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ECONOMIC AND POLICY DEVELOPMENTS

PROJECTIONS FOR THE PORTUGUESE ECONOMY: 2012-2013

PROJECTIONS FOR THE PORTUGUESE ECONOMY: 2012-2013¹

1. Introduction

The projections for 2012-2013 published in this Bulletin envisage the continued adjustment of macroeconomic imbalances accumulated over recent years in the Portuguese economy. This process is part of the Economic and Financial Assistance Programme (EFAP) which is fundamental to prevent an abrupt and disorderly economic adjustment, and to lay down the foundations for an increase in productivity and potential output growth in the medium term.

In this context, projections continue to point to a strong contraction of economic activity in 2012, followed by a gradual recovery throughout 2013, although insufficient to ensure output growth in annual average terms (Table 1). The current projections therefore point to a contraction of 3 per cent in Gross Domestic Product (GDP) in 2012 (compared to a 1.6 per cent fall in 2011), reflecting a strong decline in domestic demand and a positive contribution of exports, in spite of a deceleration due to the slowdown in the world economy. For 2013, economic activity is projected to stagnate, in a context of gradual recovery of domestic demand and acceleration of exports.

Developments projected for aggregate demand components imply a substantial cut in external financing requirements in the Portuguese economy, measured by the current and capital account balance, which is expected to become positive in 2013. These developments are key to ensure that the international investment position resume a sustainable trend, providing intertemporal solvency conditions for external debt.

Inflation measured by the Harmonised Index of Consumer Prices (HICP) is likely to remain at a relatively high level in 2012 (2.6 per cent), largely reflecting the impact of changes in indirect taxation and administered prices in 2011 and 2012, in the context of the fiscal consolidation measures set out in the

PROJECTIONS OF BANCO DE PORTUGAL: 2012-2013 ANNUAL RATE OF CHANGE, PER CENT												
	Weights	EB	Summer 2	2012	EB Spring 2		012					
	2011	2011	2012 ^(p)	2013 ^(p)	2011	2012 ^(p)	2013 ^(p)					
Gross domestic product	100.0	-1.6	-3.0	0.0	-1.6	-3.4	0.0					
Private consumption	66.3	-4.0	-5.6	-1.3	-3.9	-7.3	-1.9					
Public consumption	20.1	-3.8	-3.8	-1.6	-3.9	-1.7	-1.2					
Gross fixed capital formation	18.1	-11.3	-12.7	-2.6	-11.4	-12.0	-1.7					
Domestic demand	103.9	-5.7	-6.4	-1.4	-5.7	-6.2	-1.6					
Exports	35.5	7.6	3.5	5.2	7.4	2.7	4.4					
Imports	39.4	-5.3	-6.2	1.5	-5.5	-5.6	0.0					
Contribution to GDP growth (in p.p.)												
Net exports		4.6	3.6	1.4	4.6	3.1	1.6					
Domestic demand		-6.2	-6.6	-1.4	-6.2	-6.5	-1.7					
of which: change in inventories		-0.5	0.1	0.2	-0.5	0.8	0.1					
Current and capital account (% of GDP)		-5.2	-1.7	0.8	-5.2	-2.8	-0.4					
Goods and services account (% of GDP)		-3.2	0.4	2.5	-3.2	-1.0	1.0					
Harmonised Index of Consumer Prices		3.6	2.6	1.0	3.6	3.2	0.9					

Table 1

Source: Banco de Portugal.

Notes: (p) projected. For each aggregate, this table shows the projection corresponding to the most likely value, conditional on the set of assumptions considered.

1 This section is based on information available up to mid-June 2012.

EFAP. The dissipation of these effects throughout 2013, combined with a fall in oil prices, a significant deceleration in the import deflator and continued strong wage moderation, are expected to translate into a reduction of inflation to 1.0 per cent in 2013.

The balance of risks inherent in current projections point mainly to the possibility of more unfavourable developments in economic activity in 2012 and 2013 than envisaged in the central scenario, and to inflation slightly above projections in 2013.

2. Conjunctural data and assumptions

Current projections include a set of information on recent developments in the Portuguese economy, in particular the Quarterly National Accounts of Instituto Nacional de Estatística – INE (Statistics Portugal) for the first quarter of 2012, and conjunctural indicators available for the second quarter, as well as a set of assumptions on the future developments of external environment, financial conditions and public finance variables. Moreover, current projections do not consider the impact of a range of structural reforms included in the EFAP, which are expected to be implemented in the course of 2012.

Smaller than anticipated decline in economic activity in the first quarter of 2012

According to the Quarterly National Accounts published by Statistics Portugal, GDP declined by 0.1 per cent in the first quarter of 2012 in quarter-on-quarter terms, which corresponds to a year-on-year decrease of 2.2 per cent (Table 2). These developments represent a significantly smaller contraction than in the last quarter of 2011, when GDP had fallen by 1.3 per cent quarter-on-quarter, and by 2.9 per cent year-on-year. Data released by Statistics Portugal for the first quarter were therefore less unfavourable than those implied in the projections published in the Spring issue of the Economic Bulletin.

Economic activity developments in the first quarter reflected a broad fall in domestic demand and significant growth in exports. As regards domestic demand, both consumption and Gross Fixed Capital Formation (GFCF) decline very significantly on year-on-year terms, although slightly lower than in the last quarter of 2011. Exports continued to grow more strongly than external demand for Portuguese goods and services, determining a continued increase in the market share of Portuguese exports in the first quarter of the year. Growth of exports was especially high in the extra-EU market, but slowed down in the intra-EU market. As regards the market share, however, both markets had significant gains (see "Box

Table 2

GDP, MAIN COMPONENTS AND HICP												
		Weights				2012						
		2011	2010	2011	Q1	Q2	Q3	Q4	Q1			
Gross domestic product	уоу	100.0	1.4	-1.6	-0.6	-1.1	-2.0	-2.9	-2.2			
Gross domestic product	qoq				-0.7	-0.2	-0.6	-1.3	-0.1			
Private consumption	уоу	66.3	2.1	-4.0	-2.4	-3.4	-3.5	-6.6	-5.6			
Public consumption	yoy	20.1	0.9	-3.8	-3.5	-4.3	-1.4	-6.0	-1.8			
Gross fixed capital formation	yoy	18.1	-4.1	-11.3	-7.1	-10.5	-12.1	-15.7	-12.2			
Exports	уоу	35.5	8.8	7.6	8.4	8.8	6.7	6.6	7.9			
Imports	уоу	39.4	5.4	-5.3	-1.1	-4.3	-2.8	-12.8	-4.0			
Contribution to GDP growth (in p.p.)												
Net exports	(cont. yoy)		0.5	4.6	3.0	4.5	3.3	7.4	4.2			
Domestic demand	(cont. yoy)		0.9	-6.2	-3.6	-5.7	-5.3	-10.3	-6.4			
of which: change in inventories	(cont. yoy)		0.1	-0.5	0.2	-0.3	-0.2	-1.6	0.0			
Harmonised Index of Consumer Prices	уоу		1.4	3.6	3.7	3.7	3.1	3.8	3.3			

Sources: INE and Banco de Portugal.

Notes: yoy - year-on-year rate of change; qoq - quarter-on-quarter rate of change; cont. yoy - contribution to the year-on-year rate of change.

1.1: Geographical diversification of merchandise exports", in this Bulletin). In turn, imports of goods and services declined in year-on-year terms, in a context where enterprises have continued to adjust their inventories to levels more consistent with expected demand.

Information available for the second quarter of 2012 points to some acceleration in the pace of contraction of GDP, quarter-on-quarter, reflecting significant falls in domestic demand and a deceleration in exports. The fall in domestic demand seems to have been particularly sharp in GFCF, particularly in the construction sector, in line with the latest information available for this sector. Exports are likely to contribute further to dampening the impact on GDP of the fall in domestic demand, in spite of the projected significant slowdown, reflecting expected developments for external demand for Portuguese goods and services. In effect, information on international trade of goods in April, published by Statistics Portugal, points to a strong deceleration of exports in the second quarter of 2012.

Marked slowdown in external demand in 2012, followed by recovery in 2013

Projections for 2012-2013 are based on a set of assumptions on future developments regarding the environment variables of the Portuguese economy. As regards assumptions relating to the short-term interest rate, oil prices and the euro exchange rate, the cut-off date of the information was the middle of June (Table 3).

Turning to the developments in external demand for Portuguese goods and services, the current assumptions are based on information underlying the projections for the euro area published in the June 2012 issue of the Monthly Bulletin of the European Central Bank (ECB). This information points to moderate recovery of economic activity outside the euro area over the projection horizon. Growth in advanced economies will probably continue to be held back by the correction of imbalances required in the public and private sector balance sheets. Emerging market economies are expected to continue to contribute significantly to growth of overall activity, despite the slowdown in the second half of 2011. Projections for the euro area point to marginally negative growth of economic activity in 2012 and moderate recovery in 2013. Growth of the euro area economy will probably continue to be affected by the uncertainty surrounding the resolution of the sovereign debt crisis. In this context, external demand for Portuguese goods and services is expected to moderate markedly in 2012, and to move to slightly negative growth, particularly due to its high exposure to euro area developments (the euro area market is the destination of approximately two thirds of Portuguese exports). In 2013 external demand for Portuguese goods and services is likely to accelerate to a level close to the 2011 growth pace. Compared with the previous issue

PROJECTION ASSUMPTIONS											
		EB	Summer 20)12	EB Spring 2012						
		2011	2012	2013	2011	2012	2013				
External demand	tva	3.7	-0.2	3.5	3.9	0.6	4.4				
Interest rate											
Short-term (3-month EURIBOR)	%	1.4	0.7	0.6	1.4	0.8	0.8				
Long-term ^(a)	%	4.3	2.3	2.5	4.1	2.2	2.2				
Euro exchange rate											
Euro effective exchange rate	tva	-0.2	-5.2	-0.8	-0.2	-3.3	0.1				
Euro-dollar	vma	1.39	1.27	1.25	1.39	1.33	1.33				
Oil price											
in dollars	vma	111.0	107.4	96.6	111.0	119.6	113.8				
in euros	vma	79.7	84.3	77.4	79.7	90.2	85.6				

Table 3

Sources: Bloomberg, ECB, Thomson Reuters and Banco de Portugal calculations.

Notes: arc - annual rate of change, % - per cent, aav - annual average value. An increase in the exchange rate corresponds to an appreciation. (a) The assumptions for the long-term interest rate over the projection horizon reflect an estimate for the sovereigh debt interest rate implied by the adjustment programme.

of the Economic Bulletin, these assumptions imply a downward revision of about 1 percentage point (p.p.) in external demand growth in 2012 and 2013.

As usual, assumptions for nominal exchange rates consider that these will remain unchanged over the projection horizon at the average levels observed in the two weeks prior to the cut-off date. This technical assumption entails a depreciation of the euro, both in effective nominal terms and vis-à-vis the US dollar in 2012 and 2013. These developments imply a slightly higher depreciation of the euro over the projection horizon than assumed in the previous Economic Bulletin.

According to assumptions implied by futures markets, the oil prices are likely to decline over the projection horizon from levels close to USD 118 (\leq 90) per barrel in early 2012 to USD 96 (\leq 77) per barrel at the end of the projection horizon. Compared with the previous Economic Bulletin, these assumptions imply a downward revision of the oil prices of \leq 12 and \leq 17 in 2012 and 2013 respectively.

Financing conditions of the economy expected to ease gradually

Turning to the financing conditions of the economy, the assumptions for the short-term interest rate (three-month EURIBOR) are based on the rate implied in futures contracts, which point to relative stability over the projection horizon, at a level close to 0.7 per cent. These assumptions have remained virtually unchanged from the previous Economic Bulletin.

Financing conditions are forecast to ease gradually over the projection horizon, translating into a slight compression of loan interest rate spreads vis-à-vis benchmark money market rates, particularly in 2013. Assumptions for long-term interest rates are based on an estimate of the average cost rate of external financing from the European Union, euro area countries and the International Monetary Fund in the context of the current financial assistance programme.²

Inevitable fiscal consolidation should contribute further to domestic demand decline

As usual, the assumptions for public finances follow the general rule used in Eurosystem's projection exercises, considering the policy measures already adopted (or those with a high probability of approval) in legal terms, and specified with sufficient detail. In the present exercise, in addition to the impact of measures in force since mid-2011, information on the current year is also considered, when included in the State Budget for 2012, in the Supplementary Budget for the same year and in the Fiscal Strategy Document 2012-2016. For 2013, some measures included in the EFAP were not considered in the current projection, as they did not meet the abovementioned requirements.

On the revenue side, and as regards VAT, it should be highlighted the raise of taxes on electricity and gas in October 2011. Moreover, the rates on a number of other goods and services, previously at reduced and intermediate rates, were moved to higher ones, due to a revision of VAT tables (since January 2012). Turning to direct taxation, there was an ongoing effect of the extraordinary increase of the personal income tax applicable to part of the 2011 Christmas bonus, and a cut in and/or elimination of tax benefits in both the personal income tax and the corporate income tax. On the expenditure side, in particular as regards compensation of employees, civil servants' wages are frozen in 2012 and 2013, holiday and Christmas bonuses are partially suspended and the number of public sector employees is to be reduced over the whole projection horizon. A number of measures aimed at cutting social transfers is also being considered, in particular the temporary suspension of the holiday and Christmas bonuses of pensioners as well as the non-disbursement of some non-contributory social transfers. Therefore, these projections

² For a more detailed description of the sources and financing costs associated with the adjustment programme, see http://www.bportugal.pt/en-US/OBancoeoEurosistema/ProgramaApoioEconomicoFinanceiro/Paginas/ default.aspx.

do not reflect the recent decision of the Constitutional Court regarding the suspension of holiday and Christmas

bonuses of civil servants and pensioners. In addition, in line with the fiscal documents approved in recent months, the current projections assume that expenditure restraints will be broadly based across most items, especially in the health sector, intermediate consumption and public investment.

Compared with the previous Economic Bulletin, public consumption projections for 2012, in real terms, were revised downwards by 2.1 p.p., chiefly due to revisions of the items related to compensation of employees and intermediate consumption. In the former case, available information for the first quarter of the year foresees a sharper decline in the number of civil servants. In the latter case, the nominal value of intermediate consumption in 2011 was revised upwards, based on information included in the latest excessive deficit procedure notification, and expenditure projected for 2012 was revised downwards, chiefly as a result of information included in the supplementary budget.

3. Supply, demand and external accounts

Sharp contraction in economic activity in 2012 and stagnation in 2013

Current projections point to a GDP contraction of 3.0 per cent in 2012 (compared with a 1.6 per cent fall in 2011), followed by a stagnation in 2013. In intra-annual terms, economic activity should reach its trough at the end of 2012, and recover gradually throughout 2013. Compared with the projections published in the Spring 2012 issue of the Economic Bulletin, present GDP growth projections have been revised upwards 0.4 p.p. in 2012 and are likely to remain unchanged in 2013.

Generalised fall in output across most activity sectors, despite some buoyancy in tradable goods sectors

Over the projection horizon, activity in the private sector will probably continue to be affected by the significant decline in domestic demand, partly due to the fiscal consolidation process. The fall in manufacturing activity in 2012 should reflect a contraction in domestic demand and limited growth in exports. For 2013, projections point to virtual stagnation of activity. The construction sector is likely to maintain the downward trend seen in recent years, against the background of a strong fall in residential and public investment in 2012 and limited recovery in 2013. Compared with 2011, activity in the services sector is projected to fall further in 2012, notwithstanding the favourable developments envisaged for tourism exports, and to recover slightly in 2013, against the background of less sharp deterioration in domestic demand.

As regards the composition of growth over the projection horizon, forecasts point to a strong contribution of the labour input to GDP shrinking in 2012 (-2.6 p.p.), and to marginally negative contributions (-0.2 p.p.) of total factor productivity and the capital stock (Chart 3.1).³ The contribution of labour input to economic activity developments seems to be the most negative over the last two decades, given that the annual rate of change of employment is forecast to attain -3.9 per cent (-1.5 per cent in 2011). For 2013, current projections imply a positive contribution of total factor productivity (0.6 p.p.) and slightly negative contributions of labour (-0.4 p.p.) and capital (-0.3 p.p.), in a context of smaller falls in employment (-0.7 per cent) and GFCF (-2.6 per cent).

³ This accounting exercise of contributions to growth is based on a Cobb-Douglas production function. For a more detailed discussion of this methodology, see Almeida, V. and Félix, R. (2006), "*Computing Potential Output and the Output Gap for the Portuguese Economy*", Banco de Portugal, *Economic Bulletin* – Autumn.



Sources: INE and Banco de Portugal.

Notes: arc - annual rate of change. (p) - projected

Sources: INE and Banco de Portugal.

Notes: UCM stands for unobserved component methodology. CD stands for the methodology based on a Cobb-Douglas production function. (p) - projected.

Although the calculation of potential GDP is quite sensitive to calculation assumptions and methodologies, most methods considered suggest that it will remain at the 2011 level in 2012 and will grow positively but only slightly in 2013 (Chart 3.2).⁴ These developments are mainly due to the small increase in total factor productivity and to gradually less negative contributions of employment over the projection horizon.

Sharp reduction in domestic demand, in tandem with an increase in exports and market share gains

As previously mentioned, developments projected for the Portuguese economy in 2012-2013 are characterised by a continued sharp fall in domestic demand, contributing to GDP growth of -6.6 and -1.4 percentage points in 2012 and 2013, respectively. In this context, the accumulated fall in domestic demand projected for the 2011-2013 period reaches around 14 per cent and is broadly based across all its components, which are forecast to contract rather significantly in 2012 and gradually more moderately over 2013. Exports are expected to continue to be the only component showing positive performance, and to play a crucial role in dampening the impact of the contraction in domestic demand on economic activity. Therefore, similarly to 2011, the weight of domestic demand in GDP is likely to decline, while the weight of exports is likely to increase (Chart 3.3). The weight of exports in Portuguese GDP, however, will continue to be relatively small when compared with other euro area small economies (Chart 3.4).

Turning to domestic demand components, projections point to a very sharp decline in private consumption, of 5.6 per cent in 2012 and 1.3 per cent in 2013, after a decline of 4.0 per cent in 2011 (Chart 3.5). Although very marked, the fall projected for private consumption is broadly in line with developments in real disposable income. This largely reflects the impact of fiscal consolidation measures, in particular as regards public sector compensation, social transfers and the fiscal burden, as well as the cut in private sector wages, in the context of a sharp fall in employment and a significant increase in unemployment.

⁴ The unobserved component methodology (UCM) is presented in Centeno, Novo and J. Maria (2009), "Unemployment: Supply, demand and institutions", in *The Portuguese Economy in the context of Economic, Financial and Monetary Integration*, Economics and Research Department, Banco de Portugal.



Chart 3.4



Sources: *INE* and Banco de Portugal. **Note:** (p) – projected.



Households' consumption decisions may also be affected by intertemporal budget constraints, in a context of deteriorating economic agents' expectations as regards the trend of permanent income, and tightening financing conditions.

Current projections also point to an increase in the savings rate in 2013. In effect, in addition to the maintenance of high savings levels associated with credit amortization, the prospects for a decline in permanent income and the uncertainty surrounding labour market developments will probably lead to a reassessment of consumption decisions, favouring an increase in precautionary savings. As a result, developments projected for consumption are in tandem with the continued adjustment process of household balance sheets.

In terms of composition, current projections suggest a very sharp decline in consumption of durable goods,



Chart 3.5

Sources: *INE* and Banco de Portugal.

Notes: (p) - projected. The savings rate is expressed as a percentage of disposabale income.

which is the private consumption component most responsive to the business cycle and to financing conditions. The non-durable goods component is expected to decline, albeit more moderately, in contrast with the historical developments of this variable. Hence, projections for consumption of non-durable goods did not show the same smoothing level as traditionally seen in this component over the business cycle, in a context where economic agents considered in their decisions that the adjustment process is protracted and structural. Compared with the previous Economic Bulletin, private consumption has been revised upwards by 1.7 p.p. in 2012 and 0.6 p.p. in 2013, as a result of upward revisions of both durable and non-durable goods. This was due to less unfavourable developments than projected for the first half of this year, largely reflecting information already available, especially as regards consumer confidence developments. This revision implies a smaller increase in the savings rate than previously projected.

Expectations of a sharp contraction in domestic demand, as well as tightening financing conditions, in a context where the indebtedness level of Portuguese corporations is among the highest in the euro area, point to a very significant decline in private GFCF over the projection horizon (Chart 3.6). In addition, assumptions for public finance variables suggest a very significant fall in public investment. Total GFCF is therefore projected to decline by 12.7 per cent in 2012 and 2.6 per cent in 2013 (after a fall of 11.3 per cent in 2011). Moreover, business GFCF is expected to contract by 10.1 per cent in 2012 (7.7 per cent in 2011) and 0.7 per cent in 2013. This component is likely to benefit from some continued buoyancy in the tradable goods sector, given that the adjustment process of the Portuguese economy is likely to continue to induce a redirection of financing to more competitive sectors and corporations with better growth prospects in the medium and long term. According to current projections, residential GFCF will continue to decline (by -15.6 per cent in 2012 and -2.1 per cent in 2013), in the wake of the downward trend observed in the last decade. This reflects the continuing adjustment process of this demand component, after an expansion in the second half of the 1990s. Compared with the Spring issue of the Economic Bulletin, current projections include downward revisions in GFCF of 0.7 p.p. in 2012 and 0.9 p.p. in 2013, based on available indicators related to the construction sector in the second quarter of 2012.

Exports are expected to continue to be the most buoyant component of overall demand, and are projected to grow by 3.5 per cent in 2012 and 5.2 per cent in 2013. This represents a significant deceleration from growth in 2011 (7.6 per cent), as a result of assumptions for developments in the external demand for Portuguese goods and services (Chart 3.7). Information available points to market share gains over the most recent period due, inter alia, to increased efforts of Portuguese tradable goods firms in finding new markets, in a context where the adjustment of domestic demand is perceived as permanent by resident agents (See Box 1.1: "Geographical diversification of merchandise exports", in this Bulletin). In this respect, it is assumed that this pattern has still room for further deepening and current projections therefore imply additional market share gains of Portuguese exports in 2012 and 2013. As a result of more favourable data on market share developments, these projections represent an upward revision of exports of goods and services of 0.8 p.p. in 2012 and 2013. These assumptions, however, are surrounded by significant risks. If the gains in market share are not confirmed in 2013 (1.7 p.p.), the estimated impact on GDP growth would reach -0.3 p.p. in that year.

Projections for imports point to a fall in real terms of 6.2 per cent in 2012, implying a decline in import penetration, similar to developments in 2011. The contraction in domestic demand is particularly sharp in import-intensive components (for instance, light or heavy vehicles, passenger or goods vehicles), which clearly changes the composition of demand and therefore its import content. For 2013 imports are projected to increase by 1.5 per cent, broadly in line with import-weighted overall demand. Compared with the previous Economic Bulletin, imports have been revised downwards by 0.6 p.p. in 2012, mainly due to information already available for the first quarter of the year and consistent with the downward revision of the contribution from changes in inventories. An upward revision of 1.5 p.p. is projected for 2013, closely in line with the revision of import-weighted overall demand.



Gradual reduction in the financing requirements of the economy

Current projections point to the continued adjustment process of external imbalances of the Portuguese economy. After the narrowing in the current and capital account deficit from 8.9 per cent of GDP in 2010 to 5.2 per cent of GDP in 2011, it is projected to narrow further in 2012 to 1.7 per cent of GDP, and to post a positive balance of approximately 1 per cent of GDP in 2013 (Chart 3.8).

Among the reasons for these developments is a significant improvement in the trade balance, which is likely to move from a deficit of 3.2 per cent of GDP in 2011 to a marginally positive value in 2012 and to a surplus of 2.5 per cent of GDP in 2013 (Chart 3.9). This reflects some continued buoyancy of exports, in tandem with a very significant decline in imports, notwithstanding a persistent unfavourable



Sources: *INE* and Banco de Portugal. **Note:** (p) – projected. **Sources:** *INE* and Banco de Portugal. **Note:** (p) – projected. terms-of-trade effect in 2012. A slight gain in terms of trade is projected for 2013, in a context of falling oil prices in euro terms. The income account deficit as a percentage of GDP is likely to decline slightly in 2013. The current transfers and capital account balance as a percentage of GDP is expected to remain close to the level observed in 2011 (around 3 per cent of GDP), partly reflecting the assumptions for the profile of European Union transfers. The adjustment trend of financing requirements of the portuguese economy is close to that observed in the context of the economic stabilisation agreements with the International Monetary Fund (IMF) in the 1970s and 1980s (Chart 3.10).

4. Prices and wages

Decrease in inflation over the projection horizon

The inflation rate, as measured by the HICP, is expected to decline over the projection horizon, albeit remaining at a relatively high level in 2012 (2.6 per cent, compared with 3.6 per cent in 2011). The projected inflation rate for 2012 largely reflects the impact of fiscal consolidation measures, particularly changes in indirect taxes and administered prices. For 2013, inflation is projected to drop to 1.0 per cent, in tandem with the fading out of these effects. Against this background, price growth in 2013 is likely to pursue its macroeconomic determinants, in a context of strong wage moderation, oil price decreases and a deceleration in the import deflator.

The decrease in inflation over the projection horizon is common to both energy and non-energy components of the HICP (Chart 4.1). The energy component of the HICP is likely to grow 8.6 per cent in 2012 (12.8 per cent in 2011) and at a broadly flat rate in 2013. This evolution reflects the fading out of the increase in the VAT rate on electricity and natural gas in October 2011 as well as euro-denominated oil price developments. The non-energy component of the HICP is likely to decelerate from 2.3 per cent in 2011 to 1.7 per cent in 2012 and to 1.2 per cent in 2013. Projections for 2012 are influenced by the impact of fiscal consolidation measures, namely the higher VAT rate on a number of products, tax increases on tobacco and an increase in some administered prices. From the last quarter of 2012, a significant reduction in inflation is projected, as the effects of the increase in indirect taxes and prices subject to regulation unwind.

Although the inflation profile is strongly affected by fiscal factors, the deceleration in prices over the



Chart 3.10

Note: As regards the 1977 and 1983 programmes, data refer to the Current Account.

Sources: INE and Banco de Portugal.

Chart 4.1



Sources: Eurostat and Banco de Portugal. **Note:** (p) – projected.

projection horizon also reflects developments in its macroeconomic determinants. In fact, unit labour costs in the private sector are projected to fall, conditioned by the deterioration in labour market conditions. As regards import prices of non-energy goods, a sharp deceleration is projected for 2012 and 2013, in line with projections for developments in international prices.

Compared with the previous Economic Bulletin, inflation projected for 2012 is revised downwards by 0.6 p.p., reflecting not only the inclusion of information on price developments available up to May but also a downward revision of unit labour costs in the private sector and the import deflator. For 2013, the projection for inflation remains unchanged.

