

## Integrated sectoral and overall balance sheets for Germany

The wealth of an economy and its sectors and the constituent parts of this wealth have been attracting increasing attention in economic and monetary analysis over the past few years. This article explains how the Bundesbank uses its financial accounts statistics and the new sectoral fixed assets accounts of the Federal Statistical Office, with the addition of the Bundesbank's own estimates for land, to prepare sectoral and overall balance sheets. Furthermore, initial results for the period from 1991 to 2005 are presented.

These results show a consistently positive trend in households' net worth throughout the observation period alongside a concurrent sharp decline in the net worth of the general government sector. The similarly positive trend in the own funds positions of producing enterprises and financial sector institutions, by contrast, was shaped to a considerable extent by stock market valuation factors. According to the present method of calculation, national wealth, – calculated by consolidating the sectoral balance sheets – totalled more than €9 trillion in nominal terms at the end of 2005 and had grown considerably in comparison with the corresponding figure for 1991. The ratio of national wealth to disposable income showed a slight rise over the same 15-year period.

## Background and starting point

*Growing importance of wealth in economic analysis ...*

The amount and composition of wealth in the economy and its sectors are playing a growing role in economic analysis. It is increasingly believed that wealth is of major significance in the transmission of monetary policy, for example, if monetary policy – via asset prices – influences non-banks' capacity to borrow or propensity to spend.<sup>1</sup> Wealth issues are also playing an increasingly important role in the interpretation of monetary policy indicators, such as monetary developments. There have, for instance, been recent indications that housing wealth has a significant impact on non-banks' money holdings.<sup>2</sup> Nevertheless, asset-related considerations are, by their nature, very important not only from a monetary policy perspective but also with regard to financial stability. For example, the resilience of the individual sectors to economic fluctuations and shocks hinges essentially on the size and structure of their wealth.<sup>3</sup>

*... leads to growing need for data on wealth*

The fact that wealth is playing a more important role is giving rise to a growing need for data on wealth which goes well beyond the existing demand for data on the assets and indebtedness of households, for which many countries have been supplying relevant information for quite some time.<sup>4</sup> For example, there is an increasing requirement for additional data on the wealth of the other sectors of the economy as well as on the structure of assets and liabilities among the individual sectors.

The European System of Accounts (ESA 95) makes explicit provision for balance sheets of

the individual sectors as well the economy as a whole. However, the construction of such integrated sectoral financial and non-financial balance sheets in line with current international requirements has not been possible in Germany as the Federal Statistical Office's fixed assets accounts and the Bundesbank's financial accounts were hitherto mutually incompatible, nor has it been possible to construct such balance sheets in other EU countries. However, the introduction of complete sectoral fixed assets accounts by the Federal Statistical Office means that the sectoral gaps in information on produced non-financial assets have now been closed.

The Bundesbank has supplemented the sectoral data on fixed assets and on financial assets and liabilities by a set of sectoral building land accounts. As a result, it is now possible to at least approximately estimate and factor in the value of the land assets on which the sectoral and overall stocks of buildings and structures stand. As before, however, other national non-financial assets, such

*New integrated wealth accounts*

<sup>1</sup> See, for example, F Altissimo et al (2005), Wealth and asset price effects on economic activity, ECB Occasional Paper No 29.

<sup>2</sup> See Deutsche Bundesbank, The relationship between monetary developments and the real estate market, Monthly Report, July 2007, pp 13-24.

<sup>3</sup> The IMF's worldwide project on Financial Soundness Indicators, in which the Bundesbank is also participating, is a current example of the importance of sectoral wealth data for assessing sectoral and overall financial stability. See Deutsche Bundesbank, Financial Soundness Indicators: a contribution to improving the worldwide availability of data for financial stability analysis, Financial Stability Review, November 2006, pp 103-122.

<sup>4</sup> As part of its regular commentary on Germany's annual financial accounts, the Bundesbank has often also prepared and published complete balance sheets for households. The ECB recently published such data for the euro area. See European Central Bank, Box 5 Estimates of housing wealth in the euro area, Monthly Bulletin, December 2006, pp 47-49.

as undeveloped land, subsoil assets and water resources, are not included in this set of accounts.

These integrated wealth accounts are presented below.<sup>5</sup> This article focuses on documenting the methodology, the statistical sources used as well as a basic description of the results with regard to selected sectoral and overall balance sheet positions.

### Methodological aspects of the integrated wealth accounts

*Sectoral balance sheets and national wealth*

ESA 95 provides for balance sheets for the four domestic sectors (households,<sup>6</sup> general government, producing enterprises, and the financial sector), for the economy as a whole as well as the rest of the world. The balance sheet of the total economy is calculated by consolidating the balance sheets of all the domestic sectors and, accordingly, comprises only the aggregate non-financial assets of the individual sectors and the stock of financial assets and liabilities vis-à-vis the rest of the world; the net worth of the total economy balance sheet is termed "national wealth".

*Specific aspects of sectoral balance sheets ...*

In the accounts described here, non-financial assets are represented solely by the asset categories fixed assets and land underlying buildings and structures, which are likely to form the bulk of all non-financial assets. In addition, only the sectorally specific relevant financial assets and liabilities are listed. For example, the balance sheets of the household and general government sectors do not contain shares and other equity on the liabilities

side since, generally, only enterprises issue shares.<sup>7</sup> Moreover, households' borrowed funds show only the items loans and other accounts payable. Furthermore, only the financial sector records the asset item monetary gold and special drawing rights (SDRs) since only the central bank, as part of the financial intermediaries sector, holds such assets.

When interpreting the balance sheet of the economy as a whole, it should be noted that the listing on the liabilities side of the balance sheet of the item shares and other equity in the case of enterprises cannot be transferred to the aggregate level since the domestic economy, as an institutional entity, does not issue separate shareholders' equity. To take account of this, the item shares and other equity on the liabilities side of the total economy balance sheet is recorded as a liability and not as a component of national wealth. These are shares and other equity issued by domestic enterprises and held by non-residents. This means that the domestic economy, as an institutional entity, has a liability to the rest of the world, and national wealth is represented solely by the net worth.

