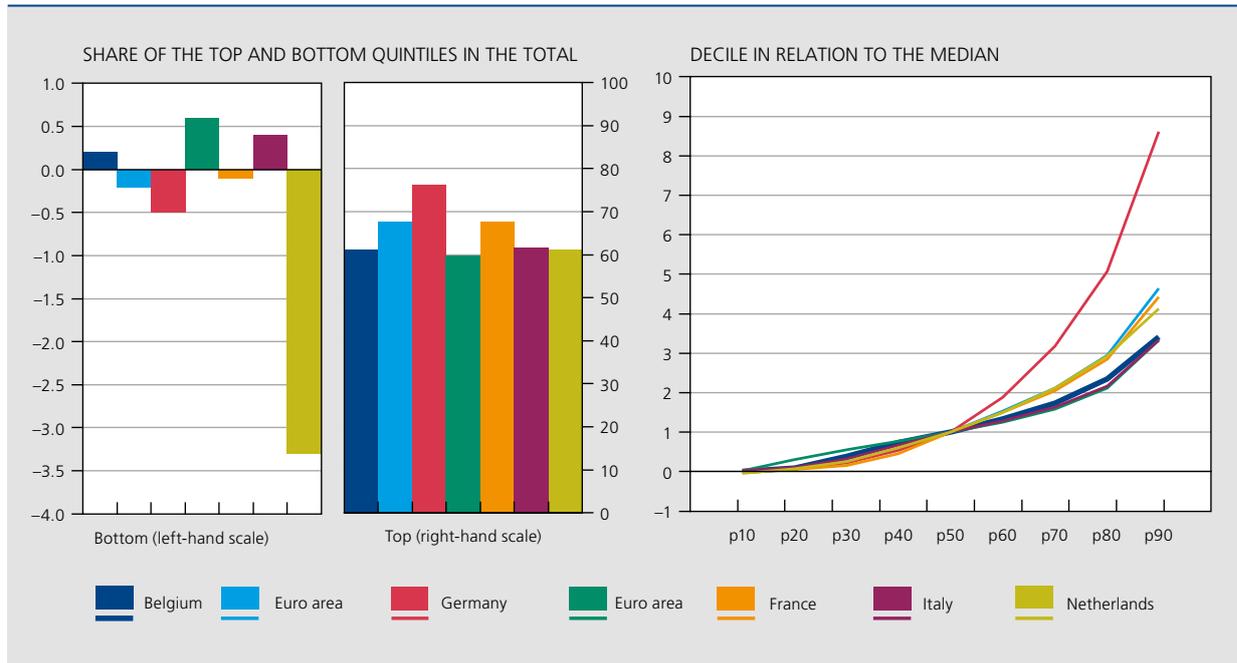
Household wealth varies considerably from one euro area country to another (see the table in the annex). The median net wealth of households ranges from € 51 400 in Germany to € 397 800 in Luxembourg. It is € 109 200 for the euro area as a whole, and € 206 200 in Belgium. The average net wealth of households ranges between

€ 79 700 in Slovakia and € 710 100 in Luxembourg. It is € 230 800 in the euro area and € 338 600 in Belgium. We shall come back later to the absolute differences in net wealth between countries.

As already illustrated earlier in regard to incomes and wealth in Belgium, the p90/p50 ratio indicates the inequality in the upper half of the distribution. There are also considerable variations between the euro area countries in regard to the distribution of wealth. The p90/p50 ratio, i.e. the ratio between a “typical” wealthy household and a household in the middle of the distribution, ranges from 2.5 in Slovakia to 8.6 in Germany; it is 3.4 in Belgium and 4.6 in the euro area as a whole.

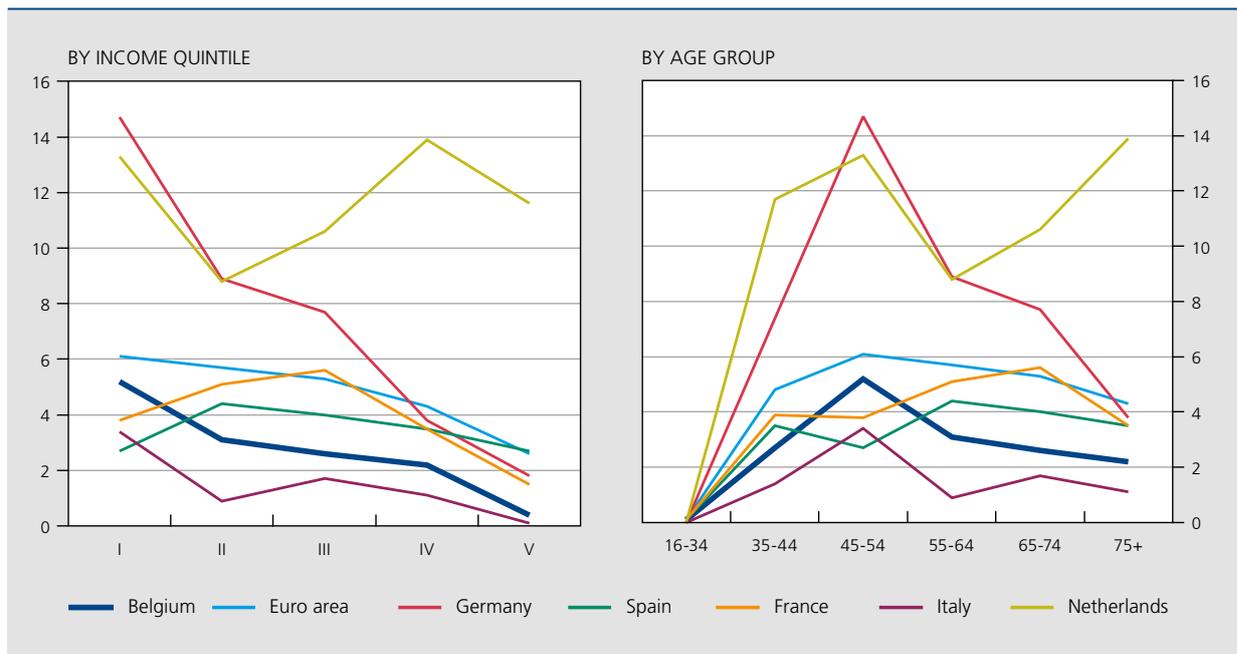
We know that the share of the poorest quintile in the total household wealth of a country is very small. It may even be negative if, on average, that group of households has negative wealth (their debts exceed their assets). That is particularly the case in the Netherlands, for example, and to a lesser extent in Germany. In those countries, and especially in the Netherlands, wealth is particularly unevenly spread at the bottom of the distribution. It is also known that, generally speaking, the wealthiest quintile represents a disproportionately large share of the total net wealth of a country. That share comes to 61.2 % in Belgium, compared to 67.7 % in the euro area as a whole. In Germany,

CHART 10 WEALTH DISTRIBUTION : INTERNATIONAL COMPARISON
(in % of the total, unless otherwise stated)



Sources : HFCS, NBB.

CHART 11 HOUSEHOLDS WITH NEGATIVE NET WEALTH
(in % of households)



Sources : HFCS, NBB.

that share is relatively substantial (76.3%), so it is not only at the bottom of the distribution, but also at the top end that German wealth is more unevenly distributed, in relative terms, than in other countries, and certainly more so than in Belgium. That picture is even clearer if again the wealth deciles are calculated (p10 to p90) and each decile is divided by the median (p50). If the results are presented in chart form, we can clearly see the wealth inequality at the top of the distribution and the variations between countries. A more detailed study of income and wealth distribution based on the HFCS data is currently in progress.

The small share of the lowest quintile in the total wealth is therefore attributable partly to a group of households with more debts than assets, or in other words negative net wealth. The proportion of households with negative wealth is quite considerable in the Netherlands (11.7%) and in Germany (7.4%). In Belgium, it is 2.7% of households, compared to 4.8% in the euro area as a whole (see also the table in the annex). In Germany, these households are found mainly in the lower income quintiles, while in the Netherlands a relatively large number of households in the higher income quintiles also have negative net wealth. The substantial outstanding balance of mortgage loans and the sluggish property market are contributory factors here. In other countries, the proportion of households with negative net wealth is smaller and has a negative correlation with income. It is highest in the intermediate age groups. These groups have bigger mortgage debts and may already have seen the value of their property decline since they contracted the loan.

4.3 International comparison of net wealth

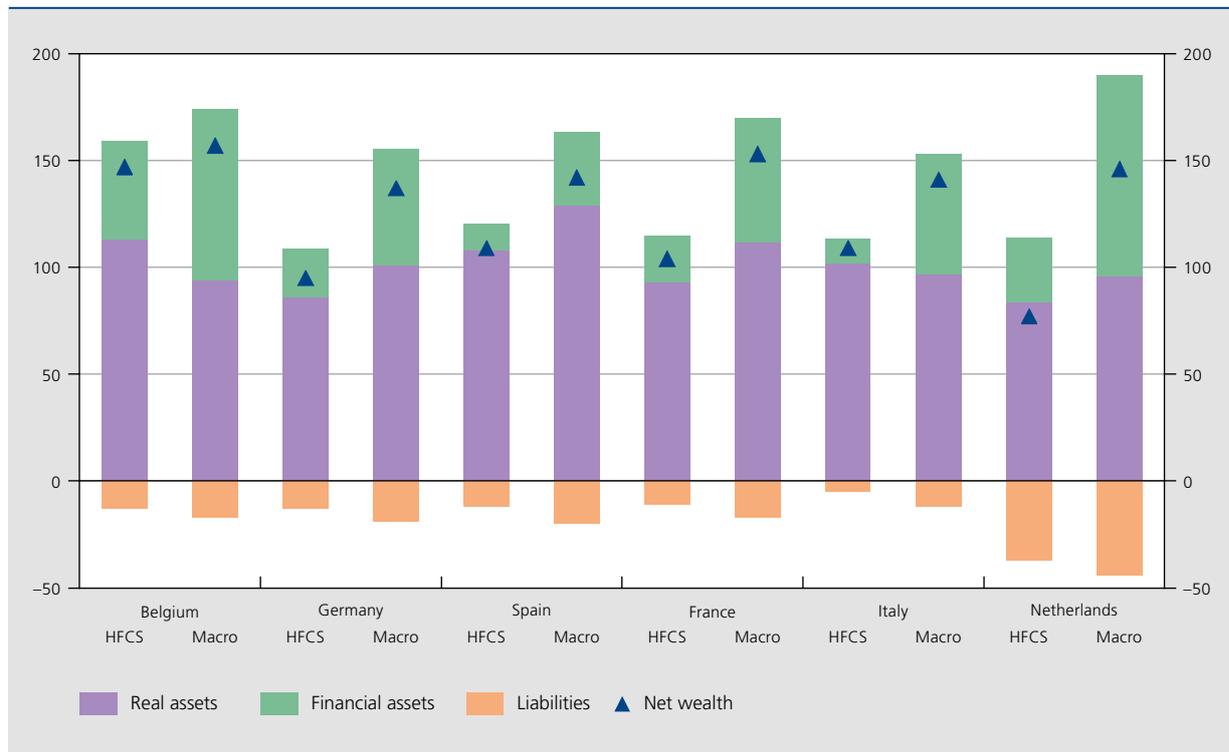
Although the HFCS is based on a common questionnaire, and a very great deal of effort has gone into ensuring that the results are comparable between countries, international variations need to be interpreted with caution (especially in the case of absolute differences between medians and averages). There are undeniably divergences between countries in regard to household characteristics, institutional factors, and factors relating to the macroeconomic environment. Thus, the HFCS measures wealth at household level, but households vary in their composition (size, number of members of working age). In addition, there are considerable variations in “public” assets, not only in regard to pensions and housing (social housing and other publicly owned housing), but also in terms of the public debt, which – in principle – has to be repaid by households sooner or later, via taxation. There may also be divergences in preferences for real and financial assets. Other crucial factors are the country’s property market

situation and the degree of borrowing (and loan terms) for the purchase of real estate. Finally, the wealth of a given sector, in this case households, cannot be separated from the other sectors (government and corporations). Similarly, the analysis of an economy as a whole must also take account of the country’s net external position in relation to the rest of the world.

Caution is also necessary when microeconomic and macroeconomic approaches are combined. Thus, taxation represents a transfer of wealth from domestic sectors (in this case households) to the government. The tax burden then influences household wealth as measured by the surveys, whereas the country’s prosperity remains unchanged overall. Furthermore, part of the household wealth may be held in the form of government bonds. The survey records this government debt held by households as a household asset, whereas the transaction is neutral in terms of the country’s total net wealth. Household prosperity as measured by the HFCS therefore takes no account of public expenditure and public debt. The survey data on household wealth say nothing about the situation of the other sectors (corporations, government, position in relation to the rest of the world). They are therefore less suited to analysing a country’s total wealth, or comparing national wealth with that of other countries.

According to the HFCS, the “typical” (i.e. the median) Belgian household has net wealth amounting to € 206 200 (where the average net wealth is € 338 600), much more than the median household in the euro area as a whole (€ 109 200) and more than in most other euro area countries. Luxembourg, Cyprus and Malta are the only countries where the median is higher. The HFCS can take account of household size, and thus calculate per capita wealth. In order to confirm the HFCS findings, the calculations can be compared in part with the data from other macroeconomic sources (national accounts and NCB estimates of real estate wealth, for example) and with other surveys such as the SILC (*Statistics on Income and Living Conditions*) or SHARE (*Survey on Health, Ageing and Retirement in Europe*), bearing in mind that comparability is limited by differences in the concepts “household” and “wealth”. Thus, in the published macroeconomic statistics, non-profit institutions serving households are generally recorded in the household sector, whereas the HFCS ignores them. As already stated, the HFCS does not include in the financial assets the capital value of statutory pensions and supplementary corporate or sectoral pensions, in contrast to the procedure followed, where possible, for the macroeconomic statistics. Generally speaking, surveys are better at recording real assets than financial assets. Compared to other sources, the HFCS results for Belgium look plausible: they cover 94% of total net wealth as estimated by macroeconomic sources.

CHART 12 PER CAPITA NET WEALTH: INTERNATIONAL COMPARISON
(thousand euro)



Sources : HFCS, NBB.

To ensure comparability with macroeconomic sources, it is necessary to consider averages rather than medians. According to the HFCS, Belgian households have average net wealth of € 147 000 per capita (€ 157 000 according to macroeconomic estimates which, as we have said, are not entirely comparable). The international variations in per capita wealth as recorded by macroeconomic estimates in the countries where they are available are smaller than those calculated according to the HFCS. This illustrates that differences between surveys (e.g. the extent to which the wealthiest households take part in the interviews) may be a factor, and that surveys such as the HFCS are not designed to measure a country's total wealth (and hence the average). Instead, they are intended to analyse wealth distribution and to study the behaviour of individual households or groups of households. By that token they are not a substitute for the national (financial) accounts or other macroeconomic statistics; on the contrary, they complement them.

A list of factors which may explain international differences in the net wealth of households starts with the characteristics of the survey. As far as possible, the HFCS is harmonised, but differences may still emerge, e.g. in

regard to sampling and representativeness, and especially the participation rate of a country's wealthiest households. In addition, household composition is also a significant factor. Larger households, and primarily those with more persons of working age, accumulate more assets (real estate) than smaller households. In southern European countries, households are larger, on average, and contain more adults. There are also considerable divergences in home ownership, which is generally less prevalent in the northern countries, and especially in Germany. To interpret these differences would require a specific, detailed analysis, but they may be due partly to household structure (households being larger in the South, sometimes comprising multiple generations), the supply of public housing, and particularly social housing, credit markets, and the tax treatment of real estate and borrowings. Moreover, movements in house prices also play a role, as real estate is the main component of household wealth, and it is the households themselves that estimate the value of their home. That value therefore depends on the local property market situation at the time of the interview and in the preceding period. Home ownership is also influenced by the credit market in the country concerned. The tax treatment of loans (mortgages) and interest payments is another factor

here. Since wealth is built up by accumulating savings out of income and their accumulation over the generations, differences in household income and the scale of inheritances also account for part of the differences in wealth. Finally, household wealth cannot be viewed separately from the wealth of other sectors, namely government and businesses. Apart from the share of wages in the economy, public (social) housing, taxation, (the credibility of) social security and statutory pensions, and the size of the public debt are likewise relevant factors.

A combination of these various factors is needed to explain the differences in household wealth between countries. There are complex interactions between many factors, yet the initial analyses only look at certain factors individually. Consequently, additional (multivariate) studies are necessary, and are currently being conducted by the HFCN. The same applies to income and wealth distribution. The information from the HFCS makes it possible to study that simultaneously and to take account of correlation factors. That research is ongoing.

Conclusion

This article examines the structure and distribution of household wealth on the basis of the first results of the *Household Finance and Consumption Survey* (HFCS). Real and financial assets are described along with debts, resulting in an analysis of the net wealth of households.

The HFCS is a rich statistical source containing a great deal of new information on household finances in the broad sense. These data are used for policy analysis and scientific research. The initial findings can be summarised as follows.

The statistical data from the HFCS are generally reliable, especially for Belgium. The HFCS microeconomic

statistics are particularly well suited to structural analyses, e.g. concerning the composition and distribution of wealth. Macroeconomic data remain preferable for general analyses. In that sense, the HFCS and the financial accounts are therefore complementary, and are not substitutes for one another.

In regard to household assets, there are wide international variations in home ownership. In Belgium, seven out of ten households own their home (six out of ten in the euro area). Participation in most financial assets (other than deposits) is low, except for the wealthiest households. It is only in the highest income quintile that more than one in five Belgian households own listed shares or units in mutual investment funds. The income profile of participation in the third pension pillar is more pronounced: in Belgium, it ranges from less than 20% for the lowest income quintile to over 60% for the highest quintile.

In regard to debts, the proportion of households in debt is relatively low in the euro area, but once again there are significant international variations. That said, households in debt sometimes have a considerable debt burden. In Belgium, fewer than half of households have debts. Three out of ten Belgian households have a mortgage loan. On those loans, the median (conditional median value) of the outstanding balance amounts to five times the gross annual income of a household in the lowest income quintile. For a household in the highest income quintile, this mortgage debt/income ratio represents less than one year's income.

If we take account of all assets and debts, the substantial wealth of Belgian households is confirmed at international level. Net wealth is more unevenly distributed than income. Once again, there are significant disparities between euro area countries. Real assets and mortgage debts are major role factors in that respect.

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

Annexe

SELECTED HFCS INDICATORS

(thousand euro, unless otherwise stated)

	Euro area	BE	DE	GR	ES	FR	IT	CY
Real assets								
Home ownership (in % of households)	60,1	69,6	44,2	72,4	82,7	55,3	68,7	76,5
Average value of own home	216,8	273,1	205,8	123,4	211,1	222,2	254,0	317,5
Financial assets								
Median	11,4	26,5	17,1	4,4	6,0	10,7	10,0	22,1
Average	44,5	109,4	47,4	14,9	34,1	50,2	31,2	68,7
Ratio p90/p50	8,8	8,8	6,6	8,2	11,8	9,7	6,3	6,5
Share in the total assets (in %)	16,8	29,1	21,2	7,0	10,3	19,3	10,0	8,1
Net wealth								
Median	109,2	206,2	51,4	101,9	182,7	115,8	173,5	266,9
Average	230,8	338,6	195,2	147,8	291,4	233,4	275,2	670,9
Ratio p90/p50	4,6	3,4	8,6	3,3	3,3	4,4	3,3	5,5
Households with negative net wealth (in % of households)	4,8	2,7	7,4	2,6	3,5	3,9	1,4	2,8
	LU	MT	NL	AT	PT	SI	SK	FI
Real assets								
Home ownership (in % of households)	67,1	77,7	57,1	47,7	71,5	81,8	89,9	67,8
Average value of own home	611,9	214,9	270,6	258,1	113,8	126,5	68,7	159,5
Financial assets								
Median	27,9	26,2	34,7	13,5	4,3	1,7	2,5	7,4
Average	89,9	52,3	68,4	46,9	22,5	9,2	7,5	29,6
Ratio p90/p50	7,3	4,7	4,7	7,7	13,4	14,2	7,7	9,0
Share in the total assets (in %)	11,2	13,4	26,6	16,9	12,5	5,6	8,3	15,0
Net wealth								
Median	397,8	215,9	103,6	76,4	75,2	100,7	61,2	85,8
Average	710,1	366,0	170,2	265,0	152,9	148,7	79,7	161,5
Ratio p90/p50	3,5	3,2	4,1	7,1	4,0	3,1	2,5	4,6
Households with negative net wealth (in % of households)	3,8	0,8	11,7	5,3	2,6	2,0	1,2	10,6

Sources: HFCS, NBB.

Causes and implications of the low level of the risk-free interest rate

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Introduction

In most advanced economies, the risk-free interest rate – i.e. the rate applicable to assets entailing a minimal credit risk – has fallen to historically low levels over the recent period. This interest rate is particularly important because it forms the basis for determining other interest rates, and therefore influences financing conditions throughout the economy. This article focuses on long-term rates to examine the causes and implications of an economic environment with very low risk-free interest rates.

The first section looks at the current level of risk-free interest rates in a historical perspective. The second section presents an analytical framework of interest rate determinants, while the third section uses that framework to study the main factors behind the movement in risk-free interest rates in the United States and in the euro area since 1990. The fourth section discusses how an accommodative monetary policy stance contributes to macroeconomic stability – and therefore to price stability – but also examines the associated risks for financial stability. More specifically, the fifth section illustrates the challenges which persistently low interest rates present for the insurance sector and for pension funds, and the risks accompanying a sudden rise in interest rates.

1. The level of interest rates: a historical perspective

Although risk-free assets really only exist in theory, in practice the Treasury securities issued by good quality sovereigns

are generally regarded as risk-free⁽¹⁾ because it is considered highly unlikely that those issuers will default. This is due in particular to the ability of a State – in contrast to a company – to raise taxes in order to repay its debts. Also, even though the process is nowadays widely prohibited or condemned in advanced economies, a State which borrows in a currency for which it is the issuing authority can always print money to avoid default. Long-term risk-free interest rates in the United States, the United Kingdom, Germany and France were used here because statistical data on those countries are available over a long period. The series presented comprise various interest rates – generally government rates – which have been assembled to produce a composite series of the risk-free long-term borrowing cost for each country. Thanks to the early development of markets in fixed-income instruments in the United States and the United Kingdom, series going back to the year 1800 are available for those two countries. The French and German series begin in 1901 and 1956 respectively.

1.1 Nominal interest rates

Long-term nominal interest rates remained modest and generally stable from the early 19th century until the eve of the First World War. That was particularly true in the United Kingdom, which was then the world's leading economic power and the country with the most highly developed financial markets. This was a period in which

(*) The authors thank M. Barba, D. Hendrickx and T. Schepens for their comments about this article.

(1) Other interest rates which may be regarded as risk-free include guaranteed interbank market rates, for example, and long-term swap rates.

metallic currency systems largely prevailed: bimetallic, based on the convertibility of paper money into gold or silver up to the end of the 19th century, and then the gold standard. These systems offered a high degree of long-term price stability, despite wide variations in the short term, due to fluctuations in the quantity of precious metal available and variations in economic activity. In that context, devoid of any price trend, nominal interest rates largely mirrored the movement in price levels. In his *Treatise on Money*, Keynes called this the “Gibson paradox” after the statistician A.H. Gibson who published various articles in the 1920s confirming the close links between price levels and interest rates (Gardes and Lévy, 1994). The paradox is viewed today as the outcome of a contradiction between the observations and prescriptions of monetary theory concerning the nature of the variables in the interest rate/price relation: the Fisher equation in fact predicts that nominal interest rates will show a positive correlation with the expected inflation rate, and not the general price level.

After a number of countries had abandoned the gold standard in the early 20th century, nominal interest rates fluctuated far more widely than in the preceding century, in parallel with sharper movements in the level of prices and inflation. Looking beyond the business cycles, it is possible to identify four main trends during the 20th century: an initial upward trend from 1900 to the 1920s, which was a relatively prosperous period with rising commodity prices, but also included the First World War which brought strong inflation; next came

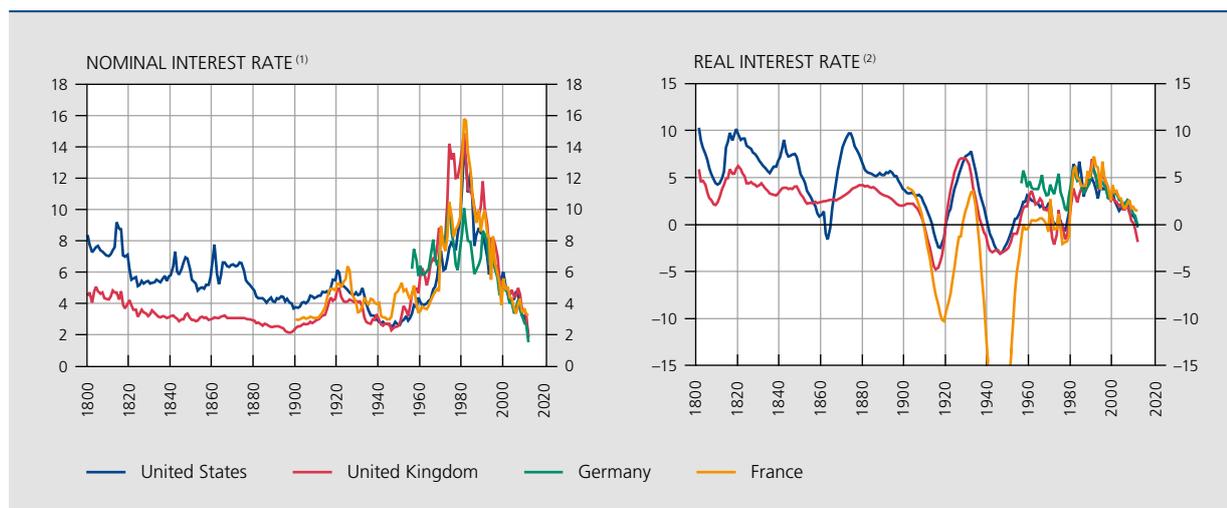
a downward trend from the 1920s to the late 1940s, a period affected by the Great Depression, deflation and the Second World War; after that came an upward trend from the late 1940s to the early 1980s, a period featuring severe supply shocks and an inflationary spiral; finally, there has been a downward trend from the early 1980s to the present day, a period of “great moderation” due in particular to the assignment to central banks of mandates geared to price stability and, more recently, the economic and financial crisis which began in 2007.