5. Uncertainty and risks

Current projections represent the most likely scenario, based on a set of assumptions presented in Section 2. The non-materialisation of these assumptions or the occurrence of factors that, due to their idiosyncratic nature, have not been considered in the current projections, may lead to a number of risks and uncertainty that directly affect the central scenario. This section presents a quantified analysis of such risks and uncertainty.⁵

High degree of uncertainty about the national and international framework

At international level, the main risks are associated with the degree of persistence in the recent intensification of the sovereign debt crisis and the continued high uncertainty about its resolution. These factors may contribute to a further deterioration in confidence among economic agents. The materialisation of this risk would imply a loss of momentum in domestic demand within the euro area compared to the central scenario and would tend to lead to a depreciation of the euro in effective terms. In fact, the most recent period has been marked by an intensification of the sovereign debt crisis in the euro area and its contagion to several euro area economies, with a major impact on financing costs and/or confidence levels. The nature of institutional resolution measures applied to the sovereign debt crisis in the euro

⁵ The methodology used in this section is based on the article published in Pinheiro, M. and P. Esteves (2010), "On the uncertainty and risks of macroeconomic forecasts: Combining judgements with sample and model information", *Empirical Economics*, pp. 1-27.

area as well as economic policy measures to be adopted by authorities in several euro area economies is still undefined, despite some institutional progress made at the European Council meeting at the end of June. The impact of these measures on economic growth among Portugal's main trading partners is, therefore, uncertain and may substantially affect Portuguese exports.

At domestic level, two types of risk factors can be identified. First, market share gains implied by the central projection may not materialise, particularly in 2013 and, as such, developments in exports may be less favourable than currently projected. Second, the deterioration in the labour market situation and the contraction in domestic demand may lead to the need to adopt measures to ensure that the fiscal target is met.

Risk of less favourable developments in economic activity and slightly higher inflation than projected in 2013

Turning to the risks to the Portuguese economy arising from the international framework, forecasts point to a depreciation of the euro and falling world demand, in a framework of an intensification of the sovereign debt crisis in the euro area and a sharp fall in confidence among economic agents. In this context, it was considered a 55 per cent probability of a depreciation of the euro exchange rate and lower growth in external demand for Portuguese goods and services (Table 5.1).

At domestic level, it was considered a 55 per cent probability of households' consumption spending and investment spending being lower than currently projected for 2012 and 2013. It was also considered a 55 per cent and a 65 per cent probability in 2012 and 2013 respectively of exports being lower than currently projected. Moreover, risks that inflation will be higher than projected for 2013 were also considered, as a result of the possible need to adopt further fiscal consolidation measures, namely additional increases in administered prices. This risk translates into a 55 per cent probability that the HICP will be higher than currently projected.

This quantification points to risks of less favourable developments in economic activity, mainly due to risk factors associated with the external environment of the Portuguese economy, as well as the prospective non-materialisation of market share gains considered in the current projections (Table 5.2. and Chart 5.1). As for consumer prices, this analysis suggests that there is a risk of inflation being slightly higher than projected for 2013, resulting from a depreciation of the euro and the possibility of additional increases in administered prices (Chart 5.2). This risk may be mitigated by less favourable developments in economic activity.

Та	b	е	5.	1

RISK FACTOR PROBABILITY PER CENT											
	2012	2013									
Conditioning variables											
Exchange rate	45	45									
External demand	55	55									
Endogenous variables											
Private consumption	55	55									
GFCF	55	55									
Exports	55	65									
HICP	50	45									

Source: Banco de Portugal.

Table 5.2

PROBABILITY OF AN OUTCOME BELOW THE PROJECTIONS PER CENT											
	Weights in 2011 (%)	2012	2013								
Gross domestic product	100	61	66								
Private consumption	66	59	62								
GFCF	18	61	61								
Exports	36	59	68								
Imports	39	60	71								
HICP		51	48								

Source: Banco de Portugal.



Sources: INE and Banco de Portugal.

6. Conclusions

Challenges facing the Portuguese economy go well beyond reducing macroeconomic imbalances built up over the last few decades. The ongoing restructuring process should be based on operating principles that streamline incentives faced by economic agents towards a sustainable growth path in the medium to long term. This process, which forms part of the Economic and Financial Assistance Programme, requires a reduction in both public and private expenditure and the degree of leverage in the economy. These are fundamental objectives and their successful achievement will determine the productivity, income and soundness of the Portuguese economy in the medium to long term.

The external environment of the Portuguese economy has moved from a long period of marked stability to a stage where uncertainty prevails. Together with the strong restrictions on domestic demand, this has hindered the investments cycle among firms operating in Portugal and the attraction of new investment projects. In order to dispel uncertainty at the European level, it is essential that an institutional framework be fully implemented so as to increase confidence among economic agents within and outside the euro area. Decisions taken by the European Council at the end of June were a first step towards this goal.

At domestic level, the implementation of reforms to improve market functioning and the fiscal consolidation process should create the conditions for sustained economic growth. In this context, eliminating labour market segmentation is essential, given that it penalizes investments by firms and workers. The product market should be characterised by levels of competition and protection of property rights that signals to firms and investor those sectors towards which investment should be channelled. In turn, fiscal policy plays a crucial role in mobilising resources for the economy and, accordingly, it should be predictable and should minimise relative price distortions. Finally, the reform of the judicial system has a key role in improving market functioning within the Portuguese economy. The upturn of the business cycle in Portugal requires a shift of domestic demand towards private investment. However, the multiplier effect generated by investment on economic activity can only be ensured if it produces qualitative changes in the productive structure by incorporating technological innovation enhancing competitiveness. This effort should result in an increase in the share of exports in Gross Domestic Product. In fact, demand for Portuguese goods and services is not solely defined within national borders. However, Portuguese firms' ability to access markets is contingent on their cost structure (resulting from competition levels in labour and product markets and the tax structure) and the quality of their physical and human resources. Investment in education is therefore of major importance for the restructuring of the economy.

Against this background, it should be borne in mind that the Portuguese economy faces a major challenge: to reallocate productive resources, particularly to the tradable sectors. This reallocation will induce, inter alia, the increase in job creation and hiring rates, which have been rather low over the past few months. This is a prerequisite for absorbing unemployment generated during the structural adjustment process. In sum, an effective and consistent implementation of the structural changes envisaged in the Economic and Financial Assistance Programme is fundamental to ensure that economic recovery is sustainable in the medium to long term.

This text was based on data available up to mid-June 2012.

BOX 1.1 | GEOGRAPHICAL DIVERSIFICATION OF MERCHANDISE EXPORTS

Exports play a key role in the adjustment process of the Portuguese economy, in particular in rebalancing external accounts. The diversification of exports' geographical destinations is a particularly relevant aspect of the external trade pattern, enabling the dispersion of risks and uncertainties and, consequently, a lower dependence on idiosyncratic shocks. This box analyses recent developments in Portuguese merchandise exports, focusing on the geographical diversification.

The orientation pattern of Portuguese exports is traditionally concentrated on some economies of the European Union (EU), notably in the euro area. At the current juncture, this is not a favourable characteristic, given the ongoing economic deceleration in advanced economies. In turn, the relatively low share of the extra-EU market limits the positive economic impacts associated with this market's sustained buoyancy.

The analysis in this box is based on monthly data on Portuguese merchandise exports collected by Statistics Portugal, as well as on data released by the Central Planning Bureau (CPB)¹ for world imports. These data are broken down in geographical terms, making it possible to calculate and assess the evolution of Portuguese exports' market share by geographical destination. Data are available up to April 2012.

Nominal growth of Portuguese merchandise exports stood at 15.3 per cent in 2011, *i.e.* only slightly below the figure recorded in 2010 (16 per cent). However, as illustrated in table 1, there was a significant slowdown in the course of the year, with growth declining from 17.9 per cent in the first quarter to 12.6 per cent in the fourth quarter. In the first quarter of 2012 growth remained virtually unchanged. However, data available for April point to growth of only 2.8 per cent. Nevertheless, it should be noted that the performance of Portuguese exports has been remarkable when compared with that of the other EU countries, growing in the most recent period and in quarterly terms at a pace similar to the average of extra-EU economies (Chart 1).

The analysis of the most recent period shows that growth of Portuguese merchandise exports was particularly strong in the extra-EU market (increasing from 12.9 per cent in the first quarter of 2011 to 31.9 per cent in the first quarter of 2012), recording a significant slowdown in the intra-EU market (from 19.6 per cent in the first quarter of 2011 to 6.0 per cent in the first quarter of 2012). Data available for April point to a slight fall in the intra-EU market (-0.9 per cent), followed by a slowdown in the extra-EU market (to 13.2 per cent). These developments provide empirical support that a diversification of Portuguese merchandise exports' destinations is currently under way, with exporting firms focusing on non-traditional destination markets.

The analysis of the export performance by destination country allows for an assessment of the relative importance of each market. The strong slowdown towards intra-EU markets since early 2011 mainly reflects the evolution of exports to the traditional trading partners with the largest share in Portuguese exports (Spain, Germany and France). This was mitigated by the maintenance of very strong growth towards destination countries with a smaller share, such as Belgium, the Czech Republic and Poland, and also to a group of other EU partners with limited individual weight (identified in Table 1 as "Other EU27 countries"). This pattern reflects, among other factors, the differentiated impact of the sovereign debt crisis, which is particularly unfavourable for Portuguese exports. Most important was the recessive impact on the Spanish economy, which accounts for approximately 25 per cent of Portuguese merchandise exports.

Data available for April point to a fall in Portuguese exports to the three main destination markets (which as a whole accounted for about 50 per cent of merchandise exports in 2011) and to the maintenance

¹ The Central Planning Bureau (CPB) is a Dutch institute whose research focuses on economics, producing studies and support information for economic policy makers. CPB releases data on global external trade on a monthly basis.

Table 1

PORTUGAL'S MERCHANDISE EXPORTS BY DESTINATION MARKET | NOMINAL YEAR-ON-YEAR RATE OF CHANGE (PER CENT)

	Weights 2010		leights 2010 2011 2011						2011	2012				
	2011			q1	q2	q3	q4	q1	Dec	Jan	Feb	Mar	Apr	
World	100.0	16.0	15.3	17.9	17.3	13.7	12.6	12.0	4.8	14.0	13.8	9.0	2.8	
UE27	74.1	15.4	13.9	19.6	16.2	12.4	8.0	6.0	-0.1	7.0	7.5	3.9	-0.9	
Spain	24.8	13.2	7.9	13.8	9.3	6.3	2.6	-3.1	-2.0	-2.1	3.3	-9.4	-8.9	
Germany	13.6	16.5	20.4	30.0	22.5	23.0	8.1	11.7	-14.5	14.9	14.1	7.2	-5.0	
France	12.0	10.3	17.6	23.0	23.5	13.6	10.5	7.4	6.0	13.9	4.9	4.0	-0.4	
United Kingdom	5.1	12.6	7.0	7.9	8.0	6.1	6.0	12.7	2.8	6.9	8.3	21.8	6.9	
Netherlands	3.9	22.4	18.6	29.3	17.8	12.0	17.1	2.4	9.7	-2.3	7.5	2.3	-5.3	
Italy	3.7	17.4	11.2	15.1	38.0	5.3	-8.8	2.9	-11.3	-3.4	3.9	7.4	-10.3	
Belgium	3.1	34.7	26.4	13.1	10.1	38.9	44.9	20.5	21.5	28.4	16.3	17.4	14.9	
Sweden	1.0	2.2	16.1	26.4	62.9	-4.8	-3.6	18.7	-23.9	23.9	18.1	15.5	-15.8	
Poland	1.0	17.6	27.3	15.4	22.9	40.3	30.8	15.4	25.4	16.3	14.3	15.5	5.6	
Czech Republic	0.7	18.9	14.3	19.0	10.1	15.1	13.5	20.3	2.2	13.9	14.5	31.1	28.5	
Other EU27														
countries	5.2	27.1	16.0	29.5	9.0	12.2	16.1	18.3	23.2	12.3	10.4	31.3	41.8	
Extra UE27	25.9	17.7	19.5	12.9	20.7	17.4	26.2	31.9	17.9	37.8	33.9	25.6	13.2	
Africa	10.3	0.9	22.5	14.7	27.0	27.4	20.6	29.6	7.7	25.1	36.6	27.6	-5.3	
America	7.5	41.1	13.8	6.3	18.3	3.4	27.8	26.7	18.8	63.0	17.9	6.0	24.7	
Asia	3.6	17.0	32.2	36.7	26.8	25.8	39.2	43.9	33.9	41.2	31.6	57.4	67.1	
Europe														
excluding EU27	2.9	31.2	13.5	-0.8	7.9	18.1	31.5	35.9	21.5	14.0	72.3	24.6	12.0	
Oceania	0.2	56.4	0.2	1.2	-3.2	-7.3	13.0	2.8	6.3	6.6	-0.4	2.9	-14.6	
of which:														
United States	3.5	31.1	12.9	-4.7	24.9	-0.9	35.8	50.4	36.5	92.2	52.2	10.8	25.3	
Brazil	1.4	49.5	33.0	59.3	21.8	21.4	35.1	7.4	-4.4	32.6	-18.2	20.9	10.2	
China	0.9	6.0	69.7	40.0	40.7	60.5	126.9	184.1	182.2	209.2	140.7	196.1	257.9	
Turkey	0.7	32.0	12.7	31.7	-8.4	6.3	32.1	15.3	0.1	-18.7	74.8	3.1	15.0	

Sources: Instituto Nacional de Estatística and Banco de Portugal.

Notes: The 'EU27' aggregate relates to intra-Community trade and the 'Extra-EU27' aggregate to extra-Community trade. Darker shaded figures represent export growth above 10 per cent, while lighter shaded figures represent export growth between 0 and 10 percent.

Chart 1



Source: Banco de Portugal.

of significant growth rates to Belgium, the Czech Republic, Poland and to a group of other EU trading partners with a smaller share. In the case of Germany, the reduction of Portuguese exports occurred against a background where total merchandise imports of that country recorded a contraction in nominal terms. It should be noted that the fall of Portuguese exports was particularly influenced by the decline in confidence levels, with an impact in passenger car sales in the euro area. These have a significant weight in Portuguese exports to that destination.

The strong buoyancy of extra-EU exports largely reflects the role played by merchandise exports to Africa, as well as to America, in particular to Brazil and to the United States. In addition, exports to Asia play an increasingly important role on the back of strong export growth to China.² These developments in extra-EU exports reflect a sizeable change in the ability of Portuguese firms in exploiting new business opportunities in markets with higher demand growth. Note that the degree of geographical aggregation of the information published by CPB does not enable a detailed analysis of the role played by some relevant countries in the structure of Portuguese trade, most notably Angola (diluted in the Africa aggregate).³

The above-mentioned evolution of Portuguese merchandise exports points to a stronger geographical diversification to emerging markets and EU countries that have a traditional limited weight. A number of concentration indicators were used to measure developments in the degree of diversification, as shown in Chart 2. These indicators – "Share of the 9 main destination markets", "Hirschman-Herfindal index" and "Theil entropy index" – suggest an overall declining trend in the degree of concentration and confirm the intensification of exports' diversification in 2011 (in particular in the cases of the Hirschman-Herfindal and Theil indices).

Recent developments in Portuguese exports took place against a background of a pronounced slowdown in the world economy and in international trade flows, which materialised in a decline of the growth of external demand for Portuguese merchandises (from around 20 per cent in 2010, in nominal terms, to 12 per cent in 2011). In this context, the performance of Portuguese exports was particularly resilient, giving rise to market share gains of 3.2 per cent in 2011, following a 3.3 per cent loss in 2010, when considering the growth of imports in the trading partners, weighted by their share in Portuguese exports (identified as "World (weighted)" in Table 2). Given the pattern of geographical specialisation of Portuguese exports, when account is taken of developments in the unweighted market share, losses in market share reached 9.2 per cent in 2010, with gains of only 1.1 per cent in 2011, as the growth of imports seems to have been particularly significant in extra-EU markets where Portuguese firms are not present.

Over the course of 2011, market share gains were particularly marked from the second quarter of the year, intensifying in the first quarter of 2012, reflecting the resilience of Portuguese exports to the slowdown in imports in the main destination countries. These market share gains were quite significant, both in the intra- and extra-EU markets. Gains were particularly strong in less usual destination markets, such as Belgium, Poland and Sweden, and in the group of other EU trading partners with limited individual weight (identified in table 2 as 'Other EU27 countries'). As regards the extra-EU market, there were market share gains in Africa, related to developments in trade with Angola, as well as in Brazil and in the United States. In Asia, market share gains in China were also very significant.

Market share gains of Portuguese exports in the first quarter of 2012 were partially mitigated in April. As shown in Table 2, there was a relatively broadly based reduction in market share, notably in the majority of the main euro area markets. This performance was also recorded in December 2011, amidst

² Export growth to China reflects inter alia the evolution of sales of passenger cars to this country since October 2011. It should be noted that before October 2011 exports of passenger cars to China were made indirectly through Germany.

³ Exports to Angola have played an increasingly important role in Portuguese external trade. The share of Angola in nominal terms in total Portuguese merchandise exports in 2011 stood at 5.5 per cent, exceeding again that of the United Kingdom. The Angola's share was only surpassed by that of Portugal's three main trading partners (Spain, Germany and France).

Chart 2



Source: Banco de Portugal.

Notes: Falling indices mean a smaller concentration. The "Share of the 9 main destination markets" indicator refers to the overall share of the 9 main destination markets of total exports. The Hirschman-Herfindal index is standardised at the [0.1] interval, expressed as: $H_t = \left(\left(\sum_{i=1}^{N} w_{i,t}^2\right)^{1/2} - (1/N)^{1/2}\right) / (1 - (1/N)^{1/2}), \text{ where } N \text{ represents the number of countries and } w_{i,t} \text{ the weight of each trading partner in Portuguese exports. The Theil entropy index is defined as: <math display="block">E_t = \frac{1}{N} \sum_{i=1}^{N} \left(\frac{w_{i,t}}{w_t}\right) \cdot \ln\left(\frac{w_{i,t}}{w_t}\right) where 0 \text{ is the minimum limit } (w_{i,t}) = 0$

an upsurge of the sovereign debt crisis in the euro area. The performance in aggregate terms was also negative at the extra-EU level, albeit with high heterogeneity. At the current juncture, it is uncertain whether the evidence recently observed will persist.

Developments in market share gains of Portuguese merchandise exports reinforce the idea that geographical diversification has resulted not only from the rise in demand in economies that are not traditional destinations of Portuguese exports, in contrast to a contraction in demand in the traditional destinations, but also from effective market share gains in non-traditional markets. These developments suggest that the tradable goods sector is more oriented towards markets with higher potential growth. The export reorientation effort of national producers results *inter alia* from the perception that the economic adjustment, both in Portugal and in other economies in the epicentre of the sovereign debt crisis, is likely to imply a protracted decline in domestic demand levels. Against this background, the search for markets with sustained growth prospects will be crucial in ensuring the maintenance of the market share gains recorded in 2011 and early 2012, in particular in a context where this type of strategy may be adopted by firms in other economies also in the process of adjusting domestic demand.

NOMINAL MARKET SHARE OF PORTUGUESE EXPORTS BY DESTINATION MARKET | YEAR-ON-YEAR RATE OF CHANGE (PER CENT)

	Weights	2010	2011	2011			2012	2011		20	012		
	2011			t1	t2	t3	t4	t1	Dec	Jan	Feb	Mar	Apr
World	100.0	-9.2	1.1	-4.0	6.5	2.3	-0.3	2.0	-5.2	4.1	3.0	-0.6	-6.6
World (weighted)	100.0	-3.3	3.2	-1.8	6.3	3.4	4.6	7.2	-1.5	11.4	5.8	4.7	-1.5
UE27	74.1	-3.4	2.3	-0.5	4.2	2.6	2.7	2.6	-3.8	4.5	1.9	1.8	-1.6
UE27 (weighted)	74.1	-2.6	2.8	0.1	5.0	2.7	3.2	4.2	-3.4	7.4	2.1	3.3	-0.8
Spain	24.8	-3.4	-1.0	-3.4	0.1	-2.1	1.1	-0.5	-2.9	6.1	-0.5	-6.1	-6.5
Germany	13.6	-2.4	6.1	7.9	7.5	10.0	-0.5	6.7	-21.0	9.2	8.2	3.5	-4.3
France	12.0	-2.8	5.1	2.2	11.4	3.3	3.2	3.0	2.6	10.9	-1.3	0.5	0.0
United Kingdom	5.1	-12.3	-1.8	-8.2	5.2	-1.4	-2.6	1.9	-1.3	-1.2	-7.4	13.8	-11.1
Netherlands	3.9	0.0	7.3	8.4	8.2	1.3	12.0	-5.1	4.1	-9.2	-3.0	-3.0	-12.0
Italy	3.7	-4.8	1.6	-5.1	22.2	-1.5	-7.7	7.6	-8.5	0.0	6.9	15.4	-0.8
Belgium	3.1	15.3	13.0	-7.2	-3.5	27.4	39.5	19.9	16.3	31.1	14.2	15.4	16.5
Sweden	1.0	-21.7	2.9	-0.7	42.2	-11.6	-7.5	19.1	-27.4	25.8	13.7	19.1	-13.9
Poland	1.0	-6.2	14.3	-2.7	4.5	29.2	28.1	11.5	23.5	11.1	10.3	13.2	13.1
Czech Republic	0.7	-5.7	0.0	-6.7	-7.4	5.7	8.7	16.0	-5.0	14.3	6.1	26.4	24.2
Other EU27	ГЭ	12.2	4.0	0.2	D 1	1 7	11.0	16.0	10.2	10.2	0.1	28.0	
countries	5.2	IZ.Z	4.0	8.3	-3.1	1.7	11.0	16.0	19.3	10.2	8.1	28.9	45.4
Extra UE27	25.9	-11.3	3.5	-9.2	10.2	4.8	7.8	16.4	3.4	21.8	18.3	10.4	-1.6
Extra UE27 (weighted)	25.9	-55	43	-75	10.1	55	84	16 1	34	24.1	16.8	89	-3.4
Africa	10.3	-12.0	7 3	-2.1	15.9	13.3	2.8	11.4	-6.7	15.2	13.8	5.6	-22.3
America	7 5	7.4	2.0	-12 7	12.3	-2.6	11 7	12.8	53	45.7	6.2	-7.0	8.2
Asia	3.6	-16.9	12.6	8.1	14.7	9.6	17 3	27.4	16.9	24 5	16.0	40.3	47.2
Europa ovel	5.0	. 0.5	12.0	0.1		5.0		27.1	1015	2 1.5	10.0	1015	
UE27	2.9	3.3	-5.7	-25.4	-8.8	0.5	14.5	25.2	10.7	1.3	56.1	20.9	2.7
Oceania	0.2	22.1	-13.6	-14.7	-12.4	-20.5	-4.3	-15.3	-8.4	-14.1	-10.5	-20.2	-26.2
of which:													
United States	3.5	1.4	2.7	-20.6	21.3	-5.1	19.3	34.0	21.2	71.3	37.9	-3.0	7.7
Brazil	1.4	-0.1	11.8	24.8	3.3	10.3	11.1	-5.2	-21.1	13.6	-20.9	0.4	0.4
China	0.9	-27.7	42.8	7.1	28.6	38.4	87.7	156.4	150.2	179.1	117.8	166.4	224.0
Turkey	0.7	-4.8	-9.1	-10.7	-26.9	-11.4	21.6	11.0	19.3	10.2	8.1	28.9	45.4

Sources: Instituto Nacional de Estatística, Central Planning Bureau and Banco de Portugal.

Notes: The "EU27" aggregate relates to intra-Community trade and the "Extra-EU27" aggregate to extra-Community trade. Shaded text represents growth of exports above 20 per cent. The growth of market share by destination market refers to the differential between the growth of Portuguese exports and the growth of imports of the country in question. The aggregates "Total", "EU27" and "Extra-EU27" take as a reference total imports of these markets, while the "weighted" aggregates take as a reference trading partners' imports weighted by their share in Portuguese exports. The difference between these aggregates corresponds to the impact of the geographical orientation on market share developments. Darker shaded figures represent the percentage increase in market share between 0 and 10 percent.

ARTICLES

ON THE TARGETING OF SHORT AND LONG TERM INTEREST RATES

LABOUR COST-CUTTING STRATEGIES MICROECONOMIC EVIDENCE FROM SURVEY DATA

MOBILITY AND INCOME INEQUALITY IN THE EUROPEAN UNION AND IN PORTUGAL

WAVELETS IN ECONOMICS

ON THE TARGETING OF SHORT AND LONG TERM INTEREST RATES*

Bernardino Adão** | Isabel Correia** | Pedro Teles**

ABSTRACT

This article is a theoretical reappraisal of the infrequent policy of central banks in targeting interest rates at both short and longer maturities.

1. Introduction

In 2009, the ECB conducted one week, three and six months, and one year, liquidity providing operations at fixed rates. Roughly at the same time, the Fed was pursuing its policies of massive purchases of longer term assets with the objective of lowering rates at those horizons. In September of 2011, the Board announced Operation Twist II, the first having been the controversial policies of the early sixties through which the Fed hoped to raise short rates and lower long rates. The objective of the 2011 policies, was rather to raise medium term rates in exchange for lower long term rates. Other evidence for the ability of a central bank to manipulate rates at different maturities is the US monetary policy of the forties, before the Fed-Treasury Accord in 1951. In order to help finance the war, the Fed agreed to establish a ceiling on the 12 month Treasury certificate, of 2.5%, while it was also targeting the rates on the 90 day Treasury bill at 0.375% annual. Not surprisingly, by 1947, the Fed was holding 97% of the outstanding T-bills.

While there seems to be empirical evidence for the ability of a central bank to conduct operations at other than short run maturities¹, a simple logic seems to fail, raising understandable concerns at operation departments in central banks: Aren't there arbitrage conditions relating rates at different maturities? Under the expectation hypothesis, the long rates are simple averages of the shorter rates. If that is the case, then there are no degrees of freedom in controlling the long rates in addition to the short, as the historical partial failure in controlling rates seems to suggest. On the other hand, the also partial success in controlling those rates requires an explanation. This is what we do in this article, based on work by Adão, Correia and Teles (2010).

Why is it important to understand this? Why shouldn't central banks do business as usual, using short rates and letting the markets pick the long rates? The pressing reason is the zero bound constraint on interest rates. Since 2008, policy rates have been very close to zero in the US, UK, and the Euro area. They were also close to zero in the US in 2003 and 2004, when the policy rate fell down to 1%, and remained there for more than a year. Because people would otherwise hold money, interest rates cannot be lowered significantly below zero. How can then the central bank provide stimulus to a feeble economy? One possibility is to lower the long rates if those are above zero.

* The opinions expressed in the article are those of the authors and do not necessarily coincide with those of Banco de Portugal or the Eurosystem. Any errors and omissions are the sole responsibility of the authors.

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1 In remarks before the National Economists Club, in 2002, Ben Bernanke, states this: "Historical experience tends to support the proposition that a sufficiently determined Fed can peg or cap Treasury bond prices and yields at other than the shortest maturities".