*... and of the total economy balance sheet*

<sup>5</sup> This article therefore represents a further development of the sectoral and overall financial and non-financial accounts published by the Bundesbank in 1999, which were still based on ESA 79 and covered the period from 1990 to 1998. See Deutsche Bundesbank, Overall financial flows in 1998, Monthly Report, June 1999, pp 15-39.

<sup>6</sup> The household sector is presented below always including non-profit institutions serving households.

<sup>7</sup> In particular, these should be understood as the quoted and unquoted shares issued by non-financial and financial corporations as well as other equity (essentially shares in private limited companies and investments in quasi-corporations, such as general partnerships and limited partnerships).

## Conceptual structure of a sectoral balance sheet

In a sectoral balance sheet, a sector's assets and liabilities are compared at a given point in time and net worth is shown as the balancing item. Assets and liabilities are valued at market prices on the balance sheet date. If market prices cannot be determined, they are estimated. Financial assets and liabilities comprise means of payment (monetary gold and special drawing rights (SDRs), currency and deposits), financial claims (securities other than shares, loans, insurance technical reserves,<sup>1</sup> other accounts receivable/payable), as well as ownership rights in corporations (shares and other equity). The difference between total financial assets and total liabilities is called net financial assets. The item non-financial assets is broken down into produced and non-produced assets. The balance sheet's balancing item is net worth, corresponding to the sum of net financial assets and non-financial assets.

Besides sub-classifying the liabilities side of the balance sheet into liabilities and net worth, it can also be broken down into own funds and borrowed funds. These two forms of presentation differ, however, only in the case of corporations, whose own funds, besides net worth, also contain shares and other equity.<sup>2</sup> Corporations' net worth arises *inter alia* from the accumulation of savings and/or retained earnings, and from holding gains. By analogy with commercial accounting, net worth may therefore be interpreted as the "self-financing" component of own funds, whereas shares and other equity represent the "equity financing component" of own funds. Borrowed funds, finally, are the sum of total liabilities less the liability item shares and other equity. Consequently, liabilities and borrowed funds, again, differ only in the case of corporations.

Assets	Liabilities
<p><b>Non-financial assets</b></p> <ul style="list-style-type: none"> <li>- Produced assets                             <ul style="list-style-type: none"> <li>- Fixed assets                                     <ul style="list-style-type: none"> <li>- Tangible fixed assets   <ul style="list-style-type: none"> <li>- Dwellings</li> <li>- Other buildings and structures</li> <li>- Machinery and equipment</li> </ul> </li> <li>- Intangible fixed assets</li> </ul> </li> <li>- Inventories and valuables</li> </ul> </li> <li>- Non-produced assets                             <ul style="list-style-type: none"> <li>- Tangible non-produced assets                                     <ul style="list-style-type: none"> <li>- Land   <ul style="list-style-type: none"> <li>- Land underlying structures and buildings</li> <li>- Land under cultivation</li> <li>- Recreational land and other land</li> </ul> </li> <li>- Subsoil assets and water resources</li> </ul> </li> <li>- Intangible non-produced assets</li> </ul> </li> </ul> <p><b>Financial assets</b></p> <ul style="list-style-type: none"> <li>- Monetary gold and special drawing rights (SDRs)</li> <li>- Currency and deposits</li> <li>- Security other than shares</li> <li>- Loans</li> <li>- Shares and other equity</li> <li>- Insurance technical reserves</li> <li>- Other accounts receivable</li> </ul>	<p><b>Liabilities</b></p> <ul style="list-style-type: none"> <li>- Monetary gold and SDRs</li> <li>- Currency and deposits</li> <li>- Securities other than shares</li> <li>- Loans</li> <li>- Insurance technical reserves</li> <li>- Other accounts payable</li> </ul> <p style="text-align: right;">} <b>Bor- rowed funds</b></p> <hr style="border-top: 1px dashed black;"/> <ul style="list-style-type: none"> <li>- Shares and other equity</li> </ul> <p style="text-align: right;">} <b>Own funds</b></p> <p><b>Net worth</b> (= net financial assets + non-financial assets)</p>

1 These are claims of policy holders and beneficiaries on insurance corporations and pension funds (for example, claims from life insurance policies). — 2 The classification of shares and other equity as a liability in ESA 95 is due to the

fact that equity financing, like debt financing, is an external financing item which corresponds to a corporation's "liability" to the investors or owners.

## Data basis for the integrated wealth accounts

*Fixed assets accounts now available with sectoral breakdown*

The Federal Statistical Office carries out a compilation of non-financial assets annually based on ESA 95. Not least owing to the difficulties of capturing and valuing non-produced non-financial assets as well as inventories and valuables, the Federal Statistical Office calculates only fixed assets, which nonetheless represent the bulk of produced non-financial assets.<sup>8</sup> A distinction is made between tangible and intangible fixed assets, with tangible fixed assets being broken down further into the items dwellings, other buildings and structures and machinery and equipment. The stock of durables, ie durable consumer goods such as private cars, does not form part of the fixed assets.

The Federal Statistical Office shows fixed assets at constant 2000 prices and at replacement cost using both the gross concept and the net concept in each case. For the sectoral and overall balance sheets calculated here, net fixed assets at replacement cost are used (gross fixed assets less accumulated consumption of fixed capital valued at current prices) as this reflects the current value of the fixed assets.<sup>9</sup> Until recently, the fixed assets accounts, with the exception of the general government sector, were broken down only by industry but not by sector of the national economy. This meant that only the stocks of fixed assets of general government, the total economy and the sum-total of fixed assets of the other domestic sectors were known. Since autumn 2007, however, the Federal Statistical Office has made available the data

on fixed assets for each sector as well as for the total economy for the period from 1990 to 2005.<sup>10</sup>

The Bundesbank's national financial accounts have, for quite some time, been prepared annually based on the sectoral financial balance sheets in accordance with ESA 95, in which the statistically recorded financial assets and liabilities are compared with each other in order to determine the sectoral and aggregate (net) financial assets.<sup>11</sup> The majority of tradable stocks of the items securities other than shares, shares and other equity as well as the item monetary gold and special drawing rights are principally valued at market prices or fair value.<sup>12</sup> The stocks of non-tradable financial assets and liabilities are shown at nominal, book or fair value. This means that all items of the financial assets and of the liabilities of the domestic sectors are known. Furthermore, for the economy as a whole, all items of the financial assets and of the liabilities vis-à-vis the rest of the world

*Financial accounts*

<sup>8</sup> See Statistisches Bundesamt (2007), Volkswirtschaftliche Gesamtrechnungen, Fachserie 18, Reihe 1.4 (available in German only).