It is interesting to draw a parallel between the existing monetary system, inflation and the pattern of nominal interest rates. The bimetallic and gold standard systems featured little long-term variation in prices and stable interest rates. Conversely, the period of high inflation in the 1970s and the early 1980s brought soaring interest rates, while the adoption of a monetary policy geared to price stability lies at the root of a downward trend in interest rates over the past thirty years.

1.2 Real interest rates

Real interest rates, rather than nominal interest rates, are generally regarded as determining decisions on consumption, saving and investment; they are therefore more relevant, to some extent, than nominal rates. More specifically, the appropriate concept is the real *ex-ante* interest rate, namely the nominal rate minus inflation expectations. However, to calculate the real interest rate

CHART 1 THE LONG-TERM RISK-FREE INTEREST RATE (1800-2012)



Sources: Homer and Sylla (1991), Datastream, <http://www.France-inflation.com> and <http://www.measuringworth.com>

(1) Generally a government bond rate.

(2) Difference between the nominal rate and trend inflation measured with a Hodrick-Prescott filter.

in the absence of historical data on inflation expectations, we are obliged to use inflation trends estimated with the aid of a Hodrick-Prescott filter, which limits cyclical variations in inflation.

Historically, real interest rates have not necessarily followed the movement in nominal rates. The absence of very marked cycles in inflation, and the great stability of nominal interest rates, account for the relatively stable real interest rates in the 19th century. Conversely, the suspension of metallic currency systems, as during the American War of Independence between 1861 and 1865, and in the early 20th century, led to greater variations in long-term inflation and increased volatility in real interest rates. Generally speaking, periods of war brought a strong rise in inflation and clearly negative real interest rates. That was also true of the period of high inflation at the end of the 1970s. In contrast, in the early 1980s, the high level of real interest rates reflected the central banks' determination to restore price stability, and mirrored the compensation demanded by investors for the uncertainty surrounding the inflation outlook, following the high inflation in the 1970s. When central banks were given mandates specifically geared to price stability in the 1990s, and as the battle against inflation began to produce results, real interest rates generally subsided in parallel with the decline in nominal rates. In the recent period, real long-term interest rates in the advanced economies have dropped to historically low peacetime levels. The following sections examine in more detail the factors behind this phenomenon and its implications.

2. Analytical framework of interest rate determinants

In order to study interest rate determinants, it is useful to refer to a theoretical analytical framework. Here we shall use the model commonly devoted to the term structure of interest rates, which is based on the expectations theory and describes the relationship between interest rates of varying maturities. We shall also propose a way of considering the relationship between monetary policy and the interest rates in the economy. In the third section, we shall be able to use this information to examine the factors contributing to the current low level of interest rates in the euro area and in the United States.

2.1 The expectations theory of the term structure of interest rates

According to the expectations theory of the term structure, in the absence of uncertainty over future

interest rates, the long-term yield on a security should be equivalent to the average yield expected from a sequence of shorter-term investments, otherwise there would be scope for arbitrage by investors, a situation which could not persist. However, it is unrealistic to assume that investors have perfect knowledge of future interest rates. Thus, taking account of the presence of uncertainty, the long-term yield on a security can be regarded as the sum of the average expected yield on a sequence of shorter-term investments plus a term premium. The latter offers compensation for the uncertainty surrounding future nominal interest rates for the duration of the investment, and its associated risk of capital loss.

The term premium incorporated in nominal interest rates depends on the magnitude of risk, which concerns in particular uncertainty over future real interest rates and inflation, but is also affected by the price of risk, which depends on investors' risk aversion. Since uncertainty increases, in principle, with the residual maturity of a bond, the term premium is generally seen as having a positive correlation with that residual maturity, and this factor is regularly put forward to account for the higher average yields on long-term securities in comparison with short-term yields.

Factors which may affect the term premium and which relate to the degree of risk aversion among investors include the importance of the asset liquidity criterion or explicit demand for long-term risk-free assets. In the context of the economic and financial crisis of 2008-2009 and the sovereign debt crisis which followed, the sometimes significant widening of the spread between State-guaranteed bonds, such as those issued by public investment agencies, and bonds issued directly by the Treasury – as is the case more particularly in Germany – is evidence, for example, that investors attached greater importance to the liquidity of the underlying securities⁽¹⁾ (Ejsing, Grothe and Grothe, 2012). By considerably increasing demand for long-term risk-free assets, a number of central banks also deliberately depressed term premiums. Hence, depending on the factors in operation, those premiums may be either positive or negative. In practice there are various ways of estimating them, and it is extremely tricky to identify their exact composition.

(1) In periods of severe financial tension, negative yields have even been observed on some short-term AAA bonds (e.g. three-month bonds), while the yields on Overnight Indexed Swaps of the same maturity (which reflect expectations regarding overnight rates) remained positive. That is evidence of the fact that some investors who, for example, had no access to the central bank's deposit facilities, tried to invest their liquidity in very safe assets and sometimes accepted a negative yield in order to do so.

2.2 Monetary policy and interest rates

In principle, the central bank has direct control over very short-term money market interest rates, essentially via its key interest rates and open market operations. Through the monetary policy transmission mechanism, the central bank influences economic activity, and hence inflation, by adjusting its monetary policy stance in line with its objectives. In the literature, the central bank's decision is regularly illustrated via a monetary policy rule that links the target short-term interest rate to macroeconomic variables such as inflation and output. The best known example of such a rule is the Taylor rule (Taylor, 1993), which may take the following form:

$$i_t = r_t^* + \pi^* + 1.5 (\pi_t - \pi^*) + 0.5 (y_t - y^*)$$

where i_t is the very short-term interest rate target, r_t^* is the equilibrium real interest rate, π^* is the inflation target defined by the central bank, π_t is actual inflation, y_t is the actual level of output and y^* is the potential level of output. This rule shows that the appropriate very short-term interest rate for a central bank aiming at price stability corresponds to the sum of the equilibrium real interest rate and the inflation target adjusted for the difference between actual inflation and target inflation, on the one hand, and for the gap between actual and potential output on the other.

In practice, even though no central bank mechanically follows such a rule, it nevertheless appears that the rule does offer a good description of the data (at least in the period preceding the crisis, when nominal interest rates were not constrained by a zero lower bound) and various studies show that central banks do accord it some importance (see for example Ilbas *et al.* (2013) for the United States).

An essential parameter of the above equation is r_t^* , the equilibrium real interest rate, also known as the “natural” interest rate. This is not a variable that can be observed, but a concept which is hard to define, and on which there is no consensus⁽¹⁾. The generally accepted idea, and the one which we adopt here, sees it as the interest rate that would prevail in a context of normal production, i.e. when output corresponds to its potential level, compatible with price stability. As pointed out by Woodford (2001), and contrary to the theory put forward by Taylor (1993), the equilibrium rate is not constant over time and changes, in particular, with real factors which are, *a priori*, exogenous to monetary policy, such as the economy's productivity. Woodford (2001) stresses the need for economic policy-makers to take account of the variability of this interest rate in order to meet their targets for macroeconomic

stability, and more particularly price stability. Conversely, the inflation target parameter π^* is subject to the direct control of the central bank. Together, the equilibrium real interest rate and the inflation target form the “equilibrium nominal interest rate”.

The central bank only has direct control over very short-term interest rates. However, as the monetary policy stance only changes gradually, changes to its key rates are likewise reflected in longer-term interest rates, which incorporate expectations regarding the future monetary policy stance. By adjusting its key rates, the central bank can thus influence the incentives for households to save or consume, and the incentives for firms to invest. In so doing, it supports or restrains economic activity and ensures price stability. New-Keynesian macroeconomic models in fact show that it is not so much the real short-term interest rate as the entire future expected path of real short-term interest rates that influences aggregate demand and inflation (Clarida *et al.*, 1999).

However, the central bank's ability to influence longer-term rates via its monetary policy stance is limited. On the one hand, it diminishes with maturity, and the impact of the central bank's decisions on interest rates is thus largely concentrated on the short and medium term. Over the long-term, there is not in fact any reason to expect monetary policy to be particularly restrictive or accommodative, and, in principle, these rates must therefore reflect on average the sum of the expected equilibrium real rate and the expected inflation target. Also, since economic agents can always choose to hold coins and banknotes rather than invest their money in debt instruments, nominal interest rates – including the key rates – cannot fall (significantly) below zero. This natural floor (zero lower bound) restricts the scope for the central bank to compensate for negative output gaps and deflationary risks via the traditional interest rate instrument. At a certain point, a central bank wishing to continue to stimulate economic activity is therefore forced to turn to “unconventional” monetary policy measures. Prominent ones include forward guidance and securities purchase programmes. The former has a particular influence on expectations regarding monetary policy in the medium term, while the latter enable the central bank to exert direct downward pressure on the term premiums contained in long-term interest rates.

(1) For more details on this subject, see for example Woodford (2003) or Weber *et al.* (2008).

3. Empirical analysis of the determinants of low interest rates in the euro area and in the United States

In this section, we try to identify the main factors behind the movement in long-term risk-free interest rates in the United States and in the euro area since 1990. To that end, we first break down the long-term risk-free rate – in this case the ten-year interest rate – into a short-term component and a long-term component. Next, by combining these interest rate data with estimates of the equilibrium nominal interest rate for the United States and the euro area we can shed light on various factors accounting for interest rates. It should be noted that, for the pre-1999 period, developments in the euro area are illustrated on the basis of German data. For the interest rates, we use US Treasury yields and, from 1999 onwards, for the euro area, the average yields of the five main euro area countries with an AAA rating as at 30 June 2013⁽¹⁾ (Germany, Austria, Finland, France and the Netherlands). That choice enables us not only to exclude the credit risk affecting the yield on certain government bonds in the euro area, but also to limit the influence of the negative liquidity premiums on sovereign instruments of countries such as Germany.

(1) On 12 July 2013, France lost its AAA rating after the rating agency Fitch downgraded it to AA+. However, the main analysis here concerns data which do not go beyond June 2013. Luxembourg was not included owing to a lack of data.

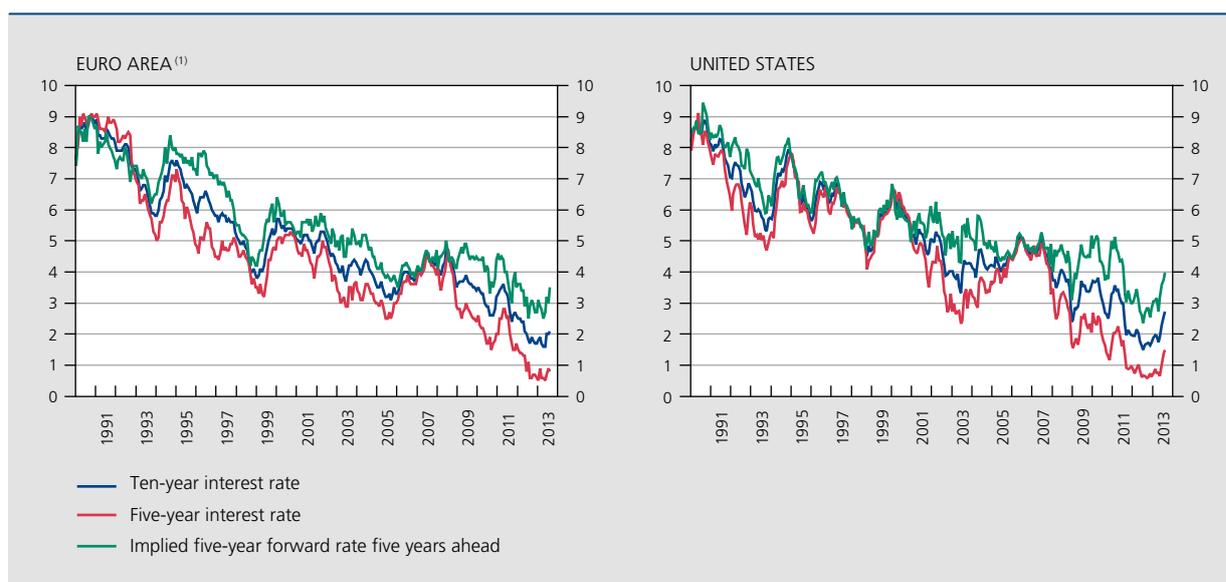
3.1 Breakdown of the ten-year interest rate

The nominal ten-year rate can be broken down into two components: a short-term component – the five-year interest rate – and a long-term component – the implied five-year forward rate five years ahead. The latter corresponds to the yield currently expected on a five-year investment made in five years' time.

Despite cyclical movements, the ten-year interest rate and each of its components tended to decline during the 1990s, both in the euro area and in the United States. The implied five-year forward rate five years ahead then remained relatively stable between 2000 and 2011, while the five-year interest rate was more volatile over the same period. During the recent crisis, the dip in the ten-year rate seems essentially to reflect a contraction in its short-term component, which is not surprising in the context of a marked easing of the monetary policy stance. However, since mid-2011, the implied five-year forward rate five years ahead has also fallen fairly sharply, whereas it had previously remained quite close to the average recorded during the pre-crisis decade.

On the basis of the analytical framework outlined above, we can break down the five-year interest rate and the implied five-year forward rate five years ahead to identify their various determinants. For that purpose we compare the nominal rates with the estimates and expectations concerning the equilibrium real rate and

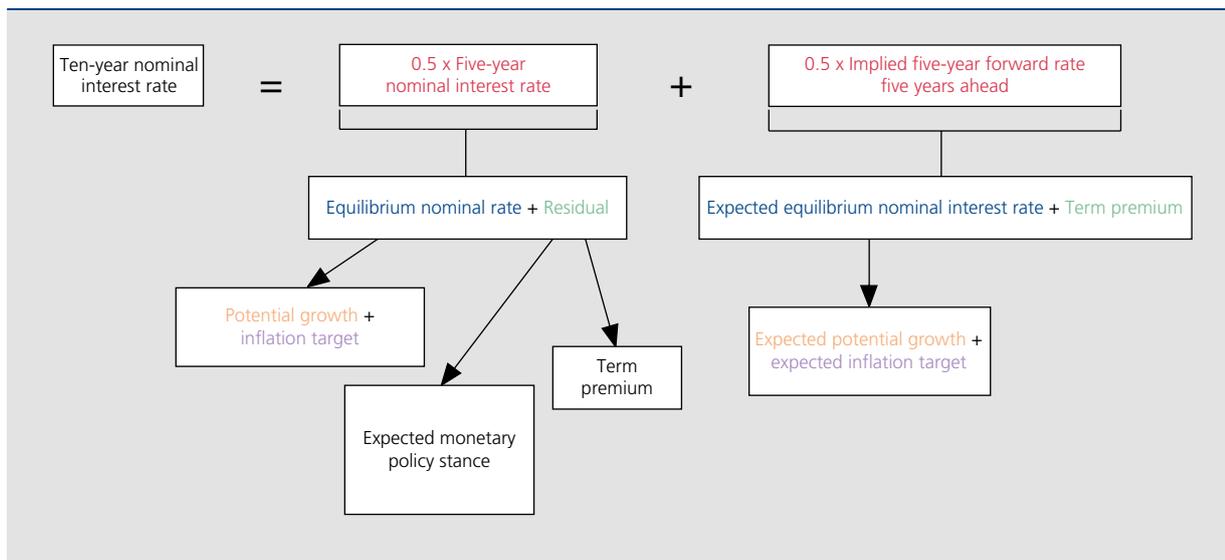
CHART 2 TEN-YEAR INTEREST RATE, FIVE-YEAR RATE AND IMPLIED FIVE-YEAR FORWARD RATE FIVE YEARS AHEAD



Sources: Thomson Reuters Datastream, NBB.

(1) German Bund yield before 1999. Average of the five main euro area countries with an AAA rating as at 30 June 2013 (Austria, Finland, France, Germany and the Netherlands) afterwards.

CHART 3 SCHEMATIC BREAKDOWN OF THE TEN-YEAR NOMINAL INTEREST RATE



the inflation targets. If we subtract from each of those nominal interest rates the corresponding equilibrium nominal rate, we obtain a residual figure which incorporates all the other factors that help to determine the interest rate.

In regard to the five-year rate, the equilibrium nominal interest rate can be approximated by the sum of the estimated potential real growth of the economy – its real component – and the central bank’s inflation target – its inflation component. The residual resulting from the difference between the five-year nominal rate and the equilibrium nominal rate reflects expectations regarding the monetary policy stance over the coming five years plus a term premium. While expectations concerning the monetary policy stance depend on the current and expected macroeconomic outlook, and on the way in which the central bank should respond to these developments, the term premium depends on the uncertainty surrounding expectations regarding future interest rates, and specific factors such as investors’ degree of risk aversion and the liquidity of the underlying asset.

The implied five-year forward rate five years ahead is, in principle, largely unaffected by cyclical movements in short-term rates and the monetary policy stance. The latter is in fact neutral, in principle, over a long horizon, and there is therefore no reason to expect it to be particularly accommodative or restrictive for the five-year period starting in five years’ time⁽¹⁾. The expected equilibrium nominal rate for that period can therefore be treated as the future short-term rate implying that the residual resulting from the difference between the implied five-year forward rate

five years ahead and the equilibrium nominal rate for that period can be interpreted as the term premium.

To provide an empirical illustration of this breakdown (summarised in chart 3), we combine the nominal interest rates with the estimated equilibrium nominal rates for the United States and the euro area. The estimated potential real growth rates come from the OECD’s Economic Outlook published in June 2013, while the inflation targets are the official or informal targets adopted by central banks⁽²⁾. There is no estimate of real potential growth for the five-year period starting in five years’ time, but it can be reasonably approximated by means of long-term real GDP growth expectations such as those derived from the twice-yearly Consensus Economics surveys, which specifically relate to a five-year period starting in five years’ time. Similarly, the inflation target expected in the long term can be estimated via long-term inflation expectations, likewise taken from the twice-yearly Consensus Economics surveys.

(1) On this subject, it is interesting to note the long-term projections produced every three months by the members of the FOMC, the Federal Reserve’s decision-making body. According to the FOMC, these can be interpreted as the rates of GDP growth, inflation and unemployment expected for a horizon of more than five or six years, in the absence of shocks and given an appropriate monetary policy.

(2) In 1984, the Bundesbank considered that the norm for the rise in price levels should be 2% up to 1997, the year in which it changed its norm to a range of 1.5-2% (Mishkin, 2001). In 1998, the ECB Governing Council defined price stability as a “year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2%”, stipulating that “price stability must be maintained in the medium term”. In May 2003, it confirmed that definition, clarifying that “in the pursuit of price stability, it aims to maintain inflation rates below, but close to 2% over the medium term” (ECB, 2003). The Federal Reserve did not officially adopt a long-term inflation target of 2% until 25 January 2012, but the inflation figures suggest an implied target of 2% during the preceding 20 years (Rosengren, 2013). Taking account of this information, and for simplicity, for the purposes of this article we shall take the inflation objective as 2% for the euro area and the United States since 1990.

3.2 Five-year interest rate

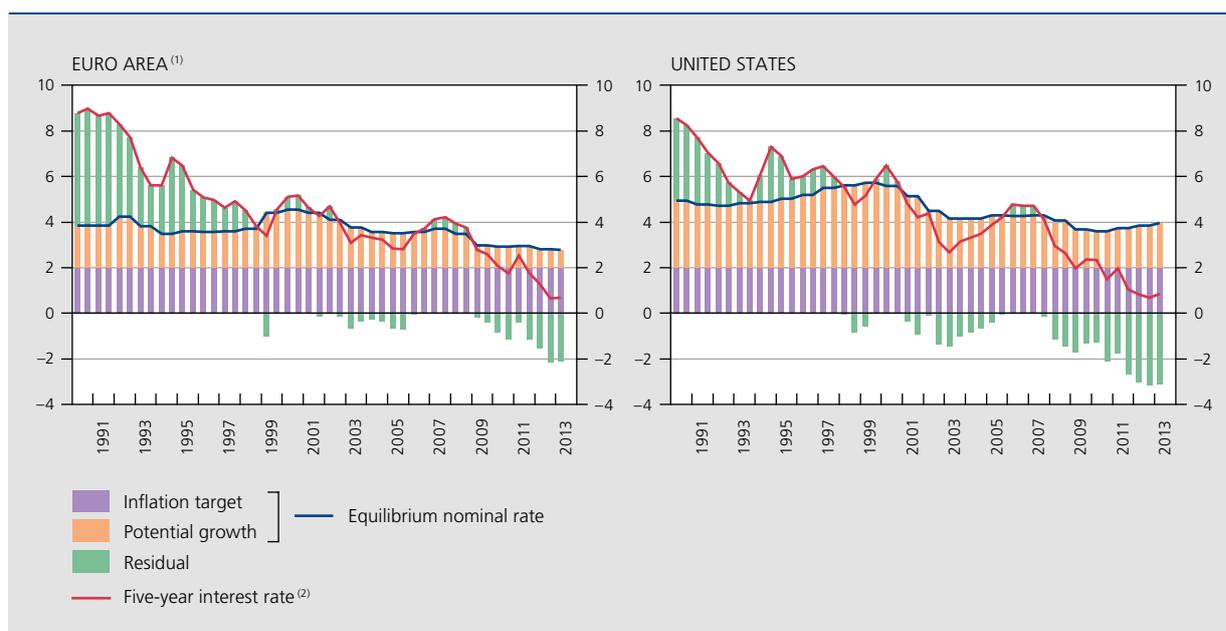
In the beginning of the crisis, the equilibrium nominal rate dropped in both the euro area and the United States. However, that decline is part of a fundamental trend dating back to the early 2000s. It reflects the weakening of the potential growth rate, which had risen in the second half of the 1990s, while the inflation targets remained unchanged. The trend fall in the equilibrium real interest rate indicates that, even if central banks maintained a monetary policy stance which was neutral, i.e. neither accommodative nor restrictive, the current short-term interest rate would be lower than in the early 2000s. It also means that, to a greater extent than before, central banks need to reduce the key interest rates in order to stimulate economic activity.

In accordance with the Taylor rule prescriptions for the determination of the interest rate target, the five-year interest rate hovers around the equilibrium nominal rate, reflecting the more or less accommodative monetary policy stance and expectations on how it will change during successive macroeconomic cycles. Because the deviations from the equilibrium rate diminish with the maturity, they will be more marked in the case of a shorter-term rate since the five-year rate already partly takes account of the prospect of a return to equilibrium interest rates. The high

level of short-term interest rates compared to the neutral rate in the early 1990s reflects the deliberately restrictive nature of the monetary policy stance, aimed at ensuring price stability after the years of high inflation and, in Germany, intended at eliminating the inflationary pressure resulting from the reunification. It also reflects the continuing high level of risk premiums demanded by investors to protect themselves against inflation, while central bank credibility was still not fully established.

Since 2007, the five-year rate has fallen by a total of almost 400 basis points in the United States and in the euro area, in the wake of the key interest rate cuts by the Federal Reserve and the ECB. The interest rate reduction took place mainly in two stages, the first extending from 2007-2008 to mid-2010, and the second from mid-2011 to the recent period. The decline in five-year interest rates is essentially due to a downward revision in expectations regarding the monetary policy stance over the horizon in question; those expectations are affected by such factors as the outlook for economic activity and inflation, but are also influenced by certain monetary policy measures such as forward guidance. Thus, during the crisis, the Federal Reserve regularly announced its longer-term monetary policy stance, while the ECB Governing Council issued statements declaring that the monetary policy stance would remain accommodative

CHART 4 FIVE-YEAR NOMINAL RATE



Sources: ECB, Federal Reserve, Mishkin (2001), OECD, Rosengren (2013), Thomson Reuters Datastream.

(1) Pre-1999 data for Germany. The interest rate data from 1999 onwards correspond to the average of the five main euro area countries with an AAA rating as at 30 June 2013.

(2) Average over six months for June and December. Latest data: June 2013.

for “as long as necessary”. In July 2013, it also offered more explicit information on its future policy stance (see box 2). Other factors which probably lowered the five-year rates, and more specifically the term premiums which they incorporate, include the rise in demand for risk-free assets, as is also the case for the implied five-year forward rate five years ahead.

3.3 Implied five-year forward rate five years ahead

After having fallen in the 1990s in the wake of the downward revision of long-term inflation expectations, the expected equilibrium nominal rate continued to decline in the 2000s and during the crisis, in parallel with the downward revision of the long-term growth forecasts. Although expectations remained higher in the United States, the trend was largely similar for each of the economic blocs. Long-term inflation expectations remained moderate and stable overall from the year 2000 onwards, essentially reflecting the central banks’ price stability mandates and the associated credibility. The firm anchoring of inflation expectations was also a key factor enabling the central banks to influence real interest rates in order to

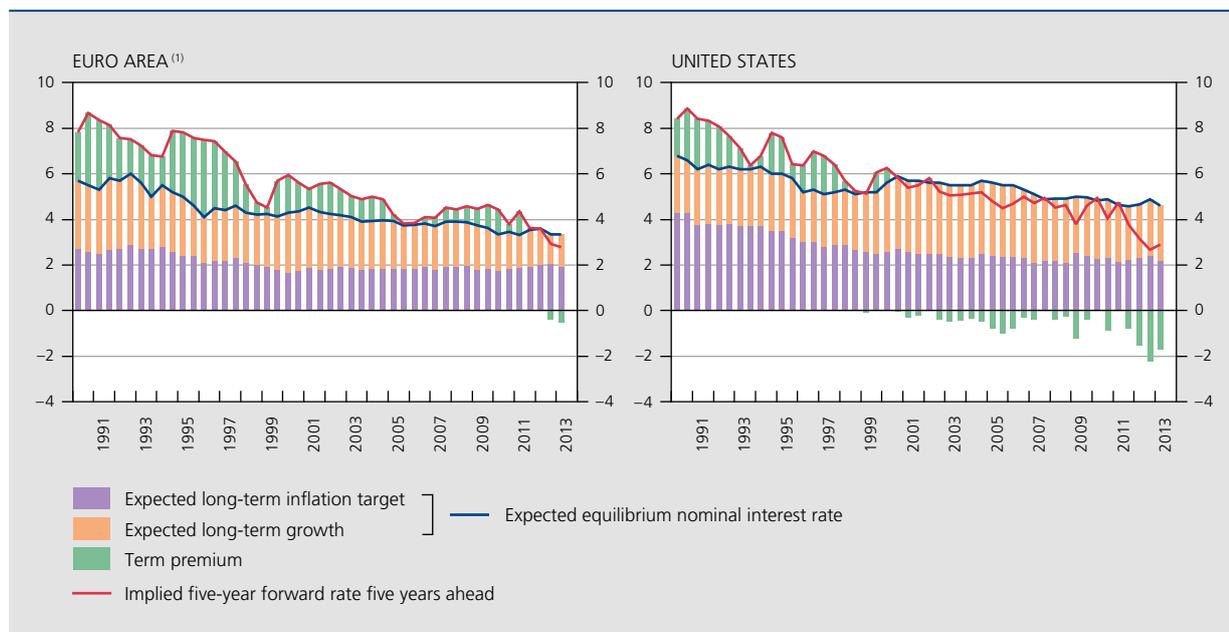
stimulate economic activity and attenuate the deflationary pressure at the height of the crisis.