Interestingly enough, there is virtually no theoretical basis for this ability of a central bank to operate at horizons other than the very short term. With the exception of the paper on which this article is based,² the academic consensus is that there is no role for long term interest rate policy in addition to short term (see Eggertsson and Woodford, 2003, and Woodford, 2005). In this article we use a simple, but very standard, theoretical model to explain why a central bank can indeed control rates at different maturities, so much so that the whole structure could actually be targeted. We also explain that the policies that are able to do this should be closer to the ones recently led by the ECB with a direct target of prices rather than using quantities. It is a feature of the theoretical model that we use, that the demand for the assets is not necessarily pinned down, even when prices are.

The basis for our argument is the well known result that policy on short term interest rates is unable to pin down a unique equilibrium, as first pointed out by Sargent and Wallace (1975). It may do so locally in a neighborhood of a particular steady state (the first paper to show this was McCallum 1981), but there is still a large number of equilibria out of that neighborhood (see Benhabib, Schmitt-Grohe and Uribe 2001, among many others). The targeting of the term structure could reduce the degree of multiplicity.

We use a simple flexible price model, without loss of generality since the results hold also under sticky prices. We show that there are degrees of freedom to target the whole term structure. It follows that if policy is restricted to a target on the short rate, it does not pin down equilibria uniquely, potentially causing significant nonfundamental volatility. This problem is not solved by a Taylor rule on the short rate, which is the standard way in which central banks are seen to operate. Taylor rules are able to isolate one equilibrium, but there are still many equilibria globally so that the same potential nonfundamental volatility is also present there. Finally we show that the supply of assets is not pinned down, even when the prices are, indicating that policy should be implemented directly on prices rather than quantities.

2. Model

The model is the simplest possible. There is a representative household, competitive firms, and a government. Production uses labor only with a linear technology. The economy is cashless which further simplifies the analysis.

In each time period t = 1, 2..., there are n possible contingencies. The history of events up to period t is s^{t} and the initial realization s^{0} is given. The variables should be indexed by the history s^{t} , but for simplicity of notation we index them by t. The exogenous variables, the productivity and government spending, are in general functions of those histories. Otherwise, there is still uncertainty but it's nonfundamental.

Households/producers

The households, which are also producers, have preferences over consumption C_t and leisure L_t , given by

$$U = E_0 \left\{ \sum_{t=0}^{\infty} \beta^t u \Big(C_t, L_t \Big) \right\}.$$

The period-by-period budget constraints are

$$\sum_{j=1}^{m} B_{t}^{j} + E_{t} Q_{t,t+1} B_{t,t+1} \leq \sum_{j=1}^{m} R_{t-j}^{j} B_{t-j}^{j} + B_{t-1,t} + P_{t} A_{t} N_{t} - P_{t} C_{t} - T_{t},$$

² As mentioned above, the paper is Short and Long Interest Rate Targets, by Adão Correia and Teles. There is also contemporaneous, independent, work by Magill and Quinzii (2012).

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where B_t^j , j = 1,...,m are bonds of maturity j paying R_t^j compound interest in period t+j; $B_{t,t+1}$ are one period state contingent bonds paying one unit of money in some state at t+1. The reason for the conditional expectation E_t is that the prices $Q_{t,t+1}$ are normalized by the probability of occurrence of the state; $N_t = 1 - L_t$ is labor; A_t is productivity, P_t is the price of the good, and T_t are lump sum taxes.

The marginal conditions of the households/producers include

$$\frac{u_C\left(s^t\right)}{u_L\left(s^t\right)} = \frac{1}{A_t} \tag{1}$$

and

$$\frac{u_C\left(s^t\right)}{P_t} = R_t^j E_t \left[\frac{\beta^j u_C\left(s^{t+j}\right)}{P_{t+j}}\right], \ j = 1, \dots, m$$
(2)

The first conditions, (1), are the intratemporal conditions stating that the marginal rate of substitution between consumption and leisure must be equal to the marginal productivity of labor. The second, (2), are the marginal conditions for the holding of noncontingent bonds with different maturities. One unit of money today buys $\frac{1}{P_t}$ goods with marginal value $u_C(s^t)$. Instead, the same unit can be used to purchase a bond that pays R_t^j units of money j periods ahead, again purchasing $\frac{1}{P_{t+j}}$ goods with marginal value $\beta^j u_C(s^{t+j})$.

Competitive equilibria

An equilibrium in this economy must satisfy the agents marginal conditions (1) and (2). In addition, the government budget constraints at any period t can be written as

$$E_t \sum_{s=0}^{\infty} Q_{t,t+s} \left[T_{t+s} - P_{t+s} G_{t+s} \right] = \sum_{j=1}^{m} R_{t-j}^j B_{t-j}^j + B_{t-1,t}.$$
(3)

Finally, markets must clear, so that

$$C_t + G_t = A_t N_t$$

in the goods market, and

$$N_{t} = 1 - L_{t}$$

in the labor market.

Summarizing the equilibrium conditions in this simple economy is straightforward. Notice that the intratemporal condition

$$\frac{u_{C}\left(\boldsymbol{s}^{t}\right)}{u_{L}\left(\boldsymbol{s}^{t}\right)} = \frac{1}{A_{t}}$$

and the resource constraint

$$C_t + G_t = A_t (1 - L_t)$$

are two equations in two unknowns determining the quantities $C_t = C_t^*$ and $L_t = L_t^*$ in every date and state. In this model with flexible prices, the allocation is not affected by monetary policy. Price levels,

instead are affected by policy. They must satisfy the intertemporal conditions

$$\frac{u_C\left(C_t^*, L_t^*\right)}{P_t} = R_t^1 E_t \left[\frac{\beta^j u_C\left(C_{t+1}^*, L_{t+1}^*\right)}{P_{t+1}} \right]. \tag{4}$$

The budget constraint (3) is not a restriction on the price levels, since it can always be satisfied by the choice of the lump sum taxes T_{t+s} , for a $s \ge 0$.

Policy is a target for the short rate

If monetary policy was simply an exogenous target for the short term nominal interest rate, R_t^1 , then the equilibrium conditions restricting the price levels would be summarized by the intertemporal conditions for the one-period bonds

$$\frac{u_C\left(C_t^*, L_t^*\right)}{P_t} = R_t^1 E_t \left[\frac{\beta^j u_C\left(C_{t+1}^*, L_{t+1}^*\right)}{P_{t+1}}\right].$$
(4)

only. If there was no uncertainty, given an initial price level, the whole path of future price levels would be given by the condition above, going forward. But once we allow for uncertainty, the equations above restrict the conditional average price level, not the actual realization. Suppose that by assumption, we allow for *n* possible contingencies in each period t = 1, 2, Then for period zero, for example, there is one equation,

$$\frac{u_{_{C}}\left(\boldsymbol{C}_{0}^{*},\boldsymbol{L}_{0}^{*}\right)}{P_{_{0}}}=\boldsymbol{R}_{0}^{1}\boldsymbol{E}_{0}\Bigg[\frac{\beta^{1}u_{_{C}}\left(\boldsymbol{C}_{1}^{*},\boldsymbol{L}_{1}^{*}\right)}{P_{_{1}}}\Bigg],$$

in n variables, the price level in each of the n possible contingencies. This is the case for every period at each node of the event tree, going forward.

Policy are targets for both short and long rates

Suppose now that there was a target for the two period bond. Then the equilibrium conditions for the two-period bonds

$$\frac{u_{C}\left(\boldsymbol{C}_{t}^{*},\boldsymbol{L}_{t}^{*}\right)}{\boldsymbol{P}_{t}} = \boldsymbol{R}_{t}^{2}\boldsymbol{E}_{t} \Bigg[\frac{\boldsymbol{\beta}^{2}\boldsymbol{u}_{C}\left(\boldsymbol{C}_{t+2}^{*},\boldsymbol{L}_{t+2}^{*}\right)}{\boldsymbol{P}_{t+2}} \Bigg]$$

would be additional restrictions on the equilibrium price level. We can use these conditions, together with (4) from t + 1 to t + 2,

$$\frac{u_{C}\left(\boldsymbol{C}_{t+1}^{*},\boldsymbol{L}_{t+1}^{*}\right)}{P_{t+1}} = \boldsymbol{R}_{t+1}^{1}\boldsymbol{E}_{t+1}\Bigg[\frac{\beta u_{C}\left(\boldsymbol{C}_{t+2}^{*},\boldsymbol{L}_{t+2}^{*}\right)}{P_{t+2}}\Bigg],$$

to write

$$\frac{u_{C}\left(\boldsymbol{C}_{t}^{*},\boldsymbol{L}_{t}^{*}\right)}{P_{t}} = R_{t}^{2}E_{t}\left[\frac{\beta u_{C}\left(\boldsymbol{C}_{t+1}^{*},\boldsymbol{L}_{t+1}^{*}\right)}{R_{t+1}^{1}P_{t+1}}\right].$$
(5)

Suppose we are again in period zero,. We now have two conditions going forward, namely,

$$\frac{u_{C}\left(C_{0}^{*},L_{0}^{*}\right)}{P_{0}} = R_{0}^{1}E_{0}\left[\frac{\beta^{1}u_{C}\left(C_{1}^{*},L_{1}^{*}\right)}{P_{1}}\right],\tag{6}$$

and

$$\frac{u_C(C_0^*, L_0^*)}{P_0} = R_0^2 E_0 \left[\frac{\beta u_C(C_1^*, L_1^*)}{R_1^1 P_1} \right],\tag{7}$$

If there is a target for both the one period and the two period rates, then there are two equations in n unknowns, the price levels in the n contingencies.

If there was a target for the rate on three period bonds, then the condition

$$\frac{u_C\left(C_0^*, L_0^*\right)}{P_0} = R_0^3 E_0 \left[\frac{\beta u_C\left(C_1^*, L_1^*\right)}{R_1^2 P_1} \right].$$
(8)

would also apply, adding one more restriction on the price levels in the different contingencies in period one.

And the same principle can be applied to bonds of longer maturities, so that a target for n maturities can solve for the price levels in the n contingencies. The more contingencies there are, the more maturities can be targeted. In the limit, as more contingencies are allowed for, the whole term structure can be targeted.

It is worth noting that since uncertainty can be nonfundamental, there is a sence in which the number of possible contingencies is strictly higher than the number of maturities, so that while the whole term structure can indeed be targeted, that is not sufficient to pin down the price level in every possible contingency.

An interpretation

Why is it, then, that the arbitrage conditions between short and long bonds, do not fully restrict the long rates, given the short rates? The reason is, this model suggests, that for a given policy on the short rates, the price levels are not pinned down. So that the long rates are also not pinned down. Restrictions on both short and long rates help determine, possibly still not uniquely, the price levels in this model.

To see this more clearly, notice that the intertemporal condition above, (5), can be written as

$$\frac{R_{t}^{1}}{R_{t}^{2}} = E_{t} \left[\frac{1}{R_{t+1}^{1}} \right] + \frac{Cov_{t} \left(\frac{1}{R_{t+1}^{1}}, \frac{u_{C}(R_{t+1}^{1})}{P_{t+1}} \right)}{E_{t} \left[\frac{u_{C}(R_{t+1}^{1})}{P_{t+1}} \right]}.$$
(9)

Given that, with a target for the short rate, the price level is not pinned down, the covariance above, $Cov_t \left(\frac{1}{R_{t+1}^1}, \frac{u_C(R_{t+1}^1)}{P_{t+1}}\right)$ is also not pinned down. The term premia are unrestricted, and therefore the term structure can be set by policy. Articles **55**

Zero volatility policies

In the expression (9), above, the covariance in general depends on the process for the price level. However if there was no volatility in the short rate in t+1, R_{t+1}^1 , then the covariance would be zero no matter what. In this case the expectation hypothesis is satisfied and, the long term yield is just the product of the short term ones,

$$R_t^2 = R_t^1 R_{t+1}^1$$

This knife-edge case does not question the generality of the result, but can still be of interest in explaining the historical episodes in which multiple targets were attempted. Indeed, if a constant target is credible, then the long rate cannot be targeted independently, and attempts at doing so will most surely fail.

On the relative supply of assets

When the monetary policy maker in this model sets a target for the nominal yields it stands ready to buy and sell assets at given prices or rates. How are then the quantities of those assets determined? The equations in the model that determine the quantities are the budget constraints of the government,

$$\sum_{s=0}^{\infty} E_t Q_{t,t+s} \Big[T_{t+s} - P_{t+s} G_{t+s} \Big] = \sum_{j=1}^m R_{t-j}^j B_{t-j}^j + B_{t-1,t}.$$

These conditions have to be satisfied, at each state, in each period, going forward. But they can be satisfied by the choice of lump sum taxes, not necessarily by the net supply of the assets. There are thus multiple such supplies consistent with equilibrium.

Conclusion

Short and long term interest rates can in general be determined independently. When short term rates are close to zero, and long term rates aren't, there is still room for policy to lower the long term rates as well. The way this should be accomplished is with a pure target for interest rates at different maturities, not with policy on the relative supply of assets.

Why is there, then, the strong conviction that short and long term rates cannot be chosen independently? The reason is, most likely, the result of determinacy of equilibria under an interest rate feedback rule, first shown by McCallum (1981). In fact when policy on the short rate is assumed to be undertaken with a Taylor-type rule, under certain conditions, there is a unique equilibrium in the neighborhood of the steady state. If the equilibrium is unique, then the term premia are also unique, and therefore the term structure is uniquely pinned down. This is indeed true locally, but not globally, and, in general, there is nothing within our standard monetary models that selects the local equilibrium, rather than any other one.
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LABOUR COST-CUTTING STRATEGIES MICROECONOMIC EVIDENCE FROM SURVEY DATA*

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ABSTRACT

This article investigates how firms adjust their labour costs in the presence of adverse shocks on labour demand and supply. The information obtained from a survey on a sample of firms show that, besides reducing employment or freezing nominal base wages, firms also make frequent use of other cost-cutting strategies, like freezing or cutting bonus and other monetary or non-monetary benefits, slowing down or freezing the rate at which promotions are filled, or recruiting new employees at wages lower than the wages received by the employees that have left the firm. We show that the use of these different adjustment strategies is affected by workers' and firms' attributes, as well as by some indicators of the economic environment in which firms operate. More importantly, we provide evidence that firms with more flexible base wages are less likely to reduce employment, and that such effect may be strengthened by the availability of the above-mentioned alternative labour-cost adjustment margins. It is important to stress that all the results presented in this article stemmed directly from the information collected in the survey and, consequently, they do not have a normative nature.

1. Introduction

Understanding the way wages and employment adjustments interplay in the presence of adverse shocks is extremely important for a proper design of monetary and fiscal policies. This article adds to the literature in this field by analysing how firms, in the presence of wage rigidity, combine different channels of labour cost adjustment in response to adverse shocks. This paper contributes to this literature by analysing how firms, in the presence of ifferent channels of labour cost adjustment in response to adverse shocks. This paper contributes to this literature by analysing how firms, in the presence of wage rigidity, combine different channels of labour-cost adjustment.

Wage rigidity is expected to have implications for unemployment because, in the face of negative shocks, employment adjustment is likely to be larger when wages are rigid downwards. Wage rigidity is also thought to have important implications for monetary policy, as it may condition the inflation target that monetary authorities should pursue. If nominal wages were perfectly flexible it would be optimal to aim at zero inflation but, in the presence of downward nominal wage rigidity, a certain amount of inflation may be required to "grease the wheels" of the labour market by easing reductions in real wages.¹

The bulk of the empirical literature aimed at assessing the extent and the effects of nominal wage rigidi-

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¹ For a discussion, see, among many others, Akerlof *et al.* (1996), Gordon (1996), Mankiw (1996), Dwyer (2003), Fehr and Goette (2005), Carlsson and Westermark (2007), Elsby (2009), Messina and Sanz-de-Galdeano (2011) and Stuber and Beissinger (2012).

ties has focused on base wages or permanent wages (base wages plus other components that are paid on a permanent or regular basis, such as meals allowances, tenure-related components, etc.), leaving aside potentially more flexible pay components, such as performance-related bonuses, commissions and other benefits, which may strongly attenuate the negative impact on employment of strict downward base-wage rigidity.² Exceptions are the contributions by Lebow *et al.* (2003), Dwyer (2003) and Oyer (2005), who look at the role played by bonuses and other benefits in reducing nominal wage rigidity. They conclude that firms seem to be able to partly circumvent wage rigidity by varying benefits so that total compensation displays less rigidity than do wages alone.

This article extends the existing literature by discussing the implications of wage rigidity in a context where several labour-cost adjustment margins are available to firms. Since firms are primarily concerned with total compensation per employee, the assessment of the importance of these alternative labour cost adjustment strategies is crucial to evaluate the overall degree of labour cost flexibility and its implications. Based on firm-level survey data for a sample of Portuguese firms, this article investigates whether these alternative margins of labour cost adjustment have been used as substitutes or complements to base wages and, most importantly, whether their utilisation has significantly reduced the detrimental impact on employment of base-wage rigidities in the Portuguese labour market.

Our results show that, when hit by adverse labour supply or labour demand shocks, those firms where base wages are more flexible display a lower probability of reducing the number of employees, and that such effect is significantly reinforced by the existence of alternative margins of labour cost adjustment. In particular, the availability of compensation components (bonus, benefits and promotions) that firms can freeze or cut in bad times, and the possibility of recruiting new employees at a wage lower than the wage of those who have recently left the firm have certainly also contributed to lower the probability of reducing the number of employees. It is important to stress that all the results presented in this article stemmed directly from the information collected in the survey and, consequently, they do not have a normative nature.

The rest of the article is organised as follows. Section 2 describes the dataset. Section 3 provides the institutional and theoretical background for the econometric model used in the empirical section of the article. Section 4 presents some preliminary analysis of the data. Section 5 discusses the econometric methodology, presents the estimated models and discusses the main results. Section 6 provides some concluding remarks. Finally, the Appendix describes how the different variables were constructed.

2. Data sources

Most of the data used in this study come from a survey on wage and price setting practices carried out by Banco de Portugal in 2008 on a sample of Portuguese firms.³

In this survey, firms were asked two questions pertaining to the different margins of labour cost adjustments, including base-wage freezes, reduction or elimination of other compensation components and reduction of employment.

As regards base-wage freezes, firms were asked the following question: "Over the last five years, has the base wage of some workers in your firm ever been frozen?" Under the assumption of a common negative shock, and in the absence of nominal wage cuts, wage freezes identify those firms in the sample where base wages exhibit the lowest degree of real downward rigidity. Thus, for the purposes

² For empirical evidence on downward wage rigidity see, for instance, Altonji and Devereux (2000), Knoppik and Beissinger (2006), Dickens *et al.* (2007), Goette *et al.* (2007), Holden and Wulfsberg (2008, 2009), Behr and Potter (2010) and Messina *et al.* (2010).

³ Details on the sample selection method, as well as a copy of the full questionnaire can be found in Martins (2011).

of the present article, we look at base-wage freezes as a measure of downward wage flexibility.⁴ In the second question, firms were asked if they had ever used ways of cutting labour costs other than changing their base wages. In particular, they were asked the following question: "Have you ever used any of the following strategies to reduce labour costs?" Firms participating in the survey were allowed to choose as many options as they wished from the list below:

- 1) Reduce or eliminate bonus payments and other monetary benefits;
- 2) Reduce or eliminate non-monetary benefits;
- 3) Slow or freeze the rate at which promotions are filled;
- 4) Recruit new employees at a wage lower than the wage of those who left the firm;
- 5) Reduce the number of employees.

These five strategies together with wage freezes summarise the main labour cost-cutting strategies available to Portuguese firms in the face of negative shocks.

Wage freezes and strategies 1 to 4 may be seen as affecting the average price of labour. Further below, for estimation purposes and tractability reasons, strategies 1 to 3 (the reduction or elimination of monetary and non-monetary benefits and the slowdown or freezing of promotions) will be aggregated in a single margin and denoted together as "flexible margins" as they are usually seen as more flexible than base wages. The reduction in the number of employees affects the quantity of labour and will be denoted simply as "reduce employees".

Besides the questions on base-wage freezes and on the alternative margins of labour cost reduction, the survey also contains information on a large set of firms' characteristics. These include information on the composition of the labour force (share of white collar vs. blue collar workers; share of low skilled vs. high skilled workers; share of workers with permanent contracts), the percentage of workers covered by collective wage agreements, the share of exports in firms' total sales, and the relevance of some factors as obstacles to wage cuts/freezes in a context where firms may desire to reduce their labour costs, such as the constraints imposed by collective wage agreements, the negative impact on firms' reputation or the difficulties in attracting new workers in the future.

After excluding from the sample those firms that have not fully answered the two questions on the alternative strategies to reduce labour costs, we were able to obtain detailed information on 1319 firms from different branches of activity. More specifically, our sample includes firms with 10 or more employees, covering manufacturing (38 percent), energy (3 percent), construction (11 percent), retail and wholesale trade (17 percent), and other business services (31 percent).

However, for estimation purposes, and for reasons that will become clear further below, we restrict the analysis to firms that have reduced costs, i.e., that have used at least one cost-cutting strategy. This reduces the original sample to 757 firms. Also for estimation purposes, the information from the survey was supplemented with data from Quadros de Pessoal, a large administrative database collected by the Ministry of Employment and Social Security, which, among other, includes information about all the Portuguese firms with wage earners (size, ownership, location, etc.). From this database, we obtained information on size (number of employees) and workers' tenure.

⁴ Information on wage freezes has been used in the literature as a measure of the degree of downward nominal wage rigidity (see, for instance, Babecky *et al.* (2009; 2010)). In our view, however, wage freezes can be seen as a measure of downward nominal wage rigidity only if the analysis is restricted to the population of firms where wages have been frozen or cut (see for instance, Holden (2004), Dickens *et al.* (2007) and Holden and Wulfsberg (2008)). Radowski and Bonin (2008) have also used the frequency of wage freezes or wage cuts as a proxy for wage flexibility in Germany.

By combining these two datasets through the individual tax identification number of each firm and after excluding the firms that have not answered to all the questions that are used as regressors in the estimated model the initial sample is reduced to 635 firms. This constitutes the final sample retained for estimation purposes.

3. Institutional and theoretical background

3.1 Institutional background

In the face of negative labour demand or supply shocks, firms are expected to reduce labour costs. This can be achieved by reducing employment and/or the average labour costs. In the real economy, however, firms face restrictions in terms of the channels of adjustment they can use, so that the way in which they distribute shocks across the various labour-cost adjustment channels is expected to depend not only on the technological and market restrictions, but also on the institutional and structural constraints of the economy, including wage rigidity and employment protection legislation.

As regards nominal wage rigidity, many studies place the Portuguese labour market among the most rigid countries in Europe (see Behr e Potter (2010), Messina et al. (2010), Holden and Wulfsberg (2008), Dickens et al. (2007) and Knoppik and Beissinger (2006)). Such rigidity stems above all from the fact that labour legislation forbids nominal wage cuts. According to the Portuguese law, a firm cannot reduce contracted wages, including other regular and periodic monetary or non-monetary pay components, unless this is permitted by collective agreements. As a general rule, only bonus, commissions and other monetary or non-monetary benefits associated to the worker's performance, not included in the collective agreement, may legally be reduced (Portuguese Labour Code, art. 129, 258 and 260). Also, collective negotiations are usually conducted at the industry level, and collective agreements stipulate minimum working conditions, like the monthly minimum wage for each category of workers, overtime pay and the normal duration of work. Such collective bargaining covers a large part of the workforce resulting both from the presence of labour unions and the existence of mechanisms of contract extension, i.e., the Government normally uses extension mechanisms to broaden the coverage of the collective bargaining agreement to workers not covered by unions. This largely regulated institutional framework, as well as the existence of a compulsory minimum wage, which establishes a wage floor for many workers, introduces strong additional rigidity in the wage-setting process.⁵

In contrast, the Portuguese labour market is usually seen as displaying a very low level of real wage rigidity. This conclusion emerges not only from the literature that investigates the degree of real wage rigidity from micro data by computing measures of downward real wage rigidity from the distribution of wages changes (see Dickens *et al.* (2007) and Messina *et al.* (2007)), but also from the literature that looks at the wage supply curve using micro or macro data, where real wages appear as highly responsive to the unemployment rate (see OECD (1992), Luz and Pinheiro (1993), Gaspar and Luz (1997), Dias *et al.* (2004) and Marques (2008)). Estimates based on more recent data, however, suggest that things may have changed significantly during the last decade or so. According to Portugal *et al.* (2010), the large cyclical sensitivity of real wages, prevailing in the 1980s and the 1990s, has basically vanished in the most recent period.⁶

⁵ In recent years, however, the number of firm-level agreements, which are supposed to allow greater wage flexibility, has increased. According to our survey, they are present in around 10 percent of the firms.

⁶ According to the authors' estimates, the semi-elasticity of real wages to changes in the unemployment rate dropped from -2.46 in the 1986-2000 period to about zero in the 2002-2007 period for job-stayers, and from -0.955 to -0.343 for new-hires.

The Portuguese labour market is also seen as displaying a high level of employment rigidity among European economies mainly due to legislation that protects employees with permanent contracts against individual dismissal (see Venn (2009)). Nevertheless, the typical Portuguese firm appears to have more control over employment than it has over contracted wages, namely because it has the possibility of resorting to collective dismissals and temporary contracts or finding ways to get around individual dismissals regulation by negotiating voluntary quits.

3.2 Theoretical background

Given the characteristics of the Portuguese labour market, we model firms' reaction to shocks by assuming a "right to manage" situation where base wages are bargained collectively but other components of total compensation and employment are chosen optimally by firms subject to adjustment costs (namely hiring and firing costs), as well as to institutional constraints.

In order to discuss the impact of negative labour demand and supply shocks on wages and employment, we resort to a very stylised model where it is assumed that firms do not pay bonuses or any other monetary or non-monetary benefits, so that total compensation coincides with base wages. To maximise profits in a "right to manage" situation firms must choose employment so as to equate the wage, which they take as given, to labour's marginal impact on firm's revenues.

Let us assume that the inverse labour demand schedule of firm i may be written as:

$$w_i = -\theta_i l_i + d_i \tag{1}$$

where w_i is the log of firm's labour cost, l_i is the log of employment, d_i measures other factors that affect labour demand (marginal revenues) and θ_i is the inverse of the elasticity of the labour demand schedule.

Similarly, let us assume that firm i faces the following inverse log-linear labour supply schedule:

$$w_i = \lambda_i l_i + s_i \tag{2}$$

where λ_i is the inverse of labour supply elasticity and s_i measures other factors that affect labour supply. Solving the two equations for wages and employment, we get:

$$w_{i} = \frac{\theta_{i}}{\lambda_{i} + \theta_{i}} s_{i} + \frac{\lambda_{i}}{\lambda_{i} + \theta_{i}} d_{i}, \qquad (3)$$

$$l_i = \frac{1}{\lambda_i + \theta_i} \left(d_i - s_i \right) \tag{4}$$

In this simple framework, a labour demand shock may be represented by Δd_i . Labour demand shocks may reflect technological shocks, fluctuations in the price of factors other than labour (e.g., energy) or output demand shocks. The equilibrium wage and employment reactions to labour demand shocks are given by:

$$\Delta w_i = \frac{\lambda_i}{\lambda_i + \theta_i} \Delta d_i \tag{5}$$

$$\Delta l_i = \frac{1}{\lambda_i + \theta_i} \Delta d_i \tag{6}$$

Since the elasticity of labour demand depends on the degree of decreasing returns to labour, on labour's substitutability with other factors of production and on the elasticity of product demand (see Hamermesh (1987)), all these features affect the reaction of employment to shocks. The response of employment to labour demand shocks is small when the labour supply curve is inelastic, *i.e.*, λ_i is large. In contrast, if wages do not change, *i.e.*, λ_i is very small, possibly because they are set by binding collective wage agreements, then employment responds strongly to labour demand shocks.