<sup>9</sup> The net concept takes account of the amount of fixed assets used up by wear and tear and economic ageing. Valuation at replacement cost measures the value of the stock of fixed assets held at current prices on the reporting date. For further details of the methodology, see O Schmalwasser and M Schidlowski, Measuring Capital Stock in Germany, *Wirtschaft und Statistik*, www.destatis.de, and O Schmalwasser, Revision der Anlagevermögensrechnung 1991 bis 2001, *Wirtschaft und Statistik* 5/2001, pp 342-355 (available in German only).

<sup>10</sup> See Statistisches Bundesamt (2007), Fixed assets by sector, Working document.

<sup>11</sup> See Deutsche Bundesbank, Financial Accounts for Germany 1991 to 2006, Special Statistical Publication 4, July 2007. Quarterly financial accounts data have also been published regularly since the beginning of 2007.

<sup>12</sup> "Fair value" is an estimated market price for tradable instruments for which no market price is available.

## Sectoral and overall balance sheets

Assets	Households	Liabilities
<b>Non-financial assets</b>	<b>Borrowed funds</b>	
Fixed assets	Loans	
Land underlying buildings and structures	Other accounts payable	
<b>Financial assets</b>		
Currency and deposits		
Securities other than shares		
Loans		
Shares and other equity		
Insurance technical reserves		
Other accounts receivable	<b>Own funds</b>	
	Net worth	

Assets	General government	Liabilities
<b>Non-financial assets</b>	<b>Borrowed funds</b>	
Fixed assets	Currency and deposits	
Land underlying buildings and structures	Securities other than shares	
<b>Financial assets</b>	Loans	
Currency and deposits	Insurance technical reserves	
Securities other than shares	Other accounts payable	
Loans		
Shares and other equity		
Insurance technical reserves	<b>Own funds</b>	
Other accounts receivable	Net worth	

Assets	Non-financial corporations	Liabilities
<b>Non-financial assets</b>	<b>Borrowed funds</b>	
Fixed assets	Securities other than shares	
Land underlying buildings and structures	Loans	
<b>Financial assets</b>	Insurance technical reserves	
Currency and deposits	Other accounts payable	
Securities other than shares		
Loans	<b>Own funds</b>	
Shares and other equity	Shares and other equity	
Insurance technical reserves	Net worth	
Other accounts receivable		

Assets	Financial corporations	Liabilities
<b>Non-financial assets</b>	<b>Borrowed funds</b>	
Fixed assets	Currency and deposits	
Land underlying buildings and structures	Securities other than shares	
<b>Financial assets</b>	Loans	
Monetary gold and SDRs	Insurance technical reserves	
Currency and deposits	Other accounts payable	
Securities other than shares		
Loans	<b>Own funds</b>	
Shares and other equity	Shares and other equity	
Insurance technical reserves	Net worth	
Other accounts receivable		

Assets	Total economy	Liabilities
<b>Non-financial assets</b>		<b>Liabilities vis-à-vis the rest of the world</b>
Fixed assets		Currency and deposits
Land underlying buildings and structures		Securities other than shares
<b>Financial assets vis-à-vis the rest of the world</b>		Loans
Monetary gold and SDRs		Insurance technical reserves
Currency and deposits		Other accounts payable
Securities other than shares		Shares and other equity
Loans		
Shares and other equity		<b>National wealth</b>
Insurance technical reserves		Net worth
Other accounts receivable		

are available, in particular from the statistics on the international investment position.

*Statistics on  
building land*

Balance sheets can be calculated from the data of the fixed assets accounts and the financial accounts for the period 1991 to 2005 only by disregarding the non-produced non-financial assets. Such balance sheets would not constitute a satisfactory database for monetary policy and financial stability analysis, however, since they would not include, above all, building land. The stock of building land is a key component of the non-produced non-financial assets and represents a considerable part of the sectoral and overall assets and, consequently, of the net worth and own funds positions. In order to eliminate this information deficit, the Bundesbank has made estimates of the sectoral stocks of building land (see annex on pages 42-43). This has allowed a sufficiently large coverage of the financial and non-financial assets, measured by the requirements of ESA 95.

### Results of the integrated sectoral and overall balance sheets<sup>13</sup>

*Increase in  
households'  
net worth*

The results show that households' net worth recorded a consistently positive trend throughout the reporting period, reaching a peak of nearly €7.6 trillion in 2005. Statistically, this was equivalent to average wealth (after deducting debt) of around €200,000 per household. Since 1991, the net worth of the household sector has risen by almost €3.4 trillion, which corresponds to an average annual growth rate of roughly 4½% in nominal terms. This was due to a €1.8 trillion increase

in non-financial assets and an even somewhat more marked growth in financial assets. While there was a steady rise in non-financial assets, financial assets declined at the beginning of the present decade owing to valuation effects. The slump in stock market prices in 2001 and 2002 caused the value of financial assets at the end of 2002 to show a year-on-year fall for the first time. The valuation-related asset losses were even greater than the concurrently quite high level of saving. By the end of 2005, financial assets had shown a sharp increase again, however, reaching €4.3 trillion at the end of the period under review, compared with non-financial assets (in the definition used here) which had a value of €4.8 trillion. Dwellings accounted for almost two-thirds of this amount; building land had a share of about one-quarter of the non-financial assets. Household debt, consisting very largely of loans for house purchase from banks and insurance companies, has been declining slightly since 2003 owing to the slowdown in the construction of owner-occupied housing. At the end of 2005, it amounted to just over €1.5 trillion.