The term premium included in the implied five-year forward rate five years ahead, which we estimate here on the basis of the residual resulting from the difference between the actual nominal rate and the equilibrium nominal rate⁽¹⁾, followed a definite downward trend during the 1990s, dragging the nominal rate down with it. In contrast, during the pre-crisis period the implied five-year forward rate five years ahead remained relatively stable, close to the expected equilibrium nominal rate. However, it is worth noting that around the year 2005 the gap between these two rates was negative in the United States; in other words, the term premium was negative. The decline in the long-term rate despite a rise in the short-term rate over the preceding months had prompted the former Chairman of the Federal Reserve, Alan Greenspan, to talk about a “conundrum”⁽²⁾. In the euro area too, the long-term rate was particularly low during that period.

(1) We adopt an intuitive, yet robust, method of estimating term premiums. Macroeconomic models can be used to infer these premiums, but they are generally complicated to handle, especially when interest rates are close to their zero lower bound, implying non-linearities (see Christensen and Rudebusch, 2013, or Kim and Singleton, 2012).

(2) Greenspan (2005).

CHART 5 IMPLIED FIVE-YEAR FORWARD RATE FIVE YEARS AHEAD



Sources: Thomson Reuters Datastream, Consensus Economics.

(1) Pre-1999 data for Germany. The interest rate data from 1999 onwards correspond to the average for the five main euro area countries with an AAA rating as at 30 June 2013. Between 1999 and 2003, expectations concerning the long-term inflation target and long-term growth correspond to the GDP-weighted average for France, Germany, Italy, the Netherlands and Spain.

(2) Six-month average for April and October. Latest data: April 2013.

Unlike the five-year rate, the implied five-year forward rate five years ahead varied little in the beginning of the crisis, and did not really start to fall until around mid-2011, in the wake of clear concern about the revival of activity worldwide. Since then, it has fallen sharply, dropping to a historic low in both the United States and the euro area during the recent period. Despite a lowering of long-term growth expectations, most of the decline in the implied five-year forward rate five years ahead since 2011 reflects a reduction in the term premium, particularly marked in the United States.

3.4 Factors behind the decline in term premiums

The factors influencing the term premiums incorporated in long-term rates are many and varied. To identify them more clearly, it is helpful to distinguish between more structural factors relating to trends which transcend the economic cycles, and more cyclical factors due essentially to the more recent context of the crisis.

Regarding structural factors, we might mention the aforesaid great moderation and the global savings glut. The great moderation refers to a period of great macroeconomic stability extending from the late 1980s to 2006, with declining inflation, positive and relatively stable economic growth, and the belief that economic cycles were more under control. It is generally attributed to structural changes in the economy, the adoption of better macroeconomic policies, and “good luck” in the form of less severe shocks. On the monetary policy front, the assignment to central banks of mandates geared to price stability, and the increased transparency and credibility of central banks, helped to stabilise inflation at a low level, to anchor inflation expectations and thus to reduce inflation premiums during the 1990s. In general, the increased macroeconomic stability attenuated the uncertainty over future movements in short-term interest rates, therefore reducing the term premiums. The global savings glut originated from the Asia crisis of 1997-1998, and to a lesser extent from the rise in oil prices (Bernanke, 2005). It is due to the persistent current account surpluses and the accumulation of large foreign exchange reserves in many emerging countries – particularly in Asia – and among oil exporters endeavouring, among other things, to reduce the risks associated with a possible capital flight, prevent any appreciation of their currency and invest their assets in a secure place. It is probably also connected with the changing age structure of the global population, with a rise in the population of working age in some of those countries, leading to a higher propensity to save. The accumulation of savings and foreign exchange reserves boosted global demand for risk-free assets, primarily

long-term government bonds issued by advanced economies and, more specifically, US Treasury securities. Population ageing in the advanced economies since the 2000s could likewise have boosted demand for savings, especially risk-free long-term assets. The strengthening of demand for risk-free assets naturally triggered a fall in the premiums incorporated in the yields.

As regards the cyclical factors behind the fall in term premiums, we might first mention certain unconventional monetary policy measures. The securities purchase programmes implemented by various central banks in order to exert direct downward pressure on long-term interest rates and further ease financing conditions in the economy played a very particular role here. These purchase programmes were adopted after short-term interest rates had dropped to their lower bound and it was therefore no longer possible to stimulate activity by using traditional monetary policy instruments. In this connection, it is worth noting the very sharp fall in term premiums in the United States compared to the euro area. That bears witness to the proactive approach of the Federal Reserve in purchasing long-term securities to drive down interest rates (see box 1), while the Eurosystem confined itself to purchasing securities in order to safeguard the transmission of its monetary policy. Its purchases under the Securities Markets Programme (SMP) were confined to the bonds of countries at the heart of the sovereign debt crisis, and bore no comparison with the quantitative easing programmes conducted by the world's other leading central banks. The programme of Outright Monetary Transactions (OMT), adopted by the Eurosystem in the summer of 2012 to replace the SMP but not so far activated, provides for the possibility of purchasing public debt securities on the secondary market, but again solely for the purpose of preserving the transmission of monetary policy in the euro area. The “forward guidance” offered by central banks on the future conduct of their monetary policy probably also affected term premiums by reducing the uncertainty over future interest rates and encouraging investors to invest at longer maturities⁽¹⁾. In addition, the non-standard monetary policy measures likely had some global repercussions as a result of arbitrage by investors seeking to maximise returns for a given amount of risk. The measures taken by the world's leading central banks therefore had an impact well beyond their own borders (IMF, 2013c).

Another factor which could explain the fall in term premiums is the greater risk aversion among certain investors in the context of the crisis. This led to a flight into safe havens such as US Treasury securities and the German

(1) See for example Hanson and Stein (2012), who identify an effect of the US monetary policy stance on the term premium.

Bund. The increased demand for these assets regarded as risk-free and highly liquid, in an environment where the supply was tending to contract following rating downgrades⁽¹⁾, naturally depressed interest rates. Finally, one last factor which may have influenced demand for risk-free assets and therefore compressed the premiums

incorporated in the rates is the stricter financial regulation, encouraging financial institutions to hold more high-quality securities (Turner, 2011).

(1) According to the IMF, the deterioration in the fiscal situation in advanced economies – by implying rating downgrades – could lead to a substantial fall in the supply of risk-free assets in future years (IMF, 2012).

Box 1 – The Federal Reserve’s large-scale securities purchase programmes since 2008

After the very short-term money market target rate had fallen to a low of between 0 and 0.25 % in the autumn of 2008, the Federal Reserve turned to “unconventional” monetary policy instruments to continue stimulating the economy. In particular, it issued “forward guidance” on its main policy rate, and embarked on a quantitative easing strategy which led it to purchase large quantities of debt securities issued by Government-Sponsored Enterprises (GSEs)⁽¹⁾, mortgage-backed securities (MBS) and US Federal State Treasury securities. In total, four securities purchase programmes were adopted. Here we describe their general features, the main transmission channels and discuss their effectiveness.

LSAP1, LSAP2, MEP and LSAP3⁽²⁾

The first programme, the Large-Scale Asset Purchase Program 1 (LSAP1), was announced on 25 November 2008. It initially foresaw purchases amounting to \$ 500 billion of MBS and \$ 100 billion of GSE debt. After having been extended in March 2009, the purchases ultimately totalled \$ 1 750 billion, including 300 billion in long-term Treasury securities. The decision by the Federal Reserve to purchase securities partly reflects the financing structure of the US economy, where the bond markets are of relatively great importance, and bank intermediation plays a more limited role. Although this first programme aimed to support the economy as a whole, the Federal Reserve’s decision to purchase MBS and GSE debt was due in particular to its desire to give priority to the mortgage loan market, severely affected by the collapse of US property prices between 2006 and 2008.

At the time of the second purchase programme (LSAP2), financial conditions had eased, but economic activity was sluggish and there were risks of deflation. After having announced in August 2010 that it was going to reinvest the principal repayments under the first programme in Treasury securities, the Federal Reserve officially launched its second purchase programme on 3 November 2010. This provided for purchases of \$ 600 billion of long-term Treasury securities in order to “promote a stronger pace of economic recovery and ensure that inflation is at levels consistent with its mandate”.

On 21 September 2011, the Federal Reserve announced that the principal repayments of MBS and GSE debt would in the future be reinvested in MBS and not in Treasury securities anymore. It also announced its intention to purchase Treasury securities with remaining maturities of more than six years for a total of \$ 400 billion and to finance these purchases by selling an equivalent amount of Treasury securities with a remaining maturity of less than three years. This programme aimed to flatten the yield curve by reducing long-term interest rates in comparison with short-term rates. In contrast to previous programmes, it did not imply any increase in the Federal Reserve balance sheet, but only an extension of its maturity. It was thus known as Operation Twist or Maturity Extension Program (MEP). On 20 June 2012, this programme was extended to the end of 2012 for an additional \$ 267 billion.

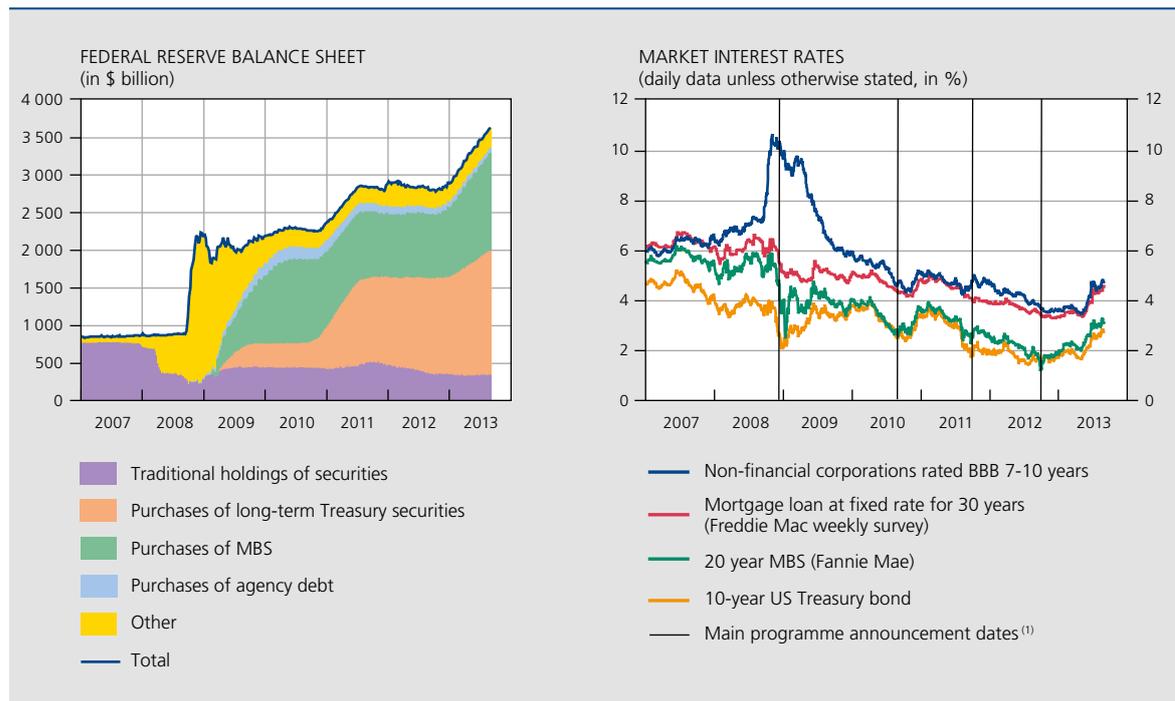
(1) Such as Freddie Mac or Fannie Mae.

(2) See for example Fawley and Neely (2013) for a more detailed description.



Finally, the fourth purchase programme was announced on 13 September 2012. In contrast to previous programmes, the Federal Reserve did not commit itself to a total amount. Instead it would purchase MBS at a pace of \$ 40 billion per month. It announced that if the situation on the labour market did not improve substantially in a context of price stability, it would continue and increase its purchases and make use of its other instruments for as long as necessary. On that basis, on 12 December 2012 it stated that, from January 2013, it would also purchase long-term Treasury securities each month for a total of \$ 45 billion, without sterilising those purchases through sales of short-term securities.

FEDERAL RESERVE BALANCE SHEET AND MARKET INTEREST RATES



Sources: Thomson Reuters Datastream, Federal Reserve Bank of Cleveland.

(1) 25 November 2008 for LSAP1, 10 August 2010 for LSAP2, 21 September 2011 for MEP and 13 September 2012 for LSAP3.

Transmission channels

Overall, the large-scale securities purchase programmes reflect the Federal Reserve's desire to stimulate the economy once the target rate had reached its lower bound, by exerting direct pressure on long-term interest rates. There are at least three transmission channels that may explain the effects of the purchases on those rates. The first is the portfolio balance channel, which is based on the "preferred habitat" theory whereby markets are subject to a degree of segmentation. By reducing the availability of long-term securities for private investors, the Federal Reserve thus lowers the interest rate risk present in the investors' portfolio, reducing the risk premium which investors demand for holding the targeted securities (Bauer, 2012). The specific demand for Treasury securities because of their risk-free, highly liquid status tends to reinforce the purchases' impact on the latter's yields, and some authors refer to a "demand for safety channel" in this connection (Krishnamurthy and Vissing-Jorgensen, 2011). More generally, the effects of the purchases are then transmitted to other interest rates in the economy via portfolio adjustments made by investors who have sold securities to the central bank. A second channel is the



signalling channel, whereby the central bank, in announcing its purchases of securities, informs agents of its desire to maintain its accommodative monetary policy, prompting them to expect policy rates to remain at their lower bound for a longer period (Bauer and Rudebusch, 2011). Insofar the central bank pays attention to the losses that it makes, the asset purchases reinforce its commitment to maintaining interest rates at a low level (Krishnamurthy and Vissing-Jorgensen, 2011). Finally, a third potential channel is the market functioning channel whereby, via its purchase programmes, the central bank makes investors understand that a major player is ready to support the market. By reducing investors' fears when financial conditions deteriorate, the purchases support not only the value of the targeted assets but, more generally, that of the other securities on the market, and therefore indirectly the financing conditions for the whole economy.

Effectiveness

The effects of securities purchase programmes on the yields of the securities acquired are not easy to assess. Moreover, it is even harder to judge their impact on the financing conditions of the economy as a whole and on the macroeconomic situation in general. Two separate approaches are commonly used to study the influence of securities purchase programmes on interest rates. The first is based on "events" and consists in studying the cumulative effect on interest rates of communications concerning purchase transactions. This method is not perfect in that it disregards, in particular, any effects occurring other than on the announcement days, while not adjusting for other information available on those dates. Nonetheless, it does offer a valid, initial approximation of the impact, and is commonly used in the literature (Bauer, 2012). The second approach is based on macroeconomic models using statistical methods which, though sophisticated, are limited by the lack of data owing to the exceptional nature of central bank securities purchase programmes. The available studies tend to suggest effects similar to those identified on the basis of event studies, although generally weaker.

Studies focusing on the impact of the programmes conducted by the Federal Reserve usually consider that the purchases have had a beneficial effect on financing costs. However, the programmes appear to produce diminishing returns to scale; in other words, the lower the level of interest rates, the more difficult it is to drive them down further. On the basis of an econometric analysis of the Treasury securities purchases under LSAP1, d'Amico and King (2010) showed, for example, that each purchase transaction generated, on average, a fall of around 3.5 basis points in the interest rate on the date of the purchases, and that the programme as a whole had led to a lasting fall in the yield curve of around 50 basis points. Gagnon, Raskin, Remache and Sack (2011) considered that LSAP1 had reduced the term premiums in the case of ten-year rates by between 30 and 100 basis points. They suggest that while the effects of the purchases were particularly evident on the mortgage loan market, they were widespread and extended to Treasury securities, private sector bonds and interest rate swaps. On the basis of the study by Gagnon *et al.* (2011), Krishnamurthy and Vissing-Jorgensen (2011) noted that LSAP1 and LSAP2 brought a considerable reduction in the nominal interest rates on Treasury securities, agency debt instruments, private sector bonds and MBS, though the scale of the reduction varies across securities, maturities and programmes. Bauer (2012) concluded that the key LSAP1 announcements had a cumulative effect on interest rates of around 100 basis points, and that applied to Treasury securities as well as private sector bonds or MBS. In the case of LSAP2, he identified a cumulative effect on the same securities of almost 15 basis points, and between 3 and 25 basis points for the MEP. In the case of the second and third programmes, leaving aside their smaller scale, factors accounting for their weaker impact include the improved market functioning in those periods (see market functioning channel) compared to LSAP1, and the impact of forward guidance in the lowering of interest rates. There are very few studies concerning LSAP3 because of the recentness of the programme which is still running today.

Paradoxically, another indication of the ability of asset purchase programmes to influence interest rates comes from the financial market volatility and the rise in interest rates which, in the spring of 2013, were triggered by statements by members of the FOMC regarding the future of LSAP3 and, in particular, the possibility of starting to slow the pace of purchases in the near future. In the face of the rising interest rates, Federal Reserve Chairman,



Ben Bernanke, gave reassurance in July, stressing that the programme would continue to depend on economic and financial developments (see for example Bernanke, 2013b). Apart from the impact of such programmes, these events illustrate the challenges – particularly concerning communication – entailed in terminating them.

Regarding the general macroeconomic situation, research in general finds that the purchase programmes limited the scale of the recession caused by the financial crisis. For instance, Chung *et al.* (2011) conclude that the additional stimulus from the purchases of securities curbed the deterioration in the labour market and probably prevented the economy from sinking into a deflationary situation, while Baumeister and Benati (2013) also argue that the reduction in long-term interest rates provided significant support for growth and averted the threat of deflation.

3.5 Summary of the determinants of the current low level of interest rates

To sum up, the current low level of interest rates is due to a range of varying factors. First, the equilibrium interest rate has displayed a downward trend since the early 2000s, and that trend was accentuated slightly during the crisis. This largely reflects the slackening pace of potential growth and the downward revision of long-term growth expectations, while inflation expectations have remained fairly stable overall, after having declined during the 1990s. The reduction in the real component of interest rates is largely unconnected with monetary policy. Next, the conduct of monetary policy does play some role. While the increased transparency and credibility of central banks since the second half of the 1990s has brought a reduction in the inflation component of the term premium, the crisis conditions and very sluggish economic activity caused central banks to adopt a particularly accommodative monetary policy stance. Expectations concerning short-term rates are also affected by the forward guidance of central banks, which likewise tends to lower term premiums. Moreover, the latter are reduced by securities purchase programmes, the effects of which extend beyond national borders. Finally, leaving aside monetary policy, some other factors such as the global savings glut, increased risk aversion in the context of the crisis, and financial regulation boosted demand for risk-free assets, while supply was subject to a downward trend, leading to a fall in interest rates.

4. Low interest rates and macroeconomic and financial stability

As stated above, central banks throughout the world have been pursuing a highly accommodative monetary policy

for more than five years now, with extremely low real interest rates. Although this policy has prevented an even sharper downturn in economic activity, there is a danger that the low interest rates may also have an adverse effect on financial stability and hence, in the longer term, on macroeconomic stability. The authorities could then face a trade-off⁽¹⁾, given the complicated economic implications of low interest rates in the context of a recession accompanied by a reduction in excessive debt levels.

The low level of short-term interest rates first leads to a fall in financing costs for credit institutions. As the gap widens between the cost of raising finance and the return on their assets – generally longer term –, their interest or intermediation margin increases. An improvement ensues in the financial health of credit institutions, so that they can grant new loans more easily. They will also pass on part of the reduction in financing costs to their customers. Households and firms can thus obtain funding more readily, and that will stimulate economic activity. This is an important transmission channel whereby short-term interest rates influence macroeconomic and financial stability.

A low interest rate environment also makes it easier for households and firms to reduce their accumulated debts. The progressive deleveraging of the non-financial sectors is crucial to the deleveraging of the financial sector, as well as being vital for lasting financial stability. The very modest level of interest rates should reduce the number of households and firms struggling to make repayments, thus increasing the profitability of credit institutions and enabling them to strengthen their capital. That situation in turn benefits macroeconomic stability, as credit institutions play a key role in financing households and firms.

(1) For a detailed discussion of the way in which unwelcome effects of an accommodative monetary policy may create a trade-off, see White (2012).

CHART 6

CONSEQUENCES OF LOW INTEREST RATES (OVER A PROTRACTED PERIOD)

	Macroeconomic sphere	Financial sphere
Advantages	<ul style="list-style-type: none"> • Lower financing costs for firms and households • Gradual deleveraging by firms and households • Stabilisation of economic activity and safeguarding of price stability; avoidance of debt deflation 	<ul style="list-style-type: none"> • Lower financing costs for financial institutions • Gradual deleveraging by financial institutions • Fewer defaulting loans
Potential disadvantages and risks	<ul style="list-style-type: none"> • Evergreening or zombie lending, undermining of long-term potential growth • Destabilisation of inflation expectations resulting in rising interest rates 	<ul style="list-style-type: none"> • Postponement of balance sheet repair (moral hazard) • Search for yield • Exposure to interest rate risk

One can therefore have the impression that, by this process, the low level of interest rates leads to a redistribution between savers and borrowers. However, it must be borne in mind that if the interest rates were higher, there would be a considerably larger number of defaulting loans. In addition, more borrowers would be forced to liquidate their assets, leading to fire sales and further reductions in the value of assets which may have been used as collateral. In the end, in a context of higher interest rates, there is always the possibility that savers might incur even heavier losses.

In revitalising economic activity, an accommodative monetary policy also helps to prevent a deflation scenario which would imply a decline in the general level of prices. Since debt is generally expressed in nominal terms, deflation increases the outstanding debt in real terms. It then becomes harder for borrowers to reduce their debt, leading to further adverse influence on economic activity and inflation, a phenomenon known as debt deflation (Fisher, 1933). Naturally, this is also detrimental to financial stability. The experience of the Great Depression of the 1930s and the Japanese crisis of the 1990s shows how difficult it is to reduce debt levels when the economy slows down in nominal terms. Overall, it must therefore be said that the positive macroeconomic and financial consequences of moderate interest rates are mutually reinforcing. Stimulating economic activity strengthens financial stability, which in turn encourages the revival of economic activity.

That said, a low interest rate environment still has its drawbacks or potential risks. At macroeconomic level, one of the major hazards of the low level of interest rates is that it ultimately hampers productivity growth. Persistently low interest rates enable credit institutions in a fragile capital position to renew their loans to insolvent firms at

a minimal debit rate; this is known as zombie lending or evergreening. Weak credit institutions can thus prevent a firm's bankruptcy from leading to the recognition of losses on the loans granted, which would hit their own capital. They therefore continue to fund unproductive projects by insolvent firms instead of financing new productive projects by solvent firms, thereby undermining productivity growth. This situation is all the more likely in a context of nominal policy rates close to zero, where banks can obtain abundant liquidity from the central bank. There are serious indications (Peek and Rosengren, 2005; Caballero *et al.*, 2008) that this type of perverse mechanism was a factor in the Lost Decade in Japan, which refers to the stagnation of Japanese productivity growth in the 1990s. Anaemic economic growth ultimately also damages the profitability of the financial sector, which in turn further harms financial stability.

An environment in which potential growth has to be regularly revised downwards also generates a risk that monetary policy may fail to recognise in time that the economy has been stimulated beyond its potential. In real time it is very hard to distinguish between a decrease in potential growth and a cyclical growth slowdown. Consequently, if it is wrongly assumed that the decline in growth is due mainly to cyclical factors, monetary policy may cut interest rates too far, thus jeopardising price stability. Such a scenario occurred in the 1970s, leading to spiralling inflation and soaring interest rates (Orphanides, 2002). Even if low interest rates contribute to a gradual reduction in debt, there is still the risk that governments, motivated by low rates, may pay insufficient attention to debt reduction. Rightly or wrongly, one could expect that governments might ultimately put pressure on the central bank to solve the public debt problem by cutting interest rates and fuelling inflation (Leeper, 1991; Sims,

1994). That is what happened in the United States after the Second World War. In the end, the mere expectation of such a scenario can trigger volatile, runaway inflation, damaging macroeconomic and financial stability.

While low interest rates reduce the incentives for governments to implement policies of fiscal consolidation, they may also discourage financial institutions from reducing their debts and consolidating their balance sheets. It is even possible that the low level of interest rates may tempt financial institutions to take excessive financial risks: this is called “search for yield” (Rajan, 2005). Financial institutions may in fact try to boost their profits in the short term or simply try to fulfil their previous commitments on yields to customers. In this way, search for yield may cause even bigger problems for financial and macroeconomic stability.

It is also necessary to ensure that persistently low interest rates do not cause financial institutions to underestimate upward interest rate risk. Interest rates are likely to start rising abruptly if, for example, economic activity suddenly improves and thus fuels inflation sooner than expected. That type of scenario is probably fairly harmless for financial stability, in that the revival of economic activity has a beneficial effect on the health of financial institutions. But inflation may also shoot up without any expansion in economic activity, for example in the event of a supply shock or on account of concerns over the central bank’s credibility. The risk premiums included in long-term interest rates – premiums which are probably negative at present, as illustrated above – may also suddenly increase.