Thus, in the face of a negative labour demand shock several final adjustments are possible. If the firm is not able to freeze nominal wages (the most likely situation under downward wage rigidity), it will likely reduce employment and answer in the survey that it has reduced employment but not frozen wages. If, by negotiating with the workers' representatives, the firm manages to freeze nominal wages (the best it can aim at, given the existence of strict base-wage nominal downward rigidity), the firm will answer in the survey that it has frozen wages and reduced employment (if freezing wages was not enough to prevent employment reduction) or that it has frozen wages and not reduced employment, otherwise.

Let us now consider a wage shock which we represent by Δs_i . The employment impact of such shock is given by:

$$\Delta l_i = \frac{-1}{\lambda_i + \theta_i} \Delta s_i \tag{7}$$

Thus, employment responses are expected to be larger when θ_i is small, *i.e.*, labour demand is more elastic, which in turn reflects the degree of market competition, as well as the substitutability of labour with other factors. In the face of a negative labour supply shock (for instance, an unexpected base-wage increase imposed by collective agreements), the most likely final outcome (in the absence of other adjustment mechanisms) is a reduction in employment, so that the firm will answer in the survey that it has reduced employment but has not frozen wages.

Summing up, the cases in which firms have reacted by freezing base wages (reducing or not employment at the same time) are responses to a negative labour demand shock. The cases in which firms have reduced employment but have not frozen base wages may be the reaction either to a negative labour demand or to a negative labour supply shock.

The role played by the alternative mechanisms investigated in this article, like the flexible components of total compensation (such as bonus and other monetary and non-monetary benefits) and the possibility of recruiting new employees at a lower wage than the one of those who have left the firm, may be discussed by noting that they operate in the model by affecting total compensation and thus the labour supply and demand curves. In the context of downwardly rigid base wages, the negative impact on employment of a negative labour demand shock will be lower if the firm has the possibility of resorting to other total compensation components (i.e., freezing or reducing bonuses and other monetary or non-monetary benefits, freezing or slowing down the rate at which promotions are filled or recruiting new employees at wages lower than those received by the employees that have recently quit). Similarly, in the face of a negative labour supply shock, these margins may be used to attenuate the increase in total compensation, reducing the negative impact on employment. In the case of a negative labour demand shock (if firms are unable to freeze base wages) while, in the case of a negative supply shock, they will emerge as substitutes to (unexpected) base-wage increases.

4. Preliminary data analysis

Table 1 summarises some information on the different cost-cutting strategies used by Portuguese firms in our sample. From the table, we see that the reduction in the number of employees ("reduce employees") is by far the most used strategy. Indeed, around 72 percent of the firms in the sample answered that they had used this margin in the past. The "flexible margins", which aggregates the reduction or elimination of bonus payments and other monetary benefits ("reduce bonus"), the reduction or elimination of non-monetary benefits ("reduce benefits") and the slowdown or freezing of promotions ("slowdown promotions"), ranks second with around 45 percent of the firms, and the recruitment of new employees with a wage lower than the one of those who left the firm ("cheaper hires") ranks third with around 30 percent of the firms.

LABOUR COST-CUTTING STRATEGIES SHARE OF FIRMS THAT HAVE USED EACH MARGIN AT LEAST ONCE											
Sectors and firm size	Base wage freezes		Flexible marg	ins	Flexible margins	Cheaper hires	Reduce employees				
		Reduce bonuses	Reduce benefits	Slowdown promotions							
Total	0.258	0.243	0.148	0.246	0.454	0.297	0.715				
Manufaturing	0.284	0.254	0.167	0.227	0.448	0.284	0.732				
Energy	0.190	0.190	0.095	0.238	0.333	0.333	0.857				
Construction	0.254	0.127	0.127	0.282	0.423	0.282	0.803				
Trade	0.252	0.289	0.111	0.163	0.422	0.274	0.681				
Other services	0.254	0.221	0.136	0.296	0.479	0.315	0.690				
Large firms	0.244	0.269	0.154	0.260	0.474	0.349	0.724				
Small firms	0.276	0.208	0.140	0.227	0.429	0.277	0.702				

Source: Authors' calculations.

Notes: "Flexible margins" is the aggregation of "reduce bonuses", "reduce benefits" and "slowdown promotions". Large firms are those firms with 100 or more employees, while firms with less than 100 employees are considered as small firms. Number of observations: 757.

Table 1 also shows that the use of the different strategies by Portuguese firms does not vary much across sectors, with the possible exception of energy and construction. The energy sector displays a slightly lower usage of "base-wage freezes" and "flexible margins" and a relatively higher usage of "cheaper hires" and "reduce employees", while firms in the construction sector also use the "reduce employees" strategy more frequently than the average firm.

As regards the distribution by firm size, Table 1 does not reveal strong asymmetries. Nevertheless, large firms seem more likely to use the "flexible margins" and "cheaper hires", as opposed to small firms which seem to make a more extensive use of "base-wage freezes".

According to the discussion in Section 3, we may expect the detrimental implications for employment of base-wage rigidity to be partly offset by the availability of other mechanisms through which firms can reduce their labour costs, such as the "flexible margins" and/or the "cheaper hires". In order to investigate whether some of these relationships are apparent in the data, we computed some sample conditional proportions, as well as tetrachoric correlation coefficients for pairings of different margins (see Tables 2 and 3, respectively).

From Table 2, we see that around 72 percent of the firms in the sample have reduced employment but only around 26 percent have frozen wages, which suggests that a large proportion of firms has reduced employment without freezing wages. However, among the firms that have frozen base wages only around 56 percent have also reduced employment. In turn, from Table 3, we see that the correlation coefficient between "base-wage freezes" and "reduce employees" is significantly negative (-0.330). Thus, overall, the sample evidence suggests that "base-wage freezes" might have been used as a substitute to employment reduction.

A similar picture emerges for "cheaper hires". Conditional on having frozen wages, only around 22 percent of the firms have used "cheaper hires", compared to around 30 percent in the full sample. The correlation between "base-wage freezes" and "cheaper hires" is also significantly negative (-0.195).

In contrast, there is no indication that "flexible margins" could have been used as a substitute for "base--wage freezes". If anything, the data suggest that firms that managed to freeze wages also tended to

SAMPLE CONDITIONAL PROPORTIONS				
	Reduce employees	Cheaper hires	Flexible margins	Base-wage freezes
P(.)	0.715	0.297	0.454	0.258
P(. Base-wage freezes=1)	0.564	0.215	0.503	1.000
P(. Flexible margins=1)	0.657	0.305	1.000	-
P(. Cheaper hires=1)	0.680	1.000	-	-

Source: Authors' calculations.

Notes: P(Y|X=1) stands for the proportion of firms that used strategy Y among those firms that have used X. Number of observations: 757.

Table 3

TETRACHORIC CORR	RELATION COEFFICIENT	S BETWEEN DIFF	ERENT PAIRS OF L	ABOUR COST-C	UTTING
STRATEGIES					

	Reduce employees	Cheaper hires	Flexible margins	Base-wage freezes
Base-wage freezes	-0.330***	-0.195***	0.097	1.000
Flexible margins	-0.193***	0.027	1.000	-
Cheaper hires	-0.086	1.000	-	-
Reduce employees	1.000		-	-

Source: Authors' calculations

Notes: ***, ** and * stand for significance at 1, 5 and 10 percent level, respectively. Number of observations: 757.

use the "flexible margins". In other words, flexibility in the total compensation components ("base-wage freezes" and "flexible margins") seems to be positively correlated, even though not significantly so (Table 3).

As regards the other strategies, Table 2 suggests that "flexible margins" or "cheaper hires" could also have been used as substitutes to employment reduction, but according to Table 3 only the correlation between "flexible margins" and "reduce employees" appears as significantly different from zero. Finally, according to Tables 2 and 3, there seems to be no relationship whatsoever between the "flexible margins" and the "cheaper hires".

Overall, Table 2 and Table 3 suggest that in the sample some margins were used as substitutes for other margins, but no significant evidence emerges as regards complementary relationships. In the next section these relationships will be further characterised using an appropriate econometric model.

5. Empirical Analysis

5.1 An econometric model for the cost-cutting strategies

In the face of negative shocks, firms are expected to respond through adjustments that affect directly their demand (price of the product) and/or their supply (costs of production). For reasons of data availability and econometric tractability, this article focuses on the labour-cost adjustment strategies that Portuguese firms have used in the face of negative labour demand and supply shocks. Thus, implicitly, we assume that the degree of price stickiness and the costs of wage and employment adjustment determine the relative importance of the price versus the cost channel, but that the relationship among the different labour-cost margins is chiefly determined by their relative adjustment costs. This allows a two-stage approach where it is assumed that firms first decide whether to reduce prices and/or costs and then, conditional on having decided to reduce costs, they determine which type of costs they are going to

cut, subject to technical or institutional restrictions.⁷

Against this background, we model firms' cost-cutting strategies by assuming the following multivariate recursive probit model:

$$y_{i1}^{*} = x_{i1}^{'}\beta_{1} + \varepsilon_{i1}^{'}$$
(8)

$$y_{i2}^{*} = x_{i2}^{'}\beta_{2} + \alpha_{1}y_{i1} + \varepsilon_{i2}$$
⁽⁹⁾

$$y_{i3}^{*} = x_{i3}^{'}\beta_{3} + \delta_{1}y_{i1} + \delta_{2}y_{i2} + \varepsilon_{i3}$$
(10)

$$y_{i4}^{*} = x_{i4}^{'}\beta_{4} + \gamma_{1}y_{i1} + \gamma_{2}y_{i2} + \gamma_{3}y_{i3} + \varepsilon_{i4}$$
⁽¹¹⁾

where y_{ij}^* (i=1,...N; j=1,...4) represents a latent variable which measures the amount of margin j used by firm i and x_{ij} is a set of regressors whose impacts are measured by vector ρ_j . As y_{ij}^* is not observed, we define y_{ij} as usually:

$$y_{ij} = 1$$
 if $y_{ij}^* > 0$; $y_{ij} = 0$ if $y_{ij}^* \le 0$, $i=1,...N; j=1,...,4$ (12)

Equations (8)-(11) describe the most general recursive triangular model that complies with the condition for logical consistency. It has been shown in the literature that such a model allows for causal interpretations enabling us to understand the underlying mechanisms generating the observations (see Maddala (1983)). It has also been shown that such a model does not suffer from identification problems.⁸

We define the 4 variables as follows: $y_{i1} =$ "base-wage freezes", $y_{i2} =$ "flexible margins", $y_{i3} =$ "cheaper hires" and $y_{i4} =$ "reduce employees". By ordering "base-wage freezes" first, we are assuming that base wages are basically negotiated outside the firm, through collective agreements, such that they are not significantly affected by adjustments in the other cost margins, in line with a right to manage approach. In turn, by ordering "reduce employees" last, we are assuming that the probability of employment reduction may depend on whether the remaining margins are also used. Ceteris paribus, employment adjustment is expected to be lower when base wages are flexible and the firm has the possibility of using the "flexible margins" or the "cheaper-hires".

In model (8)-(11), it is common to assume that:

$$corr(\varepsilon_{ij}, \ \varepsilon_{ik}) = \rho_{jk} \neq 0 \quad \forall j, k=1,2,3,4 \quad (j \neq k)$$
(13)

⁷ Ideally, in order to draw conclusions on the impacts of the different regressors on the alternative adjustment channels, we would like to have detailed data on the reaction of firms to the different shocks. Our sample has information on whether a given margin was used, but is mute on the frequency and timing of its utilisation. Thus, we proceed under the implicit identifying assumption that the data on the labour cost-cutting strategies is the result of a single reaction by the firm to a negative labour demand or labour supply shock (or a single reaction to the accumulation of several negative labour demand or supply shocks). This qualification requires, of course, that the estimated parameters be interpreted with some caution.

⁸ Wilde (2000) has shown that the identification of the model is achieved if the same exogenous regressors appear in all equations, provided these regressors are sufficiently variable, so that theoretical identification does not require availability of additional instruments (see also Freedman and Sekhom (2010)). Still, equations (8) and (9) in the estimated model include three additional regressors in order to ensure proper empirical identification of the model.

Under assumption (13), the dependent variables y_{ij} (j=1,2,3) in the right-hand side of equations (9)-(11) are endogenous for the equations where they appear as regressors, and the full model (8)-(11) must be estimated using maximum likelihood methods. But if $\rho_{jk} = 0$, $\forall j, k$ $(j \neq k)$, the dependent variables y_{ij} in the right-hand side of equations (9)-(11) become exogenous for estimation purposes and the model may be estimated using single equations methods.

Given that our purpose is to identify the relationships among the different cost-cutting strategies, model (8)-(11) is estimated by restricting the original sample to firms that have reduced labour costs, *i.e.*, that have used at least one cost-cutting strategy. Restricting the sample to firms that have reduced costs may raise sample selection issues because the restricted sample becomes endogenously determined. However, sample selection will only be a problem if the residuals in the selection equation are correlated with the residuals of the model estimated over the restricted sample. In order to handle this situation, we start by estimating model (8)-(11) together with a selection equation which, in our case, is an equation for the "cost margin" defined over the full sample:

$$w_i = z_i \delta + v_i \tag{14}$$

where $w_i = 1$ if the firm has reduced costs (has used one cost margin at least), and $w_i = 0$ otherwise; z'_i is a vector of exogenous regressors. From this model, we may proceed by testing the joint hypothesis of endogeneity of the y_{ij} (j=1,2,3) in equations (9)-(11) and the existence of sample selection problems, *i.e.*:

$$H_0 = \rho_{jk} = \theta_r = 0, \qquad j, k, r = 1, 2, 3, 4 \qquad (j \neq k)$$
(15)

where $\theta_r = corr(v_i, \varepsilon_{ir}), r = 1, 2, 3, 4.$

The tests performed suggest that both endogeneity and sample selection are not relevant issues in our case. As a result, the model was estimated using single equation methods as this is likely to imply strong efficiency gains.⁹

5.2 Estimation results

Table 4 presents the average direct marginal effects of each of the covariates on the probability of a firm using each labour cost-cutting strategy.¹⁰

The choice of the exogenous regressors, x_{ij} to be used in the empirical model was guided by the literature on downward wage rigidity. These include regressors aimed at measuring the importance of workers' and firms' attributes such as tenure, the proportion of high-skilled blue- and white-collar workers, the proportion of permanent employees or of employees covered by collective wage agreements, the importance of competition, etc. The Appendix describes how they were constructed.

We start by investigating how the exogenous regressors affect the use of the labour cost-cutting strategies, and then proceed by analysing the relationships among these strategies, with a special focus on wage-freezes and employment.

⁹ For further details, see Dias et al. (2012).

¹⁰ The average marginal effects were calculated from the difference in the predicted probabilities conditional on marginal changes for continuous regressors and 0 and 1 changes for discrete variables in each equation. We notice that in our triangular model the total marginal effect on y_j from a covariate x_k may be decomposed into the sum of a direct effect (the partial effect computed directly from the equation for y_j) and an indirect effect coming from the contribution of the equations that precede y_j in the triangular model. For instance the impact of x_k on the probability of "reduce employees" involves a direct effect through the "reduce employees" equation and an indirect effect from the use of the other margins: "base-wage freezes", "flexible margins" and "cheaper hires" (provided x_k enters those equations as a regressor). Figures in Table 4 refer to the direct marginal effects, as in our case the indirect effects do not add a significant contribution to the total effect.

5.2.1 Effects of the exogenous regressors

For ease of presentation, we grouped the exogenous regressors into the following four categories: 1) labour force composition, 2) union activity, 3) barriers to wage freezing and 4) other characteristics.

Labour force composition

This group includes four regressors that provide information about the labour force composition of the firm: the proportion of workers with less than 5 years of tenure, proportion of high-skilled blue- and white-collar workers, and the share of permanent employees.

The results for the regressor that measures the proportion of workers with less than 5 years of tenure suggest that it is not a relevant variable as regards firms' decisions on freezing base-wages or reducing the "flexible margins". In contrast, firms with a higher proportion of less experienced or younger workers are more likely to use the margin "cheaper hires". This result suggests that firms with a higher proportion of less experienced or younger workers are also the ones where quits are more frequent, allowing firms to reduce labour costs by paying lower wages to new employees. This result may be due to the prevailing dual labour market in Portugal which provides very high protection to older workers with open-ended contracts and very little to the younger ones with fixed-term contracts (see Centeno and Novo (2012)). In the case of "reduce employees", however, the coefficient is negative suggesting that firms with higher proportion of high-tenured workers are more likely to reduce employment in the face of negative shocks. This effect may stem from the fact that the proportion of high-tenured workers is proxying the age of the firm and collective dismissals being more frequent in older firms.

The literature suggests that wages of high-skilled or white-collar workers are likely to display higher downward rigidity than those of low-skilled or blue-collar workers either because the effort of high-skilled workers is more valuable and more difficult to monitor or because costs of hiring and training costs are higher for high-skilled and/or white-collar workers making firms more reluctant to cut their wages (see, for instance, Shapiro and Stiglitz (1984), Akerlof (1982) and Akerlof and Yellen (1990)).

From Table 4, we see that, in comparison to low-skilled workers (blue- and white-collar), firms with more high-skilled workers are less likely to "reduce employees", in line with the economic theory, but more likely to use the first three margins of adjustment: "base-wage freezes", "flexible margins" and "cheaper hires". This result, apparently not in line with most theories, is likely to reflect a greater use of flexible pay components among high-skilled workers.¹¹

To the extent that workers with permanent contracts have more bargaining power in the wage-setting process than workers with temporary contracts, the "insider-outsider model" (Lindbeck and Snower (1988)) will imply higher wage rigidity for the former group of workers. From Table 4, we see that the impact of the share of permanent employees on each of the margins tends to be negative (the exception is "base-wage freezes"), even though not statistically significant for most of the margins. In line with the theory, this result suggests that the higher the share of permanent workers, the harder it is, in general, to use the adjustment margins.

¹¹ In practice, the sign and magnitude of the estimated parameters for some regressors, in the model for a given margin, are likely to depend not only on workers' relative bargaining power but also on how widespread that margin is across the different type of workers. For instance, the "flexible margin" (bonus, benefits or promotions) is likely to be more widespread among the class of high-skilled and/or white-collar workers. Under these circumstances, firms with higher proportion of high-skilled and/or white-collar workers may emerge in the estimated models as displaying higher probability of reducing the flexible margin, in contrast to what the theory would suggest.

Union activity

The role played by labour unions in the wage setting process and the employment protection legislation is also likely to have strong implications for wage rigidity and for employment responses to shocks. The higher is the unions' bargaining power, the more rigid wages are expected to be and thus changes in employment are also likely to be higher. For instance, in the model developed in Holden (2004), downward wage rigidity is likely to be stronger the higher the coverage of collective agreements and the stricter the employment protection legislation. The idea is that with collective wage agreements wage cuts need the consent of employees and such cuts are more difficult to implement under stricter employment protection legislation.

In order to capture the role played by unions in the wage setting process, we included the variables "coverage" and "legislation" in the model. The first measures the proportion of workers covered by collective agreements and the second is a dummy variable which equals one if the firm considers labour regulation or the collective wage agreement as a relevant or very relevant factor that prevents wages from being cut or frozen.¹² From Table 4, we see that the two regressors, with the exception of coverage for "reduce employees", are not very relevant to explain differences across firms in the use of the different cost-cutting strategies. We see that the coverage increases the likelihood of a firm reducing employment, which suggests that the presence of unions does not limit the firms' ability to adjust the quantity margin.

Barriers to wage freezing

Some efficiency wage theories suggested in the literature may also explain why some firms do not freeze or cut wages in the event of negative shocks (see Katz (1986) and Campbell and Kamlami (1997)). According to these models, firms may be very reluctant to cut wages or other compensation components if they think that would reduce workers effort and/or induce workers to shirk or to leave the firm, consequently increasing monitoring, supervising and/or turnover costs. In order to capture these ideas, we included in the model the variables "reputation of the firm" and "workers attraction". These are dummy variables which equal one if the firm considers that the negative consequences for the reputation of the firm and the difficulties in attracting new employees are relevant or very relevant factors that prevent cutting or freezing their nominal wages. We see from Tables 4 that the impact of these two regressors is negative both for "base-wage freezes" and "flexible margins", which means that these two obstacles to reducing or freezing base wages are also obstacles to reducing the flexible margins.¹³

Other characteristics

International economic integration is likely to increase both competition and factor substitutability, thus increasing the elasticity of labour demand and labour productivity (see Andersen *et al.* (2000)). Firms operating in such an environment should also feel stronger pressure to reduce costs and thus one may expect a more intense adjustment of wages and employment in reaction to shocks. But wage rigidity may also vary with firm size, as well as with the type of sector in which the firm operates. If monitoring

¹² Notice that "legislation", "reputation of the firm" and "workers attraction" are included only in the first two equations. On the one hand, we believe that these regressors are capturing firm's characteristics that are expected to be more relevant for compensation related components and, on the other, by excluding them from the other two equations, we intend to ensure proper empirical identification of the model. See also footnote 8.

¹³ We assume that bonus and other monetary and non-monetary benefits are more flexible than base wages. This seems a reasonable hypothesis for countries like Portugal where base wages cannot be cut for legal reasons. However, in general, this is as debatable assumption. On the one hand, it may be argued that benefits over which the firm has at least some discretion are likely to be less rigid than wages because firms have more (and more subtle) ways to lower benefits than to lower wages. But, on the other hand, it may be claimed that many of the theories suggested in the literature to justify the presence of downward nominal wage rigidity are likely to apply to benefits too.

LABOUR COST CUTTING STRATE	GIES PROBIT MODEL - AVE	RAGE MARGINAL EFF	ECTS (DIRECT EFFECT	S)
	Base-wage freezes	Flexible margins	Cheaper hires	Reduce employees
Tenure less than 5 years	-0.0761	0.0195	0.1393*	-0.2421***
	(0.0718)	(0.0802)	(0.0719)	(0.0663)
High-skilled blue-collar	0.0017***	0.0003	0.0016**	-0.0011*
	(0.0006)	(0.0007)	(0.0006)	(0.0006)
High-skilled white-collar	0.0017**	0.0015*	0.0026***	-0.0017**
	(0.0007)	(0.0009)	(0.0007)	(0.0008)
Permanent employees	0.0302	-0.0937*	-0.0733	-0.0666
	(0.0480)	-0.0530	(0.0488)	(0.0503)
Coverage	-0.0030	-0.0013	0.0221	0.0968***
	(0.0361)	(0.0411)	(0.0375)	(0.0359)
Legislation	-0.0661	0.0488	-	-
	(0.0440)	(0.0493)		
Reputation of the firm	-0.1539***	-0.0847**	-	-
	(0.0372)	(0.0429)		
Workers attraction	0.0446	-0.0843**	-	-
	(0.0356)	(0.0421)		
Openess	0.0123	0.1000**	0.0897*	0.0223
	(0.0426)	(0.0476)	(0.0467)	(0.0423)
Size	-0.0154	0.0084	0.0502	0.0174
	(0.0386)	(0.0432)	(0.0398)	(0.0381)
Services	0.0444	0.0405	-0.0151	0.0196
	(0.0424)	(0.0477)	(0.0426)	(0.0399)
Base-wage freezes	-	0.0600	-0.1177***	-0.2084***
		(0.0453)	(0.0387)	(0.0432)
Flexible margins	-	-	0.0114	-0.0651*
			(0.0362)	(0.0342)
Cheaper hires	-	-	-	-0.0653*
				(0.0384)
	X ² =31.0	<i>X</i> ² =26.4	<i>X</i> ² =36.4	<i>X</i> ² =61.2
Number of observations = 635	p-value=0.00	p-value=0.00	p-value=0.00	p-value=0.00
	R ² =0.046	R ² =0.031	R ² =0.044	R ² =0.080

Articles

Source: Authors' calculations. **Note:** ***, ** and * stand for significance at 1, 5 and 10 percent level, respectively;

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costs and/or turnover costs are higher in larger firms (Oi (1983) and Barron *et al.* (1983)) such firms are more likely to pay efficiency wages in order to reduce the probability of shirking or to avoid the hiring and training costs and thus to exhibit stronger downward wage rigidity.

In order to account for these possibilities we included in the model the regressors openness, size and services. "Openness" measures the importance of exports for the firm (is a dummy variable that equals one if the share of exports on total sales is 50 percent or higher). From Table 4, we see that firms where exports account for a higher share of total sales are also firms that adjust more their "flexible margins" and take advantage of existing "cheaper workers", in line with what could be expected.

From Table 4, we conclude that large firms do not make more intensive use of the labour cost-cutting strategies than small firms. A similar conclusion holds for firms operating in the services sector.

5.2.2 Relationships among the labour-cost cutting strategies

In general, we may expect the adjustment of a given margin to depend on the degree of rigidity of the other margins. For instance, the probability of a firm using employment adjustment as a reaction to a negative labour demand shock is expected to be higher when base wages are rigid and smaller if alternative more flexible margins are available.

We start by noticing that the estimated results in Table 4 are consistent with the preliminary analysis presented in section 4. From the probit equation for "reduce employees", we see that "base-wage freezes", "flexible margins" and "cheaper hires" have been used as substitutes for employment reduction by Portuguese firms. In particular, from Table 4, we conclude that the probability of a firm reducing employment is around 21 percentage points lower for a firm that has frozen wages, and around 6.5 percentage points lower for a firm that has used the "flexible margins" or the "cheaper hires".

In addition, the probability of a firm using "cheaper hires" is around 12 percentage points lower for a firm that has frozen wages. This result suggests that "cheaper hires" and "base-wage freezes" are used as substitutes by firms, i.e., "cheaper hires" are mainly used in situations in which firms do not freeze base wages after a negative labour demand shock or to compensate abnormal or unexpected base-wage increases.

In contrast, the "flexible margins" do not emerge as substitutes to "base-wage freezes". That would be the case if they had been mainly used to compensate for abnormal or unexpected base-wage increases. Rather, the relationship between these two margins is positive (even though not significantly so) which means that the "flexible margins" have been predominantly used as a complement to "base-wage freezes" in reaction to negative labour demand shocks.