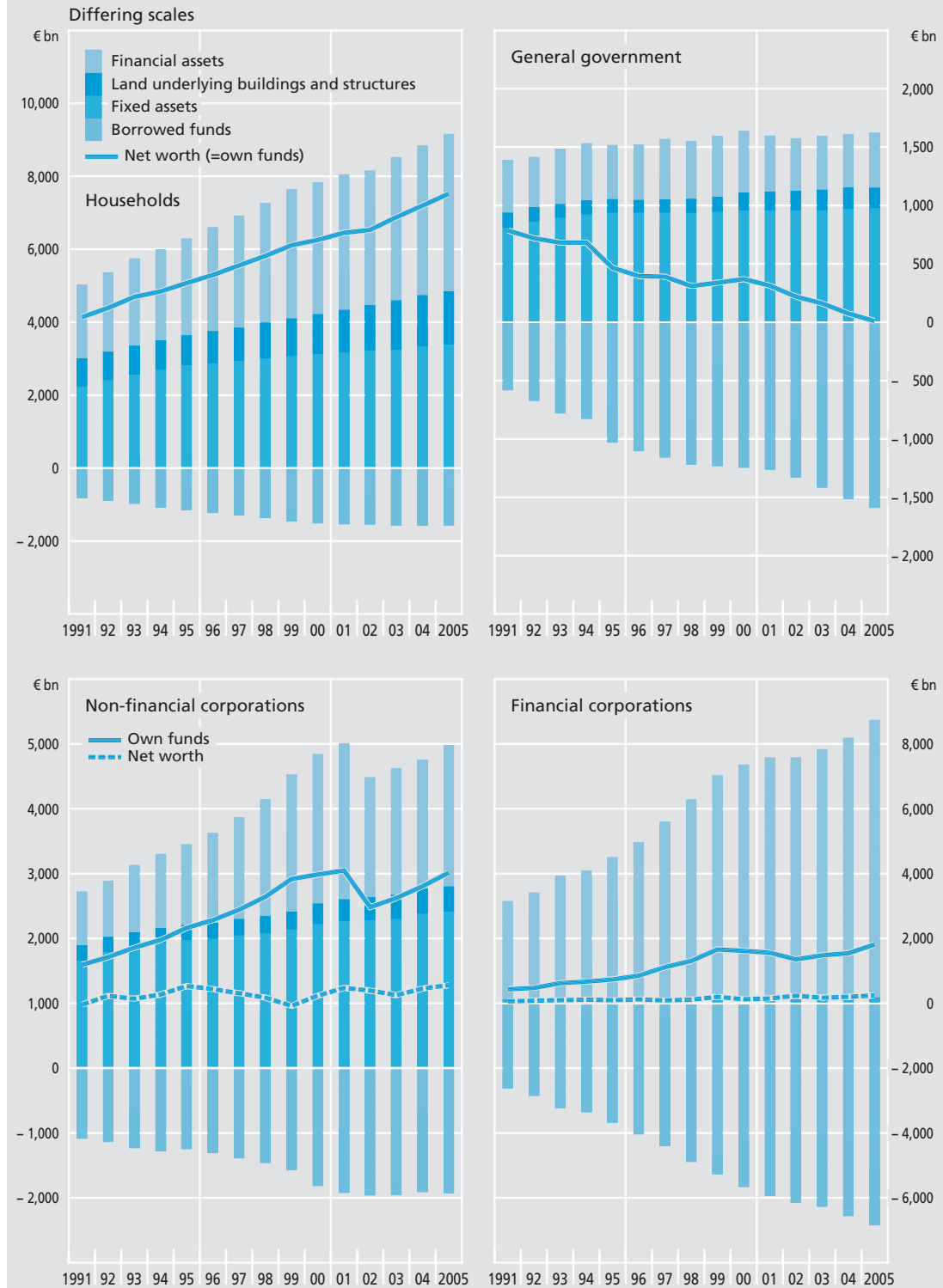
While households' net worth position showed a steady and sustained improvement between 1991 and 2005, the rise in the debt of general government, which was not accompanied by a matching build-up of assets, led to its net worth displaying a strongly negative trend in the reporting period.<sup>14</sup> According to the calculations performed, the net wealth

*Sharp decline  
in government  
net worth*

<sup>13</sup> The relevant data for the period 1991 to 2005 are shown in the tables annexed to this article.

<sup>14</sup> See also Deutsche Bundesbank, Reform of German budgetary rules, Monthly Report, October 2007, pp 47-68.

### Balance sheets by sector



Sources: Federal Statistical Office, Financial Accounts and Bundesbank calculations.

Deutsche Bundesbank



position of all the government levels at the end of 2005 was still slightly positive, however. In this connection, it should be noted that the assets of the government sector are currently understated – perhaps more than in the other sectors – in the relevant data sources and hence also in the integrated wealth accounts prepared on the basis of ESA 95. For example, owing to a lack of statistical data, a key part of non-financial assets, especially in the form of undeveloped land, which plays a major role in the government sector, has not been included in the calculations performed here. Nevertheless, it should be borne in mind that, in line with the current international requirements, it is largely only the credit and capital market liabilities that are recorded on the liabilities side of the general government balance sheet. In particular, data on households' net equity in the insurance reserves of the civil service and statutory pension insurance schemes are lacking. It is, however, envisaged that this generally quite extensive implicit general government debt will be recorded as well – at least as supplementary information – as part of the ESA revision, which is currently under way and scheduled to be completed in 2011.<sup>15</sup>

*Stock prices heavily influenced own funds of non-financial corporations...*

The results of the integrated wealth accounts show that the producing enterprises invested predominantly in real capital, which amounted to around €2.8 trillion at the end of 2005 according to the available figures, although their financial assets, too, were considerable, at just over €2 trillion at the end of 2005. Nevertheless, a longer-term comparison reveals that the accumulation of financial assets was more dynamic than that of real capital –