It is therefore necessary to weigh up the advantages and disadvantages – and the potential risks – of an accommodative monetary policy and a low interest rate environment in both the macroeconomic and the financial sphere. However, it should also be pointed out that maintaining interest rates low today creates the best conditions for an increase in rates tomorrow. For instance, Bernanke (2013a), among others, argues that lowering interest rates today is precisely what enables the economy to recover and ensures that interest rates can subsequently revert to the equilibrium rate. That in fact prevents deflationary pressure and its corollary: low interest rates. Moreover, it is only the cyclical element of the decline in interest rates that can be attributed to the accommodative monetary policy stance. In the end, part of the fall in risk-free interest rates is due to less favourable prospects for potential growth, over which monetary policy has no control (Apel and Claussen, 2012). It is difficult or even impossible for a tightening of monetary policy to compensate for this fall in the equilibrium rate – which is exogenous to it – without creating excessive risks for macroeconomic stability.

However, the effectiveness of the accommodative monetary policy also depends largely on the willingness of other agents to reduce their excess debt and help to ensure that the low interest rates do not lead to excessive risk-taking. The main aim of monetary policy in depressing interest rates is to gain time to allow the adjustments to take place gradually. If both the financial and the non-financial sectors fail to take advantage of this breathing space to effect the necessary deleveraging, the disadvantages of an accommodative monetary policy will most likely outweigh the benefits. An appropriate fiscal and prudential policy geared to gradual debt reduction and the prevention of excessive new financial risks is therefore crucial. In addition, appropriate structural policies can help to boost the long-term growth potential, ultimately allowing the part of risk-free interest rates that monetary policy cannot control, to begin rising again.

In the next section, we take a closer look at two specific risks which may arise in an environment where nominal risk-free interest rates are very low. We highlight the challenges that minimum guaranteed returns present for insurers and pension funds, and we try to identify the risks of a sudden, early rise in interest rates.

5. Two specific risks relating to low interest rates

5.1 Persistently low interest rates facing insurers and pension funds

In an economy, a decline in interest rates has a very different impact on savers as opposed to borrowers. While borrowers benefit from a reduction in their repayment costs, for savers the fall in interest rates means a reduction in their (future) interest income, which depends on the maturity of their assets. This is particularly evident in the challenges that life insurance companies and pension funds have to address, especially when they have promised their customers a minimum guaranteed return (Antolin *et al.*, 2011).

In economic terms⁽¹⁾, a fall in interest rates means an increase in the value of both the liabilities and the assets of life insurers and pension funds (Bank of England, 2012). If the return is guaranteed, the value of the liabilities – typically very long-term for these institutions – increases

(1) In accounting terms, this does not necessarily affect the valuation of certain balance sheet items for life insurers and pension funds. For example, under Solvency I, the effect of an interest rate decline on the present value of the liabilities is disregarded for the purpose of calculating the solvency margin. Solvency II is meant to rectify this defect (see also NBB, 2013).

with the decline in the discount rate used to discount the future liabilities. A steep fall in interest rates causes a surge in the current value of future liabilities, especially if they cannot fall below a pre-determined minimum. At the same time, the current value – and hence the price – of the assets which the institutions hold increases. This applies both to fixed-income assets such as bonds, and to shares. Moreover, the value of the latter increases also due to the prospect of an increase in future dividends, fuelled by the favourable impact of moderate interest rates on economic activity. Consequently, low interest rates do not necessarily pose a threat to the financial stability of life insurers and pension funds, at least so long as the average maturity of the assets matches that of the liabilities.

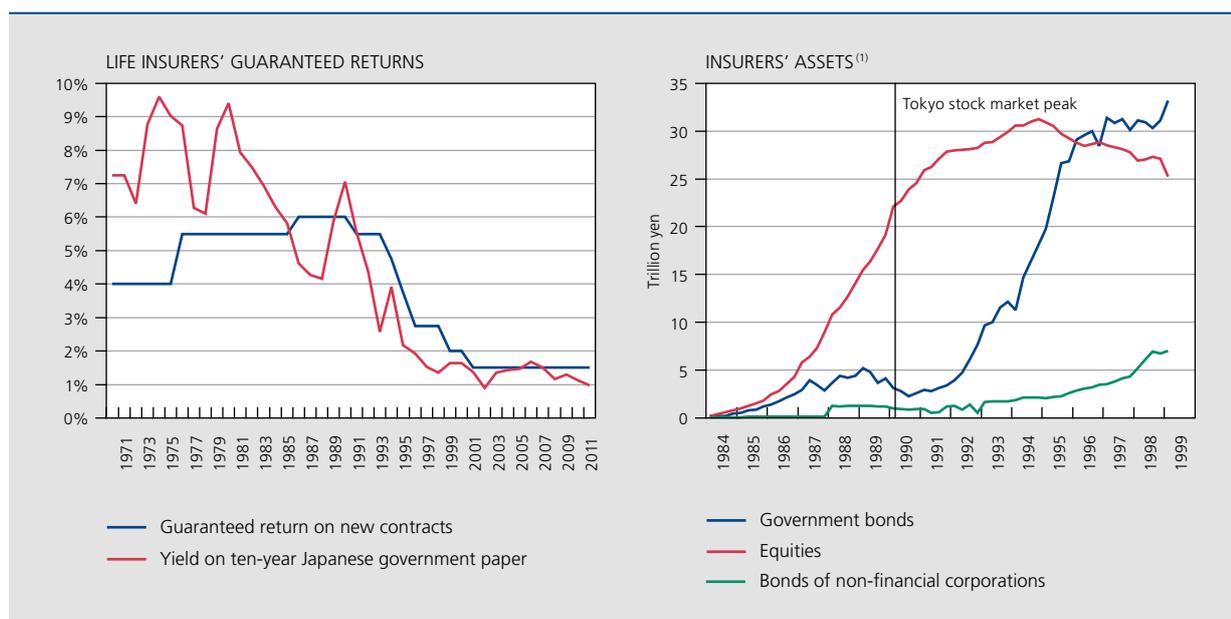
In practice, however, it seems that these institutions generally invest in assets with a shorter maturity than their liabilities, particularly as financial markets do not necessarily offer sufficient long-term assets. If the assets are all invested in fixed-income securities, and if interest rates fall, an institution with a shorter maturity on the asset side will see the value of its liabilities exceed the value of its assets. In other words, if low interest rates persist, when its debt instruments reach maturity the institution will be forced to reinvest the funds at a lower interest rate (NBB (2013) illustrates the scale of this phenomenon in Belgium). This stronger increase in the liabilities inevitably erodes the institution's capital. If the guaranteed returns

are to be respected, that is likely to impair solvency and financial stability. Of course, this simplified presentation is incomplete since it disregards numerous complexities inherent in this sector. For instance, insurers and pension funds may also cover their interest rate risk by using derivatives; in addition, adjustments to the product range – such as a reduction in the supply of guaranteed return products – may likewise help them to mitigate the impact of a decline in interest rates.

In the face of falling risk-free interest rates and relatively high guaranteed returns, life insurers and pension funds may turn to assets offering higher returns. For instance, they might invest in riskier instruments (BIS, 2011). The experience of Japanese life insurers in the 1990s shows that there is a real temptation for them to respond to the fall in risk-free interest rates by embarking on a search for yield. Before the Tokyo stock market bubble burst, Japanese life insurers granted their policy-holders fairly high guaranteed returns, despite the decline in long-term interest rates on government bonds, compared to the early 1980s.

During the expansion period of the late 1980s, life insurers in Japan naturally bought mainly equities, which yielded high returns for them so long as the stock market was rising. After the stock market bubble had burst, they changed their investment strategy and began investing

CHART 7 JAPANESE INSURERS IN THE 1990s



Sources : Bank of Japan, Federal Reserve Bank of Saint-Louis, Swiss Re.
 (1) Cumulated transactions on a quarterly basis.

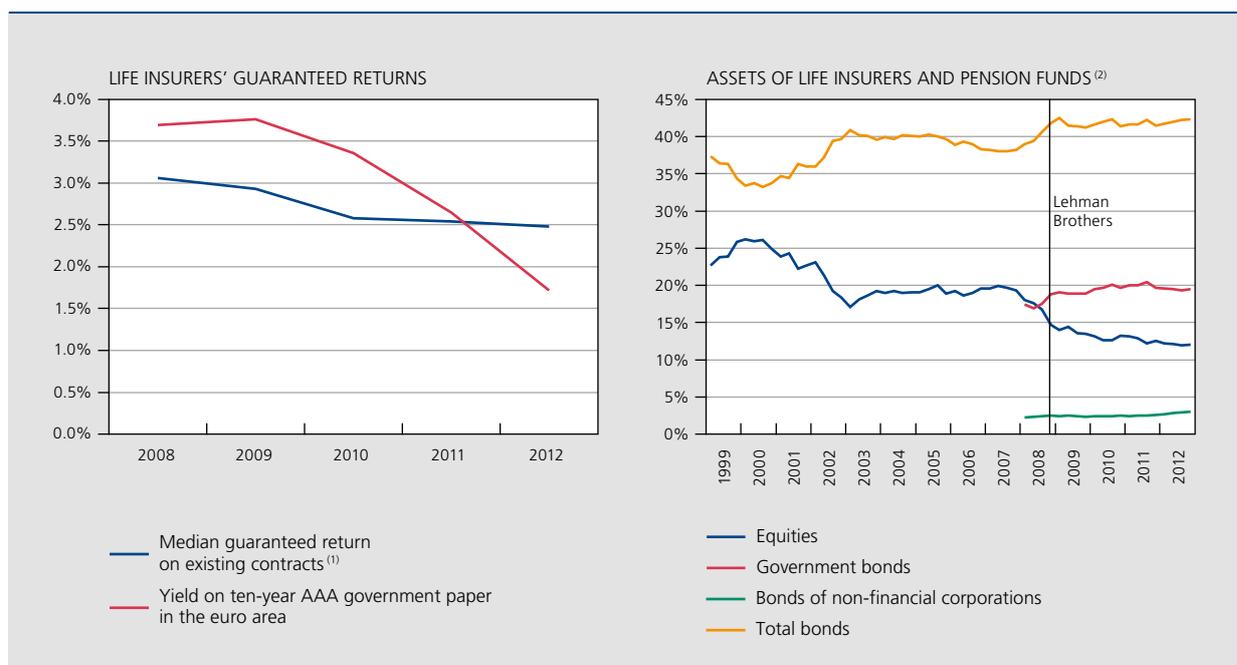
increasingly in Japanese government bonds, viewed as secure assets. However, that strategy ultimately proved untenable. Owing to the persistent slowdown in growth and the accommodative monetary policy, interest rates on longer-term government bonds dropped below the level of the guaranteed returns on new contracts. Those returns were only very gradually revised downwards. In addition, the law limited the scope for reducing the guaranteed returns on existing contracts (BIS, 2011).

Chart 7 shows that, as risk-free interest rates declined, life insurers in Japan began investing to a limited but increasing extent in corporate bonds which generally offered a higher yield but entailed greater risks, whereas they had previously shunned that asset class. But this type of strategy is not necessarily conducive to financial stability. Asset classes offering higher returns but entailing also higher credit risk can cause serious losses in the event of default, thus endangering the financial stability of life insurers. Untenable guaranteed returns and inadequate asset/liability management were the main reasons why a whole series of Japanese life insurers were driven into insolvency in the late 1990s and the early 2000s (BIS, 2011).

The question is therefore to what extent similar risks exist today in other advanced economies where interest rates

have likewise fallen sharply in recent years. In Europe, despite a decline since 2008, the median guaranteed return on current life insurance contracts in a number of European countries (including Switzerland) has recently slightly exceeded the risk-free interest rate. In regard to the investment strategy adopted by this sector in the euro area lately, a number of parallels can be drawn with the situation in Japan in the 1990s. As on the Japanese market, the value of equity investments plummeted, in this case following the collapse of Lehman Brothers, and more assets are being invested in bonds offering a fixed return. Since the end of 2008, there has been a constant rise in the share of both government bonds and bonds of non-financial corporations. As in Japan, the proportion of typically riskier bonds of non-financial corporations in the investment portfolio of insurers and pension funds has meanwhile edged upwards. Although non-financial corporate bonds still represent only a modest proportion of the portfolio, their share has increased since early 2011 with the decline in risk-free interest rates. It should also be noted that the indirect exposure to the various investment products through investment funds, which likewise represent a large proportion of the assets of insurers and pension funds, is not taken into account here. It is estimated that the indirect exposure to bonds via these instruments amounts to some 11 % of the total assets (ECB, 2010).

CHART 8 LIFE INSURERS AND PENSION FUNDS IN EUROPE



Sources: ECB, EIOPA.

(1) Data relating to a sample of insurers in the EU and Switzerland.

(2) In % of total assets. The contributions represented are also influenced by valuation effects and not only by financial transactions.

Generally speaking, on the basis of the financial accounts it is not always easy to state the degree to which the low interest rate environment presents challenges for life insurers and pension funds. That said, other information is available which suggests that a search for yield is observable in this sector. For example, the IMF (2013b) considers that the risk tolerance of American pension funds and insurers is increasing while their financial soundness is declining. Antolin *et al.* (2011) state that pension funds are investing an ever larger percentage of their assets in emerging economies, hedge funds and private equity. The current level of risk-free interest rates therefore presents challenges for life insurers and pension funds which could prompt them to turn to riskier investments in order to secure higher returns. However, since that strategy is not without risks for financial stability in the short and medium term, it has prompted the supervisory authorities to be vigilant and to call on the sector to be prudent (EIOPA, 2013; NBB, 2013).

5.2 A sudden surge in interest rates

While financial and macroeconomic stability can be threatened by persistently low interest rates, it is equally vulnerable to a situation in which interest rates suddenly rise. It is therefore useful to consider the impact of a steep rise in interest rates on financial institutions. We then focus on a historical episode of soaring interest rates, namely the surge in bond yields in many advanced economies following the tightening of US monetary policy at the beginning of 1994, and the lessons from that episode that can improve our understanding of the current situation.

On the asset side of the balance sheet, an increase in interest rates boosts the interest income on new loans. Conversely, it reduces the value of fixed-income assets, the effect being greater the longer their maturity. Admittedly, this loss of value is only realised if the assets are sold at the reduced price. So long as the assets are held to maturity, no losses will be recorded. On the liability side of the balance sheet, the main effect of higher interest rates is to increase the cost of funding. Of course, that effect becomes apparent all the sooner if financing is raised at variable interest rates or in the shorter term.

The total impact of a rapid rise in interest rates on a financial institution is due to the combination of several factors. One of the key factors is the relative maturity of the assets compared to the liabilities. In contrast to the life insurers and pension funds mentioned above, banks generally have liabilities with a shorter maturity than their assets. Therefore, if interest rates rise, the discounted value of the assets – at least if they are marked-to-market – will

fall more sharply than the value of the liabilities, thus threatening profitability. Moreover, the impact of an interest rate rise also depends on the relative increase in short-term rates as opposed to long-term rates. Since banks engage in maturity transformation, their profits will be smaller the more short-term rates outpace the rise in long-term rates.

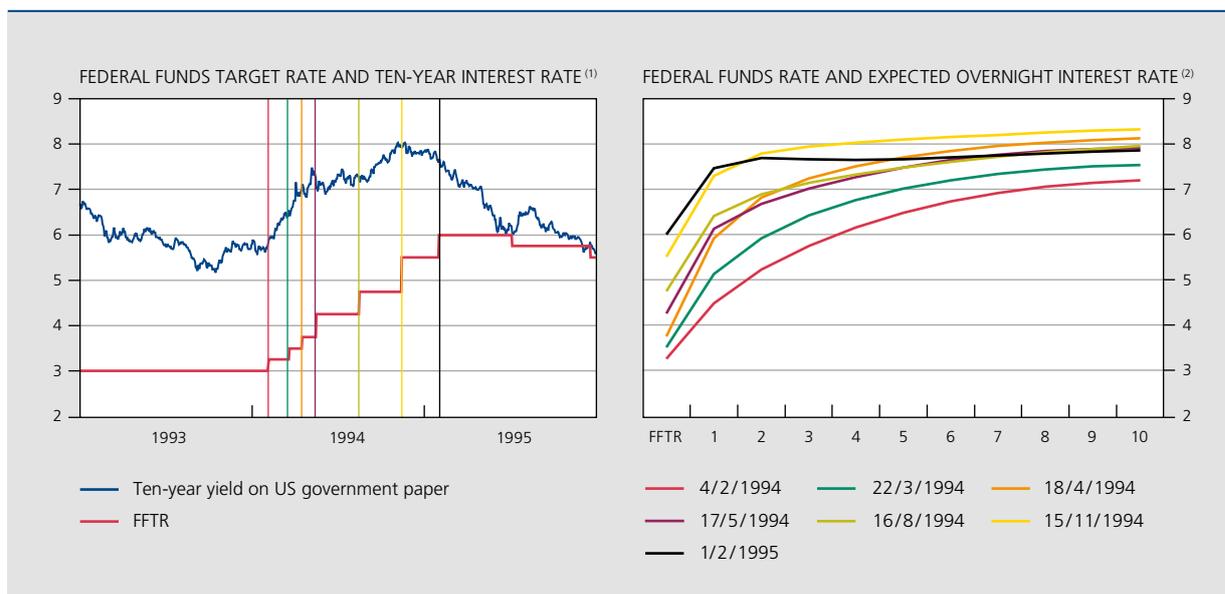
Furthermore, in regard to the ultimate effect of higher interest rates on the profitability of financial institutions, it is probably also the reason behind the interest rate rise that matters. In the case of a tightening of monetary policy motivated by an increase in aggregate demand, that will not necessarily dent the banks' profitability, as strengthening demand will enable the banks to grant more new loans, and the adverse effect of the higher interest rates on the repayment burden of borrowers will not necessarily drive up the percentage of defaulting loans (IMF, 2013b). In fact, borrowers' income will rise in parallel with the expansion in economic activity. In the opposite case, a rise in interest rates caused by a negative supply shock that increases inflation and inflation expectations but restrains economic activity is indeed likely to depress the banks' profitability, as the slowdown in economic activity will discourage new lending and heighten the risk of default on existing loans.

The bond market turbulence in 1994 and monetary policy

Against the backdrop of bond market volatility in the first half of 2013, the question is to what extent there is now a risk of a steep rise in interest rates. The current situation often evokes memories of the episode of soaring interest rates in the United States in 1994 following the sharp tightening of US monetary policy. The rise in risk-free US interest rates then rapidly spread to other advanced economies as well, causing a worldwide bond market sell-off. It is therefore worth comparing the current monetary policy and the current macroeconomic context with the events of 1994.

Between February 1994 and February 1995, the Federal Open Market Committee (FOMC), the Federal Reserve's decision-making body for monetary policy, increased the policy rate from 3 to 6%. At the same time, the interest rate on ten-year US government bonds increased from around 5.7 to over 8% in the autumn of 1994. It then subsided to 6% in the autumn of 1995. Chart 9 shows, for each day of interest rate increases over the period considered, the policy rate in force at the time and the expected level of risk-free interest rates for an infinitely brief period during the ensuing ten years as derived from the yields on US government bonds. That reveals the

CHART 9 INTEREST RATE SURGE IN THE UNITED STATES IN 1994



Sources: Thomson Reuters Datastream, Gürkaynak and al. (2006).

(1) The chart shows the Federal Funds Target Rate (FFTR). The vertical lines indicate the dates for which a forward curve is represented in the right-hand chart.

(2) For each date mentioned, the chart shows the FFTR in force on that date and the implied overnight interest rate, derived from the yield curve relating to US government debt, from one to ten years after the date mentioned.

expected path of overnight interest rates for the ten years ahead (Gürkaynak *et al.*, 2006). It is evident that the successive increases in the policy rate by the FOMC caused financial markets to revise upwards the expected path of interest rates more or less in parallel, resulting in a higher ten-year interest rate. At the end of the upward interest rate cycle, long-term interest rates declined following the downward revision of the interest rate path. Leaving aside the rapid rise in long-term interest rates, this tightening episode had relatively little impact on financial markets, as share prices initially dipped before climbing back from the summer of 1994, while both unemployment and inflation continued to fall (Goldman Sachs, 2013).

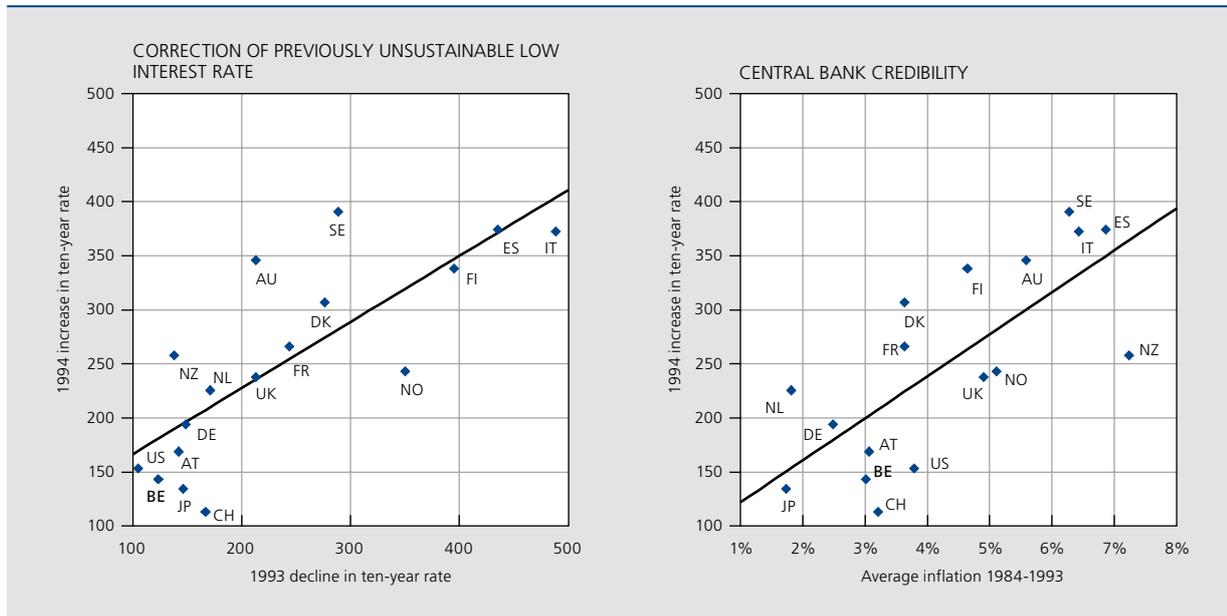
To gain a better understanding of the aggressive interest rate hikes by the FOMC, it is useful to analyse the economic background to this episode. From September 1992 the policy rate had stood at 3%, which was quite low for the time, whereas long-term interest rates were tending to fall, having dropped from around 8.5% at the end of the 1980s to 5.5% in 1993. In the context of an economic recovery, the FOMC thus feared that inflation expectations might be driven higher – following the disinflation policy of the 1980s – and that prompted it to increase interest rates (Goodfriend, 2010). The strong rise in long-term interest rates during the upward cycle was therefore interpreted by some FOMC members as a consequence of increasing inflation expectations, requiring a

further increase in interest rates. That is why this episode is sometimes described as an inflation scare. Moreover, the minutes of the FOMC meetings mention that by means of aggressive, unexpected interest rate hikes the FOMC members intended to curb the sharp fall in interest rates recorded in preceding years. They considered that this fall in interest rates had been caused in particular by speculative investments. The element of surprise accompanying the interest rate hikes and the rise in long-term interest rates was therefore actually desirable. The FOMC members were not wrong: many investors financed by short-term debt were active on the Treasuries market. They were forced to unwind their positions rapidly, thus driving down prices and giving a strong impetus to long-term interest rates (Turner, 2013).

The volatility of the US market also increased the volatility on markets in government securities of other advanced economies (Borio and McCauley, 1995; BIS, 1995). The rise in long-term interest rates in a number of countries is largely attributable to a correction of the 1993 decline in interest rates and to the degree of credibility which monetary policy had established. The 1994 increase in interest rates was all the more significant where the decline in rates had been substantial in 1993. There are in fact indications that the bond markets of certain countries were overvalued at the end of 1993 (BIS, 1995). It also appears that, in countries which had performed better up

CHART 10 EXPLANATIONS FOR THE GLOBAL RISE IN LONG-TERM INTEREST RATES IN 1994

(basis points, unless otherwise stated)



Source : Thomson Reuters Datastream.

to then in terms of price stability, the increase in long-term interest rates had been far less marked. That indicates that the monetary policy of those countries was more credible, and that long-term inflation expectations were more firmly anchored there, so that they were better able to avoid fears of inflation.

In recent months, risk-free long-term interest rates have bounced back to a significant degree in some countries, in the wake of the improvement in the macroeconomic outlook, especially in the US, and the announcement by certain Federal Reserve officials of plans to slow the pace of purchases of US government securities. However, when this article went to press, the increases were still small compared to those of 1994. Could a 1994-type scenario happen today? The first point is that the advanced economies are currently seeing very moderate inflation and are operating at below capacity, which makes any sudden, severe tightening of monetary policy in the near future rather unlikely. In addition, in regard to long-term interest rates there are substantial differences between the way in which monetary policy was conducted in the United States in 1994 and the current *modus operandi* of central banks in advanced economies.

In regard to the shorter term segment of the yield curve, i.e. according to the terminology of the first section of this article, a horizon of around five years, central banks have

made fundamental changes to their communication strategy in recent decades. A point worth noting here is that it was after the February 1994 meeting that the FOMC for the first time commented on its decision. Previously, financial markets had to infer the monetary policy stance from the central bank's open market operations. Today, central banks use a wide range of information channels (press releases, minutes of meetings, etc.) which help financial markets to understand the central bank's intentions. Moreover, not only does the central bank comment on the current monetary policy stance, it also offers a more or less explicit indication of its future stance. Some central banks (such as the Swedish central bank and the Bank of Norway) have for some time now opted to publish their interest rate projections. Others, such as the Federal Reserve and more recently the ECB and the Bank of England, have preferred to state – without giving an exact interest rate path – that they expect the policy rate to remain at a rather low level for a protracted period. With its policy of forward guidance based on macroeconomic indicators (unemployment and inflation expectations), the FOMC now explicitly exerts pressure on the short-term segment of the yield curve. That is in stark contrast to the almost total absence of any communication on the monetary policy stance in the mid-1990s. Box 2 explains in more detail the context of the ECB's forward guidance policy, which has in particular helped it to limit the impact of the rise in US interest rates on its own monetary policy stance.