Finally, the probability for a firm of reducing employment if it has frozen wages and used the "flexible margins" is around 29 percentage points lower than for an otherwise identical firm, and the probability for a firm of reducing employment if it has frozen wages and used the "flexible margins" and the "cheaper hires" is around 35 percentage points lower than for an otherwise identical firm.¹⁴

These results show that base-wage flexibility has a strong negative impact on the probability of a firm

14 These correspond to the following probabilities (not shown in Table 4):

 $\Pr{ob(y_4=1\mid y_1=1,y_2=1,y_3,x_4)} - \Pr{ob(y_4=1\mid y_1=0,y_2=0,y_3,x_4)} \text{ and }$

 $\Pr{ob(y_4 = 1 \mid y_1 = 1, y_2 = 1, y_3 = 1, x_4)} - \Pr{ob(y_4 = 1 \mid y_1 = 0, y_2 = 0, y_3 = 0, x_4)}, \quad \text{respectively, where}$ $y_4 = \text{reduce employees, } y_3 = \text{cheaper hires, } y_2 = \text{flexible margins, } y_1 = \text{wage freezes and } x_4 = \text{vector of exogenous regressors entering equation for } y_4$ reducing employment, and that such effect has been significantly strengthened by the availability of alternative margins of labour cost adjustment, like the "flexible margins" and the "cheaper hires".

6. Concluding remarks

The studies aimed at assessing the extent and the effects of nominal wage rigidities have focused mainly on base wages or permanent wages (base wages plus the other components that are paid regularly on a monthly basis, such as meals allowances, tenure-related components, etc.), leaving aside potentially more flexible pay-components such as performance-related bonus and other monetary and non-monetary benefits which may strongly attenuate the rigidity of total labour costs.

Using survey data, this article investigates the implications for employment of base-wage rigidities together with other strategies that Portuguese firms have used to cut labour costs in the event of negative labour demand or supply shocks.

Our dataset shows that, among the firms that have reduced labour-costs, the reduction in the number of employees ("reduce employees") was by far the most commonly used strategy (around 72 percent of the firms) followed by the strategy "flexible margins", which includes the reduction or elimination of bonus payments and other monetary benefits, the reduction or elimination of non-monetary benefits and the slowdown or freezing of the rate at which promotions are filled (around 45 percent of the firms). The recruitment of new employees with a wage lower than the one of those who left the firm ("cheaper hires") was used by around 30 percent of the firms and around 26 percent of the firms have resorted to "base-wage freezes".

We find significant heterogeneity in the use of each of these strategies across firms. The use of each margin depends on several workers' and/or firms' attributes such as the tenure and skills distribution, measures of the unions' bargaining power, as well as some indicators of the economic environment in which firms operate. In particular, firms operating mainly in the foreign market, a more competitive environment, tend to use some of these strategies more heavily.

The econometric results suggest that the strategy "cheaper hires" is used as a substitute for "base-wage freezes" by Portuguese firms, i.e., it is predominantly used in situations in which firms do not freeze base wages after a negative labour demand shock or to compensate abnormal or unexpected base-wage increases. In contrast, the relationship between the strategies "flexible margins" and "base-wage freezes" is positive (even though not significantly so) which suggests that the "flexible margins" are predominantly used as a complement to "base-wage freezes" in reaction to negative labour demand shocks.

We also find a clear negative association between the margin "base-wage freezes", which we use as a measure of base-wage flexibility, and the strategy "reduce employees". In particular, we estimate that the probability of a firm reducing employment is around 21 percentage points lower for a firm that has frozen base wages than for an otherwise identical firm. The ability to use the "flexible margins" or "cheaper hires" also decreases the probability of a firm reducing employment (around 6.5 percentage points in each case). Together, the probability for a firm of reducing employment if it uses the strategies "base-wage freezes", "flexible margins" and "cheaper hires" is around 35 percentage points lower than for an otherwise identical firm.

Overall, we conclude that base-wage flexibility lowers significantly the probability of a firm reducing the number of employees, and that such effect is significantly reinforced by the possibility of firms resorting to alternative margins of labour cost adjustment, like more flexible compensation components (bonus, benefits and promotions) and the recruitment of new employees at wages lower than those received by the employees that have left the firm.

Annex - The covariates

In this annex, we describe the covariates used in the probit models whose results are presented in section 4. The details are as follows:

Tenure less than 5 years - Proportion of employees whose tenure is less than 5 years.

High-skilled blue-collar - Proportion of high-skilled blue-collar employees in total employment.

High-skilled white-collar - Proportion of high-skilled white-collar in total employment.

Permanent employees - Dummy variable that is equal to one if the proportion of permanent workers is higher than 98 percent of total workforce.

Coverage - Dummy variable that is equal to one if the proportion of employees covered by collective agreements is equal to eighty percent or higher.

Legislation - Dummy variable that equals one if the firm considers labour legislation or the collective agreement as an important or very important obstacle to freeze wages in a context where the firm needs to reduce costs.

Reputation of the firm - Dummy variable that equals one if the firm considers that the negative impact on firm's reputation is an important or very important obstacle to freeze wages in a context where the firm needs to reduce costs.

Workers attraction - Dummy variable that equals one if the firm considers that the difficulties in attracting new employees is an important or very important obstacle to freeze wages in a context where the firm needs to reduce costs.

Openess - Dummy variable that equals one if the proportion of sales in the foreign market is 50 percent of total sales or higher.

Size - Dummy variable that equals one if the number of employees is larger than 100.

Services - Dummy variable that equals one if the firm operates in services.

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MOBILITY AND INCOME INEQUALITY IN THE EUROPEAN UNION AND IN PORTUGAL*

Nuno Alves** | Carlos Martins**

ABSTRACT

This article aims at establishing some facts on mobility and income distribution in the European Union countries, with a special focus on the Portuguese case. The analysis was developed with the latest information from the EU-SILC database, for the period 2005-2009. There is substantial mobility between the various income deciles in the EU and, to a lesser extent, in Portugal. Income mobility decreases the degree of inequality in non-negligible terms, but the fraction of inequality that takes a permanent nature remains quite high in all EU countries and in particular in Portugal. Additionally, there is no relation between the level of inequality and the contribution of income mobility to the reduction in inequality in the EU countries. In the recent past, income growth in the EU countries, including Portugal, was skewed towards lower income individuals. However, the contribution of this "progressive" growth to the reduction of inequality was mitigated, or even canceled, by the re-ranking of individuals in the income distribution.

1. Introduction

Aggregate income growth figures do not reveal the great diversity of individual experiences underlying them. In fact, every year a substantial percentage of individuals moves along the income distribution curve, in both directions. Quantifying this mobility is important to assess the degree of equal opportunities prevailing in society as well as to assess the uncertainty surrounding the individual income trajectories. Understanding this intertemporal mobility can substantially alter our perspective on several economic phenomena. In particular, income mobility has direct implications on the assessment of permanent inequality.

In this context, several questions arise immediately. What is the dispersion of annual gains and losses in household income? What is the degree of transitions of individuals between income deciles? Are there different mobility patterns in the various socio-economic groups? Does income mobility significantly mitigate the level of permanent inequality in the income distribution? What is the contribution of that mobility to the recent evolution of inequality? There are few studies that address these issues within the European Union context, although there are several analyses focusing on individual countries (a presentation of several representative studies can be found in Burkhauser and Couch, 2009). A recent study that deserves notice and inspired the present article is Alperin and Van Kerm (2010).

The main goal of this article is to try to answer the above questions for the various European Union countries, drawing on the longitudinal information from the European Union Survey on Income and Living Conditions (EU-SILC). The mobility concept under analysis is intra-generational and short/medium term (between 1-4 years), for the period 2005-2009. Additionally, we intend to describe how mobility

^{*} The opinions expressed in the article are those of the authors and do not necessarily coincide with those of Banco de Portugal or the Eurosystem. Any errors and omissions are the sole responsibility of the authors.

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influences both the level and the change in income inequality, from an intertemporal perspective. The focus of the article lies strictly on the description of stylized facts. The approach is thus intentionally positive and not normative. Throughout the article, special emphasis will be given to the Portuguese case, which is also justified by the absence of studies that examine these issues specifically for Portugal.¹

The article is structured as follows. In Section 2 the database is briefly described, as well as the main methodological options. In Section 3 a set of composite mobility indicators is presented, including transition matrices by income deciles. In Section 4 the impact of mobility on the level and evolution of inequality is analysed. Finally, Section 5 presents the main conclusions and some research issues for the future.

2. The data

The sample used in this study was based on the EU-SILC longitudinal database. This database resulted from the creation at the European level of a program on European harmonized statistics on income and living conditions of households, which takes place annually since 2004. Each year, the EU-SILC project includes the collection of data at the individual level and for the respective household, resulting in the production of a cross-section database, and also of a longitudinal database, which is less comprehensive in terms of information and sample size and covers the four years ending in the respective year.

This study was based primarily on the longitudinal databases between 2005 and 2009, covering the period between 2003 and 2009. In general, the sample underlying each longitudinal database is based on four subgroups of equal size and each one representing the total population of each year. Each year, the subgroup that completes four years is dropped from the sample and replaced by another equivalent, meaning that each individual or family can only be followed by a period of four years. For example, the 2009 longitudinal database includes individuals who were followed between 2006 and 2009, between 2007 and 2009 and between 2008 and 2009. Applying the same method, the 2008 database also considers the first two groups of the 2009 database referred to above, so there is an overlap between the various longitudinal database. In our study, we always focused on the information from the most recent longitudinal database. It must be said that the country coverage in the available databases is not uniform. For example, the longitudinal database for Germany is only available in 2006 and the cross-section database for France is not available in 2008.

The unit of analysis consisted essentially in pairs of incomes for a given individual in periods t and t-1 and in periods t and t-3, in order to study the short and medium term transitions, respectively. Based on the aggregation of the several longitudinal databases, two longitudinal samples were defined, with two and four years. Each of these samples includes all individuals with income greater than zero in two or four consecutive years, respectively. In all the exercises, the extreme values of income, which were identified using the cross-section databases, were eliminated.² Similarly, the calculation of income deciles for each country / year used in the analysis in section 3 was also based in the cross-section databases. Reflecting the variability of the original databases, either longitudinal or cross-sectional, the coverage by country and period of the two samples considered in this study is also variable.

The individual income in each year refers to equivalent income at 2008 constant prices. The starting point is the total disposable income of the respective household for a period of twelve months. Note that, in most countries, this period corresponds to the previous calendar year, which raises a mismatch between some of the characteristics of each individual used in the analysis and the respective income. Once deflated, the household income is divided by the number of equivalent adults in each household (according to

¹ In this context, it is also worth highlighting the analysis in Cardoso (2006) on wage mobility in Portugal, focusing on the period before the introduction of the euro.

² The income levels below 75 percent of the first percentile or above 125 percent of the last percentile of the income distribution for each country and year were considered outliers. This procedure is identical to that followed by Alperin and Van Kerm (2010).

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the modified equivalence scale of the OECD, which takes into account the size and composition of the household)³ to calculate the individual equivalent income. For individuals who changed their household in a given year, the average of the respective equivalent incomes was considered.

The analysis considers a range of up to twenty nine countries, including most European Union countries.⁴ In the following sections, the whole set of countries available in each sample is referred to as European Union.

All results were calculated using the longitudinal weights available. For the 2-year longitudinal sample, 2-year longitudinal weights from the database of the respective year were primarily used and, if these do not exist, the same weights of the database of the following year. For example, for a pair of income between 2007 and 2008, 2-year weights from the 2008 longitudinal database were used. When not available, the same 2-year weights from the 2009 longitudinal database were used. The 4-year longitudinal sample was based only on the longitudinal databases from 2008 and 2009, because these were the only ones who had 4-year longitudinal weights. The records to which was not possible to assign weights were excluded from the analysis. Considering all these criteria, the period covered by the 2-year longitudinal sample was limited to the interval between 2004 and 2009 (between 2005 and 2009 in the case of the 4-year longitudinal sample).

The size of the 2-year longitudinal sample for the EU countries and for the several years available amounts to about one million and a half pairs of income. The sample for Portugal amounts to more than 32 thousands pairs of income. In the case of the 4-year longitudinal sample, the sample size amounts to about 175 thousands pairs of income for the EU countries and about 2200 for Portugal.

3. Income Mobility in the European Union: 2005-2009

This section will present evidence on intra-generational income mobility in several EU countries in 2005-2009. The analysis will illustrate several concepts of mobility, in particular mobility as individual income growth (subsection 3.1) and mobility as a positional change in the income distribution (subsection 3.2). In section 3.3 some mobility profiles for specific segments of the population will be presented. Finally, section 4 will illustrate the concept of mobility as a contributor to the reduction of long-term inequality. For a thorough discussion of these different concepts of mobility, see Jenkins (2011).

The analysis will strictly focus on the short and medium term. The mobility indicators will be calculated based on annual income transitions (corresponding to the aggregation of all available annual transitions in the successive waves of EU-SILC) and also for 4-year transitions (which, as mentioned above, is the maximum period each individual is followed in the database). The results for the Portuguese economy will be compared with the indicators for all EU countries.

3.1 What is the distribution of income gains and losses in the European Union?

A first dimension of mobility that is important to analyze is the individual change in income between two moments in time. Charts 1 and 2 illustrate the distribution of income gains and losses in the EU, based on the rate of change of each individual's real equivalised income, calculated on an annual basis and in

³ More specifically, this scale assigns a weight of one to the first adult of each household, 0.5 to other adults and 0.3 to each child.

⁴ Iceland and Norway also participate in the EU-SILC and are included in our analysis. In figures and tables in the following sections, countries are identified as follows: Austria (AT), Belgium (BE), Bulgaria (BG), Cyprus (CY), Czech Republic (CZ), Germany (DE), Denmark (DK), Estonia (EE), Spain (ES), Finland (FI), France (FR), Greece (GR), Hungary (HU), Ireland (IE), Iceland (IS), Italy (IT), Lithuania (LT), Luxembourg (LU) Latvia (LV), Malta (MT), Netherlands (NL), Norway (NO), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovenia (SI), Slovakia (SK) and the United Kingdom (UK).

Chart 1 Chart 2 DISTRIBUTION OF THE INCOME RATE OF **DISTRIBUTION OF THE INCOME RATE OF** VARIATION BETWEEN T-1 AND T | TWO-YEAR VARIATION BETWEEN T-3 AND T | FOUR-YEAR LONGITUDINAL SAMPLE LONGITUDINAL SAMPLE 0.03 0.03 Median - European Union Median - European Union Median - Portugal -Median - Portugal --- Density - European Union Density - European Union Density - Portugal Density - Portugal 0.02 0.02 Density Densitv 0.01 0.01 0.00 0.00 -100 -50 50 150 0 100 -100 -50 50 100 150 on of income of income b (per cent) veen t-1 and t Rate of variation Rate of (per cent)

Source: Authors' calculations.

four-year transitions. The figures reveal a picture of high heterogeneity of individual experiences. There is a significant percentage of individuals with substantial falls in income, and others with particularly high rates of income growth. These characteristics of the distribution of income changes are similar between the EU and Portugal. Note that this heterogeneity is expected, given the myriad of events affecting household equivalised income in each moment, including demographic changes (for example, the birth of a child or a divorce), changes in the employment status (for example, a promotion or a transition to employment, unemployment or inactivity) as well as changes in public policies (for example, changes in taxes or in transfers to households). It should however be stressed that these values may also be contaminated by measurement errors, which tend to over-estimate the true degree of income mobility. These errors are inescapable in surveys of this nature (see Jenkins, 2011 and lacovou et al., 2012).

Charts 3 and 4 summarize the same information for each of the countries under analysis. In each figure, countries are sorted by the average income growth level, respectively in annual and 4-year transitions. Chart 3 shows that each year, a substantial share of the population in each country records real income losses (between around 15 and 40 per cent). In several countries, more than 10 per cent of the population records losses higher than one quarter of the previous year income. In the sample period, the countries where a higher share of the population recorded real income gains were some of the new accession countries to the European Union. It is also interesting to note that there is not a perfect monotone relationship between average income growth in each country and the percentage of individuals with gains/losses in income. This diversity of situations is necessarily associated with country-specific policies, institutions and shocks. Specifically in the Portuguese case, the figure suggests that in each year, about one third of individuals experience income losses (measured in real terms and per equivalent adult).

These general features remain qualitatively unchanged when considering longer-period transitions (Chart 4). Naturally, in this case, the share of individuals with cumulated income losses is lower compared to the case of annual transitions, due in particular to the intertemporal income smoothing effect.



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Source: Authors' calculations.

3.2 Income transition matrices

The most common concept of income mobility corresponds to the positional change of each individual in the income distribution. This concept implies a relative assessment of the evolution of each individual's income vis-à-vis all other members of society. Any upward transition thus implies a downward counterpart. A usual way to synthesize this mobility concept is through the analysis of transition matrices between the various quantiles of the income distribution.

Tables 1 to 4 present the transition matrices between income deciles, for the whole EU and for Portugal.⁵ Again, we assess annual and 4-year transitions. In the absence of mobility, the matrices would display a diagonal filled with values equal to unity (100 per cent of the individuals would remain in the same decile). In turn, Table 5 presents some composite indicators of mobility, computed using those transition matrices.

From the tables it can be concluded that there is significant income mobility in the EU economies. Each year, only about 38 per cent of individuals in the EU remain in the same income decile. However, this mobility is short distance. In fact, in the case of annual transitions, about 71 per cent of individuals remain in the same income decile or move to an adjacent decile (Table 5). As expected, when the horizon expands, there is a marked increase in transitions between deciles. In a 4-year horizon only 28 percent of individuals in the EU remain in the same income decile (61 per cent if one adds the transitions to adjacent deciles).

The transition matrices also reveal that the probability of remaining in the same decile is particularly high at the tails of the income distribution. In particular, about 64 per cent of individuals in the EU remain in the highest income decile from one year to the next (51 per cent in the lowest decile). These values decrease significantly in the case of 4-year transitions (to 56 and 37 per cent, respectively). As expected, the highest mobility is observed in the individuals in the middle of the income distribution. These results are in line with other studies in this field (see RWI, 2011, and Jenkins, 2011).

⁵ As mentioned above, the values that define the various deciles were based in the cross-section database, which is officially used to analyze the characteristics of the income distribution in the European Union. The matrix for the European Union results from the aggregation of individual transitions calculated initially for each of the countries.

INCOME MOBILITY IN THE EUROPEAN UNION TWO-YEAR LONGITUDINAL SAMPLE											
Docilo in t 1		Decile in t									
Declie in t-1	1	2	3	4	5	6	7	8	9	10	
1	51.5	21.0	9.8	6.0	3.9	2.8	1.7	1.4	1.1	0.9	
2	17.5	40.3	18.4	9.4	5.7	3.5	2.1	1.5	0.9	0.8	
3	7.5	18.6	32.9	17.5	9.8	5.6	3.6	2.1	1.5	1.0	
4	4.9	8.4	18.7	29.1	17.0	9.8	5.8	3.5	1.8	1.1	
5	3.4	4.9	8.5	18.2	28.2	17.4	9.5	5.3	3.0	1.5	
6	2.4	3.0	5.0	8.7	18.0	28.1	18.1	9.4	4.9	2.4	
7	1.6	2.1	3.0	5.0	8.7	18.1	29.8	18.8	9.2	3.6	
8	1.0	1.5	2.1	3.1	4.8	8.5	19.0	33.1	20.3	6.5	
9	1.0	1.1	1.3	1.8	2.8	4.6	7.8	18.8	41.8	19.0	
10	1.0	0.9	1.0	1.2	1.6	2.2	3.2	6.4	18.2	64.3	

Source: Authors' calculations.

Note: Proportion of individuals in the respective decile in t-1.

Table 2

INCOME MOBILITY IN PORTUGAL TWO-YEAR LONGITUDINAL SAMPLE												
Decile in 4.4		Decile in t										
Declie in t-1	1	2	3	4	5	6	7	8	9	10		
1	60.3	17.8	7.4	6.0	2.1	3.1	1.0	0.7	0.9	0.7		
2	15.7	46.0	17.6	7.7	5.2	3.2	1.7	0.8	1.1	1.0		
3	6.0	16.1	40.5	16.4	10.0	4.2	3.0	1.8	0.9	1.0		
4	4.0	7.2	17.0	34.4	17.8	8.8	5.5	2.6	1.7	1.1		
5	2.5	4.9	7.7	19.1	29.2	19.8	9.1	5.0	2.1	0.6		
6	1.7	3.1	5.0	8.7	15.8	33.7	19.8	8.2	3.5	0.6		
7	1.4	2.3	3.8	3.0	9.0	20.2	34.2	20.4	4.9	0.9		
8	0.7	1.8	1.8	3.1	4.3	5.4	18.2	43.7	18.5	2.5		
9	0.5	1.4	1.4	1.1	1.7	3.3	3.4	15.0	56.9	15.3		
10	0.9	0.9	0.5	0.7	0.8	0.7	1.2	2.5	12.6	79.2		

Source: Authors' calculations.

Note: Proportion of individuals in the respective decile in t-1.

The evidence for the Portuguese economy shares the features above described, but reveals a degree of income mobility significantly below the EU average. This conclusion is confirmed in the several synthetic indicators presented in Table 5. In Portugal, about 77 per cent of individuals remain in the same income decile or change to the adjacent decile in each year (67 per cent in the case of 4-year transitions). The average decile movement is also lower in the Portuguese case. The degree of inertia in the tails of the distribution is particularly high. In the case of the highest income decile, about 80 per cent of individuals remain in that decile, both in the annual and in the 4-year transitions. This is one of the highest values in the EU.

3.3 Breakdown by segments of the population

The evidence presented thus far refers to the whole population. A comprehensive assessment of the nature of this mobility requires the inclusion in the analysis of the individuals' characteristics, as well as the various events - demographic, social and economic - which determine the respective income profiles. The greatest difficulty in this assessment is the endogenous nature of all these elements, making it difficult

INCOME MOBILITY IN THE EUROPEAN UNION FOUR-YEAR LONGITUDINAL SAMPLE										
Decile in t 2	Decile in t									
Declie III t-5	1	2	3	4	5	6	7	8	9	10
1	37.0	21.3	12.3	8.4	6.6	5.1	3.2	2.6	2.1	1.4
2	17.8	30.3	18.7	10.2	7.7	4.8	4.0	3.1	2.1	1.4
3	9.2	19.3	23.6	15.5	10.3	8.6	5.5	3.6	2.6	1.7
4	6.2	11.0	18.0	20.7	14.9	11.0	7.5	4.9	4.1	1.7
5	4.6	6.1	10.5	17.4	20.6	14.6	10.1	8.3	5.5	2.3
6	2.6	4.2	6.7	10.8	16.9	21.3	15.5	11.3	7.0	3.7
7	3.0	3.2	4.2	7.2	9.8	17.3	21.0	17.9	11.0	5.4
8	1.6	1.8	2.5	4.9	6.0	11.1	17.9	23.3	21.5	9.3
9	1.6	1.0	1.6	3.0	4.2	5.7	9.9	19.1	30.2	23.6
10	1.5	0.8	0.9	2.1	2.5	3.3	4.8	8.2	20.2	55.8

Source: Authors' calculations.

Note: Proportion of individuals in the respective decile in t-3.

Table 4

INCOME MOBILITY IN PORTUGAL FOUR-YEAR LONGITUDINAL SAMPLE											
Decile in t 2		Decile in t									
Declie III t-5	1	2	3	4	5	6	7	8	9	10	
1	40.8	26.4	10.8	7.9	3.6	2.4	6.8	-	1.2	-	
2	9.2	32.0	22.6	11.8	10.1	7.2	5.7	1.5	-	-	
3	2.2	29.1	21.0	19.8	4.1	5.8	8.5	2.1	4.6	3.0	
4	2.3	8.0	19.9	23.6	16.1	12.7	7.9	4.5	4.0	1.1	
5	3.3	3.8	9.8	12.1	21.6	15.8	9.5	14.2	9.7	-	
6	4.1	10.3	4.0	6.7	12.5	31.6	14.5	7.9	8.3	-	
7	1.3	1.8	5.0	3.2	10.1	24.9	22.9	27.5	2.8	0.4	
8	3.9	0.8	2.3	4.7	8.6	5.6	16.7	17.0	32.2	8.3	
9	-	3.2	1.2	1.0	6.7	5.5	5.7	12.0	39.6	25.2	
10	-	-	0.6	0.7	1.5	4.9	1.7	-	10.4	80.2	

Source: Authors' calculations.

Note: Proportion of individuals in the respective decile in t-3.

to identify the respective contribution to the income mobility. This analysis will be left for future research. In this subsection, the goal is merely to present some mobility breakdowns by several characteristics of the population. The analysis is strictly illustrative and not intended to establish any causal relationship. In Charts 5-7 some composite indicators of mobility are presented, for the whole EU and for Portugal, disaggregated by age, by educational level and by employment status. The results refer only to annual income transitions.

In terms of age groups, the evidence suggests that the lower degree of mobility lies, as expected by the life cycle theory, in the highest age brackets. The largest mobility is recorded by individuals between 20 and 40 years, in particular as regards upward movements. This conclusion is visible in both the EU and Portugal.

In terms of educational level, the lowest income transitions are observed in individuals with higher educational levels. These individuals - mostly concentrated in the highest deciles of the income distribution - are also the ones less likely to record downward income transitions. In Portugal, there is an inverse monotonic relationship between educational level and degree of mobility. This relationship is much more mitigated in the case of the EU.

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INCOME MOBILITY IN THE EUROPEAN UNION AND PORTUGAL									
	Two-year lo sam	ongitudinal Iple	Four-year longitudina sample						
	Between	t-1 and t	Between t-3 and t						
	Portugal	European Union	Portugal	European Union					
Proportion of individuals:									
remaining in the same income decile	45.5	37.6	31.3	28.0					
moving below to other income decile	28.7	31.8	40.2	37.3					
moving above to other income decile	25.9	30.6	28.6	34.7					
remaining in the same income decile or moving to an adjacent income decile	77.0	71.1	66.7	61.0					
moving to an adjacent income decile	31.5	33.5	35.5	33.0					
one decile above	16.4	16.8	20.4	16.5					
one decile below	15.1	16.7	15.1	16.6					
moving two or more income deciles	23.0	28.9	33.3	39.0					
two or more deciles above	12.2	15.0	19.8	20.8					
two or more deciles below	10.8	13.9	13.5	18.2					
Average decile movement	1.0	1.2	1.5	1.6					

Source: Authors' calculations.

As regards the employment status, unemployed individuals record the lowest mobility between deciles, followed by inactive individuals. In turn, employees are more likely to record upward and downward decile transitions. It is also important to note that inactive individuals have the highest propensity for downward income transitions. Finally, it should be noted that this evidence struggles with the fact that in the EU-SILC the income reference period does not correspond to the period where the demographic and economic characteristics of individuals/households are collected (see Debels and Vandecasteele, 2008). This question should be particularly relevant in the case of unemployed individuals.

4. Mobility and income inequality in the European Union

4.1 Mobility and the level of inequality

The existence of longitudinal income mobility implies, on the one hand, that an individual's income averaged over successive years is smoother than annual income, which displays greater variability. Moreover, the dispersion of these smoothed individual incomes is lower than the dispersion observed in each individual year. Increased mobility thus implies lower income inequality for a given reference period (as originally shown in Shorrocks, 1978). This result supports the idea that a certain level of inequality should be more tolerable the higher the level of mobility, since it implies a lower level of permanent inequality. For example, it is possible that the ranking of permanent inequality across countries may differ from the ranking of inequality usually evaluated in cross section studies, which are based on non-longitudinal analyses.