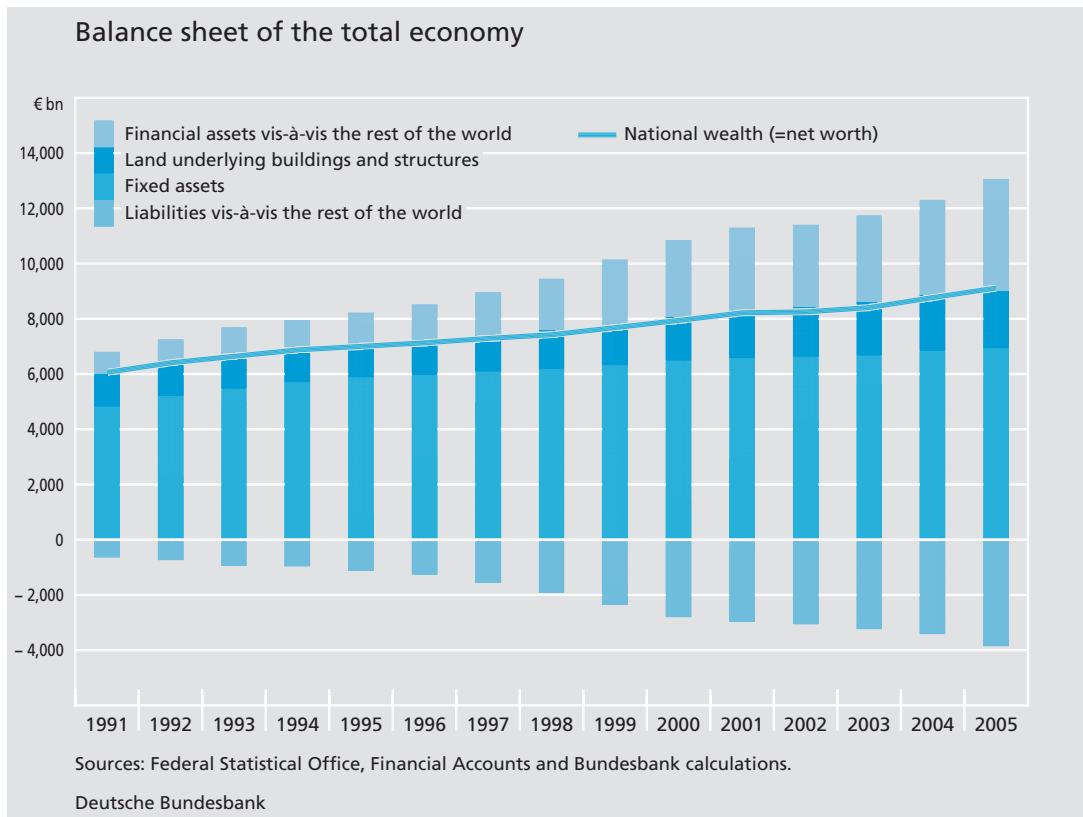
despite the stock market slump at the beginning of the decade, which, owing to the comparatively major importance of shares, affected the producing enterprises far more than households. This is due to the fact that, for many years, enterprises have been forging ahead with external corporate growth, ie investing in domestic and foreign enterprises.

Such activity is often associated with higher borrowing in the capital market. This is consistent with the fact that the stock of shares and other equity on the liabilities side of the balance sheet grew very sharply throughout this period despite the aforementioned slump in stock market prices. The reserves formed from the retained earnings together with credit and capital market debt were generally more than sufficient to fully finance the non-financial assets, which consisted mainly of industrial and commercial buildings and machinery and equipment. Since ESA prescribes that shares and other equity should be marked to market, the own funds ratios calculated on the basis of the integrated wealth accounts should be interpreted with a certain amount of caution when compared with the corresponding national corporate balance sheet statistics, which are generally geared to the lower of cost or market principle.<sup>16</sup> This is especially true in the case of producing enterprises, where the relevant ratio was just

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<sup>15</sup> For details see A Braakmann, J Grütz and T Haug, Das Renten- und Pensionsvermögen in den Volkswirtschaftlichen Gesamtrechnungen, Methodik und erste Ergebnisse, *Wirtschaft und Statistik*, 12/2007, pp 1167-1179 (available in German only).

<sup>16</sup> For the comparability of data from the financial accounts and the corporate balance sheet statistics, see Deutsche Bundesbank, German enterprises' profitability and financing in 2004, *Monthly Report*, June 2006, pp 55-77.



under 60% of the balance sheet total at the end of 2005, which was well above the ratio based on microeconomic balance sheet data.<sup>17</sup>

... and of the  
financial sector

The own funds position of the financial sector enterprises, which in part is already captured at market-related prices by the relevant primary sources, surged dynamically in the period 1991 to 1999 owing to rapidly rising stock market prices that led to a sharp increase in outstanding shares and other equity. This development went into reverse between 2000 and 2002 owing to the slump in the stock markets. The positive trend subsequently resumed, however, with a new peak being reached in 2005 at almost €1.9 trillion. The financial intermediaries' own funds ratio as defined here thus corresponded to roughly

one-fifth of the balance sheet total. Overall, the institutions recorded an increase in their own funds of almost €1.4 trillion between 1991 and 2005 due mainly to the growth in shares and other equity. The development in net worth was much more muted, however. This was due to a much smaller increase in the financial intermediaries' non-financial assets, which are, naturally enough, of less importance than in the case of the producing enterprises. At the end of 2005, their non-financial assets amounted to just under €200 billion; almost three-quarters of this consisted

<sup>17</sup> However, the own funds ratios of non-financial corporations, which have been calculated as part of the integrated wealth accounts presented in this article, are consistent, for example, with the results of the largely comparable integrated wealth accounts for the USA, where the own funds ratio of this sector in 2005 was just under 60%.

of other buildings and structures and the land on which they stood.

*Sharp rise in national wealth in nominal terms ...*

The balance sheet for the total economy is calculated by consolidating the sectoral balance sheets. Since this involves netting domestic financial assets and liabilities, national wealth is ultimately the product of the non-financial assets of the total economy and of the financial claims on non-residents less non-residents' claims on German debtors. At the end of 2005, Germany's financial assets vis-à-vis the rest of the world amounted to more than €4 trillion. At €3.8 trillion, the corresponding liabilities were somewhat smaller, which means that Germany was a net creditor in terms of this balance sheet presentation. At just over €200 billion, this asset position was relatively small compared with total domestic non-financial assets, however. Seen in this light, national wealth, or the net worth of the overall economy, was determined almost solely by the value of buildings, of land underlying buildings and structures, and of machinery and equipment. At the end of the reporting period, this item totalled just over €9 trillion in nominal terms, compared with €6 trillion in 1991. This corresponded to almost five times the disposable income of the economy as a whole and thus slightly exceeded the comparable figure at the start of German reunification. The most important items among the non-financial assets were dwellings and other buildings and structures, which together had a share of nearly two-thirds. The land underlying buildings and structures accounted for roughly one-fifth of wealth.