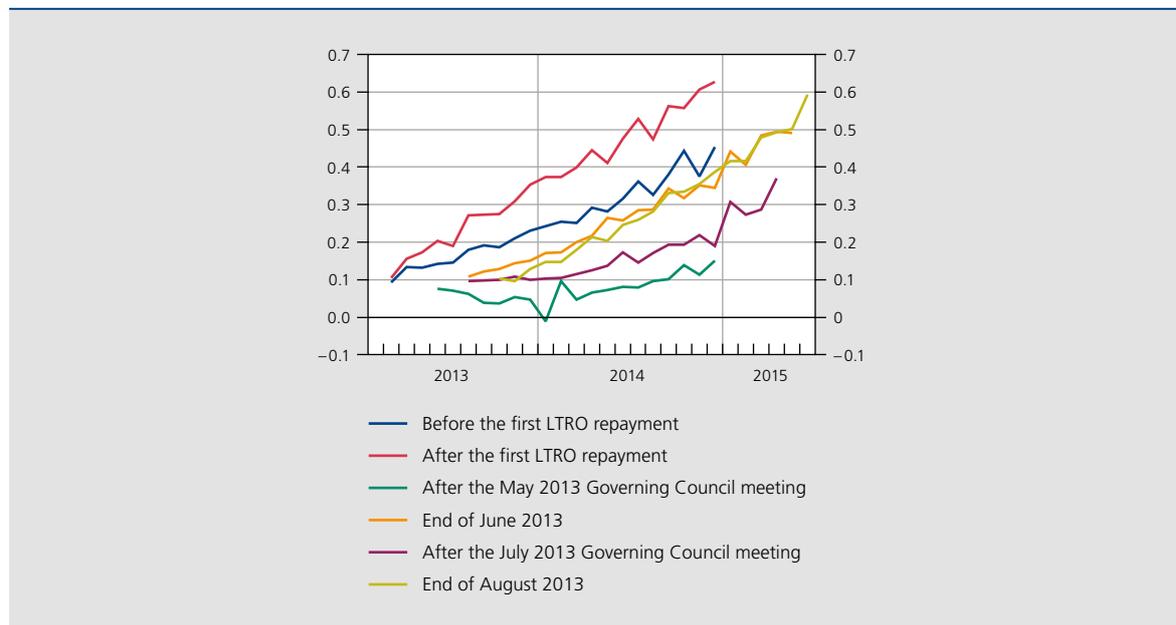
Box 2 – Forward guidance and the ECB

The financial crisis prompted central banks worldwide to adopt an extremely accommodative monetary policy. For that purpose, they did not only resort to the conventional instrument of cutting key interest rates, but also implemented a range of unconventional measures, such as forward guidance. Before the financial crisis, some central banks had already been making more or less specific announcements about their intentions concerning the future path of key interest rates, but during the crisis some of them decided to issue forward guidance in order to influence interest rate expectations. This applied, for instance, to the Federal Reserve and, from August 2013, the Bank of England.

Since July 2013, the ECB has also opted for more explicit announcements of its intentions regarding interest rates. Since the start of EMU, the ECB President has held a press conference at the end of each Governing Council meeting. For some time now the Eurosystem has also been publishing the quarterly macroeconomic projections produced by its staff. That allows observers to form an idea of the ECB's future course of monetary policy on the basis of the economic outlook. However, after the Governing Council meeting at the beginning of July 2013, President Draghi explicitly announced for the first time that the Governing Council expected the ECB's key interest rates to remain at their present, or lower, levels for an extended period of time. That expectation was based on the overall subdued inflation outlook, extending into the medium term, given the broad-based weakness in the real economy and subdued monetary dynamics.

EXPECTATIONS REGARDING THE PATH OF OVERNIGHT INTEREST RATES

(forward Eonia swaps, three-day average)



Source: Bloomberg.

While it had never previously been so explicit, the communication of future monetary policy is nevertheless not entirely new for the ECB Governing Council. At the end of January 2013, the first – larger than expected – repayments under the three-year long-term refinancing operations drove up the expected path of the Eonia



overnight rate, as the expectation was that a new wave of substantial repayments would reduce the still very considerable liquidity surplus and thus drive overnight rates higher. At the beginning of February, President Draghi therefore stated that an increase in the overnight rates was not necessarily in line with the ECB's policy geared towards price stability. That amounted to saying that money market conditions and their impact on the monetary policy stance would be closely monitored, and that this policy was likely to remain accommodative. That message was to be reiterated in the ensuing months.

In May 2013, the ECB Governing Council considered that, in view of the economic outlook, it was appropriate to ease monetary policy further. The Governing Council therefore cut the rate on the main refinancing operations by 25 basis points to 0.5 %, and reduced the rate on the marginal lending facility by 50 basis points to 1 %, the deposit facility rate being left unchanged at 0 %. However, in the light of the communication on the subject, market participants did not rule out the possibility that the deposit facility might subsequently move into negative territory; that led to a significant decline in expectations regarding the overnight interest rate.

Nevertheless, owing to a new contraction in the liquidity surplus, and partly also because of the rise in US government bond yields, expectations regarding the overnight interest rate began climbing again in June. The Governing Council therefore made an explicit announcement in July 2013 concerning its intentions on key interest rates, making it clear that it intended to keep them at their current or lower levels for an extended period of time. That wording implied in particular that the ECB did not rule out the possibility of a further cut in the key interest rates, and that the lower bound had therefore not necessarily been reached. Unsurprisingly, expectations regarding the overnight rate dropped in response to this announcement. Although they have gone back up since then, following the publication of better than expected macroeconomic data, they would most likely have been higher without the forward guidance.

This change in the communication strategy is aimed mainly at clarifying the central bank's reaction function. An increase in the overnight interest rate driven by liquidity repayments by counterparties is not necessarily compatible with a monetary policy geared to price stability, as the improvement in the banks' financing conditions does not always go together with an improvement in the outlook for price stability. Forward guidance helps the ECB Governing Council to steer expectations regarding interest rates in the future, in order to align the monetary policy stance with the outlook for price stability in the euro area.

For the long segment of the yield curve, beyond a horizon of about five years according to the terminology in this article, anchoring inflation expectations makes a substantial difference. In 1994, the period of rampant inflation followed by a painful disinflation was still a vivid memory. In addition, most central banks did not have a quantitative inflation target. As a result, the FOMC had to establish its credibility by adopting draconian measures. Today, inflation expectations seem to be more firmly anchored in the advanced economies, particularly thanks to a quantitative inflation target (Beechey *et al.*, 2011; Gürkaynak *et al.*, 2010). That should make the long segment of the yield curve more stable, reducing the upside risks to interest rates fuelled by rising long-term inflation expectations.

Several central banks are currently significant players on the market in long-term assets, owing to the large scale purchases that they make. We have therefore come a

long way from the 1990s, when central banks never intended to exert any active influence over long-term rates. In principle, it is hard to say whether or not this active central bank role aggravates the risk of long-term interest rate fluctuations. On the one hand, these purchases moderate the risk premiums incorporated in long-term rates, so that if the central bank stops making purchases, that could drive interest rates higher. Moreover, that is what happened in May 2013 when the Federal Reserve indicated that it might gradually end its purchases of securities as the economic outlook improved. However, on the other hand the central bank may try to prevent the adverse impact on rates by actively modulating its purchases, as pointed out recently by Ben Bernanke (see Bernanke, 2013b). That aspect was also highlighted in July 2013 when the Federal Reserve clarified its concern over the recent bond market volatility. Nonetheless, these two findings suggest that abandoning the unconventional

measures presents a challenge for central banks, in particular if they have meanwhile become key players on certain market segments.

In addition, some of the risk premiums included in long-term interest rates are nowadays probably below their 1994 level, owing to factors unconnected with monetary policy, such as the strong demand for secure, liquid assets. If that demand for safe haven assets were suddenly to dry up, it would be very difficult to prevent long-term rates from rising again. The composition of the population of investors in longer-term instruments also seems to be a significant factor in the risk of a bond market sell-off, as the events of 1994 demonstrated (Goldman Sachs, 2013).

Conclusion

This article leads to a number of considerations and policy recommendations. Today, risk-free interest rates are low on account of the macroeconomic context, with stable inflation expectations and meagre potential growth compared to the early 2000s. This results in a fall in the equilibrium interest rate which the central bank takes as the benchmark for determining its monetary policy stance – and which it sees as a given – while expectations of a decline in real growth weigh heavily on the outlook for interest rates at more distant horizons. If these expectations of a fall in potential growth – such as those implied by the IMF forecasts⁽¹⁾ – prove correct, investors will face lower real returns in the future, leaving aside the current highly accommodative monetary policy.

The persistent economic headwinds plaguing the advanced economies for several years now have caused central banks in many countries to pursue a very accommodative policy which, in multiple ways, exerts downward pressure on short- and long-term interest rates. Somewhat paradoxically, that policy creates the best conditions for restoring higher interest rates in the medium term. As argued by Bernanke (2013a), for instance, cutting interest rates today is precisely the way to create the preconditions for an economic recovery and rising interest rates tomorrow. In other words, in the current circumstances, excessively high interest rates would

hamper growth and fuel deflation, which would depress long-term interest rates. Sustainable, strong growth is the only way for investors to get a positive real return.

However, as we have said, this very low interest rate environment also carries risks for financial stability. Since those risks are likely to be concentrated in specific sectors, it is necessary to adopt an appropriate, targeted prudential policy. That should enable the monetary authorities to pursue an appropriate monetary policy and avoid being hampered by concerns about its potential adverse effects on financial stability (IMF, 2013b).

In a persistently low interest rate environment, it is vital for prudential authorities to closely monitor interest rate risks. In this connection, in the latest issue of its Financial Stability Review (NBB, 2013) the Bank called on the insurance sector to exercise prudence, and in October 2012, in the light of the fall in risk-free interest rates, it suggested that the maximum benchmark rate for long-term life insurance contracts should be confined to 2%. Since this proposal was not taken up, the Bank stated that it would ensure, via its prudential policy, that every insurance company applied an interest rate compatible with its risks and costs.

One last point which may be mentioned is that, even more so than in the past, central banks will have to be very cautious in their announcements, especially if they are considering abandoning the current very accommodative policy. That is evident from the recent bond market volatility, fuelled in particular by market players' perception that the Federal Reserve might cease or moderate its purchases of debt instruments sooner than expected. Moreover, credible communication by the central bank, on the lines of the indications given by the ECB Governing Council since July 2013 concerning its future monetary policy stance, can contribute to curb any undesirable interest rate movements.

(1) The IMF's five-year growth projections published in the spring of 2008 (IMF, 2008) indicate growth of 3.2 and 2.4% respectively for the United States and the euro area. The corresponding forecasts published in April 2013 were revised downwards, to 2.9 and 1.6% respectively (IMF, 2013a).

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Company financing in Belgium : Analysis using supply and use tables

Xavier Deville

Introduction

To finance their development, companies can use not only internal resources, but also external funds, which can notably take the form of a capital increase or a loan from a credit institution. The topic of business financing, and notably that of SMEs, is a recurring theme in the news today and the focus of several surveys and studies. It is especially pertinent in the wake of the recent financial crisis. That crisis had, and continues to have, a significant impact on how companies obtain financing. This report aims to elucidate that impact. Our analysis looks at a 12-year period from 2000 to 2011 in order to provide some perspective when making comparisons with the pre-crisis period. Furthermore, this choice of time period also seeks to assess how the 2006 introduction of the tax deduction for venture capital known as the notional interest deduction has affected companies' financing. In other words, the study offers an overview of trends in Belgian corporate financing over the past decade.

The different forms of financing are reflected in companies' annual financial statements. The company file developed by the National Bank of Belgium's Central Balance Sheet Office⁽¹⁾ supplies a wealth of information on this topic at the individual company level. Until now, these data have been compiled into a "supply and use" table. This will soon be replaced by a "cash flow table". For reasons of methodology, this report is based on the current supply and use table (see below)⁽²⁾.

After explaining some of our methodology, this article describes the characteristics of companies with a financing need at the end of the financial year and the reasons for that need. The figures are broken down by company size,

sector and region. The report then looks at the external resources used to meet this financing need. The analysis is supported by statistics supplied by the Central Corporate Credit Register and by recent qualitative surveys.

1. Methodology and description of the study population

For the purposes of this study, the concepts of financing need and total financing need (also called overall financing need) are used as they are defined in the company file of the Central Balance Sheet Office and are similar to the definitions used in the national accounts. Table 1 shows a simplified version of the components of the supply and use table from the company file in which these notions of financing are calculated⁽³⁾.

The objective of the table is to recreate the (internal and external) sources of financing obtained by the company during the financial year and to trace their allocation. Thus, it catalogues the investment made during the period and how it was funded. Based on value added, the table presents the various income and charges that together make up the internal financing sources available to the company, i.e. its free cash flow calculation. By comparing these resources with tangible and intangible assets, on the one hand, and with changes in net

(1) The company file can be used to compare an individual company's financial situation with that of the sector in which it operates. It is available by request from the Central Balance Sheet Office. See <http://www.nbb.be> > Central Balance Sheet Office > Products of the CBSO > Company file.

(2) A few years ago, the Bank produced a report on corporate financing (Baugnet and Zachary, 2007). While building on the work in that report, this analysis is different in that it incorporates recent economic developments and draws on supply and use tables.

(3) For detailed calculations with references to the corresponding items in the annual accounts, see Annex 1.

operating assets on the other, it is possible to determine the financing need arising from the financial year's activities. The change in net operating assets expresses the difference between current non-financial assets and liabilities. Non-financial assets include inventories and trade receivables, while non-financial liabilities comprise current non-financial liabilities such as trade payables and taxes, wages and social security contributions payable. Adding in financial investment gives us the overall financing need (or surplus). Lastly, the table shows changes in the various external sources of financing that are the counterpart of this overall financing need or surplus.

Thus, among other things, this table makes it possible to determine a company's financial position (financing need or surplus) for a given financial year, as well as to understand how the situation came about and the resources the company is using to deal with it. Used at an aggregate level⁽¹⁾, it allows us to analyse how certain characteristics of non-financial corporations (sector, size, etc.) influence their financing behaviour. The supply and use table is the best suited to such an aggregate analysis (see OECD, 2007, chapter 3).

This study focuses on the portion of the table starting with balance of available internal sources and ending with external sources.

Companies based in Belgium or with an office in Belgium must file their annual accounts every year with the Central Balance Sheet Office⁽²⁾, which thus has a nearly exhaustive database for the purposes of analysis. For reasons of methodology, for this study it was necessary to restrict the study population somewhat. First, we excluded companies whose accounts did not pass the Central Balance Sheet Office's arithmetical and logical checks. Then, the study focused on companies alone, to the exclusion of associations and other groups. Furthermore, limiting the study to non-financial corporations ruled out financial corporations, primarily banks, insurers and holding companies. Also excluded from the study were companies belonging to the head office activities sector. This segment, which includes the former coordination centres, comprises mainly financing companies that provide internal banking services for a group of companies (Vivet, 2011, p. 70). These companies are thus grouped with financial corporations. Lastly, non-commercial sectors such as education, health care and public administration are excluded from the scope of this study⁽³⁾. This initial set of criteria makes it possible to determine what can be referred to as the sample population of Belgian non-financial corporations.

Additional selection criteria, inherent in the calculations of the accounting items used, had to be applied. Thus, we

TABLE 1 SIMPLIFIED PRESENTATION OF THE SUPPLY AND USE TABLE

Value added
– Staff costs
– Other operating costs
Balance: Gross operating result
+ Financial income
+ Other exceptional income
+ Associates' share of losses
– Financial charges
– Other exceptional charges
– Income tax
– Profit to be distributed
Balance: Available internal sources of financing
+ Capital subsidies
– Net tangible and intangible investment
± Change in net operating assets
Balance: Financing surplus (+) or need (–)
– Long-term financial investments
± Change in cash assets
Balance: Total financing need (–) or total financing surplus (+)
External sources of financing:
± Change in capital and share premium account
± Change in long-term debt
Change in short-term financial debt
Total external sources of financing

Source: NBB (2008 a).

only selected companies whose accounts correspond to a 12-month financial year. In addition, because the supply and use table shows trends in accounting items from one year to the next, only companies that filed their annual accounts for years N and N–1 using the same format (full or abbreviated) are taken into consideration in year N, as the aggregate results are generated by compiling the individual results. These additional selection criteria reduce the study population to 85 % of non-financial corporations as defined above. However, the proportion rises to 93 % if we look at value added or employment rather than the number of companies, as shown in table 2, which moreover shows the distribution of companies studied according

(1) It should be noted that the aggregate data may obscure some disparities between companies that would be visible in the individual tables.

(2) Some companies are not subject to this requirement, notably those whose partners have unlimited liability. For more information on the exceptions, see <http://www.nbb.be> > Central Balance Sheet Office > Filing annual accounts > Which companies have to file accounts?.

(3) The 2008 NACE-BEL codes for the branches of activity covered are listed in the annexes.

TABLE 2 BREAKDOWN OF COMPANIES STUDIED
(averages for 2000-2011, in %)

	Number of companies	Value added	Employment
Sample representativeness relative to all Belgian non-financial corporations	85.3	92.9	93.0
Sample breakdown:			
Size			
SMEs	93.4	23.2	29.2
Large companies	6.6	76.8	70.8
Sector			
Manufacturing sectors	8.1	30.9	29.0
of which:			
Agri-food industries	1.4	4.2	4.1
Textiles, clothing and footwear	0.7	1.3	2.0
Wood, paper products and printing	1.5	2.2	2.4
Chemicals and pharmaceuticals	0.3	7.6	3.9
Metallurgy and metalworking	1.6	4.6	5.1
Metal manufactures	0.9	6.1	6.5
Non-manufacturing sectors	91.9	69.1	71.0
of which:			
Wholesale and retail trade	28.3	21.2	21.2
Transportation and storage	3.7	8.9	11.5
Accommodation and food service activities	5.8	1.7	3.1
Information and communication	4.2	7.3	4.8
Real estate activities	10.4	2.6	0.7
Other service activities	19.5	11.6	14.6
Energy, water supply and waste	0.4	5.7	2.3
Construction	12.1	6.9	9.7

Source: NBB (Central Balance Sheet Office).

to their size and sector of activity. The criteria for company size in this case is the format used to file annual accounts. In accordance with Belgian Company Code, firms using the full format are considered to be large companies, while those using the simplified format are considered to be SMEs⁽¹⁾. Sector distinctions are based on the 2008 NACE-BEL nomenclature (see annex II).

The study deals with the period 2000-2011, which encompasses the introduction of the tax deduction for venture capital known as the notional interest deduction⁽²⁾ starting in 2006 and the global financial crisis, the effects of which were felt in Belgium from 2008 onwards. All the amounts mentioned are in current euros. Thus, care must be taken in comparing absolute amounts over a span of several years.

For the period 2000-2011, the vast majority (93.4 %) of companies studied are SMEs. In terms of value added and employment, however, these companies account for respectively less than one-quarter (23.2 %) and one-third (29.2 %) of the selection. As with the breakdown by size, the distribution of companies by sector is disproportionate, with nearly 92 % of companies active in

(1) According to the Belgian Company Code, small unlisted companies may use the abbreviated format, while large companies and small listed companies must use the full format. The legal definition of a small company is one that, within the past two completed financial years, has not exceeded more than one of the following thresholds: an annual average of 50 FTE employees; revenues (ex. VAT) of € 7 300 000; total assets of € 3 650 000; unless the annual average number of FTE employees exceeds 100, in which case the business is automatically considered a large company. For affiliated companies, the criteria measuring revenues and total assets are calculated on a consolidated basis, and the number of FTE employees at each company is added together. In other cases, the business is considered a large company.

(2) This measure, created by the Law of 22 June 2005, took effect in tax year 2007. It allows companies to deduct from their taxable income a theoretical or "notional" amount of interest calculated based on their "restated" shareholders' capital. For more information, see Vivet (2012).

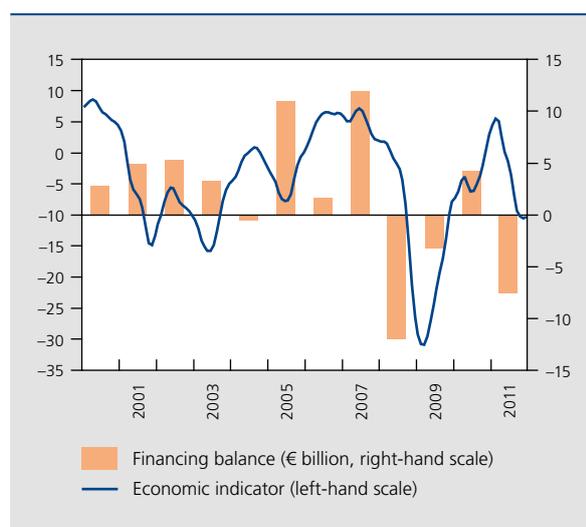
the services branches, including more than one-quarter (28.3 %) in the wholesale and retail trades. These non-manufacturing branches account for 69.1 % of value added and employ 71 % of workers, and more than one company in five – with respect to both value added and employment – belongs to the wholesale and retail trade sector. In the manufacturing industry, the sector with the largest number of companies is metallurgy and metal-working (1.6 %), whereas the most significant branches in terms of value added and employment are respectively chemicals and pharmaceuticals (7.6 %) and metal manufactures (6.5 %).

2. Financing balance

Table 3, below, shows trends in the financing balance of Belgian non-financial corporations and its determinants over the period 2000-2011, based on the categories listed in Table 1. These aggregate figures, expressed in billions of current euros, are calculated for all non-financial corporations. To put these figures into their macroeconomic context, Chart 1 shows the trend in the economic indicator for the same period, alongside that of the corporate financing balance.

Chart 1 shows that trends in companies' financial balance are influenced by economic conditions. For example, the

CHART 1 FINANCING BALANCE AND ECONOMIC INDICATOR



Source: NBB.

(1) The economic indicator is the balance of responses to the monthly survey. Series smoothed and seasonally adjusted.

periods when companies had particularly high financing needs (2008 and 2011) occurred during times of economic downturn. This may be explained by a combination of two factors. On the one hand, when the

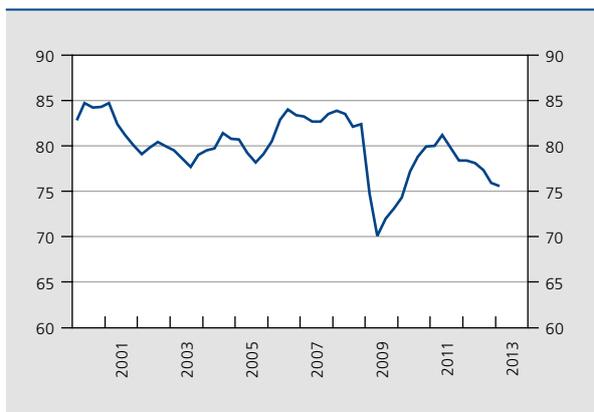
TABLE 3 TRENDS IN CORPORATE FINANCING NEED OR SURPLUS
(aggregate figures, in € billion)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Available internal sources of financing	-41.2	-22.9	-30.0	-32.5	-25.8	-12.5	-32.8	-41.4	-48.4	-1.7	-38.5	-28.7
Capital subsidies	22.4	19.7	18.5	19.6	25.3	24.7	33.9	27.6	26.1	26.0	35.2	35.9
Net tangible and intangible investments	0.7	0.6	0.7	0.7	0.9	1.8	1.8	2.5	8.9	4.4	3.1	3.2
Acquisitions	19.9	20.2	19.5	15.7	24.1	7.0	22.0	22.0	41.9	26.4	38.6	34.4
Divestments	32.1	32.9	31.2	32.1	32.9	36.9	39.0	41.4	52.5	45.3	51.2	49.8
Change in net operating assets ..	12.2	12.7	11.7	16.3	8.8	29.9	17.0	19.4	10.6	18.9	12.6	15.4
<i>Financing need or surplus</i>	0.3	-4.8	-5.6	1.3	2.6	8.5	12.0	-3.8	5.1	7.4	-4.7	12.3
Non-current financial investments	2.8	4.9	5.3	3.3	-0.5	11.0	1.7	11.9	-12.0	-3.3	4.3	-7.5
Change in cash assets	42.3	16.0	31.8	25.2	21.4	11.8	27.9	44.9	34.0	-2.8	29.2	25.0
Total financing need	1.7	11.8	3.5	10.7	3.9	11.7	6.6	8.4	2.4	1.1	13.7	-3.8
Number of companies (thousands)	188	192	198	209	223	235	243	252	256	265	272	281

Source: NBB (Central Balance Sheet Office).

CHART 2 PRODUCTION CAPACITY UTILISATION IN THE MANUFACTURING INDUSTRY

(percentages, seasonally adjusted series)



Source: NBB (quarterly production capacity survey).

economy is robust, companies plan more investment, which raises their financing needs. It should be noted that average investment spending for the period 2006-2011 was significantly higher than during the period 2001-2005. However, this investment is made at a certain time lag relative to the economic situation. Furthermore, when economic conditions weaken, companies' available internal sources of financing contract, which also tends to increase their financing needs. This is what we observed in 2008 and 2009, when internal resources fell to € 26.1 million and € 26 billion respectively. Corporate profits came under pressure from a rise in costs related to imports of goods and services following a widespread spike in commodity prices in the first half of 2008 and a drop in final demand, which was felt in late 2008 and into 2009, principally due to a slump in foreign trade.

Tangible and intangible investment, however, continued to increase in 2008. It was not until the end of the year that end-markets' prospects started to dim and it became apparent that the economic slowdown would not be short-lived. Thus, at the end of 2008, a clear drop in production capacity utilisation was registered, which continued into the first half of 2009 (see chart 2). Note that 2008 was also marked by the transfer of € 6 billion in assets from the Rail Infrastructure Fund to Infrabel, which inflated tangible fixed assets and caused a commensurate increase in capital subsidies⁽¹⁾.

The contraction of available internal resources combined with the increase in tangible and intangible investments in 2008 created the largest financing need in the period under review (€ 12 billion). This situation was aggravated by the increase in net operating assets, i.e. the difference

between current inventories and receivables on the one hand, and current non-financial liabilities on the other.