This section will seek to quantify the relation between mobility and inequality in the several EU countries for the period 2005-2009. It is important, first of all, to recall some facts about income inequality in the European Union (for a detailed analysis, see Atkinson and Marlier, 2010). To this end, Chart 8 shows the 10, 50 and 90 percentiles of the income distribution in each of the EU countries (measured in euros/ year), based on the EU-SILC longitudinal sample for 2009 (*i.e.*, with income levels referring to 2008). The figure also presents some ratios between those percentiles. The figure illustrates several ideas. First, there

Chart 5

ANNUAL TRANSITIONS BY AGE GROUP | TWO-YEAR LONGITUDINAL SAMPLE



Chart 7

60.0 Remaing in the same decile
 Moving above
 Moving below 50.0 40.0 30.0 20.0 cent Per 10.0 0.0 Working (full-time or partial) Unemployed Inactive Working (full-time or partial) Inactive Unemployed

ANNUAL TRANSITIONS BY EMPLOYMENT STATUS | TWO-YEAR LONGITUDINAL SAMPLE

Source: Authors' calculations.

is high income dispersion in the European Union. In fact, the inequality indicators calculated for the EU as a whole outweigh the inequality indicators for the individual countries. Second, there is substantial heterogeneity in terms of income inequality across countries. At one extreme, some countries display high levels of inequality - led by Portugal and other southern-European countries, as well as some new entrants to the European Union – and, at the other, several countries of central and northern Europe present relatively low inequality levels. These differences stem from the income dispersion both at the top and at the bottom of the distribution, although in the Portuguese case the dispersion at the top of the distribution is particularly relevant.

This evidence does not, however, take into account the potential impact of income mobility on the inequality indicators. As mentioned above, the existence of non-proportional changes in income over time implies that inequality will be lower when income is aggregated over several years. In Charts 9 and 10 this result is confirmed based on the Gini coefficient. This coefficient - which is derived directly from



ANNUAL TRANSITIONS BY EDUCATIONAL LEVEL | TWO-YEAR LONGITUDINAL SAMPLE



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Chart 8



Source: Authors' calculations.

the Lorenz curve - is perhaps the most popular measure of inequality, ranging from 0 (perfect equality) and 1 (perfect inequality).

Chart 9 shows, for each country, two inequality indicators computed using the longitudinal information from the EU-SILC, calculated for the 2009 longitudinal sample: on the one hand, the average of the Gini coefficients calculated in annual terms (weighted by average income in each period); on the other hand, the Gini coefficient aggregating income for the various pairs of consecutive years (t-1 and t). By construction, the second indicator is lower than the first. Chart 10 shows the same exercise with the longitudinal sample of 2009, but with 4-year transitions.⁶ Several conclusions are worth highlighting from the figures.



Source: Authors' calculations. **Notes:** In (a), average incomes in each year were used as weights. The (c) variable corresponds to (1-R), where R is the index proposed by Shorrocks (1978). **Source:** Authors' calculations.

Notes: In (a), average incomes in each year were used as weights. The (c) variable corresponds to (1-R), where R is the index proposed by Shorrocks (1978).

6 It should be noted that the values of the Gini coefficients differ between the two figures given that the respective samples also differ. Moreover, these values for the Gini coefficient do not necessarily coincide with the official figures published by Eurostat, which are based on cross-sectional sample.

First, the reduction of inequality when income is aggregated over several years is not negligible, but does not substantially alter the assessment regarding the level of inequality in each country, as well as the relative inequality ranking in the European context. For example, in the Portuguese case, the reduction in inequality when incomes are aggregated over a 4-year period corresponds to a decrease in the Gini coefficient of about 2 percentage points. This decrease, although sizeable, does not alter the conclusion that Portugal is one of the countries with higher income inequality in Europe.

Second, the ratio between the two indicators is also a measure of mobility (ratio "R") proposed by Shorrocks (1978). This ratio decreases as the sample under analysis increases and converges to an indicative value of permanent income inequality. The short sample period of the EU-SILC longitudinal database does not allow measuring this value accurately. In the literature, it is usually shown that permanent inequality may be about 30 per cent lower than the level of inequality measured annually, in case incomes are aggregated over sufficiently long periods, namely in excess of 10 years (see Jenkins, 2011). In the case of EU-SILC, the intertemporal aggregation of incomes lowers inequality between 5 to 15 percent (in the case of 4-year transitions). This ratio (more precisely, the difference between 1 and the ratio R) is also presented in Charts 9 and 10, for all countries in the sample.

Third, there is no evidence in the EU that countries with greater inequality compensate for this fact with greater income mobility. This conclusion can be read directly from figures, since the ratio "R" is unrelated to the inequality level across countries. The Portuguese case is particularly striking in this context, given that it combines one of the highest levels of inequality with one of the lowest contributions of mobility to the decline in inequality.

4.2 Mobility and the change in inequality

Besides the impact of mobility on the level of inequality, it is important to assess the impact of mobility on the change in inequality. For this purpose, it is important to simultaneously examine (i) the evolution of inequality, (ii) income growth over the income distribution and (iii) income mobility. Jenkins and Van Kerm (2006) showed that the change in income inequality between two moments in time can be additively decomposed into two components: the first represents income mobility, in terms of the re-ranking of individuals in the income distribution; the second summarizes the income progressivity, *i.e.* the extent to which income growth between the two moments in time is skewed towards lower income individuals. Note that even if income changes are progressive, inequality may not decrease, namely if there is a re-ranking of individuals contributing to an increase in inequality.⁷

The decomposition proposed by Jenkins and Van Kerm (2006) requires information on the income distribution of an identical set of individuals at two moments in time. In the EU-SILC database, this longitudinal information is only available for a maximum of four years and, in this latter case, for a relatively small sample. Therefore, and only in order to illustrate some stylized facts about the relationship between mobility and the evolution of income inequality, we implemented the procedure of Jenkins and Van Kerm (2006) for the 2-year longitudinal data referring to 2009.⁸ The results are shown in Chart 11.

The figure suggests that in all the sample countries, income growth was clearly biased towards lower income individuals. Income growth was therefore progressive, contributing to a decline in income inequality. However, the re-ranking of individuals mitigated to a large extent that contribution (there are even countries where, despite the progressivity in income, there was an increase in inequality in the sample).

⁷ A simple example allows illustrating this mechanism clearly. Suppose an economy with two individuals, A and B, with initial income of €1000 and €2000, respectively. If, by assumption, individual A increases her income by €1000 and individual B decreases her income by the same amount, income growth is clearly biased towards the individual with lower income. However, the inequality level would not change, given the re-ranking between A and B in the income distribution.

⁸ The procedure was implemented in STATA with the program dsginideco.





Source: Authors' calculations.

Chart 11

The high contribution of the re-ranking of individuals reflects the substantial diversity of individual experiences and the sizeable mobility documented in Section 3. Portugal broadly shares the qualitative features described above. It should also be noted that a 4-year longitudinal analysis (not shown) does not alter these conclusions.

Finally, we also include in Chart 12 the income profile of Portugal and the EU, in this case including all observations of the 2-year longitudinal sample (for the entire period under review). The Chart confirms that income growth in Portugal was clearly biased towards lower income individuals, the same occurring in the EU as a whole. For Portugal, this result is inter alia associated with a set of public policies, particularly in terms of changes in the minimum wage and in social benefits. Note that, in the EU as a whole, the computation does not correspond to an aggregation of national income profiles but uses all EU individuals directly in the calculation. Thus, the income profile of the EU for the lowest incomes includes mainly the new EU accession countries, while the highest incomes mainly include individuals of higher income countries. This fact contributes to explain the humps on the right tail of the income profile.





Source: Authors' calculations.

5. Conclusions

This article aimed at establishing some facts on mobility and income distribution in the European Union countries, with a special focus on the Portuguese case. The analysis was developed with the latest information from the EU-SILC database, for the period 2005-2009. Even though this analysis is still in a preliminary stage, some key ideas may already be highlighted.

1. There is significant heterogeneity in individual income changes. In each year, and in all countries without exception, it is possible to observe sizeable income variations, positive and negative. The characteristics of the distribution of income changes in Portugal do not differ markedly from the average of all EU countries, even though the annual average income growth in Portugal during the period under analysis was significantly lower than the EU average.

2. There is substantial mobility between the various income deciles, which increases with the sample period under analysis. This mobility is concentrated on transitions between adjacent deciles. The smallest transitions are observed in the lowest and highest deciles of the income distribution. These conclusions are robust to the several EU countries. Portugal has a lower degree of income mobility vis-à-vis the average of the EU and records a relatively high degree of immobility in the lowest decile and, in particular, in the highest decile of the income distribution.

3. In terms of age groups, the evidence suggests that the greater degree of immobility is located, as expected, in the higher age brackets and that the highest mobility, both upwards and downwards, occurs in individuals between 20 and 40 years. This conclusion is also observed in the Portuguese case. In terms of educational level, the smallest income transitions are observed in individuals with higher educational levels. These individuals are also the ones least likely to record downward income transitions. In Portugal, this evidence is even more marked than in the EU average.

4. Income mobility decreases the degree of inequality (and increasingly when longer samples of individual information are aggregated). This reduction is non-negligible (between 5 and 15 percent taking full advantage of the longitudinal information in the EU-SILC), but does not substantially alter the income inequality ranking of EU countries. Overall, the fraction of permanent inequality is therefore very high in all EU countries. Portugal is one of the countries with less reduction of inequality when income information for several years is aggregated.

5. In EU countries, there is no relation between the level of inequality and the contribution of income mobility to the reduction in inequality. Portugal is an extreme example in this context, given that it combines particularly high levels of inequality with relatively low contributions of mobility to the reduction in inequality.

6. In the recent past, income growth in all EU countries, including Portugal, was skewed towards lower income individuals. The contribution of this progressive growth to the reduction of inequality was, however, mitigated by the re-ranking of individuals in the income distribution, which contributed to an increase in inequality.

This analysis can be extended in several directions. In particular, it will be important to identify the causes of income mobility, as well as the transmission channels between mobility and income inequality. Additionally, it is also important to deepen the analysis between the various concepts of mobility and their impact on social welfare. Finally, it should be noted that the study of intergenerational transmission of income within the EU will be enhanced by the inclusion in EU-SILC 2012 of a specific module dedicated to this issue. The research agenda aimed at understanding the mechanisms underlying the degree of mobility within and between generations should therefore remain particularly active, especially given its relevance to the design of public policies.

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WAVELETS IN ECONOMICS*

António Rua**

ABSTRACT

The aim of this article is to highlight the usefulness of wavelet analysis in economics. Wavelet analysis is a very promising tool as it represents a refinement of Fourier analysis. In particular, it allows one to take into account both the time and frequency domains within a unified framework, that is, one can assess simultaneously how variables are related at different frequencies and how such relationship has evolved over time. Despite the potential value of wavelet analysis, it is still a relatively unexplored tool in the study of economic phenomena. The basic theoretical building blocks are reviewed and some empirical applications are provided.

1. Introduction

Time domain analysis is, far from doubt, the most widespread approach in the economic literature to study time series. Through such approach, the evolution of individual variables is modelled and multivariate relationships are assessed over time. Another strand of literature focus on the frequency domain. Frequency domain analysis is a complementary tool to time domain analysis. In particular, with spectral analysis, one can investigate the importance of different frequency components for the behaviour of a variable and the relationship between variables at the frequency level.

Wavelets analysis reconciles both approaches, in the sense that both time and frequency domains are taken into account. Hence, wavelets are a very promising tool as they represent a refinement in terms of analysis. Despite its potential usefulness, wavelets have been more popular in fields other than economics. For example, in geophysics, for the analysis of oceanic and atmospheric flow phenomena, seismic signals and climatic data; in medicine, for heart rate monitoring, breathing rate variability and blood flow and pressure; in engineering, for the assessment of machine process behaviour; just to name a few (see, for example, Adisson (2002) for a comprehensive overview). The two most well-known real-life applications of wavelets are the FBI algorithm for fingerprint data compression and the JPEG algorithm for image compression.

Although there are still relatively few papers in economics resorting to wavelet analysis, such analysis can provide fruitful insights about several economic phenomena. In fact, as mentioned by Ramsey (2002), "Wavelets are treated as a 'lens' that enables the researcher to explore relationships that previously were unobservable" while "... the ability to apply a new 'lens' to inspect the relationships in economics and finance provides great promise for the development of the discipline". For instance, the pioneer work of Ramsey and Lampart (1998a,b) draws on wavelets to study the relationship between several macroeconomic variables, namely money supply and output in the first case and consumption and income in the second. A survey concerning wavelet applications in economics is provided, for example, by Crowley (2007).



^{*} The opinions expressed in the article are those of the author and do not necessarily coincide with those of Banco de Portugal or the Eurosystem. Any errors and omissions are his sole responsibility.

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The aim of this article is to review the basic building blocks underlying the continuous wavelet transform and discuss some empirical applications.¹ Recent work using the continuous wavelet transform includes Crowley and Mayes (2008), Rua (2010), Aguiar-Conraria and Soares (2011a), Rua and Silva Lopes (2012) who resort to wavelets for business cycle analysis, Rua and Nunes (2009) assess the international comovement of stock market returns, Aguiar-Conraria and Soares (2011b) study the relationship between oil prices and industrial production, Rua (2012) investigates the link between money growth and inflation in the euro area and Rua and Nunes (2012) propose wavelet-based measures of market risk, among others.

Despite the growing literature in the last few years, there is clearly scope to widen further the application of wavelet analysis in economics. Wavelet analysis has a huge potential as it allows one to unveil relationships between economic variables in the time-frequency space, that is, it allows one to assess simultaneously how variables are related at different frequencies and how such relationship has evolved over time. On the one hand, in a continuously changing economic environment, capturing the time dimension is obviously crucial for the assessment of time-varying behaviour. On the other hand, as argued, for instance, by Clive Granger, the 2003 Nobel Prize in economics, there is no reason to believe that economic variables should present the same relationship at all frequencies. Hence, taking into account the frequency dimension can also be extremely important for the economic analysis.

The article is organised as follows. In section 2, the basic building blocks underlying wavelet analysis are reviewed. In section 3, some empirical applications are discussed and section 4 concludes.

2. From Fourier analysis to wavelet analysis

In 1807, Jean Baptiste Joseph Fourier, a French mathematician, claimed that any periodic function can be expressed as an infinite sum of sine waves and cosine waves of various frequencies. Such idea led to the development of the well-known Fourier transform. The Fourier transform is the conventional method for studying the frequency content of a signal and it involves the projection of a series onto an orthonormal set of trigonometric components (see, for example, Priestley (1981)). In particular, the Fourier transform uses a basis of sines and cosines of different frequencies to determine how much of each frequency the signal contains. The Fourier transform of the time series x(t) is given by

$$F_x(\omega) = \int_{-\infty}^{+\infty} x(t) e^{-i\omega t} dt$$

where ω is the angular frequency and $e^{-i\omega t} = \cos(\omega t) - i\sin(\omega t)$ according to Euler's formula.

During the nineteenth century the Fourier transform solved many problems in physics and engineering. However, throughout the twentieth century, mathematicians, physicists, and engineers came to realize a drawback of the Fourier transform. The Fourier transform does not allow the frequency content of the signal to change over time and therefore it has trouble reproducing signals that have time-varying features. In other words, it can tell us how much of each frequency exists in the signal but it does not tell us when in time these frequency components exist.

To overcome such limitation it has been suggested the short-time Fourier transform. As the name suggests, the basic idea is to use the Fourier transform for short periods of time. It consists in applying a short-time window to the signal and performing the Fourier transform within this window as it slides across all the data.

However, any time-frequency analysis is limited by the Heisenberg uncertainty principle. In 1927, the physicist Werner Heisenberg stated that the position and the velocity of an object cannot both be measured

¹ There are other variants of the wavelet transform such as the discrete wavelet transform (see, for example, Rua (2011)).

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exactly at the same time even in theory. In signal processing terms, this means that it is impossible to know simultaneously the exact frequency and the exact time of occurrence of this frequency in a signal. In fact, there is a trade-off between time and frequency resolution. This means that for narrow windows one gets good time-resolution but poor frequency resolution whereas for wide windows one gets good frequency resolution and poor time-resolution.

The problem with the short-time Fourier transform is that it uses constant length windows. These fixed length windows give the uniform partition of the time-frequency space. When a wide range of frequencies is involved, the fixed time window tends to contain a large number of high frequency cycles and a few low frequency cycles which results in an overrepresentation of high frequency components and an underrepresentation of the low frequency components. Hence, as the signal is examined under a fixed time-frequency window with constant intervals in the time and frequency domains, the short-time Fourier transform does not allow an adequate resolution for all frequencies.

In contrast, the wavelet transform uses local base functions that can be stretched and translated with a flexible resolution in both frequency and time. In the case of the wavelet transform, the time resolution is intrinsically adjusted to the frequency with the window width narrowing when focusing on high frequencies while widening when assessing low frequencies. Allowing for windows of different size makes it possible to improve the frequency resolution of the low frequencies and the time resolution of the high frequencies. This means that, a certain high frequency component can be located better in time than a low frequency component. On the contrary, a low frequency component can be located better in frequency compared to a high frequency component. As it enables a more flexible approach in time series analysis, wavelet analysis is seen as a refinement of Fourier analysis.

The above discussion can be illustrated through Chart 1. For a time series in the time domain each point contains information about all frequencies. In contrast, in the case of the Fourier transform, every point in the frequency domain contains information from all points in the time domain. For the short-time Fourier transform, the time-frequency plane is divided using a constant length window whereas for the wavelet transform the window width is adjusted to the frequency.

The continuous wavelet transform of a time series x(t) can be written as

$$W_x(\tau,s) = \int_{-\infty}^{+\infty} x(t) \psi_{t,s}^*(t) dt$$

where * denotes the complex conjugate.² Hence, the wavelet transform decomposes a time series x(t) in terms of some basis functions (wavelets), $\psi_{\tau,s}(t)$, analogous to the use of sines and cosines in Fourier analysis. The term wavelet means a small wave. The smallness refers to the condition that this function is of finite length. The wave refers to the condition that this function is oscillatory. These basis functions are derived from the so-called mother wavelet $\psi(t)$ and are defined as

$$\psi_{\tau,s}(t) = \frac{1}{\sqrt{s}}\psi\left(\frac{t-\tau}{s}\right)$$

where τ determines the time position and s is the scale. In terms of frequency, low scales capture rapidly changing details, that is, high frequencies, whereas higher scales capture slowly changing features, that is, low frequencies.

To be a mother wavelet, $\Psi(t)$ must fulfil certain criteria (see, for example, Percival and Walden (2000)). There are a number of functions that can be used for this purpose. The most commonly used mother wavelet for the continuous wavelet transform is the Morlet wavelet.

² As the continuous wavelet transform at a given point in time uses information of neighbouring data points, results should be read carefully close to the beginning or the end of the time series.



Geologists usually locate underground oil deposits by making loud noises. Because sound waves travel through different materials at different speeds, geologists can infer what kind of material lies under the surface by sending seismic waves into the ground. However, seismic signals contain lots of abrupt changes in the wave as it passes from one rock layer to another. As discussed earlier, the Fourier transform is unable to retain all this information. In 1981, Jean Morlet, a geophysicist working for a French oil company, developed what are now known as Morlet wavelets to solve signal processing problems for oil prospection.

In particular, the Morlet wavelet can be written as

$$\psi(t) = \pi^{-\frac{1}{4}} e^{i\omega_0 t} e^{\frac{-t^2}{2}}$$

One can see that the Morlet wavelet consists of a complex sine wave within a Gaussian envelope. One of the advantages of the Morlet wavelet is its complex nature which allows for both time-dependent amplitude and phase for different frequencies. The parameter ω_0 controls the number of oscillations within the Gaussian envelope. By increasing (decreasing) ω_0 one achieves better (poorer) frequency

localization but poorer (better) time localization. In practice, setting ω_0 to 6 provides a good balance between time and frequency localization. Moreover, for ω_0 = 6, the wavelet scale s is almost equal to the Fourier period which eases the interpretation of wavelet analysis. See, for example Adisson (2002) for further details on the Morlet wavelet.

Likewise in Fourier analysis, several interesting quantities can be defined in the wavelet domain. For instance, one can define the wavelet power spectrum as $|W_x(\tau,s)|^2$ which measures the contribution to the variance of the series around each time and scale. Another quantity of interest is the cross-wavelet spectrum which captures the covariance between two series in the time-frequency space. Given two time series x(t) and y(t), with wavelet transforms $W_x(\tau,s)$ and $W_y(\tau,s)$ one can define the cross-wavelet spectrum as $W_{xy}(\tau,s) = W_x(\tau,s)W_y^*(\tau,s)$. The wavelet squared coherency is given by

$$R^{2}(\tau,s) = \frac{\left|S\left(s^{-1}W_{xy}(\tau,s)\right)\right|^{2}}{S\left(s^{-1}\left|W_{x}(\tau,s)\right|^{2}\right)S\left(s^{-1}\left|W_{y}(\tau,s)\right|^{2}\right)}$$

where S(.) denotes smoothing in both time and scale. As well as in Fourier analysis, smoothing is also required; otherwise squared coherency would be always equal to one. The idea behind the wavelet squared coherency is similar to the one of squared coherency in Fourier analysis. The wavelet squared coherency measures the strength of the relationship between the two series over time and across frequencies (while the squared coherency in Fourier analysis only allows one to assess the latter). The $R^2(\tau,s)$ is between 0 and 1 with a high (low) value indicating a strong (weak) relationship. Hence, through the plot of the wavelet squared coherency one can distinguish the regions in the time-frequency space where the link is stronger and identify both time and frequency varying features.

Additionally, one can also compute the wavelet phase, which captures the lead-lag relationship between the variables in the time-frequency space. The wavelet phase difference is defined as

$$\phi(\tau, s) = \tan^{-1} \left(\frac{\Im \left(W_{xy}(\tau, s) \right)}{\Re \left(W_{xy}(\tau, s) \right)} \right)$$

where \Re and \Im are the real and imaginary parts, respectively. The resemblance with the analogue measure in Fourier analysis is clear. It provides information about the lead-lag relationship between the two series. However, besides providing information about the lead-lag across frequencies as in standard Fourier analysis, the wavelet phase also allows one to assess how such lead-lag relationship has changed over time.

3. Some empirical illustrations

In this section, some applications of the above concepts are provided. Let us start by assessing the relationship in the time-frequency space of the Portuguese economic activity vis-à-vis the euro area as well as vis-à-vis Spain, which is the most important Portuguese trade partner. Using real GDP data from the first quarter of 1978 up to the first quarter of 2012, the wavelet squared coherency between the corresponding quarterly growth rates is presented in Chart 2. The horizontal axis refers to time while the vertical axis refers to frequency. To ease interpretation, the frequency is converted to time units (years). Hence, through the inspection of the chart one can identify both frequency bands (in the vertical axis) and time intervals (in the horizontal axis) where the series move together. The black bold line in the chart delimits the statistical significant area at the usual significance level of five per cent.

From Chart 2, one can conclude that the Portuguese economic activity has presented a high and significant link at long-term movements, namely at fluctuations that last more than 8 years, with both the

Chart 2



Source: Author's calculations.

euro area and Spain over the whole sample period. At the typical business cycle frequency range, that is, for fluctuations that last more than 2 but less than 8 years, the strength of the relationship has started increasing since the beginning of 2000's and has become statistically significant since the mid-2000's reflecting an increasingly economic integration. Concerning shorter-run movements, one can identify episodes where the link has been temporarily stronger. For example, the wavelet squared coherency has been particularly high vis-à-vis the euro area during the 1992-1993 recession, vis-à-vis Spain around the 1983-1984 period and with both during the so-called Great Recession in 2009.

To assess the corresponding lead-lag relationship, the wavelet phase is plotted in Chart 3. As the wavelet phase difference can be poorly estimated when coherency is low, the statistical significant area of the wavelet squared coherency is also plotted in Chart 3. One can conclude that Portuguese economic activity lags slightly at long-term movements but at the other time-frequency regions delimited by the bold line, it oscillates between a slight lag and slight lead without presenting any noteworthy lead or lag.

Suppose now that one is interested in measuring the contemporaneous comovement. As mentioned earlier, the wavelet squared coherency allows one to assess the strength of the relationship but it disregards how much the variables are out of phase, that is, the lead-lag. This latter information is provided by the wavelet phase difference. In other words, one can think of the first as the maximum squared correlation between the two variables which is attained when the phase difference is given by the second.³ Within Fourier analysis, Croux, Forni and Reichlin (2001) have proposed a spectral-based measure, the dynamic correlation, which allows one to measure the comovement between two series at each individual frequency. This measure, which ranges between -1 and 1, is conceptually similar to the contemporaneous correlation between two series in the time domain. However, unlike the correlation coefficient in the time domain, one now obtains a comovement measure that can vary across frequencies. Rua (2010) proposes a wavelet-based measure which can be seen as a generalisation of the dynamic correlation measure suggested by Croux, Forni and Reichlin (2001) since it provides information about contemporaneous comovement not only at the frequency level but also over time. This feature is of striking importance for assessing, for example, the degree of synchronization of macroeconomic fluctuations across countries or regions which plays a key role on the discussion about the attractiveness of economic integration.

³ The same reasoning applies to the analogous measures in Fourier analysis (see, for example, Rua and Nunes (2005)).

Chart 3



Source: Author's calculations.

Note: A positive value denotes a lead whereas a negative one corresponds to a lag (in years).

In Chart 4, the results obtained with the measure proposed by Rua (2010) are presented. Qualitatively, the findings from Chart 4 are not that different from those resulting from Chart 2, reflecting the fact that there is no substantial lead-lag relationship. From Chart 4, it becomes clear that synchronization has always been high at long-term fluctuations. At the typical business cycle frequency range, synchronization has become gradually higher since the establishment of the monetary union in 1999. This higher synchronization was also extended to short-run fluctuations during the Great Recession but one should note that afterwards there is evidence of decoupling.

In order to take on board more than two series when assessing comovement, Croux, Forni and Reichlin (2001) have extended the dynamic correlation to the multivariate case and named this generalised measure as cohesion. Cohesion is essentially a weighted average of the dynamic correlations between



Chart 4

all possible pairs of series within a group of variables. For instance, this measure can provide a useful summary statistic on the degree of synchronization across countries or regions while avoiding the problem of choosing a base country or region. In a similar fashion to Croux, Forni and Reichlin (2001), Rua and Silva Lopes (2012) have extended the bivariate measure proposed by Rua (2010) to the more general case in order to obtain a measure of cohesion in the time-frequency space. The wavelet-based cohesion also varies between -1 and 1 and it allows one to quantify the extent of cohesion among several series at different frequencies and investigate if such relationship has changed over time.

Let us consider the long time series for annual GDP growth provided by Angus Maddison (available at www.ggdc.net/maddison) updated with the latest IMF World Economic Outlook data. In particular, it is considered the sample period from 1871 up to 2011 for several countries (namely Austria, Belgium, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Sweden, Switzerland, UK, Portugal, Spain, Australia, New Zealand, Canada, USA, Brazil, Chile, Uruguay, Japan and Sri Lanka) accounting for almost 60 per cent of the world GDP in 1990. Using GDP weights, the resulting wavelet-based cohesion is displayed in Chart 5. A key finding emerges. The business cycle synchronization has never been as high as the observed during the latest economic and financial crisis, when one considers the last 140 years. This evidence unveils the widespread nature of such event and the current degree of the world economic integration.