*... but only slight increase in relation to income*

## Limitations of the integrated wealth accounts

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The integrated wealth accounts based on ESA 95, which have been presented here for the first time, contain some valuable new information. In particular, they go beyond an isolated analysis of households' wealth by presenting a consistent picture of the balance sheets of each of the sectors as well as of the economy as a whole.

Even so, the accounts are subject to some statistical limitations which should be borne in mind when interpreting the results. First, the calculation of the value of building land contains certain degrees of freedom as it is very largely based on estimates. Moreover, the valuations of building land areas are based on price information for new land for building development and therefore ignore possible price differences with regard to land that has already been built on. For this reason, the results with regard to market values are to be seen more as a lower limit. Furthermore, potential measurement errors in the sources used due, in particular, to unavoidable valuation problems, should be taken into consideration. In the financial accounts, for example, the precise determination of the own funds positions of non-financial corporations is fraught with a number of uncertainties since the market-based valuation of unquoted shares is possible only with the aid of estimations. With regard to the degree of coverage of the sectoral and overall wealth pursuant to the requirements of ESA 95, the approach adopted here necessarily remains incomplete since, as was mentioned in the

*Despite certain statistical limitations ...*

introduction to this article, not all components of non-financial assets, such as inventories, valuables, undeveloped land, subsoil assets and water resources, can be captured.

Despite these caveats, the outcome is a good coverage of the sectoral and overall wealth holdings from an economic perspective. Fur-

thermore, given the problem areas cited, the – in most cases – relatively minor discrepancies in the results compared with other systems of accounts and the consistency of various estimation approaches argue for the reliability of the calculation method used here.

*... good coverage of financial and non-financial assets*

## Annex:

### Calculating the value of building land

As the data on building land in Germany required for the sectoral integrated wealth accounts are not available in statistical form, the following explanation details how the market values and areas of land underlying dwellings and other buildings and structures are calculated for the economy as a whole and for the individual domestic sectors for the period from 1991 to 2005.

The data pool comprises two sets of statistics from the Federal Statistical Office. One is the Land Survey<sup>18</sup>, which is compiled quadrennially (the most recent survey is for 2004) as a census of the total surface area of land by type of actual use (eg buildings and undeveloped areas, recreational, agricultural and forest areas). The second data base is the Statistics on the Purchase Values of Building Land,<sup>19</sup> which have been drawn up both on a quarterly and an annual basis since 1964. They provide information *inter alia* on the area sold and the average purchase price (in €/m<sup>2</sup>) for sales of undeveloped land suitable for building measuring 100m<sup>2</sup> or more.<sup>20</sup> These figures are calculated for different types of building land (developed building land, undeveloped building land, other building land) and are broken down by various attributes,

including type of building area (commercial area, mixed commercial and residential area, residential area, industrial area and rural area).

This data base shows the stock of building land<sup>21</sup> for individual years (1992, 1996, 2000, 2004), the annual sales of building land and the average purchase price (in €/m<sup>2</sup>) broken down according to types of building area – however, at a macroeconomic level only. Based on this information, the

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<sup>18</sup> See Statistisches Bundesamt (2005), Land- und Forstwirtschaft, Fischerei, Bodenfläche nach Art der tatsächlichen Nutzung, Fachserie 3, Reihe 5.1 (available in German only).

<sup>19</sup> See eg Statistisches Bundesamt (2007), Preise, Kaufwerte für Bauland, Fachserie 17, Reihe 5 (available in German only).

<sup>20</sup> The average purchase values are not prices in the usual sense but average values. In simple terms, they are calculated by dividing total land sales recorded by total plots of land sold. Their changes over time reflect not only the actual changes in price that are being sought but also differences in the composition of land sales (for example, the varying location of the land). If more high-quality land is sold, then the average values increase even if the prices for all land remain constant. Because of this peculiarity, the Federal Statistical Office also does not publish percentage changes on the basis of the Statistics on the Purchase Values of Building Land. See the methodological notes in: Statistisches Bundesamt (2007), Preise, Kaufwerte für Bauland, Fachserie 17, Reihe 5, p 3 (available in German only).

<sup>21</sup> The volume of the main usage type "buildings and undeveloped areas" from the Land Survey is used to calculate the amount of building land for the whole of the economy as the definition of this item is very similar to the "land underlying buildings and structures" item as defined in ESA 95.

following four-step procedure then calculates the areas and values of building land both for dwellings and for other buildings and structures that are required for the sectoral integrated wealth accounts.

(1) The share of each type of building area in the total area in 2004 (reference year) is estimated using its share in the accumulated building land transactions for the period from 1964 to 2004. This calculation is based on the notion that, given sufficiently "long" transaction series, the share of a given type of building area in the overall area in the reference year can be approximated by its share in the accumulated overall transactions in the past. The shares calculated in this way are then converted for 2004 into absolute areas, broken down by type of building area, using the area data from the Land Survey statistics.

(2) Using a stock-flow account, the data calculated for 2004 in the first stage of the procedure are retrospectively calculated back to 1991 and extrapolated for 2005 on the basis of the annual transactions from the Statistics on the Purchase Values of Building Land and the Land Survey. The next stage is to determine the value of the area data. The result is a stock-flow account for areas and values in accordance with the ESA item land underlying buildings and structures, differentiated according to type of building area.

(3) On the basis of several assumptions, the figures calculated in the second stage are transformed in

an approach broken down by areas for dwellings and for other buildings and structures.

(4) The results from the third stage are merged with the Federal Statistical Office's sectoral fixed assets accounts to ensure that they are compatible with the sectoral presentation pursuant to ESA 95. For each year in the period from 1991 to 2005, the ratio of land value to building value for both dwellings and for other buildings and structures is calculated for the economy as a whole. These purely macroeconomic ratios are then transposed to the individual sectors on the basis of the sectoral stocks of dwellings and of other buildings and structures.