The year 2010 was marked by a return to more favourable economic conditions, with pre-crisis-level GDP growth and a brisk upswing in the economic indicator, which moved back into positive territory towards the end of the year. This macroeconomic improvement was also evident in the corporate financing balance table. Benefiting from the recovery in world trade and resulting improvement in sales, Belgian non-financial corporations posted a substantial increase in their available internal resources, which came to € 35.2 billion in 2010, up 35%. With more promising end-markets and a much-improved production capacity utilisation rate, this upswing in internal resources was accompanied by renewed tangible and intangible investment. This investment, at € 38.6 billion in 2010, rose 46% compared with 2009. However, it should be noted that it was influenced by some large-scale mergers and acquisitions in the IT and communications sector. These restructuring deals also had a notable impact on the decrease in net operating assets (as did certain intra-group transactions at Electrabel).

Long-term financial investment increased virtually throughout the period under review. However, it is important to mention that the peak in financial investment observed in 2007 was heavily influenced by Electrabel's € 18.2 billion purchase of Suez's stake in Suez-Tractebel. On the other hand, investment contracted in absolute terms in 2009, by € 2.8 billion, at the height of the financial crisis. It was also affected by intragroup transactions at Belgacom and Electrabel that resulted in reductions in fixed financial assets of respectively € 3.9 billion and € 4.5 billion.

In 2008 and 2009, companies also experienced a slowdown in the growth of their cash assets, which fell from € 8.4 billion in 2007 to € 2.4 billion in 2008 and € 1.1 billion in 2009. These cash assets include current investments in own shares or other (term deposits, shares sold within twelve months, etc.) and cash at bank and in hand (cash deposits, sight deposits, etc.). In other words, they comprise the liquidity that a company can use immediately to settle its accumulated financial commitments. This slowdown in cash asset growth combined with the reduction in financial investments led to the lowest total financing need of the period in 2009 at € -1.7 billion.

Given that tangible and intangible investment increased more than internal resources, it is principally the decrease in net operating assets that explains the financing surplus of € 4.3 billion generated in 2010.

(1) See Deville, X. and F. Verduyn (2012), *Implementation of EU legislation on rail liberalisation in Belgium, France, Germany and The Netherlands*, NBB Working Paper No. 221.

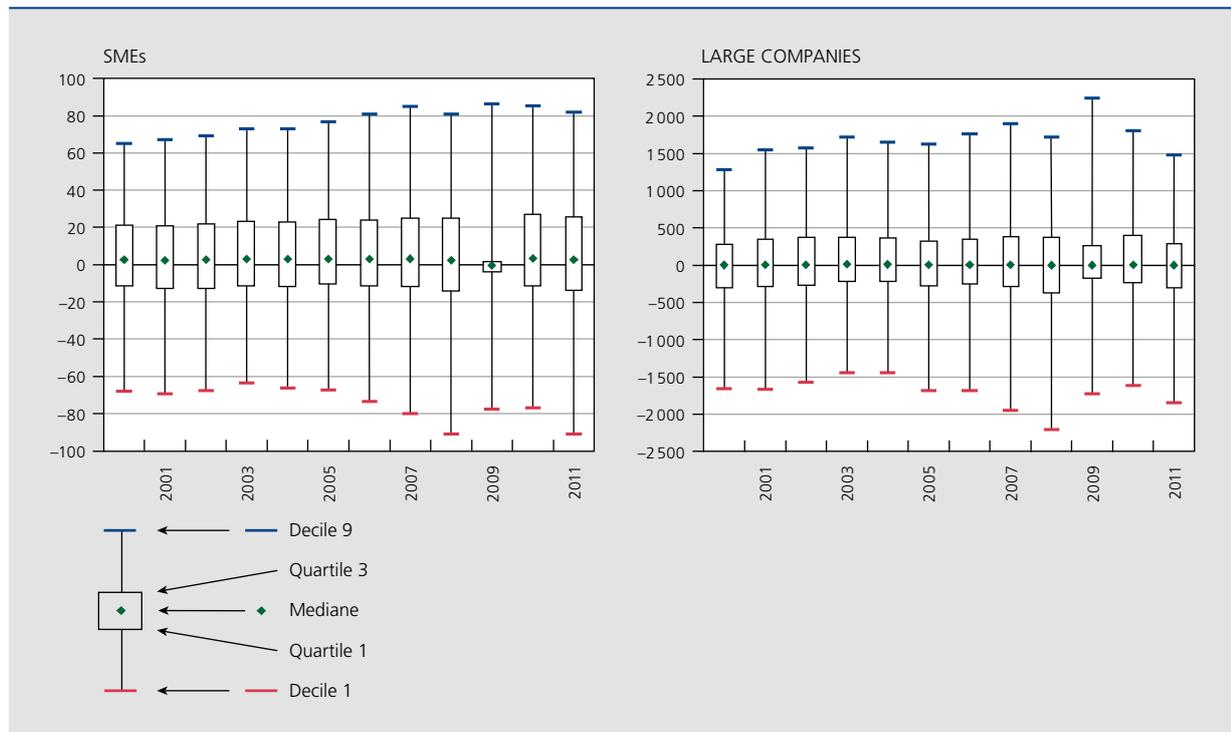
The economic upswing also corresponded to an increase in long-term financial investment and cash assets. Note that these movements were also influenced, respectively, by the Electrabel group restructuring mentioned above and by the sale of some of the Solvay Group's equity stakes, resulting in an increase in its cash assets. However, these transactions only reinforced an already solid upward trend. As a result, the overall financing balance for non-financial corporations swung back into heavily negative territory, at € 38.5 billion in 2010.

In 2011, the recovery in demand observed in 2010 continued before dwindling somewhat in the second half. The slowing of foreign demand was only partially offset by stronger sales in Belgium. The internal resources available to non-financial corporations remained stable at € 35.9 billion. Tangible and intangible investment experienced a slight decline, down 11 %, due to weaker prospects for end-markets in the second half. This trend was also visible in the economic indicator presented in Chart 1, which turned negative in the second half of the year. Net operating assets resumed their climb after plummeting in 2009 owing to certain one-off transactions (see above), causing a decrease in the financing balance, which fell back into the red at €-7.5 billion.

As with tangible and intangible investment, financial investment was down 14 % to € 25 billion, whereas cash assets plummeted owing to some large-scale transactions at Solvay and Electrabel. This had an impact on the total financing need, which, while still negative, shrank to €-28.7 billion.

The statistical distribution of the corporate financing balance (chart 3) shows that large companies were slightly more sensitive to economic conditions during the crisis in 2008. We note that the movement of large companies towards the high end of the distribution in 2009 was slightly more pronounced than it was for SMEs. In 2008, the 10 % of large companies with the biggest financing need each had a financing need of over € 2.2 million. In 2009, this threshold fell to € 1.7 million, a drop of more than 20 %. The decline was 15 % for SMEs. The statistical distribution also shows us that SMEs with a financing surplus appear to have been more resilient to economic conditions (in this case, companies above the median level). By contrast, the first decile and, to a lesser extent, the first quartile, appear to have been more volatile. In the case of large companies, both the high end and the low end of the distribution moved higher in 2009, then lower in 2010 and 2011. This indicates that, in 2009, large companies with

CHART 3 STATISTICAL DISTRIBUTION OF COMPANIES' FINANCING BALANCE BY SIZE
(€ thousands)



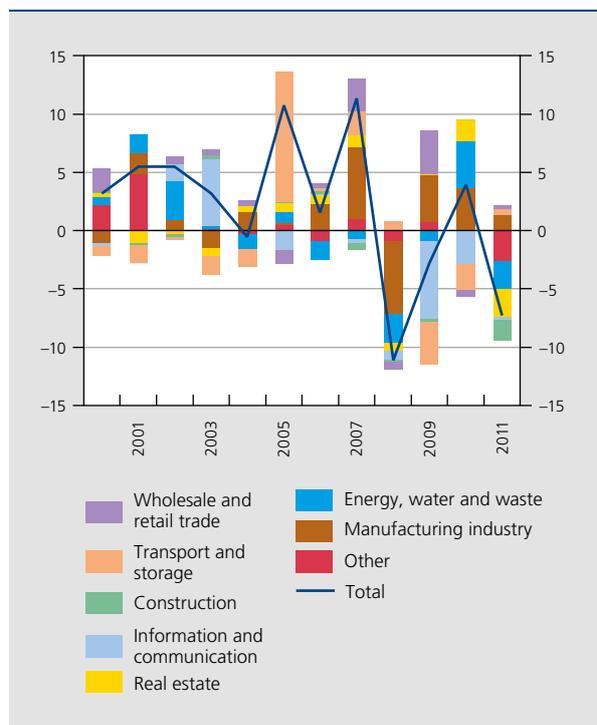
Source: NBB (Central Balance Sheet Office).

a financial surplus tended to increase their surplus, while companies with a financing need reduced their need. These effects were subsequently reversed.

It is also interesting to distinguish the trends in financing balance at the sector level. This is the aim of charts 4 and 5, which detail the contribution of the principal branches of activity to the changes in, respectively, large companies' and SMEs' financing balance.

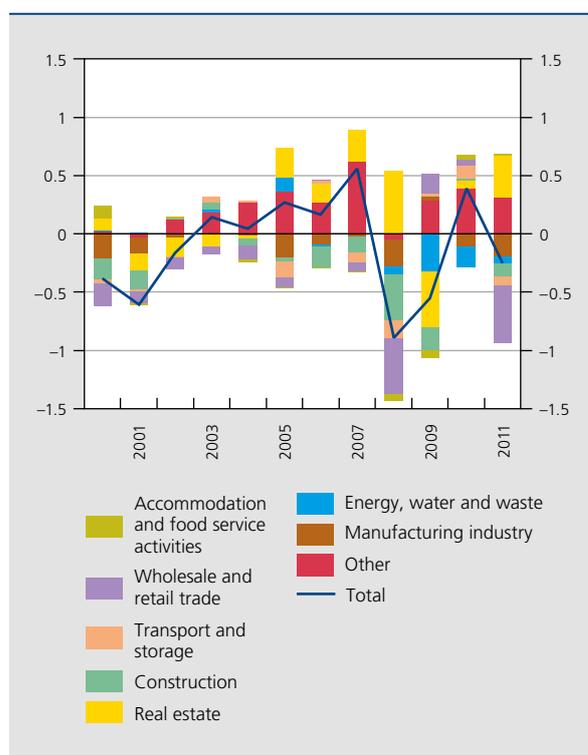
Among large companies, since 2004 the manufacturing industry has posted a positive financing balance (except in 2008), bolstered by the chemicals and pharmaceuticals industries. By contrast, the information and communication sector has usually ended up with a financing need, particularly as a result of Belgacom and Telenet. The financing balances of other sectors fluctuated more significantly. In 2005, there was a substantial financing surplus (more than € 11 billion) in the transport sector owing to the demerger of the Belgian national railway company (SNCB/NMBS) into three entities and the transfer of rail infrastructure to the Railway Infrastructure Fund, which in the accounts resulted in a substantial reduction in the SNCB/NMBS group's tangible fixed assets⁽¹⁾.

CHART 4 SECTOR BREAKDOWN OF LARGE COMPANIES' FINANCING BALANCE
(€ billion)



Source: NBB (Central Balance Sheet Office).

CHART 5 SECTOR BREAKDOWN OF SMEs' FINANCING BALANCE
(€ billion)



Source: NBB (Central Balance Sheet Office).

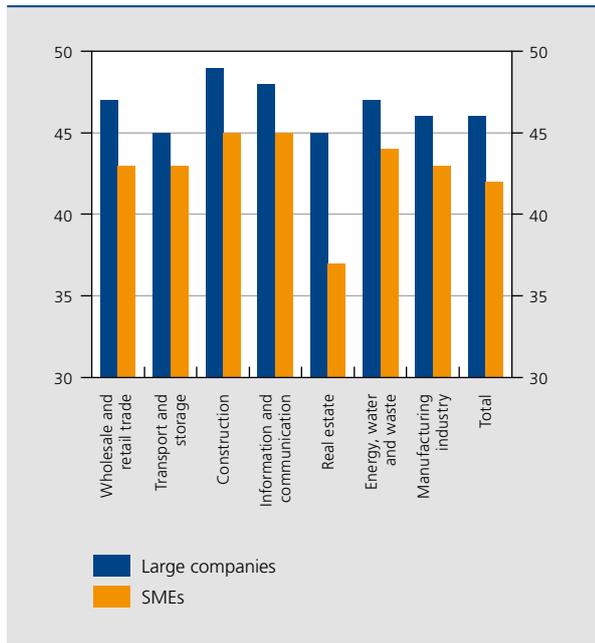
SMEs are a different matter. Every year since 2004, with the exception of 2009, the real estate sector has had a financing surplus because its available internal resources are often greater than its net investment. In fact, it was the only sector with a surplus in 2008. Real estate is also the sector with proportionally the fewest SMEs with a financing need (37 %, chart 6). The other principal sectors, such as wholesale and retail trade, manufacturing industry and construction, generally need to borrow. Construction has the highest proportion of companies with a financing need, among both SMEs and large companies.

Chart 7 shows the trend in financing balance by sector at the regional level⁽²⁾. The financing balance was positive in each of Belgium's three Regions in 2005 and declined the following year. However, we note some differences in how quickly financing needs increased following the crisis. Flanders posted a financing need in 2008, when all sectors exhibited financing needs totalling € 13.5 billion.

(1) See Deville, X. and F. Verduyn (2012), *Implementation of EU legislation on rail liberalisation in Belgium, France, Germany and The Netherlands*, NBB Working Paper No. 221.

(2) The regional breakdown of annual accounts is based on data from the Institute of National Accounts. For companies operating in multiple regions, items from the annual accounts are broken down on a pro rata basis by the number of employees in each Region. For more information, see Vivet (2011).

CHART 6 COMPANIES WITH A FINANCING NEED
(percentage of the total, 2000-2011 average)



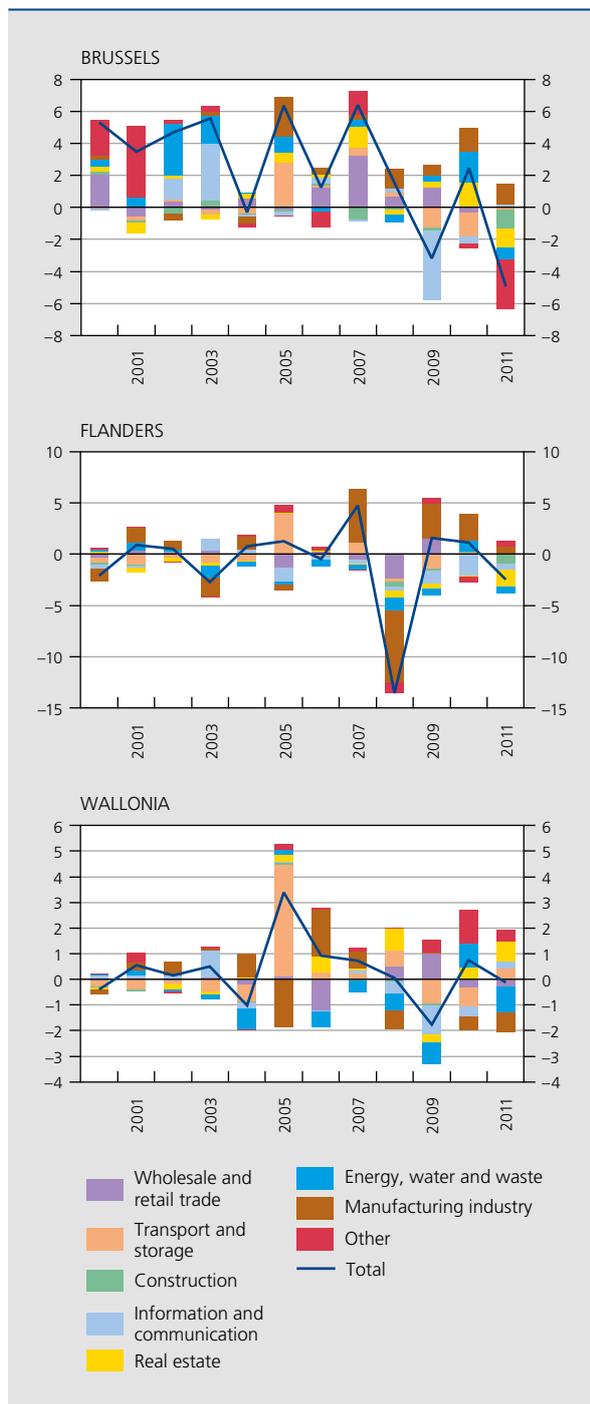
Source: NBB (Central Balance Sheet Office).

In Wallonia and Brussels, the financing balance was still positive overall in 2008 but turned negative the following year, although not to the extent of Flanders in 2008. In 2010, all three Regions posted an overall corporate financing surplus, followed by a financing need in 2011.

A few differences were noted in the sectors that have the most impact on trends in the Regions' overall financing balance. In Brussels, wholesale and retail trade is the principal sector that tends to generate a financing surplus. Greater need for financing in 2009 and 2011 resulted, respectively, from the information and communication sector (particularly Belgacom) and from other sectors, chiefly that of other services (including auxiliary financial services). In Flanders, the trend in companies' financing balance was influenced by the manufacturing industry and, more specifically, by the chemicals and pharmaceuticals industries and the metal manufactures sector, which includes car-making and assembly. The chemicals and pharmaceuticals industries also heavily influenced companies' financing balance in Wallonia, as did transport and storage and the energy, water supply and waste sector, whose financing balance was negative almost every year.

With respect to the proportion of companies with a financing need (chart 8), Brussels stands out somewhat from the other two Regions. For the period 2000-2011, 44 % of

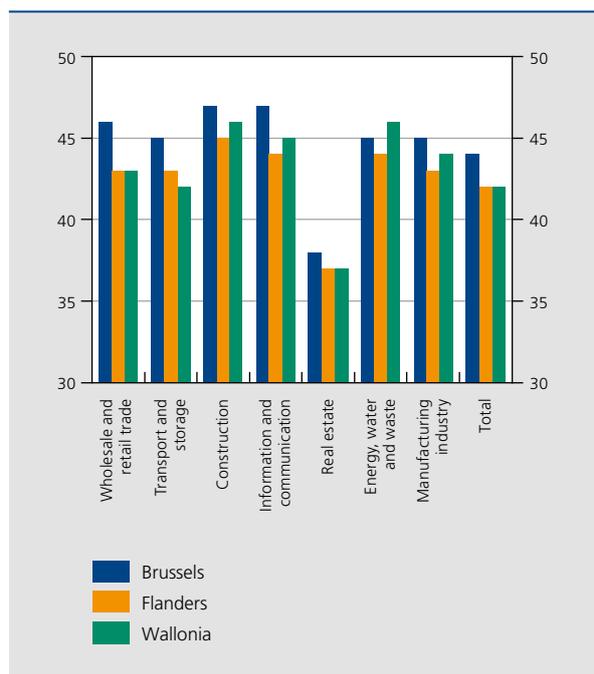
CHART 7 SECTOR BREAKDOWN OF COMPANIES' FINANCING BALANCE BY REGION
(€ billion)



Source: NBB (Central Balance Sheet Office).

companies in the Brussels-Capital Region had a financing need, compared with 42 % in Flanders and Wallonia. This over-representation of companies in need of financing in Brussels, which holds for nearly every branch of activity, is chiefly attributable to a size effect. Brussels has relatively

CHART 8 REGIONAL BREAKDOWN OF COMPANIES WITH A FINANCING NEED
(percentage of the total, 2000-2011 average)



Source : NBB (Central Balance Sheet Office).

more large companies than the other two Regions (9%, compared with 6% in Flanders and 5% in Wallonia) and, as shown in chart 6, large companies have proportionally more that need to borrow.

To attempt to explain the trend in companies' financing balance in greater detail, it is useful to fine-tune the grouping of companies by size by making an additional distinction between companies that generate a financing surplus and those that have a financing need. This is the objective of chart 9, which highlights the principal factors that influence the trend in companies' financing balance, according to their size and location. It is important to note that internal resources play an important role in financing for both large companies and SMEs.

Among large companies, the fluctuations in the different variables make it difficult to discern trends. However, we do note that among companies with a financing need, needs increased sharply from 2008 because of higher tangible and intangible investment.

The level of tangible and intangible investment by SMEs with a financing surplus has been constant over the years at around € 2 billion. The trend in their financing capacity, which has steadily increased over the period under review, is more linked to the increasingly pronounced decrease in their net operating assets and to the growth of their available internal resources. Whereas net operating assets fell by € 2.3 billion in 2000, they dropped by € 6.2 billion in 2011, a contraction of 176%. Available internal resources amounted to € 9 billion in 2011, representing a 98% increase since 2000. These trends applied to most of the services branches. In the manufacturing industry, the increase in SMEs' financing capacity was less pronounced and was only attributable to the increasingly rapid decrease in net operating assets, as available internal resources were stable.

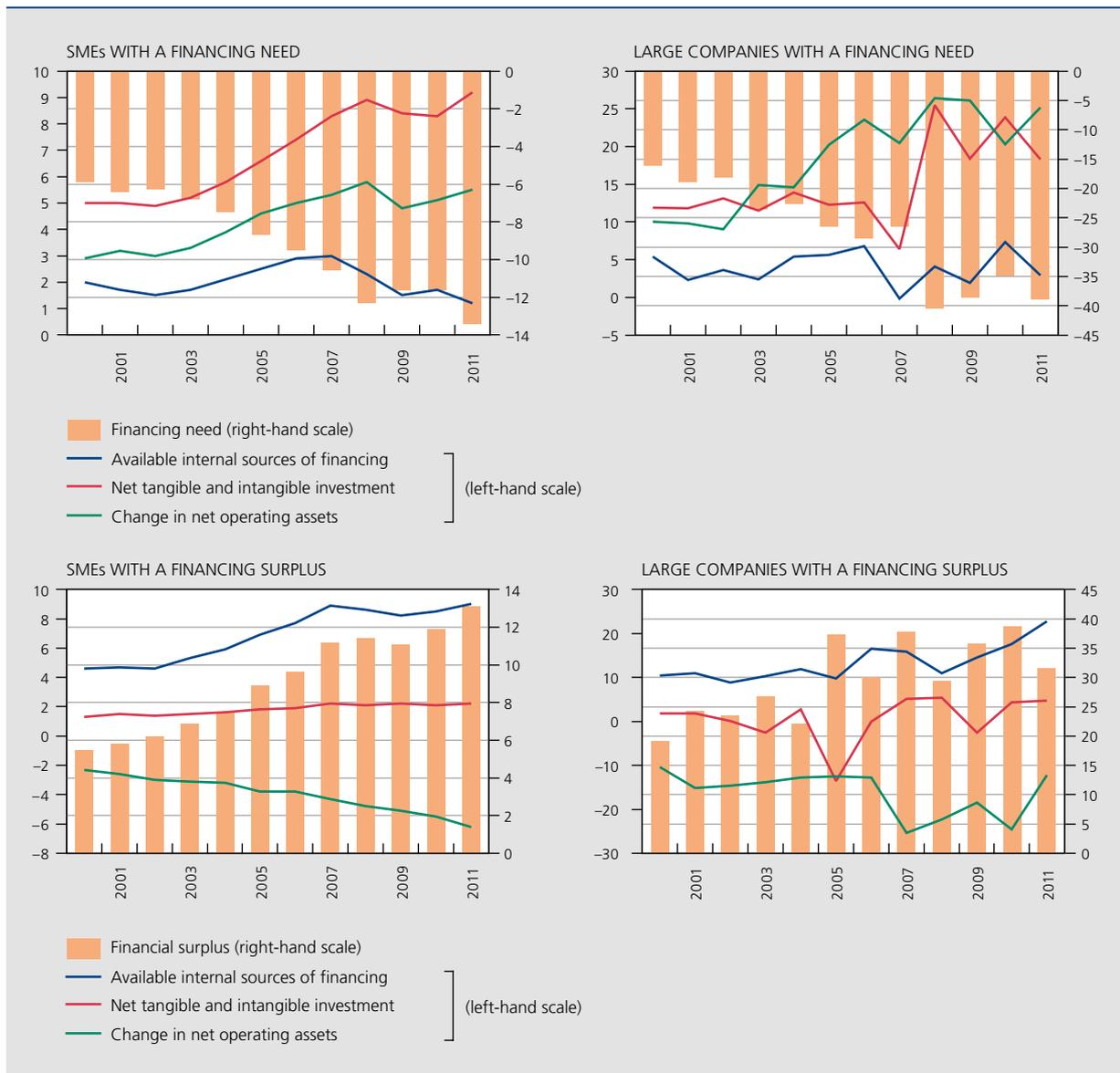
Among SMEs with a financing need, the increase in net operating assets and tangible and intangible investment was the reason for the growing deterioration in the financing balance, as available internal resources did not follow a similar trend.

Analysis at the regional level confirms the trends described above, with the three Regions posting similar trends overall.

This first section has demonstrated the link between companies' financing balance and economic conditions. The aggregate financing balance of large firms was also influenced by certain large-scale transactions made by a few big Belgian companies with a predominant influence on the statistics in their respective sectors of activity (Belgacom, Telenet, SNCB, etc.). The regional analysis highlighted the importance of the manufacturing industry to the financing balance of Flemish companies, particularly in the chemicals and pharmaceuticals industries and the metal manufactures sector. The chemicals and pharmaceuticals industries also heavily influenced the financing balance of companies in Wallonia, whereas in Brussels, the biggest influence on the financing balance of non-financial corporations came from the manufacturing industry and trade sector. Lastly, the analysis demonstrated that by and large, SMEs in need of funding saw their net operating assets and investment increase, while their available internal resources remained fairly stable.

The next section looks at how companies have met their financing needs.

CHART 9 FINANCING BALANCE AND PRINCIPAL FACTORS, BY COMPANY SIZE
(€ billion)



Source : NBB (Central Balance Sheet Office).

3. Financing sources

Table 4 shows the sources of financing that Belgian non-financial corporations have used to meet their financing needs in the broadest sense, including financing needs generated by long-term financial investments and by changes in cash assets. Over the period under review, borrowings were the principal source of company financing, at € 188 billion (€ 65 billion of which was in bank debt), ahead of changes in capital and share premium account (whether via issue of listed shares or not), which came to € 172 billion. As a reminder, head office activities (NACE 70100) are not included in this analysis.