4. Conclusions

The aim of this article is to motivate the reader to the usefulness of wavelet analysis in economics. However, the above discussion does not intend to be an exhaustive description of wavelet analysis. Instead, the goal of the article is to provide an intuitive and brief overview of the main tools related with the continuous wavelet transform. Firstly, the basic concepts underlying wavelet analysis are addressed as well as its relationship with the standard Fourier analysis. Afterwards, some empirical applications are provided so as to illustrate the use of the described tools.

Despite the growing literature in the last few years, there is clearly scope to widen further the application of wavelet analysis. In fact, wavelet analysis allows one to unveil relationships between economic variables in the time-frequency space, that is, it allows one to assess simultaneously how variables are related at different frequencies and how such relationship has evolved over time. This can be of striking importance for the study of economic behaviour in a continuously changing world.

Chart 5

WORLDWIDE COHESION



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QUARTERLY SERIES FOR THE Portuguese economy

UPDATING 1977-2011

QUARTERLY SERIES FOR THE PORTUGUESE ECONOMY: 1977-2011

As has been the case since 2004, this section of the Summer Economic Bulletin contains updated quarterly long series for the Portuguese economy. The update released in this Bulletin has the same breakdown as in previous series and includes, for the first time, quarterly figures for 2011.

Data now released incorporate the latest series of quarterly national accounts as well as quarterly national accounts for institutional sectors published by Statistics Portugal (Instituto Nacional de Estatística – INE) in June 2012 and closely follow the methodological procedures adopted last year.

In what concerns the main expenditure components, data released for the period from 1995 onwards are consistent with official quarterly data from INE, both at current prices and in volume (chain-linked volume using 2006 as benchmark).

In turn, series on disposable income for the period starting in the first quarter of 1999 differ from figures published by INE in the quarterly national accounts for institutional sectors, due to the fact that they are seasonally adjusted in cases where a seasonal pattern is discernible (while figures published by INE are unadjusted). As a rule, the X12-ARIMA procedure was used for seasonal adjustment purposes. Series with an unstable seasonal pattern (making it difficult to use the X12-ARIMA procedure) were adjusted by breaking down annual figures data published by INE into quarterly figures using the corresponding quarterly indicator on the basis of a four-quarter moving average. It should be noted that in addition to seasonal adjustment, this procedure also provides some smoothing in the series.

Regarding the period not covered by current publications of INE (prior to 1995 as regards expenditure components and 1999 for disposable income components) as well as labour market data, the methodology underlying the construction of these series did not undergo significant changes compared to those detailed in the article "Quarterly series for the Portuguese economy: 1977-2003" published in the June 2004 issue of the Economic Bulletin. Basically, the procedure consists in previously backdating annual figures in the quarterly national accounts on the basis of rates of change in the Long Series published by Banco de Portugal, which are then broken down into quarterly figures, using related indicators where possible and in compliance with the methodology detailed in the article mentioned above.

Quarterly figures for the 1977-2011 period are presented in the tables below. An electronic version of the series is available on Banco de Portugal's website.

MAIN EXPENDITURE COMPONENTS												
		197	.7			19	78			191	79	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption (residents)	594.5	631.5	669.8	696.0	728.4	757.5	802.7	856.6	884.0	934.6	1005.0	1094.4
Public consumption	117.4	124.7	132.0	140.4	148.8	157.2	165.8	175.0	184.4	196.3	210.5	227.3
GFCF	290.4	309.5	312.4	324.2	317.5	333.8	374.6	388.0	486.7	523.5	561.6	590.5
Change in inventories	27.7	30.5	36.1	44.5	55.7	56.2	46.1	25.4	-6.0	-15.8	-4.1	29.2
Exports of goods and services	132.5	145.6	153.2	164.3	176.6	189.8	215.9	247.8	283.4	323.6	361.5	403.6
Goods	86.4	94.6	99.2	104.4	111.8	120.9	136.1	158.1	181.4	205.0	229.8	256.5
Services	46.1	51.0	54.0	59.9	64.8	68.9	79.7	89.8	101.9	118.6	131.6	147.0
Imports of goods and services	225.9	266.4	275.8	297.5	302.9	305.4	335.7	356.0	385.8	434.5	504.3	564.6
Goods	192.9	229.0	236.6	255.7	258.8	259.2	285.5	301.6	326.5	368.3	424.0	475.9
Services	33.1	37.4	39.2	41.8	44.1	46.2	50.2	54.3	59.3	66.2	80.3	88.7
GDP	936.6	975.3	1027.7	1071.9	1124.1	1189.1	1269.5	1336.9	1446.7	1527.7	1630.3	1780.4
Chain-linked volume (reference year 2006)												
Private consumption (residents)					9479.7	9467.4	9569.3	9704.3	9804.7	9950.8	10110.3	10311.4
Public consumption					2677.0	2715.4	2758.3	2801.8	2847.2	2900.6	2961.4	3028.5
GFCF					3718.4	3721.1	3953.8	3858.7	4542.3	4621.2	4682.1	4629.5
Exports of goods and services					1423.0	1447.0	1562.1	1680.6	1826.7	1968.7	2083.6	2162.9
Goods					771.2	790.9	836.9	906.6	979.5	1046.4	1104.4	1148.5
Services					761.3	763.2	852.0	906.2	995.3	1088.7	1157.5	1198.0
Imports of goods and services					1883.9	1826.8	1837.0	1850.1	1865.8	1955.6	2087.4	2175.7
Goods					1486.7	1437.6	1443.7	1450.8	1459.6	1527.6	1610.7	1681.2
Services					409.8	404.1	409.6	417.8	426.6	450.8	513.2	531.0
GDP					17240.4	17478.9	17997.2	17965.6	18928.6	19114.1	19346.7	19731.7
Deflator (2006=1)												
Private consumption (residents)					0.0768	0.0800	0.0839	0.0883	0.0902	0.0939	0.0994	0.1061
Public consumption					0.0556	0.0579	0.0601	0.0625	0.0648	0.0677	0.0711	0.0750
GFCF					0.0854	0.0897	0.0947	0.1006	0.1071	0.1133	0.1200	0.1276
Exports of goods and services					0.1241	0.1312	0.1382	0.1475	0.1551	0.1644	0.1735	0.1866
Goods					0.1450	0.1529	0.1627	0.1743	0.1852	0.1959	0.2081	0.2234
Services					0.0852	0.0903	0.0936	0.0991	0.1024	0.1090	0.1137	0.1227
Imports of goods and services					0.1608	0.1672	0.1827	0.1924	0.2068	0.2222	0.2416	0.2595
Goods					0.1741	0.1803	0.1977	0.2079	0.2237	0.2411	0.2632	0.2831
Services					0.1076	0.1142	0.1225	0.1301	0.1390	0.1469	0.1565	0.1670
GDP					0.0652	0.0680	0.0705	0.0744	0.0764	0.0799	0.0843	0.0902

MAIN EXPENDITURE COMPONENTS												
		19	80			19	81			198	32	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption (residents)	1182.1	1262.3	1333.7	1389.1	1477.1	1548.2	1649.8	1732.6	1814.5	1901.0	1977.7	2049.2
Public consumption	245.2	264.8	283.1	301.1	317.5	332.6	347.3	361.9	379.1	400.2	424.3	453.9
GFCF	546.6	580.3	593.1	635.6	740.1	782.0	862.4	875.1	902.5	941.8	985.4	1034.0
Change in inventories	84.0	117.8	130.4	122.0	92.5	77.2	76.1	89.3	116.7	128.0	123.1	102.0
Exports of goods and services	433.1	456.8	463.1	475.4	484.9	515.5	525.0	538.9	554.1	583.0	655.4	700.3
Goods	277.9	289.7	289.8	293.3	299.2	313.5	324.2	334.3	353.9	378.6	442.0	473.4
Services	155.2	167.1	173.3	182.1	185.6	202.1	200.8	204.6	200.3	204.4	213.4	227.0
Imports of goods and services	623.8	685.6	727.6	774.3	814.5	931.1	940.7	954.2	1018.3	1098.9	1144.3	1144.7
Goods	513.6	568.6	596.3	634.0	662.9	767.8	777.1	784.4	851.2	921.0	965.8	962.3
Services	110.2	117.1	131.3	140.3	151.6	163.3	163.6	169.8	167.1	177.9	178.5	182.4
GDP	1867.3	1996.3	2075.9	2148.9	2297.6	2324.3	2519.9	2643.7	2748.5	2855.1	3021.7	3194.7
Chain-linked volume (reference year 2006)												
Private consumption (residents)	10638.1	10907.1	11062.7	11149.0	11152.9	11238.2	11301.1	11350.9	11480.4	11565.4	11612.1	11596.7
Public consumption	3100.1	3169.0	3230.6	3286.8	3333.5	3371.3	3399.1	3420.4	3439.9	3468.2	3506.1	3551.7
GFCF	4073.6	4058.0	4000.3	4082.9	4493.7	4519.9	4849.7	4817.7	4744.8	4713.4	4733.6	4735.1
Exports of goods and services	2198.2	2228.9	2207.8	2158.2	2143.1	2162.0	2157.8	2146.7	2117.9	2144.3	2239.3	2366.4
Goods	1169.7	1178.2	1151.4	1115.7	1104.7	1106.0	1121.7	1135.0	1147.3	1188.8	1273.8	1368.3
Services	1213.3	1244.5	1261.1	1250.6	1247.9	1274.3	1239.3	1198.1	1133.9	1099.7	1091.0	1113.4
Imports of goods and services	2324.3	2405.0	2468.5	2502.0	2497.8	2527.8	2596.8	2664.7	2724.7	2747.0	2682.7	2686.5
Goods	1760.1	1825.0	1854.4	1880.0	1874.7	1896.8	1968.7	2024.5	2103.8	2123.5	2085.4	2090.1
Services	627.4	642.7	6.069	699.5	702.1	711.3	696.7	707.8	667.4	668.6	633.4	631.6
GDP	19301.0	19744.2	19817.3	19916.3	19879.9	20014.1	20467.8	20458.6	20400.6	20511.6	20878.1	20844.3
Deflator (2006=1)												
Private consumption (residents)	0.1111	0.1157	0.1206	0.1246	0.1324	0.1378	0.1460	0.1526	0.1581	0.1644	0.1703	0.1767
Public consumption	0.0791	0.0836	0.0876	0.0916	0.0953	0.0986	0.1022	0.1058	0.1102	0.1154	0.1210	0.1278
GFCF	0.1342	0.1430	0.1483	0.1557	0.1647	0.1730	0.1778	0.1816	0.1902	0.1998	0.2082	0.2184
Exports of goods and services	0.1970	0.2049	0.2098	0.2203	0.2262	0.2384	0.2433	0.2510	0.2616	0.2719	0.2927	0.2960
Goods	0.2376	0.2459	0.2517	0.2629	0.2709	0.2834	0.2890	0.2945	0.3084	0.3185	0.3470	0.3460
Services	0.1279	0.1343	0.1374	0.1456	0.1488	0.1586	0.1620	0.1708	0.1766	0.1859	0.1956	0.2039
Imports of goods and services	0.2684	0.2851	0.2948	0.3095	0.3261	0.3683	0.3623	0.3581	0.3737	0.4000	0.4265	0.4261
Goods	0.2918	0.3115	0.3216	0.3372	0.3536	0.4048	0.3947	0.3875	0.4046	0.4337	0.4631	0.4604
Services	0.1757	0.1821	0.1900	0.2005	0.2159	0.2296	0.2348	0.2399	0.2504	0.2661	0.2817	0.2889
GDP	0.0967	0.1011	0.1048	0.1079	0.1156	0.1161	0.1231	0.1292	0.1347	0.1392	0.1447	0.1533

MAIN EXPENDITURE COMPONENTS												
		19	83			19	34			19	85	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption (residents)	2202.8	2319.1	2496.0	2675.9	2795.6	2956.1	3153.3	3218.9	3376.1	3493.4	3589.0	3739.9
Public consumption	481.5	511.8	537.9	564.2	589.9	618.9	651.5	691.0	732.4	781.6	831.0	882.3
GFCF	1102.1	1167.1	1238.9	1276.7	1234.7	1311.6	1334.0	1423.4	1466.0	1512.6	1536.3	1620.2
Change in inventories	64.8	35.1	12.8	-2.1	-9.5	-12.0	-9.8	-2.7	9.3	16.8	20.0	18.8
Exports of goods and services	769.1	860.3	973.9	1081.2	1176.8	1294.9	1412.1	1523.0	1654.9	1727.4	1741.7	1790.0
Goods	521.6	590.9	676.1	748.1	826.3	901.1	994.7	1068.0	1153.9	1210.7	1222.7	1238.2
Services	247.4	269.4	297.8	333.1	350.5	393.8	417.4	455.0	500.9	516.7	518.9	551.7
Imports of goods and services	1166.1	1226.9	1353.3	1480.5	1524.0	1619.9	1750.4	1821.9	1919.0	1940.6	1908.5	1994.5
Goods	971.5	1025.5	1133.6	1249.7	1271.9	1355.9	1464.3	1521.7	1599.7	1606.3	1579.6	1649.5
Services	194.7	201.4	219.7	230.8	252.2	264.0	286.1	300.2	319.3	334.2	328.9	345.0
GDP	3454.2	3666.6	3906.2	4115.4	4263.5	4549.6	4790.7	5031.8	5319.7	5591.2	5809.5	6056.6
Chain-linked volume (reference year 2006)												
Private consumption (residents)	11555.4	11515.3	11479.1	11388.2	11350.2	11314.6	11336.9	11331.1	11272.4	11315.6	11354.2	11490.7
Public consumption	3596.8	3628.8	3642.6	3640.0	3629.8	3625.0	3634.6	3663.3	3708.7	3767.1	3830.5	3891.8
GFCF	4780.7	4793.8	4744.5	4549.7	4298.4	4368.9	4229.1	4257.1	4248.3	4256.8	4200.7	4276.4
Exports of goods and services	2499.2	2583.2	2669.4	2762.3	2852.6	2976.2	3084.7	3187.9	3300.0	3324.4	3313.3	3329.5
Goods	1456.3	1520.1	1570.9	1631.7	1686.4	1752.9	1824.7	1886.5	1938.6	1973.1	1966.7	1964.3
Services	1158.0	1171.1	1210.0	1241.5	1280.0	1346.6	1382.4	1427.2	1502.7	1477.9	1472.6	1501.1
Imports of goods and services	2639.8	2567.2	2510.6	2436.6	2434.7	2469.3	2530.6	2541.3	2569.5	2602.8	2594.4	2676.9
Goods	2055.2	1997.9	1944.4	1885.1	1865.4	1896.5	1937.8	1947.4	1968.4	1994.7	2001.3	2065.8
Services	618.7	602.9	604.9	590.3	618.6	620.1	644.6	645.0	653.5	660.6	636.4	655.2
GDP	20863.4	20962.4	21045.7	21030.9	20643.4	20888.9	20781.2	20994.5	20989.9	21056.9	21132.0	21329.8
Deflator (2006=1)												
Private consumption (residents)	0.1906	0.2014	0.2174	0.2350	0.2463	0.2613	0.2781	0.2841	0.2995	0.3087	0.3161	0.3255
Public consumption	0.1339	0.1411	0.1477	0.1550	0.1625	0.1707	0.1792	0.1886	0.1975	0.2075	0.2170	0.2267
GFCF	0.2305	0.2435	0.2611	0.2806	0.2872	0.3002	0.3154	0.3344	0.3451	0.3553	0.3657	0.3789
Exports of goods and services	0.3077	0.3331	0.3648	0.3914	0.4125	0.4351	0.4578	0.4777	0.5015	0.5196	0.5257	0.5376
Goods	0.3582	0.3887	0.4304	0.4585	0.4900	0.5140	0.5451	0.5661	0.5952	0.6136	0.6217	0.6304
Services	0.2137	0.2301	0.2461	0.2683	0.2738	0.2924	0.3020	0.3188	0.3334	0.3496	0.3524	0.3675
Imports of goods and services	0.4417	0.4779	0.5390	0.6076	0.6260	0.6560	0.6917	0.7169	0.7468	0.7456	0.7356	0.7451
Goods	0.4727	0.5133	0.5830	0.6630	0.6818	0.7150	0.7556	0.7814	0.8127	0.8053	0.7893	0.7985
Services	0.3146	0.3341	0.3632	0.3909	0.4076	0.4257	0.4438	0.4654	0.4886	0.5060	0.5168	0.5265
GDP	0.1656	0.1749	0.1856	0.1957	0.2065	0.2178	0.2305	0.2397	0.2534	0.2655	0.2749	0.2840

INAIN EXPENDITURE COMPONENTS												
		19	86			19	87			198	88	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption (residents)	3967.4	4205.2	4352.0	4556.1	4674.0	4920.5	5072.1	5264.4	5675.3	5939.2	6261.7	6612.8
Public consumption	928.6	969.9	1002.8	1030.2	1059.8	1099.3	1161.5	1234.4	1331.1	1366.0	1421.6	1497.3
GFCF	1592.7	1703.1	1781.8	1883.9	2030.8	2150.4	2300.6	2439.9	2667.4	2766.6	2961.6	3040.4
Change in inventories	13.2	18.8	35.8	64.1	103.7	134.4	156.2	169.1	173.1	163.0	138.8	100.6
Exports of goods and services	1823.5	1901.4	1985.4	2127.9	2201.1	2370.6	2454.4	2577.1	2675.2	2724.4	2900.6	3101.7
Goods	1251.7	1303.8	1356.2	1447.1	1499.5	1589.1	1657.8	1737.3	1822.5	1879.9	2006.3	2118.8
Services	571.7	597.6	629.2	680.8	701.6	781.5	796.6	839.7	852.7	844.5	894.4	982.9
Imports of goods and services	1996.6	2009.1	2080.4	2325.9	2495.3	2699.7	2942.0	3163.3	3411.0	3529.7	3853.0	3909.2
Goods	1670.0	1656.0	1726.4	1936.6	2089.1	2259.5	2477.6	2667.7	2876.9	2980.3	3265.8	3277.2
Services	326.6	353.1	354.0	389.3	406.2	440.2	464.3	495.6	534.1	549.4	587.2	632.0
GDP	6328.6	6789.2	7077.5	7336.3	7574.1	7975.6	8202.7	8521.5	9111.1	9429.5	9831.3	10443.5
Chain-linked volume (reference year 2006)												
Private consumption (residents)	11706.1	12068.7	12215.1	12555.6	12629.3	13037.4	13121.4	13317.8	13918.3	14165.9	14375.7	14731.2
Public consumption	3947.5	3989.8	4021.5	4044.0	4068.4	4112.0	4182.5	4276.9	4387.9	4456.9	4537.7	4630.9
GFCF	4149.0	4298.5	4440.8	4521.3	4817.0	4985.6	5283.0	5380.2	5766.7	5838.8	6033.4	6092.3
Exports of goods and services	3408.7	3477.9	3621.8	3759.1	3856.2	4013.2	4059.7	4091.0	4130.6	4166.6	4371.6	4610.5
Goods	2007.1	2056.0	2130.3	2208.6	2265.5	2321.0	2348.5	2362.2	2402.8	2482.7	2604.0	2750.8
Services	1543.8	1560.6	1644.2	1710.8	1754.8	1887.1	1908.1	1930.2	1919.2	1837.4	1929.1	2027.1
Imports of goods and services	2800.4	2973.0	3166.8	3425.8	3605.9	3813.2	4010.7	4240.7	4491.6	4714.3	4878.8	4971.5
Goods	2203.3	2341.6	2523.5	2731.2	2895.6	3061.8	3229.3	3413.2	3619.6	3822.4	3945.3	3997.7
Services	619.9	654.1	650.8	701.9	715.8	757.4	784.9	831.6	875.2	888.6	933.0	979.8
GDP	21262.1	21690.8	21935.5	22121.3	22750.6	23332.9	23526.9	23473.8	24317.3	24277.4	24778.0	25491.9
Deflator (2006=1)												
Private consumption (residents)	0.3389	0.3484	0.3563	0.3629	0.3701	0.3774	0.3865	0.3953	0.4078	0.4193	0.4356	0.4489
Public consumption	0.2352	0.2431	0.2494	0.2548	0.2605	0.2673	0.2777	0.2886	0.3034	0.3065	0.3133	0.3233
GFCF	0.3839	0.3962	0.4012	0.4167	0.4216	0.4313	0.4355	0.4535	0.4626	0.4738	0.4909	0.4991
Exports of goods and services	0.5349	0.5467	0.5482	0.5661	0.5708	0.5907	0.6046	0.6299	0.6476	0.6539	0.6635	0.6727
Goods	0.6237	0.6341	0.6366	0.6552	0.6619	0.6847	0.7059	0.7355	0.7585	0.7572	0.7704	0.7703
Services	0.3703	0.3829	0.3827	0.3980	0.3998	0.4141	0.4175	0.4351	0.4443	0.4596	0.4636	0.4849
Imports of goods and services	0.7130	0.6758	0.6569	0.6789	0.6920	0.7080	0.7335	0.7459	0.7594	0.7487	0.7897	0.7863
Goods	0.7580	0.7072	0.6841	0.7091	0.7215	0.7380	0.7672	0.7816	0.7948	0.7797	0.8278	0.8198
Services	0.5269	0.5399	0.5439	0.5547	0.5675	0.5812	0.5916	0.5960	0.6103	0.6183	0.6294	0.6450
GDP	0.2976	0.3130	0.3226	0.3316	0.3329	0.3418	0.3487	0.3630	0.3747	0.3884	0.3968	0.4097

MAIN EXPENDITURE COMPONENTS												
		1	989			19	00			199	91	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption (residents)	6723.6	6929.4	7221.6	7430.0	7835.6	8243.9	8670.4	9083.2	9552.7	10020.7	10448.6	10761.7
Public consumption	1588.3	1684.6	1768.8	1854.2	1928.4	2027.2	2146.8	2294.6	2472.4	2629.3	2767.1	2865.3
GFCF	3099.8	3195.5	3345.8	3519.2	3590.4	3684.5	3773.6	3908.2	3965.8	4066.5	4261.0	4320.5
Change in inventories	48.2	43.0	84.9	173.9	310.0	367.9	347.6	249.0	72.2	-45.6	-104.2	-103.9
Exports of goods and services	3318.9	3470.8	3659.4	3924.2	4087.2	4247.8	4255.5	4336.7	4258.1	4359.3	4389.2	4438.9
Goods	2300.0	2421.8	2546.4	2709.2	2825.4	2901.4	2933.2	2891.1	2882.4	2858.0	2931.3	2983.4
Services	1018.9	1048.9	1113.0	1215.0	1261.8	1346.4	1322.3	1445.5	1375.7	1501.3	1457.9	1455.5
Imports of goods and services	4099.2	4165.4	4402.7	4614.4	5014.4	4960.7	5246.7	5471.3	5465.0	5507.1	5731.8	5762.3
Goods	3491.6	3484.4	3685.1	3886.3	4202.6	4137.8	4352.3	4582.8	4579.6	4564.9	4707.4	4750.4
Services	607.6	681.0	717.6	728.0	811.8	822.9	894.3	888.5	885.5	942.1	1024.4	1011.9
GDP	10679.6	11157.9	11677.8	12287.0	12737.3	13610.7	13947.2	14400.4	14856.2	15523.1	16029.8	16520.2
Chain-linked volume (reference year 2006)												
Private consumption (residents)	14574.0	14744.2	14964.8	15195.8	15550.6	15932.2	16309.9	16659.6	17045.2	17520.8	17894.0	18131.4
Public consumption	4737.5	4825.7	4898.0	4953.1	4990.7	5065.5	5177.4	5329.0	5523.2	5667.0	5755.8	5788.2
GFCF	5992.0	6044.5	6115.3	6295.4	6297.3	6344.3	6350.5	6487.0	6404.8	6459.8	6637.0	6650.3
Exports of goods and services	4799.9	4908.8	5143.5	5407.8	5581.2	5718.0	5692.8	5720.0	5589.4	5701.5	5721.9	5785.8
Goods	2881.7	2991.1	3123.6	3275.4	3385.5	3463.3	3486.2	3442.7	3420.5	3433.0	3505.4	3601.0
Services	2081.3	2056.0	2171.4	2297.5	2363.2	2429.3	2357.9	2464.9	2321.6	2452.2	2370.8	2312.6
Imports of goods and services	4959.6	5062.0	5232.8	5457.9	5768.3	5971.4	6186.5	6240.5	6281.0	6443.0	6681.1	6855.1
Goods	4033.7	4064.1	4201.3	4416.4	4632.3	4826.4	4971.5	5042.0	5098.4	5204.3	5348.9	5528.4
Services	918.7	1005.7	1039.6	1040.2	1144.3	1145.1	1223.1	1199.2	1178.7	1240.4	1344.7	1330.4
GDP	25554.7	25897.8	26459.5	27173.1	27630.2	28109.8	28143.9	28599.4	28634.4	29048.2	29268.4	29366.9
Deflator (2006=1)												
Private consumption (residents)	0.4613	0.4700	0.4826	0.4890	0.5039	0.5174	0.5316	0.5452	0.5604	0.5719	0.5839	0.5935
Public consumption	0.3353	0.3491	0.3611	0.3743	0.3864	0.4002	0.4146	0.4306	0.4476	0.4640	0.4807	0.4950
GFCF	0.5173	0.5287	0.5471	0.5590	0.5702	0.5808	0.5942	0.6025	0.6192	0.6295	0.6420	0.6497
Exports of goods and services	0.6914	0.7070	0.7115	0.7257	0.7323	0.7429	0.7475	0.7582	0.7618	0.7646	0.7671	0.7672
Goods	0.7981	0.8097	0.8152	0.8271	0.8346	0.8378	0.8414	0.8398	0.8427	0.8325	0.8362	0.8285
Services	0.4896	0.5102	0.5126	0.5289	0.5339	0.5542	0.5608	0.5864	0.5926	0.6122	0.6149	0.6294
Imports of goods and services	0.8265	0.8229	0.8414	0.8454	0.8693	0.8307	0.8481	0.8767	0.8701	0.8547	0.8579	0.8406
Goods	0.8656	0.8574	0.8771	0.8800	0.9072	0.8573	0.8755	0.9089	0.8982	0.8772	0.8801	0.8593
Services	0.6614	0.6772	0.6903	0.6999	0.7094	0.7186	0.7312	0.7409	0.7512	0.7595	0.7618	0.7606
GDP	0.4179	0.4308	0.4413	0.4522	0.4610	0.4842	0.4956	0.5035	0.5188	0.5344	0.5477	0.5625