This results in an overall value for building land of over €2 trillion at the end of 2005. Three-quarters of the total is attributable to land underlying dwellings. These areas are predominantly owned by households, but non-financial corporations, including public and private sector housing associations, also own considerable stocks of land with dwellings. Building land for other buildings and structures, such as industrial plants and office buildings, mainly belongs to general government and to producing enterprises. In contrast, financial intermediaries own only an extremely small amount of land. If the values of buildings shown in the fixed assets accounts are compared at the macroeconomic level with the land values calculated here, then the produced buildings are almost three times higher than the associated land assets.

The table to this annex can be found on pages 44 and 45.

**Integrated sectoral and overall balance sheets from 1991 to 2005**

€ bn; year-end amounts

Item	1991	1992	1993	1994	1995	1996	1997	1998
<b>Households</b>								
<b>Assets</b>	5,036.5	5,359.7	5,748.9	5,994.3	6,300.5	6,599.8	6,924.2	7,257.8
Non-financial assets	3,022.3	3,204.8	3,358.5	3,519.8	3,642.4	3,757.9	3,865.7	3,990.6
Fixed assets	2,243.1	2,428.0	2,570.6	2,717.9	2,826.5	2,886.7	2,945.5	3,007.5
Land underlying buildings and structures	779.3	776.8	787.9	801.9	815.9	871.1	920.2	983.1
Financial assets	2,014.2	2,154.9	2,390.4	2,474.5	2,658.1	2,841.9	3,058.5	3,267.2
<b>Liabilities</b>	5,036.5	5,359.7	5,748.9	5,994.3	6,300.5	6,599.8	6,924.2	7,257.8
Borrowed funds	828.4	895.9	984.2	1,079.7	1,154.5	1,232.7	1,295.3	1,370.5
Net worth (= own funds)	4,208.1	4,463.8	4,764.7	4,914.6	5,146.0	5,367.1	5,628.9	5,887.3
<b>General government</b>								
<b>Assets</b>	1,389.8	1,414.6	1,487.1	1,532.9	1,518.3	1,523.8	1,570.5	1,553.8
Non-financial assets	939.9	987.5	1,015.9	1,044.7	1,056.8	1,051.5	1,053.0	1,061.4
Fixed assets	810.8	864.3	896.7	926.2	938.2	939.3	936.2	937.3
Land underlying buildings and structures	129.1	123.1	119.2	118.5	118.6	112.2	116.8	124.2
Financial assets	449.9	427.1	471.2	488.2	461.5	472.3	517.5	492.4
<b>Liabilities</b>	1,389.8	1,414.6	1,487.1	1,532.9	1,518.3	1,523.8	1,570.5	1,553.8
Borrowed funds	581.6	673.2	782.8	829.0	1,030.5	1,105.5	1,158.9	1,221.5
Net worth (= own funds)	808.2	741.4	704.3	703.9	487.8	418.3	411.6	332.3
<b>Non-financial corporations</b>								
<b>Assets</b>	2,722.8	2,893.0	3,135.6	3,299.4	3,451.1	3,629.9	3,869.8	4,148.1
Non-financial assets	1,900.6	2,025.9	2,097.4	2,162.7	2,212.0	2,242.5	2,302.7	2,354.6
Fixed assets	1,660.9	1,791.7	1,865.6	1,930.5	1,976.9	2,005.0	2,051.2	2,086.8
Land underlying buildings and structures	239.7	234.2	231.9	232.2	235.1	237.6	251.4	267.8
Financial assets	822.2	867.1	1,038.2	1,136.7	1,239.1	1,387.4	1,567.1	1,793.5
<b>Liabilities</b>	2,722.8	2,893.0	3,135.6	3,299.4	3,451.1	3,629.9	3,869.8	4,148.1
Borrowed funds	1,089.6	1,140.5	1,236.4	1,282.3	1,247.9	1,306.2	1,385.9	1,465.3
Own funds	1,633.2	1,752.5	1,899.2	2,017.1	2,203.2	2,323.7	2,483.9	2,682.8
Shares and other equity	613.6	597.5	788.8	841.3	896.5	1,064.4	1,288.7	1,555.0
Net worth	1,019.6	1,155.0	1,110.4	1,175.8	1,306.7	1,259.3	1,195.2	1,127.8
<b>Financial corporations</b>								
<b>Assets</b>	3,144.7	3,416.3	3,926.2	4,100.3	4,507.1	4,975.6	5,605.1	6,286.0
Non-financial assets	137.3	147.2	155.9	162.4	168.5	171.6	176.9	181.8
Fixed assets	117.3	127.5	136.2	142.6	148.2	151.5	155.5	158.7
Land underlying buildings and structures	20.0	19.6	19.7	19.8	20.3	20.1	21.5	23.1
Financial assets	3,007.4	3,269.1	3,770.3	3,937.9	4,338.6	4,804.0	5,428.2	6,104.2
<b>Liabilities</b>	3,144.7	3,416.3	3,926.2	4,100.3	4,507.1	4,975.6	5,605.1	6,286.0
Borrowed funds	2,633.5	2,861.4	3,223.3	3,350.4	3,691.3	4,041.6	4,407.8	4,897.6
Own funds	511.2	554.9	702.9	749.9	815.8	934.0	1,197.3	1,388.4
Shares and other equity	368.3	393.6	526.3	555.9	638.5	732.9	1,026.9	1,195.3
Net worth	142.9	161.3	176.6	194.0	177.3	201.1	170.4	193.1
<b>Total economy</b>								
<b>Assets</b>	6,805.5	7,257.8	7,687.7	7,952.7	8,228.0	8,509.7	8,957.3	9,453.5
Non-financial assets	6,000.1	6,365.3	6,627.8	6,889.7	7,079.8	7,223.5	7,398.3	7,588.5
Fixed assets	4,832.1	5,211.5	5,469.1	5,717.2	5,889.8	5,982.5	6,088.4	6,190.3
Land underlying buildings and structures	1,168.0	1,153.7	1,158.7	1,172.5	1,189.9	1,241.0	1,309.9	1,398.2
Financial assets vis-à-vis the rest of the world	805.4	892.5	1,059.9	1,063.0	1,148.2	1,286.2	1,559.0	1,865.0
<b>Liabilities</b>	6,805.5	7,257.8	7,687.7	7,952.7	8,228.0	8,509.7	8,957.3	9,453.5
Liabilities vis-à-vis the rest of the world	633.9	742.9	938.0	970.8	1,117.3	1,271.1	1,558.3	1,921.8
National wealth (= net worth)	6,171.6	6,514.9	6,749.7	6,981.9	7,110.7	7,238.6	7,399.0	7,531.7

Sources: Federal Statistical Office, Financial Accounts and Bundesbank calculations.