The year 2006 saw a big upswing in financing by capital increase, rising 186% to € 20.6 billion under the combined impact of a drop in the cost of capital financing relative to bank debt and the introduction that year of a tax deduction for venture capital (notional interest), which makes capital financing more attractive. The increase in capital financing was above all due to a jump in large-scale transactions by a few big companies (table 5), which appears to support the argument that large companies altered their balance sheet structure after the notional interest deduction was created. The change in capital remained high in following years, peaking at € 22.4 billion in 2008, due mainly to large deals in the chemicals

TABLE 4 TRENDS IN COMPANIES' EXTERNAL FINANCING SOURCES
(aggregate figures, in € billion)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total financing need	-41.2	-22.9	-30.0	-32.5	-25.8	-12.5	-32.8	-41.4	-48.4	-1.7	-38.5	-28.7
Change in capital and share premium account	20.4	13.5	12.4	15.6	7.0	7.2	20.6	12.5	22.4	9.3	14.8	16.3
Change in long-term debt	7.3	2.9	6.5	20.8	13.6	-0.7	7.0	26.1	8.5	0.4	33.3	8.2
of which: change in borrowings from credit institutions	1.6	0.5	-0.8	17.3	10.0	2.1	5.4	5.7	4.5	-3.1	7.3	0.4
Change in current financial debt	13.5	6.5	11.1	-3.8	5.2	6.0	5.4	3.7	17.8	-7.3	-8.4	4.5
of which: change in borrowings from credit institutions	2.1	2.7	-0.2	4.6	-1.7	4.9	5.6	-0.9	10.3	-8.1	-7.5	2.0
Number of companies (thousands)	188	192	198	209	223	235	243	252	256	265	272	281

Source: NBB (Central Balance Sheet Office).

and energy sectors (notably a € 4 billion capital increase by Electrabel).

Financing by capital increase has also risen in importance among SMEs (table 6). Whereas in 2005, the change in capital was equal to one-third of the change in external financial resources (€ 1.1 billion out of € 3.3 billion), the proportion rose steadily from 2006 onwards, reaching 56% in 2011. That year, SME capital increases totalled € 2.7 billion. However, over the 12 years of the

study period, the increase in capital financing was less pronounced. On average from 2000 to 2005, capital increases represented 46% of SMEs' external financing sources, compared with 51% in 2006-2011, i.e. after the introduction of the notional interest deduction.

Wider use of capital financing is particularly evident in the sub-group of SMEs in need of financing (chart 10), where there was a clear 47% jump in the change in capital in 2006 compared with 2005. In 2011, capital financing

TABLE 5 TRENDS IN LARGE COMPANIES' EXTERNAL FINANCING SOURCES
(aggregate figures, in € billion)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total financing need	-38.9	-20.7	-28.6	-31.0	-23.9	-9.2	-29.2	-37.1	-42.1	2.2	-34.7	-24.2
Change in capital and share premium account	19.4	12.4	11.5	14.7	6.1	6.1	19.2	10.6	19.0	7.0	12.4	13.6
Change in long-term debt	6.6	2.3	6.3	20.4	13.0	-2.2	5.6	24.5	6.5	-0.5	32.3	7.0
of which: change in borrowings from credit institutions	1.2	0.3	-0.9	17.2	9.7	1.4	4.6	4.5	3.1	-3.5	7.0	-0.1
Change in current financial debt	12.8	6.0	10.8	-4.1	4.8	5.3	4.4	2.7	16.6	-8.0	-9.2	3.6
of which: change in borrowings from credit institutions	1.8	2.4	-0.4	4.6	-1.9	4.5	4.9	-1.5	9.5	-8.4	-8.0	1.7
Number of companies (thousands)	13	13	13	14	14	14	14	14	15	16	16	17

Source: NBB (Central Balance Sheet Office).

TABLE 6 TRENDS IN SMEs' EXTERNAL FINANCING SOURCES
(aggregate figures, in € billion)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total financing need	-2.3	-2.2	-1.4	-1.6	-1.9	-3.3	-3.6	-4.3	-6.4	-3.8	-3.9	-4.5
Change in capital and share premium account	1.0	1.1	0.9	0.9	0.9	1.1	1.3	1.9	3.4	2.4	2.4	2.7
Change in long-term debt	0.6	0.6	0.2	0.4	0.7	1.5	1.3	1.6	1.9	1.0	0.9	1.2
of which: change in borrowings from credit institutions	0.3	0.2	0.1	0.1	0.3	0.7	0.9	1.3	1.3	0.4	0.3	0.5
Change in current financial debt	0.6	0.5	0.3	0.2	0.4	0.7	1.0	1.0	1.2	0.7	0.8	0.9
of which: change in borrowings from credit institutions	0.3	0.3	0.1	0.1	0.2	0.4	0.7	0.6	0.8	0.3	0.5	0.4
Number of companies (thousands)	175	179	185	195	210	221	229	237	241	250	256	264

Source: NBB (Central Balance Sheet Office).

exceeded short-term debt financing for the first time (€ 2.6 billion vs. € 2.3 billion). The latter has been stable since 2009 (left-hand chart), whereas capital financing has exceeded non-bank debt financing since 2009 (right-hand chart).

The importance of capital financing among SMEs in need of financing increased in all three Regions, but was particularly pronounced in Flanders. In 2011, capital increases in the northern part of the country among this group of companies amounted to € 1.9 billion, an increase of 252 % over the € 0.5 billion posted in 2005.

For SMEs with a financing need, this trend was most apparent in the wholesale and retail trade, real estate and construction sectors, as well as in the manufacturing industry. It was also noted in the information and communication sector, although it did not come with a downturn in other financing sources.

This trend was influenced not only by the launch of the notional interest deduction scheme in 2006, but also by prevailing credit market conditions, which weakened from 2007 as a result of the financial crisis. Between 2008 and 2011, banks granted € 6 billion in loans to companies (all included), compared with € 31 billion between 2004 and 2007.⁽¹⁾

The trend has been observed both among large companies and among SMEs and is more pronounced for long-term borrowings (chart 11). Over the period 2008-2011,

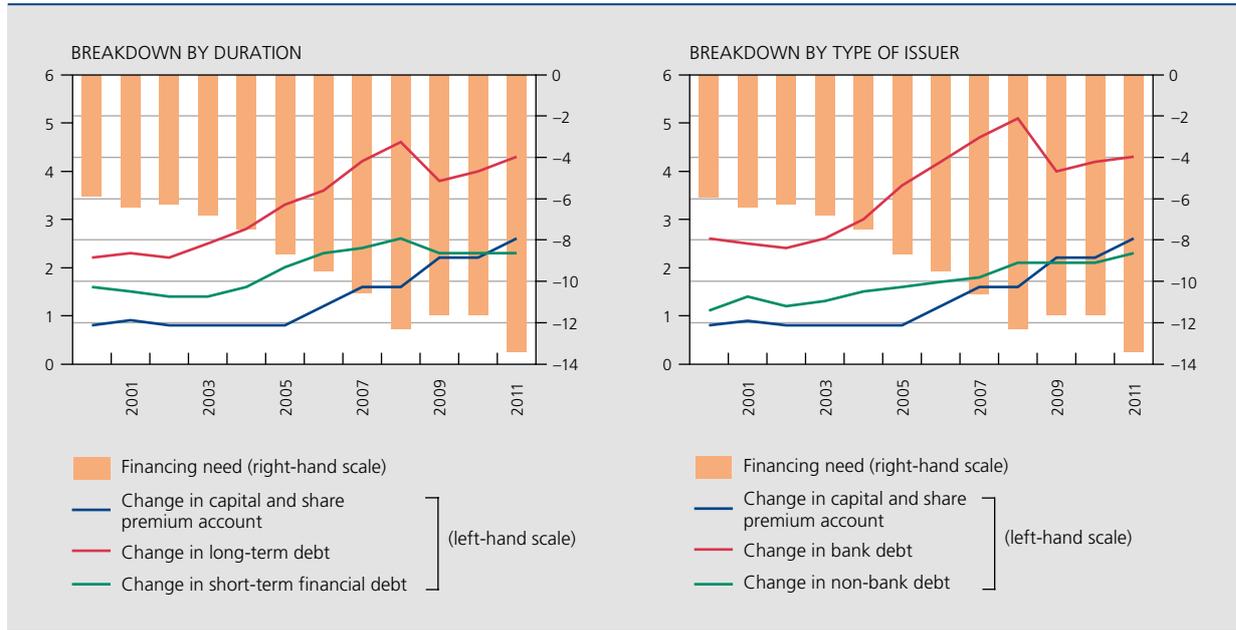
the change in borrowings from credit institutions was smaller than it was before the crisis, whereas the change in non-bank borrowings (which basically include loans between companies, but also includes long-term commercial debt and bonds, among other things) accelerated. Thus, there are clear signs of a tendency among companies to secure financing outside the banking channel, either via capital increase or non-bank debt.

This trend may be influenced by factors linked to demand for credit (see above), but it is also due to a change in lending conditions. Qualitative surveys that ask banks and companies about their perceptions of the credit market provide some more insight into this angle.

Banks' perceptions are assessed through the Bank Lending Survey (BLS), a quarterly survey of countries' most significant credit institutions carried out by the Eurosystem central banks. In Belgium, this survey reflects the opinions of the country's four largest banks (whose lending to the private sector represents around 70 % of loans granted by all Belgian credit institutions) with respect to trends in lending conditions and demand for credit. The results are expressed in net percentages, i.e. the difference between the percentage of responses indicating a trend in one direction and the percentage of responses indicating a trend in the

(1) Note that, among large companies, the figures are influenced by certain large-scale deals. For example, Electrabel's 2007 purchase of shares in Suez-Tractebel (see above) was partly financed with debt, which explains the sharp increase in non-bank debt seen in that year. Furthermore, Electrabel undertook an extensive financial debt restructuring effort in 2010, which resulted in the substitution of long-term debt (which rose by nearly € 6 billion) for short-term debt.

CHART 10 FUNDING SOURCES OF SMES IN NEED OF FINANCING
(€ billion)



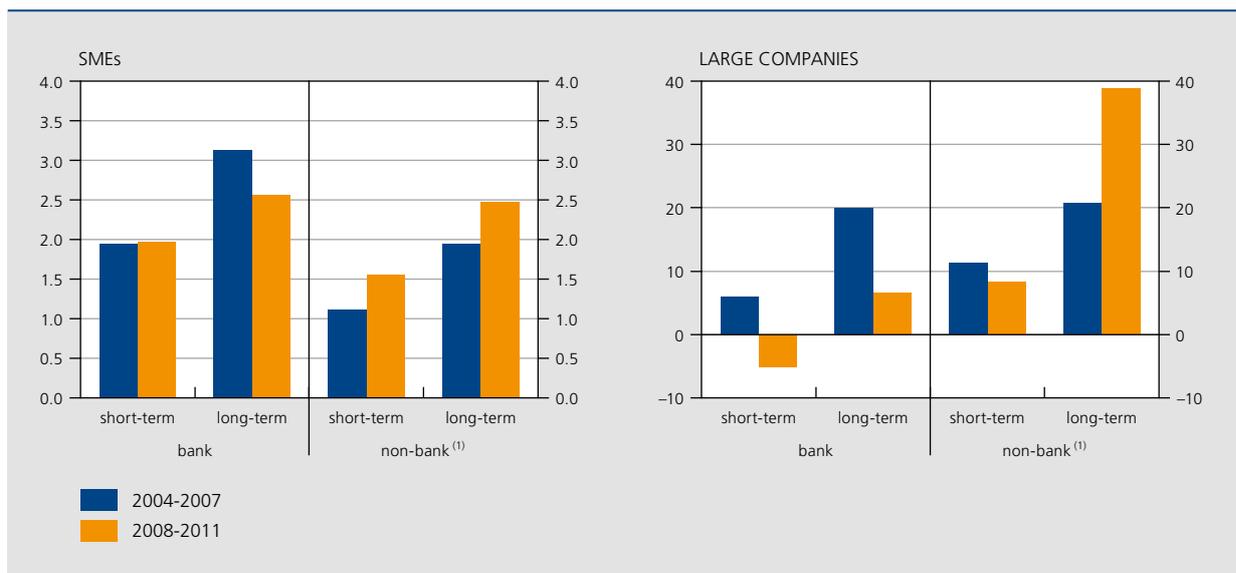
Source : NBB (Central Balance Sheet Office).

opposite direction. Responses are weighted as a function of their distance relative to the “neutral” response. The indicator’s possible values range from -100 % (significant weakening or tightening for all respondents) to +100 % (significant growth or easing for all respondents)⁽¹⁾.

The NBB polls business leaders, using a survey to gauge how they perceive trends in conditions for access to

(1) For more information on methodology, see <http://www.nbb.be> > Statistics > Economic Survey > Bank Lending Survey > Methodological explanation.

CHART 11 CHANGE IN DIFFERENT TYPES OF DEBT BEFORE AND AFTER THE CRISIS
(€ billion)



Source : NBB (Central Balance Sheet Office).

(1) Non-bank debt includes intra-group loans.

credit⁽¹⁾. Initially included in another survey conducted once a year, since 2009 the poll has been carried out separately every quarter⁽²⁾. Its results are expressed as net percentages, i.e. the balance of positive and negative responses⁽³⁾.

Chart 12 brings together the principal components of the trend in lending conditions on the bank credit market. Tension has been evident on financial markets since summer 2007 as a result of the subprime lending crisis. That year, banks reported that their perception of risks was one reason lending criteria were tightened. The crisis gained momentum the following year, causing balance sheet woes at banks owing to the drop in value of their asset portfolios and the contraction of their capital owing to higher risk. These balance sheet problems led banks to tighten their lending criteria, in particular by raising their margin.

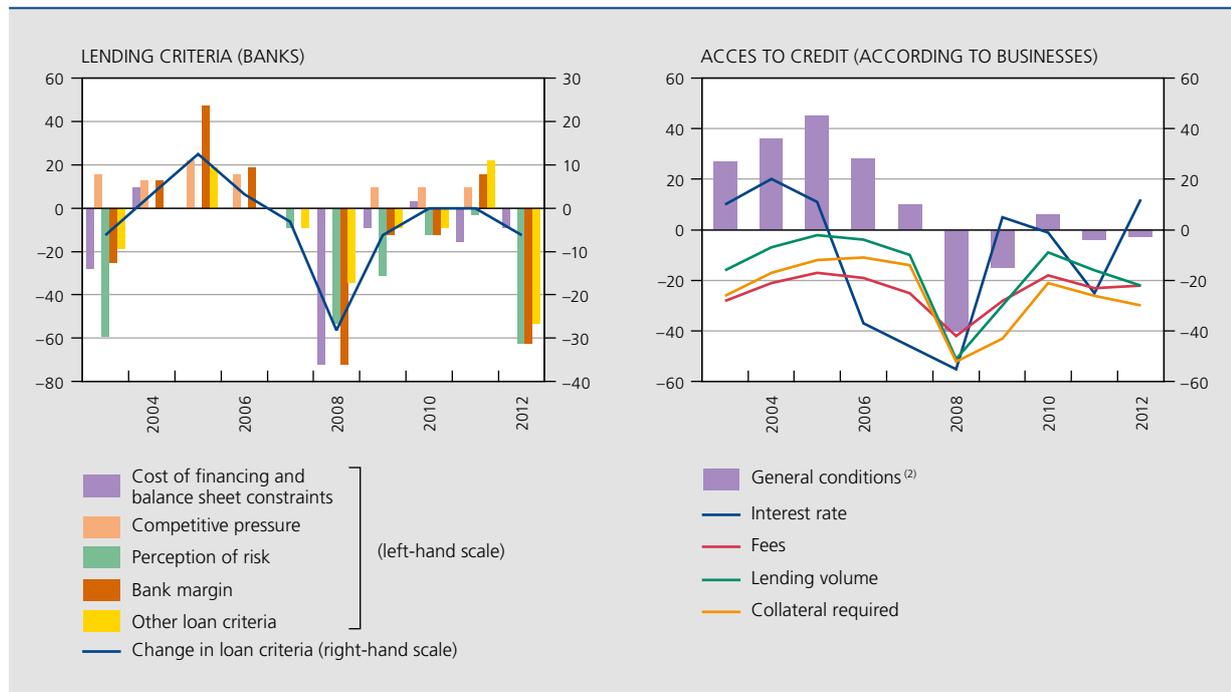
This perception is shared by business leaders, who thought that interest rates were the factor that deteriorated the most substantially in 2008, followed by collateral requirements and lending volumes. Access to credit improved a bit in 2009 (especially owing to a more favourable interest rate) before deteriorating again in 2011.

On the bank side, there is no sign of any easing of lending criteria, which continued to tighten in 2009 and remained unchanged in 2010 and 2011 as the sovereign debt crisis spread to the banking sector, weighing on credit institutions' liquidity and solvency. Faced with rising costs and balance sheet constraints, banks continued to apply strict conditions when lending to businesses. According to the businesses themselves, conditions actually tightened in 2011. In 2012, banks reported that they had adopted stricter lending criteria based on a perception of increased risk, notably by raising their margin. This tightening was confirmed by business leaders, who observed changes in the general access to bank credit despite interest rates easing.

The change in bank lending market conditions is reflected to some extent in data from the Central Corporate Credit Register, which records loans of over €25,000 made

- (1) It should be noted that the credits covered by this survey are those used directly for fixed capital formation, i.e. it excludes loans made for mergers and acquisitions. For more information on methodology, see http://www.nbb.be/DOC/DQ/kredObs/fr/KO_home.htm > Séries statistiques > Taux et autres conditions > Enquêtes NBB (appréciation des entreprises). French and Dutch only.
- (2) For this report, results from 2009 onward have been annualised by calculating the average of the quarterly results.
- (3) For example, a balance of +10 means that positive responses were 10% more numerous than negative responses.

CHART 12 ASSESSMENT OF CREDIT MARKET CONDITIONS BY BANKS AND COMPANIES⁽¹⁾
(trend expressed in net percentages)



Source: NBB (Bank Lending Survey and business leader survey of access to credit).

(1) annualised data obtained by calculating the average of quarterly results.

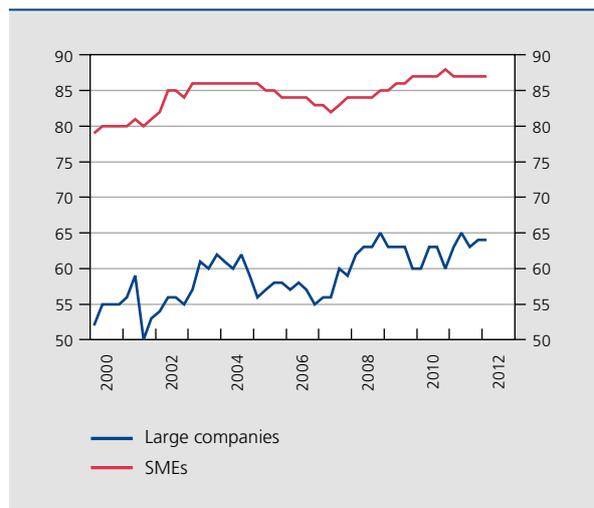
(2) With respect to access to credit, general conditions refer to the present moment, whereas the other criteria compare trends at the time of the survey with those observed six months earlier until 2008 and three months earlier from 2009 onwards.

to non-financial corporations⁽¹⁾. Among its published statistics, the authorised credit utilisation rate is an indicator of current credit market conditions. Expressed as a percentage ratio of the amount actually used and the total amount of authorised credits for each financial institution, it illustrates the extent to which companies are drawing on their lines of credit. This ratio is present in chart 13, which distinguishes between large and small companies⁽²⁾. Note that the utilisation rate among SMEs is structurally higher, as they traditionally rely more heavily on bank credit than do large companies, which have a larger array of financing options.

From 2007 onwards, the credit utilisation rate recovered among both SMEs and large companies. In 2005-2006, the average rate was 84 % for SMEs and 57 % for large companies. Over the period 2007-2011, by contrast, it rose to respectively 85 % and 62 % for SMEs and large companies. All sizes and sectors combined, the credit utilisation rate of non-financial corporations rose by 10 % between 2006 and 2011. This trend appears to indicate that, having difficulty securing new credit, companies sought to maximise their use of existing credit lines.

SMEs' difficulty obtaining bank loans after the onset of the crisis is also illustrated by the survey conducted by the Belgian Knowledge Centre for SME Financing (BeCeFi, 2013). The survey revealed that in 2009, 17 % of SME applications for bank loans were rejected. This percentage is significantly higher than the 9 % observed

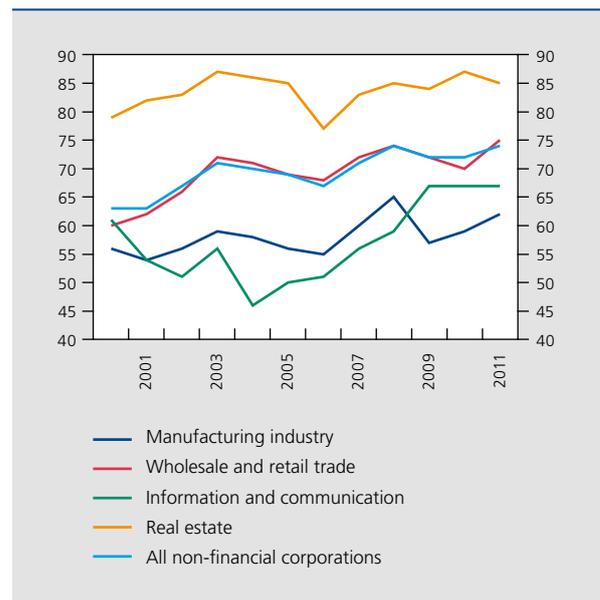
CHART 13 AUTHORISED CREDIT UTILISATION RATE, BY COMPANY SIZE
(percentages)



Source: NBB (Central Corporate Credit Register).⁽¹⁾

(1) Data are taken from CKO1 reports. The Register now has a reconfigured database, but because of the methodology change involved in the move, a long series of historical data is not possible.

CHART 14 AUTHORISED CREDIT UTILISATION RATE, BY SECTOR
(percentages)



Source: NBB (Central Corporate Credit Register).⁽¹⁾

(1) Data are taken from CKO1 reports. The Register now has a reconfigured database, but because of the methodology change involved in the move, a long series of historical data is not possible.

in 2008. It subsequently came down in 2010 and 2011, to respectively 15 % and 13 %, which is still higher than before the crisis. In 2012, the rate rose to 16 %, confirming that SMEs are still having a hard time getting access to bank credit.

The 2011 FPS Economy survey on SMEs' access to financing confirmed this trend, noting an increase in the rejection rate for bank credit applications, which rose from 2 % in 2007 to 6 % in 2010. Conversely, the biggest fall in the rejection rate was among "other sources" of debt financing, which fell from 78 % in 2007 to 39 % in 2010⁽³⁾.

Chart 14 shows that sectors whose credit utilisation rates rose faster than the average between 2006 and 2011 are those where SMEs in need of financing posted strong growth in capital increases: the manufacturing industry, trade, real estate and information and communication. This last sector, moreover, illustrates the trend perfectly, having undergone both the strongest increase in the authorised credit utilisation rate (+32 % between 2006 and

(1) The data used stop at 31 March 2012, after which date the Central Credit Register stopped using the € 25,000 threshold.

(2) The distinction by size is based on the type of format used to file annual accounts (abbreviated format = SME, full format = large company). Companies that have not filed at least one set of annual accounts with the Central Balance Sheet Office within the past 60 months are not included.

(3) Other studies, such as the ECB's "Survey on the access to finance of small and medium-sized enterprises in the euro area", arrive at similar conclusions.

2011) and the fastest growth in capital increases among SMEs with a financing need (+173 % between 2005 and 2011). Thus, this tends to confirm the hypothesis that the growing use of capital increases among SMEs is at least partly a response to more restricted access to the credit market following the financial crisis.

Conclusion

By using the aggregate level of the supply and use table compiled by the Central Balance Sheet Office for individual companies, this study has been able to identify certain trends affecting the population of companies in need of financing, the causes of the financing need, and the external sources used to meet it.

An analysis of the trend in companies' financing balance shows that it is dependent upon economic conditions. The periods when companies' financing need was the highest (2008 and 2011) came on the heels of economic downturns. This situation appears to be attributable to the decline in available internal resources and the fact that the execution of investment projects lags behind the economic cycle. Distinguishing between companies according to size shows that the financing balance and its components fluctuate more for large firms than for SMEs, owing to the influence of deals by some large enterprises. The slightly more pronounced sensitivity to the economy among large companies during the crisis of 2009 is reflected in the statistical distribution of companies' financing balance. For example, among large companies, both the high end and the low end of the distribution (i.e. companies with respectively the biggest surpluses and biggest financing needs) moved higher in 2009 and then lower in 2011. Among SMEs, the high end of the distribution was relatively stable, which means that companies that generated a financial surplus were less affected (positively or negatively) by the economy.

A more detailed analysis at the sector level shows that some sectors were more likely than others to regularly find themselves with a surplus or a financing need. Among SMEs, real estate has regularly posted a surplus since 2005 because its available internal resources often exceed its net investments. Furthermore, it has proportionally much fewer companies in need of financing than do other sectors. Conversely, wholesale and retail trade, the manufacturing industry and construction generally have a financing need. Among large companies, the manufacturing industry habitually generates a financing surplus, unlike the information and communication sector.

The regional breakdown of trends in companies' financing balance shows that, from 2008, Flanders exhibited a

financing need in every sector of activity, which was not the case until 2009 in Brussels and Wallonia. In Flanders and Wallonia, these trends were mainly driven by the manufacturing industry, especially the chemicals and pharmaceuticals industries and, particularly in Flanders, by the metal manufactures sector. In Brussels, it was the service-oriented sectors that had the biggest influence on the financing balance because of the Brussels-Capital Region's economic structure where the majority of companies are in services sectors. We also note that Brussels had relatively more companies in need of financing, undoubtedly because of the disproportionate number of large companies in the Region, as large companies are relatively more likely to present a financing need.

By making a distinction between companies with a financial surplus and those in need of financing, we were able to discern some of the latter group's characteristics. They generally have inferior available internal resources, make more tangible and intangible investment, and are experiencing growth in their net operating assets whereas companies with a surplus are seeing a decline. This is particularly striking among SMEs, where we see an increasingly pronounced decrease in net operating assets among the companies that posted a financing surplus between 2000 and 2011, while their financing surplus increased.

An analysis of companies' financing sources highlighted a significant increase in capital financing in 2006, likely attributable to the adoption of the notional interest tax deduction. Capital financing continued to gain ground thereafter, particularly among SMEs with a financing need, for which we clearly saw a growing increase in the change in capital and a decline in new long-term financial commitments. We also noted that, following the crisis, the attribution of bank credit slowed and there was an acceleration in non-bank lending (principally intragroup loans), especially for long-term loans, among both large companies and SMEs. Thus, we saw a relative decline in companies' bank financing.