Deutsche Bundesbank

1999	2000	2001	2002	2003	2004	2005	Item
							<b>Households</b>
							<b>Assets</b>
7,648.9	7,840.2	8,056.7	8,155.2	8,518.9	8,842.3	9,162.5	Non-financial assets
4,109.9	4,232.2	4,350.6	4,479.3	4,611.4	4,755.7	4,857.4	Fixed assets
3,074.5	3,138.3	3,177.5	3,213.9	3,252.0	3,340.1	3,391.2	Land underlying buildings and structures
1,035.4	1,093.9	1,173.1	1,265.4	1,359.4	1,415.7	1,466.2	Financial assets
3,539.0	3,608.0	3,706.1	3,675.9	3,907.5	4,086.6	4,305.1	
7,648.9	7,840.2	8,056.7	8,155.2	8,518.9	8,842.3	9,162.5	<b>Liabilities</b>
1,467.4	1,513.7	1,535.4	1,552.1	1,568.4	1,573.7	1,568.7	Borrowed funds
6,181.5	6,326.5	6,521.3	6,603.1	6,950.5	7,268.6	7,593.8	Net worth (= own funds)
							<b>General government</b>
							<b>Assets</b>
1,594.9	1,637.4	1,599.1	1,573.5	1,597.9	1,610.3	1,624.0	Non-financial assets
1,076.1	1,111.7	1,122.5	1,126.4	1,137.1	1,154.3	1,152.6	Fixed assets
946.8	959.4	962.3	959.8	962.3	972.3	979.2	Land underlying buildings and structures
129.3	152.2	160.2	166.6	174.8	182.0	173.4	Financial assets
518.8	525.7	476.6	447.1	460.8	456.0	471.4	
1,594.9	1,637.4	1,599.1	1,573.5	1,597.9	1,610.3	1,624.0	<b>Liabilities</b>
1,234.9	1,245.3	1,263.7	1,332.8	1,414.6	1,513.9	1,592.2	Borrowed funds
360.0	392.1	335.4	240.7	183.3	96.4	31.8	Net worth (= own funds)
							<b>Non-financial corporations</b>
							<b>Assets</b>
4,532.1	4,846.9	5,009.2	4,488.1	4,624.0	4,757.4	4,988.8	Non-financial assets
2,421.7	2,539.2	2,603.9	2,636.3	2,675.8	2,776.1	2,808.5	Fixed assets
2,141.2	2,225.1	2,270.3	2,282.5	2,299.2	2,379.4	2,417.2	Land underlying buildings and structures
280.5	314.1	333.6	353.8	376.5	396.7	391.3	Financial assets
2,110.4	2,307.7	2,405.3	1,851.8	1,948.2	1,981.3	2,180.3	
4,532.1	4,846.9	5,009.2	4,488.1	4,624.0	4,757.4	4,988.8	<b>Liabilities</b>
1,575.1	1,821.0	1,920.5	1,965.1	1,960.4	1,911.9	1,933.3	Borrowed funds
2,957.0	3,025.9	3,088.7	2,523.0	2,663.6	2,845.5	3,055.5	Own funds
1,955.6	1,868.2	1,812.1	1,286.0	1,497.4	1,578.4	1,735.0	Shares and other equity
1,001.4	1,157.7	1,276.6	1,237.0	1,166.2	1,267.1	1,320.5	Net worth
							<b>Financial corporations</b>
							<b>Assets</b>
7,022.8	7,370.7	7,586.9	7,584.9	7,833.4	8,185.8	8,736.7	Non-financial assets
185.7	192.2	192.9	192.9	191.4	193.7	190.0	Fixed assets
161.5	164.5	163.8	162.5	159.9	161.1	158.7	Land underlying buildings and structures
24.1	27.7	29.1	30.4	31.5	32.7	31.3	Financial assets
6,837.1	7,178.5	7,394.0	7,392.0	7,642.0	7,992.1	8,546.7	
7,022.8	7,370.7	7,586.9	7,584.9	7,833.4	8,185.8	8,736.7	<b>Liabilities</b>
5,281.6	5,672.6	5,945.1	6,148.6	6,273.6	6,560.1	6,842.5	Borrowed funds
1,741.2	1,698.1	1,641.8	1,436.3	1,559.8	1,625.7	1,894.2	Own funds
1,462.5	1,492.9	1,413.4	1,121.3	1,307.6	1,344.6	1,569.3	Shares and other equity
278.7	205.2	228.4	315.0	252.2	281.1	324.9	Net worth
							<b>Total economy</b>
							<b>Assets</b>
10,136.3	10,852.1	11,300.0	11,408.1	11,747.4	12,292.3	13,065.6	Non-financial assets
7,793.4	8,075.3	8,269.9	8,434.8	8,615.6	8,879.8	9,008.5	Fixed assets
6,324.0	6,487.3	6,573.9	6,618.7	6,673.4	6,852.9	6,946.4	Land underlying buildings and structures
1,469.4	1,588.0	1,696.1	1,816.2	1,942.2	2,027.0	2,062.1	Financial assets vis-à-vis the rest of the world
2,342.9	2,776.8	3,030.1	2,973.3	3,131.8	3,412.5	4,057.1	
10,136.3	10,852.1	11,300.0	11,408.1	11,747.4	12,292.3	13,065.6	<b>Liabilities</b>
2,347.1	2,803.5	2,973.6	3,049.0	3,232.1	3,414.7	3,842.6	Liabilities vis-à-vis the rest of the world
7,789.2	8,048.6	8,326.4	8,359.1	8,515.3	8,877.6	9,223.0	National wealth (= net worth)