These trends were influenced by prevailing credit market conditions, which according to qualitative surveys of banks and business leaders have deteriorated since 2007. The tension in the bank lending market was also evident in the figures compiled by the Central Corporate Credit Register, which showed an increase in authorised credit utilisation rates from 2007 onward for both SMEs and large companies, indicating difficulty in obtaining new loans. Two other surveys of SMEs' access to financing, conducted respectively by the BeCeFi and the FPS Economy, reinforced this observation, indicating an increase in the loan application rejection rate following the onset of the crisis.

Lastly, sector-based analysis of authorised credit utilisation rates reveals that sectors posting the highest increase in these rates are also those in which SMEs with a financing need posted the fastest acceleration in financing by capital increase. This tends to confirm the hypothesis that SMEs' increased use of capital financing is partly the result of restricted or more costly access to bank credit as a result of the financial crisis.

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Annex I – Calculation of items in supply and use tables⁽¹⁾

1. Full format

To create a supply and use table, it is first necessary to perform a series of controls to verify the consistency and accuracy of certain accounting entries. The results of the controls are added to certain items in the table. These adjustments are vital to ensure the overall balance between resources and how they are used over the financial year.

The list of control equations is presented below. The result of each control is entered under an imaginary item C (items C₁ to C₁₆). These items are included in the definition of the entries in the supply and use table.

1.1 Controls dealing with amortisation and value impairment

These check to see if the information in the income statement is consistent with that provided in the annex. If there is a difference, the income statement data are brought into line with those in the annex.

- a. Amortisation and value impairment entries that are reversed when the fixed assets are sold are frequently entered in the annex under “writebacks”.

This anomaly is corrected by increasing the value of the reversed amortisations and value impairments by the difference between the writebacks reported in the annex and those reported in the income statement.

$$\text{Non-financial fixed assets: } C_1 = 8089 + 8289 - 760$$

$$\text{Financial fixed assets: } C_2 = 8484 + 8614 - 761$$

- b. Certain companies factor value adjustments into their amortisations or value impairments of fixed assets that are related to current assets. These adjustments must be added to internal resources in order to correctly recreate the net change in fixed assets.

– Difference between net amortisation of start-up costs, and intangible and tangible fixed assets entered into the financial statement and the annex:

$$C_3 = (8003 + 8079 - 8089 + 8279 - 8289) - (630 - 760 + 660 + 6501) + C_1$$

– Difference between net value impairments of financial fixed assets reported in the income statement and the annex:

$$C_4 = (8474 - 8484 + 8604 - 8614) - (661 - 761) + C_2$$

– Amount to be added to internal resources:

$$C_5 = C_3 + C_4$$

1.2 Changes in shareholders' capital items on the balance sheet that do not appear in the income statement or the annex

Certain accounting entries affect provisions, reported income and balance sheet reserves without influencing the income statement. These entries have been recreated by comparing changes from one balance sheet to the next of relevant items in the liabilities and shareholders' capital section and the corresponding items in the income statement. The change in revaluation gains on the balance sheet will also be compared against the corresponding income reported in the annex in order to isolate any transfers of capital gains to shareholders' capital or reserves.

(1) Source: excerpt from NBB, *Centrale des bilans - Dossier d'entreprise, méthodologie et mode d'utilisation*, October 2008, pp. 51-60.

- Difference between the change in deferred income on the balance sheet and the corresponding change reported in the table of appropriated retained earnings in the income statement:

$$C_6 = 14P - 14\$(^{(1)})$$

- Difference between changes in reserves on the balance sheet and the income statement:

$$C_7 = (13 - 13\$) - (6920 + 6921 - 792 + 689 - 789)$$

- Difference between changes in provisions and deferred taxes on the balance sheet and the income statement:

$$C_8 = (16 - 16\$) - (635/7 + 662 - 762 + 680 - 780 + 6560 - 6561)$$

- Transfers of capital gains:

$$C_9 = (12 - 12\$) - (8219 - 8239 + 8249 + 8414 - 8434 + 8444)$$

- Amount to be added to internal resources:

$$C_{10} = C_6 + C_7 + C_8 + C_9$$

1.3 Difference between the value of fixed assets on the balance sheet of the previous financial year and that reported in the annex

This difference results from mergers, demergers, entities being absorbed or spun off into a subsidiary over the past financial year; it is added to (or subtracted from) the acquisition value of the fixed assets in question.

- Start-up costs: $C_{11} = 20P - 20\$$

- Intangible fixed assets: $C_{12} = 8059P - 8129P - 21\$$

- Tangible fixed assets: $C_{13} = 8199P + 8259P - 8329P - 22/27\$$

- Financial fixed assets: $C_{14} = 8394P + 8454P - 8524P - 8554P + 8644P - 28\$$

1.4 Transfers between balance sheet items affecting non-financial fixed assets⁽²⁾

- Intangible fixed assets: $C_{15} = 8049 - 8119$

- Tangible fixed assets: $C_{16} = 8189 - 8319$

(1) Items relating to the previous financial year are followed by "\$".

(2) The transfer of financial fixed assets to other cash investments or vice-versa is explicitly reported in long-term financial investments.

Number of months in the financial year

Value added	R103	70/74 – 740 – 60 – 61
+ Operating subsidies	R104	740
– Staff costs	R105	– (62)
– Other operating costs	R106	– (640/8 + 649)
Gross operating result	R107	70/74 – 60 – 61 – 62 – 640/8 – 649
+ Income from fixed financial assets	R108	750
+ Income from current assets	R109	751
+ Other financial income	R110	752/9 – 9125 – 9126
+ Interest subsidies	R111	9126
+ Other exceptional income	R112	764/9
+ Associates' share of losses	R113	794
– Interest expenses	R114	– (650 – 6501)
– Value impairment of current assets	R115	– (651 + 631/4)
– Other financial charges	R116	– (652/9 – 6560 + 6561)
– Other exceptional charges	R117	– (664/8)
+ Exceptional charges recorded as assets in respect of restructuring costs	R118	– 669
– Income tax	R119	– (67/77)
– Profits to be distributed	R120	– (694/6)
± Accounting adjustments ⁽¹⁾	R121	C5 + C10
Available internal resources		
(cash flow)	(A) R122	70/74 – 60 – 61 – 62 – 631/4 – 640/8 – 649 + (75 – 9125) – 65 + 6501 + 6560 – 6561 + 764/9 – 664/8 – 669 – 67/77 + 794 – 694/6 + C5 + C10

(1) Adjustments made to bring into line changes in the income statement with those of shareholders' capital on the balance sheet. These adjustments are included in the imaginary items C1 through C16.

Available internal resources	R201	R122
+ Capital subsidies	R202	15 – 15 \$ + 9125
– Tangible and intangible investments	– R203	– (R204 – R205)
<i>Acquisitions</i>	R204	(a1) + (a2) + (a3) + (a4)
<i>Change in start-up costs</i>	(a1)	8002 + 8004
<i>Acquisitions of intangible fixed assets</i>	(a2)	8029 – 8099
<i>Acquisitions of tangible fixed assets</i>	(a3)	8169 + 8229 – 8299
<i>Other changes</i> ⁽¹⁾	(a4)	C11 + C12 + C13
<i>Divestments</i>	R205	(b1) + (b2) + (b3)
<i>Sales of intangible fixed assets</i>	(b1)	8039 – 8109 – C15
<i>Sales of tangible fixed assets</i>	(b2)	8179 – 8309 – C1 – C16
<i>Net capital gains from the sale of fixed assets</i>	(b3)	763 – 663
– Increase (+ decrease) in net operating assets	– R206	– [(c1) – (c2)]
<i>Change in non-financial current assets</i>	(c1)	(3 + 40/41 + 490/1) – (3 \$ + 40/41 \$ + 490/1 \$)
<i>Change in non-financial current liabilities</i>	(c2)	(44 + 45 + 46 + 47/48 + 492/3 + 8861 + 8891 + 8901) – (44 \$ + 45 \$ + 46 \$ + 47/48 \$ + 492/3 \$ + 8861 \$ + 8891 \$ + 8901 \$)
Financing surplus (+) or need (–)	R207	R201 + R202 – R203 – R206
– Long-term financial investments	– R208	– [(d1) + (d2) – (d3)]
<i>Acquisition of fixed financial assets</i>	(d1)	8364 – 8544 + 8584 + 8634 – 8494 + 8424 + 8624 + C14
<i>Change in receivables of over one year</i>	(d2)	29 – 29 \$
<i>Sale of financial fixed assets</i>	(d3)	8374 + 8594 – 8504 – C2 – (8384 – 8514)
– Increase (+ decrease) in cash assets	– R209	– (50/53 – 50/53 \$ + 54/58 – 54/58 \$)
Total financing need (–) [or total financing surplus (+)]	R210	R207 – R208 – R209

(1) Difference between the value of the net non-financial fixed asset on the balance sheet at the close of the previous financial year and that reported in the annex.

Ressources externes

Variation du capital et des primes d'émission	R211	10 – 10 \$ + 11 – 11 \$ + 791 – 691
Variation de l'endettement à long terme	R212	17 – 17 \$
dont: variation des dettes vis-à-vis des établissements de crédit ...	R213	173 – 173 \$
Variation de l'endettement financier à court terme	R214	43 – 43 \$ + 8801 – 8801 \$
dont: variation des dettes vis-à-vis des établissements de crédit ...	R215	430/8 – 430/8 \$ + 8841 – 8841 \$
Total des ressources financières externes	R216	R211 + R212 + R214

2. Abbreviated format

To create a supply and use table, it is first necessary to perform a series of controls to verify the consistency and accuracy of certain accounting entries. Any outcomes from the controls are added to certain items in the table. These adjustments are vital to ensure the overall balance between resources and how they are used over the financial year.

The list of control equations is presented below. The result of each control is entered under an imaginary item A (items A₁ to A₁₁). These items are included in the definition of the entries in the supply and use table.

2.1 Controls dealing with amortisation and value impairment

Only amortisation charges and value impairments reported in the income statement (item 630) may be compared with those reported in the annex:

$$A_1 = (8079 + 8279) - 630$$

Amortisation charges reported in the annex take into account exceptional amortisations but not amortisations of start-up costs. Because the amortisations incorporated into available internal resources are adjusted to the amounts indicated in the annex, those charged against start-up costs no longer show up, after adjustments, in internal resources.

2.2 Changes in shareholders' capital items on the balance sheet that do not appear in the income statement or the annex

– Difference between the "Deferred income" liability account and the corresponding change reported in the table of appropriated retained earnings in the income statement:

$$A_2 = (14P - 14\$)$$

– Difference between changes in reserves on the balance sheet and the income statement (excluding appropriations of taxable reserves):

$$A_3 = (13 - 13\$) - (6920 + 6921 + 689 - 789)$$

The comparison between changes in reserves on the liability side and the corresponding income statement entry does not take into account any appropriations. As a result, the reserves counted as internal resources comprise only the allocated amounts minus any appropriations of tax-free reserves (789): other appropriations appear in resources in the composition of external resources (appropriations of shareholders' capital, 791/2).

– The change in provisions and deferred taxes on the balance sheet may only be compared with the provisions reported on the income statement:

$$A_4 = (16 - 16\$) - (635/7 + 680 - 780 + 656)$$

From testing, it appears that, while incomplete, this control is useful because of the numerous increases in provisions on the liability side whose counterpart on the income statement is found under an item other than the one dealing with provision charges (amortisations, other charges, etc.).

– Transfers of capital gains:

$$A_5 = (12 - 12\$) - (8219 - 8239 + 8249 + 8415 - 8435 + 8445)$$

- Amount to be added to internal resources:

$$A_6 = A_2 + A_3 + A_4 + A_5$$

The above remarks thus principally affect the calculation for available internal resources, for which the chief differences relative to those calculated for the full format are to be found:

- in the realised net capital gains that are added, and
- in the appropriations of (taxable) reserves and amortisation of start-up costs, on the one hand, and differences between writebacks of amortisations and value impairments reported in the annex and those cited in the income statement ($C_1 + C_2$), on the other, which do not appear.

2.3 Difference between the value of fixed assets on the balance sheet of the previous financial year and that reported in the annex

This difference results from mergers, demergers, entities being absorbed or spun off into a subsidiary over the past financial year; it is added to (or subtracted from) the acquisition value of the fixed assets in question.

- Intangible fixed assets: $A_7 = 8059P - 8129P - 21\$$
- Tangible fixed assets: $A_8 = 8199P + 8259P - 8329P - 22/27\$$
- Financial fixed assets: $A_9 = 8395P + 8455P - 8525P - 8555P - 28\$$

2.4 Transfers between balance sheet items affecting non-financial fixed assets⁽¹⁾

- Intangible fixed assets: $A_{10} = 8049 - 8119$
- Tangible fixed assets: $A_{11} = 8189 - 8319$

(1) The transfer of financial fixed assets to other cash investments or vice versa is explicitly reported in long-term financial investments.

Number of months in the financial year

Value added	R101	9900
- Staff costs	R102	-(62)
- Other operating costs	R103	-(640/8 + 649)
Gross operating result	R104	9900 - 62 - 640/8 - 649
+ Financial income	R105	75 - 9125
+ Other exceptional income	R106	76 - (8089 + 8289 + 8485)
+ Associates' share of losses	R107	794
- Interest expenses	R108	-(65 - 656)
- Value impairment of current assets	R109	-(631/4)
- Other exceptional charges	R110	-(66 - 8475)
- Income tax	R111	-(67/77)
- Profits to be distributed	R112	-(694/6)
± Accounting adjustments ⁽¹⁾	R113	A1 + A6
Available internal resources (cash flow)	R114	9900 - 62 - 631/4 - 640/8 - 649 + (75 - 9125) - 65 + 656 + 76 - 8089 - 8289 - 8485 - 66 + 8475 - 67/77 + 794 - 694/6 + A1 + A6

(1) Adjustments made to bring into line changes in the income statement with those of shareholders' capital on the balance sheet. These adjustments are included in the imaginary items A1 through A11.

Available internal resources	R201	R114
+ Capital subsidies	R202	15 – 15 \$ + 9125
– Net tangible and intangible investments	– R203	– (R204 – R205)
<i>Acquisitions</i>	R204	20 – 20 \$ + 8029 – 8099 + 8169 + 8229 – 8299 + A7 + A8
<i>Divestments</i>	R205	8039 – 8109 – A10 + 8179 – 8309 – A11
– Increase (+ decrease) in net operating assets	– R206	– [(c1) – (c2)]
<i>Change in non-financial current assets</i> (c1)		(3 + 40/41 + 490/1) – (3 \$ + 40/41 \$ + 490/1 \$)
<i>Change in non-financial current liabilities</i> (c2)		(44 + 45 + 46 + 47/48 + 492/3) – (44 \$ + 45 \$ + 46 \$ + 47/48 \$ + 492/3 \$)
Financing surplus (+) or need (–)	R207	R201 + R202 – R203 – R206
– Long-term financial investments	– R208	– [(b1) + (b2) – (b3)]
<i>Acquisition of fixed financial assets</i> (b1)		8365 + 8386 – 8545 – 8495 + 8425 + A9
<i>Change in receivables of over one year</i> (b2)		29 – 29 \$
<i>Sale of financial fixed assets</i> (b3)		8375 – 8505 – 8385 + 8515
– Increase (+ decrease) in cash assets	– R209	– (50/53 – 50/53 \$ + 54/58 – 54/58 \$)
Total financing need (–) [or total financing surplus (+)]	R210	R207 – R208 – R209
External resources		
Change in capital and share premium account	R211	10 – 10 \$ + 11 – 11 \$ + 791/2 – 691
Change in long-term debt	R212	17 – 17 \$
of which: change in borrowings from credit institutions	R213	172/3 – 172/3 \$
Change in short-term financial debt	R214	43 – 43 \$ + 42 – 42 \$
of which: change in borrowings from credit institutions	R215	430/8 – 430/8 \$
Total external financial resources	R216	R211 + R212 + R214

Annex II – Sector groupings

SECTORAL GROUPINGS

	NACE-BEL 2008 divisions
Manufacturing industry	10-33
of which:	
Agri-food industries	10-12
Textiles, clothing and footwear	13-15
Wood, paper products and printing	16-18
Chemical and pharmaceutical industries	20-21
Metallurgy and metalworking	24-25
Metal manufactures	26-30
Non-manufacturing branches	01-09, 35-82, 85.5 and 9⁽¹⁾
of which:	
Trade	45-47
Transportation and storage	49-53
Accommodation and food service activities	55-56
Information and communication	58-63
Real estate activities	68
Business services	69-82
Energy, water supply and waste	35-39
Construction	41-43

(1) Except 64, 65, 701, 75, 94, 98 and 99.

Summaries of articles

[The Belgian economy in global value chains. An exploratory analysis](#)

Data on global value chains are shedding new light on foreign trade. Since exports largely rely on intermediate imports, breaking up exports into foreign and domestic value-added content allows for a more comprehensive understanding of the foreign trade and the national accounts statistics. After describing the conceptual framework, the paper presents some exploratory findings on the Belgian economy. Most notably, it stresses that re-exportation of merchandise and the value added content provided by service sectors are of great importance for industrial exports. The analysis also makes it possible to better identify the initial origin of inputs used in goods manufactured for export as well as the goods' final destination.

JEL codes: F10, F23, F60

Key words: global value chains, exports, globalisation

[Decoupled and resilient? The changing role of emerging market economies in an interconnected world](#)

For the last two or three decades, the global economy has been going through an extraordinary transition phase. This period has been marked by stronger integration among economies, fuelled by falling trade and communication costs, but above all by the rising prominence of emerging market and developing economies (EMDE), which as a group have enjoyed persistently higher growth than advanced economies (AE) and have shown greater resilience than in the past. This performance has to a large extent resulted from the use of better policy frameworks and institutions as well as the ability to implement counter-cyclical economic policies. While EMDEs were certainly not spared from the 2008/2009 global financial crisis, these features have helped them to limit its adverse impact and handle the crisis better than similar events in the past. Furthermore, and despite some regional exceptions, EMDEs generally bounced back more rapidly and vigorously from the great recession than AEs. The article shows how EMDEs' growing weight in the global economy and the multiplication of their connections with other parts of the world have reshaped the global economic landscape. It illustrates how the one-directional influence of AEs on EMDEs' business cycles has gradually diminished. While this does not imply full decoupling, it nevertheless suggests that the interdependence between EMDEs and AEs is becoming increasingly two-sided.

JEL codes: E32, F02, F41, F42

Key words: globalisation, business cycles, decoupling, emerging economies, resilience

Structure and distribution of household wealth : An analysis based on the HFCS

The total financial wealth of households can be deduced from the financial accounts, and their total real wealth can be assessed on the basis of estimates of property ownership and property prices. However, these macroeconomic information sources reveal little about the distribution of wealth among households. That requires microeconomic survey data. The Household Finance and Consumption Survey (HFCS) comprises that type of microeconomic data. The article uses the processed results of the first wave of that survey to analyse the structure and distribution of household wealth. Regarding household assets, we find wide international variations in home ownership. There is a low level of participation in most financial assets (other than deposits), except for the wealthiest households. In regard to debt, the author finds a relatively low percentage of households with debts in the euro area, but once again there are considerable international variations. If all assets and debts are taken into account, the wealth of Belgian households is substantial by international standards. Net wealth seems to be more unevenly distributed than income. Here, too, there are considerable variations between euro area countries. Real assets and mortgage debts play a significant role in this respect. The HFCS is a rich and – certainly for Belgium – reliable statistical source with a great deal of new information on household finances in the broad sense. The microeconomic statistics provided by the HFCS are suitable mainly for structural analyses, but the macroeconomic data are useful for global analyses.

JEL codes: D14, D31

Key words: household finance, household survey, wealth

Causes and implications of the low level of the risk-free interest rate

In most advanced economies, risk-free interest rates – i.e. the rates applicable to assets with minimal credit risk – have fallen to historically low levels over the recent period, in both nominal and real terms. These interest rates are particularly important because they serve as the basis for pricing other interest rates in the economy. The article looks at the current level of nominal and real risk-free interest rates in a historical perspective. Next, on the basis of an analytical framework of interest rate determinants, it describes the main factors behind the developments in risk-free interest rates in the United States and in the euro area since 1990. It then discusses how a low interest rate environment helps to safeguard macroeconomic stability – and hence price stability – but also deals with the potential risks for financial stability that such an environment may imply. Finally, it considers two specific interest rate risks in more detail. In particular, it illustrates the challenges which persistently low interest rates present for the insurance sector and for pension funds, as well as the risks stemming from a sudden rise in interest rates.

JEL codes: E43, E44, E52, E58

Key words: risk-free interest rate, monetary policy, macroeconomic stability, financial stability, euro area, United States

Company financing in Belgium: Analysis using supply and use tables

The issue of how companies are financed, notably small companies, has been a recurring topic in the news and in numerous surveys and studies. It is especially relevant in the wake of the recent financial crisis.

By using a table of aggregate revenue and expenditure developed by the Central Balance Sheet Office for individual companies, the article describes the characteristics of companies with a

financing need at the end of their financial year and the reason for the need. Statistics are broken down by company size, sector and region. The article then looks at the external resources used to meet those financing needs and finds, notably, an increase in equity financing among small companies in recent years. The analysis is supported by various statistics supplied by the Central Corporate Credit Register and by recent qualitative studies.

JEL codes: G32, M49

Key words: corporate finance, financial crisis, accounting data

Abstracts from the Working Papers series

242. Economic importance of the Belgian ports: Flemish maritime ports, Liège port complex and the port of Brussels – Report 2011, by Cl. Mathys, July 2013

The Flemish maritime ports (Antwerp, Ghent, Ostend, Zeebrugge), the Autonomous Port of Liège and the port of Brussels play a major role in their respective regional economies and in the Belgian economy, not only in terms of industrial activity but also as intermodal centres facilitating the commodity flow.

The paper provides an extensive overview of the economic importance and development of these ports for the period 2006-2011, with an emphasis on 2011. Focusing on the three major variables of value added, employment and investment, it also provides some information based on a few cargo statistics, the social balance sheet and an overview of the financial situation in these ports as a whole.

After the upturn in 2010, maritime cargo traffic in the Flemish ports continued to rise, albeit at a slower pace in 2011. Direct value added declined in the four ports in Flanders as a whole. Both maritime and non-maritime clusters as a whole were down. The value added of the non-maritime clusters in each port declined, while in the maritime cluster, the port of Antwerp was the only one to register a steep drop. Direct employment in the Flemish ports as a whole declined during 2011: this is true of both the maritime and non-maritime cluster. Investment contracted in all the Flemish ports in 2011.

The volume of cargo handled in the ports of Liège and Brussels increased in 2011. Direct value added rose in both clusters in Liège as in Zeebrugge but only in the maritime cluster in Brussels. As for Ghent employment increased in both clusters in Brussels but only in the non-maritime cluster in Liège. After falling in 2010, investment picked up again in 2011 in both clusters in Liège, while the drop recorded in Brussels since 2009 continued throughout 2011.

Conventional signs

e.g.	for example
i.e.	<i>id est</i>
p.m.	<i>pro memoria</i>

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
BG	Bulgaria
CZ	Czech Republic
DK	Denmark
HU	Hungary
LT	Lithuania
LV	Latvia
PL	Poland
RO	Romania
SE	Sweden
UK	United Kingdom
EU15	European Union, excluding the countries which joined after 2003
EU27	European Union, excluding Croatia
BR	Brazil
CN	China
HK	Hong Kong
IN	India

MX	Mexico
NO	Norway
JP	Japan
RU	Russian Federation
SA	South Africa
SG	Singapore
TR	Turkey
US	United States

Others

ADB	Asian Development Bank
AE	Advanced economies
BIS	Bank for International Settlements
BLS	Bank Lending Survey
BRIC	Brazil, Russia, India and China
CCCR	Central Corporate Credit Register
CEE	Central and eastern Europe
CeFIP/KeFIK	Knowledge Centre for SME Financing
CIS	Commonwealth of Independent States
EC	European Commission
ECB	European Central Bank
EIOPA	European Insurance and Occupational Pensions Authority
EMU	European and Monetary Union
Eonia	Euro Overnight Index Average
EMDE	Emerging market and developing economies
EU	European Union
FAO	Food and Agriculture Organization
FDI	Foreign direct investment
FFTR	Federal Funds Target Rate
FOMC	Federal Open Market Committee (US)
FPS	Federal Public Service
G20	Group of Twenty
GDP	Gross domestic product
GSE	Government-Sponsored Enterprise
GTAP	Global Trade Analysis Project
GVC	Global Value Chains
HFCN	Household Finance and Consumption Network
HFCS	Household Finance and Consumption Survey
HICP	Harmonised index of consumer prices
IDE-JETRO	Institute of Developing Economies – Japan External Trade Organisation
IMF	International Monetary Fund
IT	Information technology
LAC	Latin America and the Caribbean
LIC	Low-income countries

LSAP	Large-Scale Asset Purchase Program
LTRO	Longer-Term Refinancing Operations
MBS	Mortgage-backed securities
MENA	Middle East and North Africa
MENAAP	Middle East, North Africa, Afghanistan and Pakistan
MEP	Maturity Extension Program
NACE	Nomenclature of economic activities in the European Community
NAI	National Accounts Institute
NBB	National Bank of Belgium
NCB	National central bank
OECD	Organisation for Economic Cooperation and Development
OMT	Outright Monetary Transactions
R&D	Research and development
SHARE	Survey on Health, Ageing and Retirement in Europe
SILC	Statistics on Income and Living Conditions
SME	Small and medium-sized enterprise
SMP	Securities Markets Programme
SNCB/NMBS	Belgian railway company
SSA	Sub-Saharan Africa
UNCTAD	United Nations Conference on Trade and Development
VA	Value added
VAT	Value added tax
WDI	World Development Indicators
WEO	World Economic Outlook
WIOD	World Input-Output Database
WTO	World Trade Organization

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Limited liability company
RLP Brussels – Company number: 0203.201.340
Registered office: boulevard de Berlaimont 14 – BE-1000 Brussels
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Publisher

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© Illustrations: National Bank of Belgium

Cover and layout: NBB AG – Prepress & Image

Published in October 2013