MAIN EXPENDITURE COMPONENTS												
		19	92			19	93			19	94	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption (residents)	11055.2	11495.5	11751.0	11955.7	12185.7	12268.6	12589.7	12853.3	12992.6	13312.4	13519.3	13790.4
Public consumption	2943.4	3005.7	3079.2	3142.5	3216.6	3280.7	3338.9	3399.1	3439.1	3499.7	3566.7	3633.1
GFCF	4673.3	4735.5	4800.6	4786.3	4431.2	4549.0	4383.5	4465.1	4578.3	4602.4	4625.0	4865.5
Change in inventories	-44.4	-20.9	-33.4	-81.9	-166.4	-192.9	-161.4	-72.0	75.4	179.2	239.3	255.7
Exports of goods and services	4504.5	4538.5	4420.5	4352.3	4315.4	4333.8	4624.8	4749.7	4779.3	5065.7	5192.9	5510.4
Goods	3072.8	3116.3	3046.4	3017.1	3008.4	3055.0	3220.0	3338.0	3466.1	3699.8	3895.9	4158.7
Services	1431.8	1422.2	1374.1	1335.3	1307.0	1278.7	1404.8	1411.7	1313.2	1365.9	1297.0	1351.7
Imports of goods and services	5907.7	5940.4	5970.5	5872.4	5919.8	5824.0	5966.1	6269.7	6272.5	6518.9	6782.6	7213.1
Goods	4905.2	4946.0	4910.3	4840.7	4705.3	4667.6	4771.4	4989.6	5182.5	5414.3	5685.9	5953.1
Services	1002.6	994.4	1060.2	1031.7	1214.5	1156.4	1194.6	1280.0	1090.1	1104.6	1096.7	1260.0
GDP	17224.2	17813.7	18047.3	18282.5	18062.5	18415.1	18809.4	19125.5	19592.2	20140.6	20360.6	20842.0
Chain-linked volume (reference year 2006)												
Private consumption (residents)	18302.4	18580.0	18720.8	18905.8	19024.3	18964.6	19101.5	19143.2	18999.2	19210.7	19226.8	19356.3
Public consumption	5761.9	5741.4	5728.9	5725.0	5732.7	5748.2	5773.9	5809.0	5849.9	5888.3	5919.5	5943.7
GFCF	7135.0	7176.1	7207.7	7095.2	6543.1	6608.8	6311.1	6296.5	6430.1	6423.9	6433.6	6695.4
Exports of goods and services	5889.4	5892.3	5835.5	5737.9	5679.5	5622.1	5859.6	5935.6	5965.1	6174.6	6343.3	6598.6
Goods	3701.6	3780.6	3766.5	3741.6	3724.6	3731.2	3815.7	3935.7	4081.1	4258.4	4475.5	4693.5
Services	2312.9	2208.8	2157.0	2069.1	2025.4	1948.1	2124.4	2061.3	1914.7	1939.4	1866.0	1893.7
Imports of goods and services	7084.4	7291.9	7450.2	7378.4	7473.0	7265.0	7228.5	7479.2	7472.0	7772.5	8123.9	8574.3
Goods	5746.1	5939.3	6.009.9	5951.6	5821.9	5696.4	5666.2	5822.1	6038.1	6321.5	6668.0	6917.9
Services	1337.0	1347.3	1444.2	1430.7	1680.5	1592.5	1586.3	1687.0	1436.4	1448.5	1445.8	1660.6
GDP	30262.9	30308.2	30151.5	30141.3	29652.2	29845.7	30034.4	29888.7	30341.4	30501.3	30309.7	30450.1
Deflator (2006=1)												
Private consumption (residents)	0.6040	0.6187	0.6277	0.6324	0.6405	0.6469	0.6591	0.6714	0.6839	0.6930	0.7032	0.7125
Public consumption	0.5108	0.5235	0.5375	0.5489	0.5611	0.5707	0.5783	0.5851	0.5879	0.5944	0.6025	0.6112
GFCF	0.6550	0.6599	0.6660	0.6746	0.6772	0.6883	0.6946	0.7091	0.7120	0.7165	0.7189	0.7267
Exports of goods and services	0.7649	0.7702	0.7575	0.7585	0.7598	0.7708	0.7893	0.8002	0.8012	0.8204	0.8186	0.8351
Goods	0.8301	0.8243	0.8088	0.8064	0.8077	0.8188	0.8439	0.8481	0.8493	0.8688	0.8705	0.8860
Services	0.6190	0.6439	0.6370	0.6454	0.6453	0.6564	0.6613	0.6849	0.6858	0.7043	0.6951	0.7138
Imports of goods and services	0.8339	0.8147	0.8014	0.7959	0.7922	0.8017	0.8254	0.8383	0.8395	0.8387	0.8349	0.8413
Goods	0.8537	0.8328	0.8170	0.8134	0.8082	0.8194	0.8421	0.8570	0.8583	0.8565	0.8527	0.8605
Services	0.7498	0.7381	0.7341	0.7211	0.7227	0.7262	0.7531	0.7588	0.7589	0.7626	0.7585	0.7588
GDP	0.5692	0.5878	0.5986	0.6066	0.6091	0.6170	0.6263	0.6399	0.6457	0.6603	0.6718	0.6845

MAIN EXPENDITURE COMPONENTS												
		19	95			19	96			19	97	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption (residents)	14111.7	14431.0	14322.5	14444.7	14831.2	15018.0	15440.6	15530.0	15888.4	15985.5	16426.7	16641.0
Public consumption	3723.4	3808.1	3879.5	3954.5	4017.8	4102.9	4164.3	4224.7	4318.8	4420.9	4517.7	4644.1
GFCF	4999.9	5161.1	4995.2	5103.9	5087.9	5382.7	5650.2	5886.7	6063.1	6486.1	6692.5	6820.8
Change in inventories	226.6	206.9	202.2	182.5	160.0	141.6	136.3	120.4	125.3	113.1	120.9	123.6
Exports of goods and services	5880.9	5772.4	5969.6	6242.1	6350.2	6304.7	6326.4	6382.4	6548.3	6952.5	7144.6	7428.3
Goods	4440.1	4305.3	4449.9	4717.3	4869.7	4839.4	4859.4	4858.5	5024.3	5307.6	5477.7	5708.7
Services	1440.8	1467.1	1519.7	1524.8	1480.5	1465.3	1467.0	1523.9	1524.0	1644.9	1666.9	1719.6
Imports of goods and services	7397.6	7480.7	7298.0	7601.5	7813.1	7849.7	8013.7	8366.0	8471.2	8844.6	9276.2	9724.3
Goods	6151.6	6223.0	6085.6	6293.2	6593.9	6604.8	6761.1	7037.4	7271.1	7517.9	7882.0	8156.2
Services	1246.0	1257.7	1212.4	1308.3	1219.2	1244.9	1252.6	1328.6	1200.1	1326.7	1394.2	1568.1
GDP	21544.9	21898.8	22071.0	22326.2	22634.0	23100.2	23704.1	23778.2	24472.7	25113.5	25626.2	25933.5
Chain-linked volume (reference year 2006)												
Private consumption (residents)	19397.2	19747.0	19525.4	19537.3	19992.7	20043.2	20350.9	20348.8	20664.2	20696.1	21111.2	21213.0
Public consumption	5945.4	6009.7	6072.2	6131.3	6182.5	6220.9	6245.3	6263.4	6288.3	6339.3	6423.3	6537.3
GFCF	6806.2	6950.2	6741.2	6737.3	6648.1	7024.1	7375.5	7644.9	7709.9	8196.3	8353.7	8497.1
Exports of goods and services	6971.7	6730.6	7002.9	7326.2	7379.5	7453.3	7593.1	7616.8	7678.8	8067.6	8081.5	8352.1
Goods	4960.2	4690.2	4885.3	5219.0	5379.9	5479.5	5626.4	5565.1	5678.2	5932.8	5950.9	6193.7
Services	2011.5	2040.4	2117.6	2107.2	1999.6	1973.8	1966.7	2051.7	2000.6	2134.8	2130.6	2158.4
Imports of goods and services	8835.1	8823.0	8559.3	8768.7	8990.4	9039.4	9332.1	9668.5	9753.8	10050.9	10325.4	10775.5
Goods	7133.2	7156.5	6983.0	7095.9	7373.3	7430.6	7742.1	8045.9	8168.0	8435.6	8614.8	8983.2
Services	1701.9	1666.5	1576.3	1672.8	1617.1	1608.8	1590.0	1622.6	1585.8	1615.3	1710.6	1792.3
GDP	30539.5	30852.0	31023.0	31194.2	31441.1	31906.9	32400.0	32419.8	32740.7	33371.9	33732.6	33970.9
Deflator (2006=1)												
Private consumption (residents)	0.7275	0.7308	0.7335	0.7393	0.7418	0.7493	0.7587	0.7632	0.7689	0.7724	0.7781	0.7845
Public consumption	0.6263	0.6337	0.6389	0.6450	0.6499	0.6595	0.6668	0.6745	0.6868	0.6974	0.7033	0.7104
GFCF	0.7346	0.7426	0.7410	0.7576	0.7653	0.7663	0.7661	0.7700	0.7864	0.7913	0.8011	0.8027
Exports of goods and services	0.8435	0.8576	0.8524	0.8520	0.8605	0.8459	0.8332	0.8379	0.8528	0.8618	0.8841	0.8894
Goods	0.8951	0.9179	0.9109	0.9039	0.9052	0.8832	0.8637	0.8730	0.8848	0.8946	0.9205	0.9217
Services	0.7163	0.7190	0.7177	0.7236	0.7404	0.7424	0.7459	0.7427	0.7618	0.7705	0.7824	0.7967
Imports of goods and services	0.8373	0.8479	0.8526	0.8669	0.8690	0.8684	0.8587	0.8653	0.8685	0.8800	0.8984	0.9024
Goods	0.8624	0.8696	0.8715	0.8869	0.8943	0.8889	0.8733	0.8747	0.8902	0.8912	0.9149	0.9079
Services	0.7321	0.7547	0.7691	0.7821	0.7539	0.7738	0.7878	0.8188	0.7568	0.8213	0.8150	0.8749
GDP	0.7055	0.7098	0.7114	0.7157	0.7199	0.7240	0.7316	0.7334	0.7475	0.7525	0.7597	0.7634

IVIAIN EXPENDITURE COMPONENTS												
		19	98			19	66			20	00	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption (residents)	16890.4	17305.2	17588.3	18060.3	18378.1	18609.5	19043.5	19327.6	19863.7	20000.3	20443.3	20669.0
Public consumption	4761.4	4882.2	4998.2	5083.5	5165.2	5280.6	5425.9	5614.5	5790.4	5962.1	6122.5	6263.1
GFCF	7180.4	7407.7	7452.6	7815.7	7762.7	7938.8	8226.7	8412.6	8975.6	8573.7	8873.6	8815.5
Change in inventories	243.1	272.6	315.0	336.8	425.0	458.0	433.8	414.5	277.1	278.6	188.3	213.3
Exports of goods and services	7571.7	7785.6	7893.5	7574.2	7767.2	7845.0	8140.7	8384.8	8890.1	8840.2	9351.5	9757.0
Goods	5679.3	5848.1	5803.4	5649.7	5773.5	5829.2	6070.5	6189.1	6610.4	6498.7	6981.7	7182.6
Services	1892.4	1937.5	2090.1	1924.5	1993.7	2015.8	2070.2	2195.7	2279.7	2341.5	2369.8	2574.4
Imports of goods and services	10057.1	10258.7	10269.5	10456.6	10529.2	10728.7	11339.2	11796.2	12728.1	12285.6	12684.5	13133.8
Goods	8414.4	8756.0	8783.8	8873.0	9018.4	9210.1	9738.8	10144.5	10988.7	10495.0	10923.1	11305.8
Services	1642.7	1502.7	1485.7	1583.6	1510.8	1518.6	1600.4	1651.7	1739.4	1790.6	1761.4	1828.0
GDP	26589.9	27394.6	27978.1	28413.9	28969.0	29403.2	29931.4	30357.8	31068.8	31369.3	32294.7	32584.1
Chain-linked volume (reference year 2006)												
Private consumption (residents)	21459.6	21859.8	22082.4	22511.3	22863.6	23010.5	23351.2	23529.1	24034.7	23871.1	24135.3	24248.4
Public consumption	6667.8	6787.6	6883.2	6951.6	7000.5	7047.1	7101.2	7168.4	7249.9	7334.1	7418.4	7497.9
GFCF	8948.2	9027.1	9101.8	9553.3	9544.4	9566.9	9792.6	9930.2	10416.9	9856.9	10107.5	9977.8
Exports of goods and services	8574.9	8685.7	8940.6	8657.1	8831.6	8902.6	9145.3	9313.5	9776.8	9469.8	9874.4	10258.4
Goods	6219.8	6327.7	6432.2	6341.3	6437.4	6491.5	6685.6	6750.0	7132.2	6802.9	7196.9	7347.1
Services	2355.1	2358.0	2508.4	2315.8	2394.2	2411.1	2459.7	2563.5	2644.6	2666.9	2677.5	2911.3
Imports of goods and services	11366.9	11621.5	11787.8	12127.9	12404.2	12548.8	12922.2	13252.3	13905.4	13272.5	13314.7	13476.9
Goods	9398.1	9788.3	9964.1	10149.6	10473.4	10624.8	10922.4	11226.9	11822.1	11178.2	11273.6	11393.2
Services	1968.8	1833.2	1823.7	1978.3	1930.8	1924.0	1999.8	2025.4	2083.3	2094.3	2041.1	2083.7
GDP	34435.7	34934.5	35448.9	35872.9	36214.6	36402.1	36829.7	36976.2	37786.2	37465.0	38300.6	38604.0
Deflator (2006=1)												
Private consumption (residents)	0.7871	0.7916	0.7965	0.8023	0.8038	0.8087	0.8155	0.8214	0.8265	0.8378	0.8470	0.8524
Public consumption	0.7141	0.7193	0.7261	0.7313	0.7378	0.7493	0.7641	0.7832	0.7987	0.8129	0.8253	0.8353
GFCF	0.8024	0.8206	0.8188	0.8181	0.8133	0.8298	0.8401	0.8472	0.8616	0.8698	0.8779	0.8835
Exports of goods and services	0.8830	0.8964	0.8829	0.8749	0.8795	0.8812	0.8902	0.9003	0.9093	0.9335	0.9470	0.9511
Goods	0.9131	0.9242	0.9022	0.8909	0.8969	0.8980	0.9080	0.9169	0.9268	0.9553	0.9701	0.9776
Services	0.8035	0.8217	0.8332	0.8310	0.8327	0.8360	0.8416	0.8565	0.8620	0.8780	0.8851	0.8843
Imports of goods and services	0.8848	0.8827	0.8712	0.8622	0.8488	0.8550	0.8775	0.8901	0.9153	0.9256	0.9527	0.9745
Goods	0.8953	0.8945	0.8815	0.8742	0.8611	0.8668	0.8916	0.9036	0.9295	0.9389	0.9689	0.9923
Services	0.8344	0.8197	0.8147	0.8005	0.7825	0.7893	0.8003	0.8155	0.8349	0.8550	0.8630	0.8773
GDP	0.7722	0.7842	0.7893	0.7921	0.7999	0.8077	0.8127	0.8210	0.8222	0.8373	0.8432	0.8441

MAIN EXPENDITURE COMPONENTS												
		20	01			20	02			20(03	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption (residents)	20976.1	21157.9	21259.1	21482.3	21804.8	22003.3	22307.9	22277.2	22359.9	22471.3	22833.8	23134.8
Public consumption	6353.2	6490.2	6578.6	6682.5	6783.6	6877.8	6964.7	7036.8	7096.2	7141.4	7207.0	7284.2
GFCF	8676.0	9095.5	9161.2	9335.4	9187.5	9146.8	8847.1	8796.7	8567.3	8350.1	8452.6	8476.5
Change in inventories	253.3	291.0	360.5	97.5	14.5	45.8	91.7	52.8	-165.5	-67.9	-14.4	101.6
Exports of goods and services	9527.5	9506.7	9250.9	9467.8	9449.1	9751.4	9797.0	9800.1	9953.4	9680.7	9929.5	10067.2
Goods	7121.4	7012.6	6803.7	6931.7	6901.7	7200.5	7194.7	7241.1	7415.6	7176.3	7314.6	7466.0
Services	2406.1	2494.1	2447.2	2536.1	2547.4	2550.9	2602.3	2559.0	2537.8	2504.4	2614.9	2601.2
Imports of goods and services	12971.1	13148.5	12842.6	12569.9	12558.6	12679.0	12649.4	12582.8	12385.3	11937.0	12419.8	12645.9
Goods	11196.7	11331.6	11096.8	10846.6	10789.2	10887.9	10914.6	10841.2	10681.6	10273.7	10739.8	10925.0
Services	1774.4	1816.9	1745.8	1723.3	1769.4	1791.1	1734.8	1741.6	1703.7	1663.3	1680.0	1720.9
GDP	32815.0	33392.8	33767.7	34495.6	34680.9	35146.1	35359.0	35380.8	35426.0	35638.6	35988.7	36418.4
Chain-linked volume (reference year 2006)												
Private consumption (residents)	24280.2	24356.2	24320.0	24545.3	24710.6	24747.2	24756.3	24579.5	24495.6	24481.2	24713.2	24877.3
Public consumption	7569.5	7633.7	7690.3	7737.9	7775.6	7800.7	7815.3	7820.8	7823.3	7824.1	7836.4	7863.7
GFCF	9740.9	10180.2	10234.6	10455.8	10205.3	9991.8	9616.9	9513.5	9205.7	9068.9	9184.6	9081.9
Exports of goods and services	10092.2	9944.7	9852.2	10203.2	10134.9	10352.4	10339.6	10376.5	10608.6	10428.4	10755.5	10906.2
Goods	7376.3	7150.1	7110.7	7309.3	7271.0	7527.1	7509.6	7607.8	7883.2	7734.7	7951.0	8137.7
Services	2715.9	2794.6	2741.5	2893.9	2863.9	2825.3	2830.0	2768.7	2725.4	2693.7	2804.5	2768.5
Imports of goods and services	13515.9	13686.5	13677.4	13625.1	13537.9	13584.2	13631.4	13498.2	13234.2	13130.2	13688.6	13954.4
Goods	11495.3	11625.3	11700.7	11641.3	11535.1	11576.0	11710.5	11575.5	11364.6	11296.8	11826.5	12061.8
Services	2020.6	2061.2	1976.7	1983.8	2002.8	2008.2	1920.9	1922.7	1869.6	1833.4	1862.1	1892.6
GDP	38386.5	38704.8	38756.9	39312.6	39328.8	39374.6	38951.2	38692.0	38769.3	38652.5	38727.0	38773.3
Deflator (2006=1)												
Private consumption (residents)	0.8639	0.8687	0.8741	0.8752	0.8824	0.8891	0.9011	0.9063	0.9128	0.9179	0.9240	0.9300
Public consumption	0.8393	0.8502	0.8554	0.8636	0.8724	0.8817	0.8912	0.8998	0.9071	0.9127	0.9197	0.9263
GFCF	0.8907	0.8935	0.8951	0.8928	0.9003	0.9154	0.9200	0.9247	0.9307	0.9207	0.9203	0.9333
Exports of goods and services	0.9440	0.9560	0.9390	0.9279	0.9323	0.9419	0.9475	0.9445	0.9382	0.9283	0.9232	0.9231
Goods	0.9654	0.9808	0.9568	0.9483	0.9492	0.9566	0.9581	0.9518	0.9407	0.9278	0.9200	0.9175
Services	0.8859	0.8925	0.8927	0.8764	0.8895	0.9029	0.9195	0.9243	0.9312	0.9297	0.9324	0.9396
Imports of goods and services	0.9597	0.9607	0.9390	0.9226	0.9277	0.9334	0.9280	0.9322	0.9359	0.9091	0.9073	0.9062
Goods	0.9740	0.9747	0.9484	0.9317	0.9353	0.9406	0.9320	0.9366	0.9399	0.9094	0.9081	0.9058
Services	0.8782	0.8815	0.8832	0.8687	0.8835	0.8919	0.9031	0.9058	0.9113	0.9072	0.9022	0.9093
GDP	0.8549	0.8628	0.8713	0.8775	0.8818	0.8926	0.9078	0.9144	0.9138	0.9220	0.9293	0.9393

MAIN EAFENDITURE COMPONENTS												
		20	04			20	05			20	06	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption (residents)	23435.1	23761.5	24032.1	24368.8	24571.9	24991.0	24895.8	25388.3	25773.2	26053.0	26334.6	26586.9
Public consumption	7365.8	7494.7	7638.2	7825.5	8006.9	8143.3	8218.9	8248.8	8243.3	8239.0	8236.7	8283.2
GFCF	8560.0	8689.5	8700.3	8750.1	8712.9	8911.7	8842.4	8945.8	9096.6	9080.3	8881.7	8831.5
Change in inventories	104.7	231.7	340.8	433.3	179.4	245.6	244.1	243.5	431.2	193.5	293.4	269.8
Exports of goods and services	10208.4	10594.8	10413.6	10657.8	10212.1	10574.0	10849.9	11032.9	11773.8	12277.2	12712.7	12948.9
Goods	7484.1	7660.3	7716.0	7953.8	7485.3	7722.5	7949.0	8006.2	8514.7	8901.0	9228.4	9329.4
Services	2724.3	2934.5	2697.6	2704.0	2726.8	2851.5	2900.9	3026.7	3259.1	3376.2	3484.3	3619.5
Imports of goods and services	12931.0	13470.8	13626.4	14266.0	13686.1	14228.1	14423.9	14852.4	15744.7	15818.2	16095.0	16027.3
Goods	11194.4	11665.9	11738.4	12329.4	11806.3	12208.2	12432.7	12695.5	13425.6	13511.6	13793.9	13636.8
Services	1736.6	1804.9	1888.0	1936.6	1879.8	2019.9	1991.2	2156.9	2319.1	2306.6	2301.1	2390.5
GDP	36743.0	37301.4	37498.6	37769.5	37997.1	38637.5	38627.2	39006.9	39573.4	40024.8	40364.1	40893.1
Chain-linked volume (reference year 2006)												
Private consumption (residents)	25074.6	25245.6	25390.0	25486.1	25579.4	25906.5	25558.9	25838.7	26014.8	26122.3	26256.1	26354.4
Public consumption	7908.8	7976.2	8063.9	8161.1	8250.5	8309.1	8327.7	8308.5	8271.6	8242.7	8234.9	8253.1
GFCF	9188.3	9124.7	9126.2	9096.5	9085.1	9212.8	9018.3	9053.1	9116.6	9043.8	8890.7	8839.1
Exports of goods and services	10992.2	11252.1	11007.9	11194.0	10765.7	11209.1	11249.0	11325.6	11939.4	12308.4	12600.9	12863.9
Goods	8118.4	8187.8	8183.1	8387.1	7909.9	8249.2	8279.9	8250.0	8672.7	8937.6	9113.3	9250.0
Services	2873.8	3064.3	2824.8	2806.9	2855.8	2959.9	2969.1	3075.6	3266.7	3370.8	3487.6	3613.9
Imports of goods and services	14070.7	14406.6	14537.9	15089.1	14491.8	14954.2	14862.9	15113.9	15707.1	15805.0	16098.0	16075.1
Goods	12196.8	12462.6	12515.1	13024.6	12516.2	12850.9	12817.3	12915.9	13373.2	13504.3	13806.1	13684.3
Services	1873.9	1944.0	2022.8	2064.5	1975.6	2103.3	2045.6	2198.0	2333.9	2300.7	2291.9	2390.8
GDP	39214.2	39545.6	39350.1	39229.5	39495.0	39966.4	39513.7	39583.8	40029.8	40180.0	40148.6	40497.1
Deflator (2006=1)												
Private consumption (residents)	0.9346	0.9412	0.9465	0.9562	0.9606	0.9647	0.9741	0.9826	0.9907	0.9973	1.0030	1.0088
Public consumption	0.9313	0.9396	0.9472	0.9589	0.9705	0.9800	0.9869	0.9928	0.9966	0.9996	1.0002	1.0036
GFCF	0.9316	0.9523	0.9533	0.9619	0.9590	0.9673	0.9805	0.9881	0.9978	1.0040	0666.0	0.9991
Exports of goods and services	0.9287	0.9416	0.9460	0.9521	0.9486	0.9433	0.9645	0.9742	0.9861	0.9975	1.0089	1.0066
Goods	0.9219	0.9356	0.9429	0.9483	0.9463	0.9362	0.9600	0.9704	0.9818	0.9959	1.0126	1.0086
Services	0.9480	0.9576	0.9550	0.9633	0.9548	0.9634	0.9770	0.9841	0.9977	1.0016	0.9991	1.0015
Imports of goods and services	0.9190	0.9350	0.9373	0.9455	0.9444	0.9514	0.9705	0.9827	1.0024	1.0008	0.9998	0.9970
Goods	0.9178	0.9361	0.9379	0.9466	0.9433	0.9500	0.9700	0.9829	1.0039	1.0005	0.9991	0.9965
Services	0.9267	0.9284	0.9334	0.9380	0.9515	0.9603	0.9734	0.9813	0.9937	1.0026	1.0040	0.9999
GDP	0.9370	0.9433	0.9529	0.9628	0.9621	0.9667	0.9776	0.9854	0.9886	0.9961	1.0054	1.0098

MAIN EXPENDITURE COMPONENTS												
		20	07			20	08			20	60	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption (residents)	27009.7	27495.2	27782.5	28347.5	28536.2	28791.5	29126.5	28502.2	27336.7	27204.5	27432.5	27800.1
Public consumption	8319.7	8394.6	8426.5	8438.3	8453.9	8541.8	8685.1	8851.4	9226.8	9225.0	9366.1	9342.4
GFCF	9306.4	9240.4	9352.2	9730.1	9813.5	9915.5	9705.4	9200.2	8657.0	8714.6	8950.9	8306.9
Change in inventories	141.6	303.5	281.2	296.4	239.7	287.3	372.3	283.4	-201.5	-398.3	-93.5	114.8
Exports of goods and services	13379.0	13521.6	13696.6	13900.9	14384.8	14284.3	14345.5	12787.3	11218.5	11477.7	12205.5	12334.1
Goods	9556.9	9604.1	9647.4	9730.4	10091.3	10102.8	10215.9	8707.5	7405.8	7679.1	8445.1	8438.1
Services	3822.1	3917.5	4049.2	4170.5	4293.5	4181.5	4129.6	4079.8	3812.7	3798.6	3760.4	3896.0
Imports of goods and services	16220.2	16787.6	17237.2	17799.7	18355.9	18676.8	19098.2	16993.8	14375.3	14315.5	15589.6	15436.8
Goods	13811.2	14298.3	14662.3	15124.4	15739.1	15970.4	16345.3	14293.9	11892.4	11764.2	13119.4	12947.0
Services	2409.0	2489.3	2574.9	2675.3	2616.8	2706.4	2752.9	2699.9	2482.9	2551.3	2470.2	2489.8
GDP	41936.2	42167.7	42301.8	42913.5	43072.2	43143.6	43136.6	42630.7	41862.2	41908.0	42271.9	42461.5
Chain-linked volume (reference year 2006)												
Private consumption (residents)	26578.3	26758.7	26910.4	27140.0	27183.8	27124.4	27373.4	27119.7	26348.1	26350.4	26680.8	26891.6
Public consumption	8283.3	8302.5	8299.5	8277.8	8255.8	8267.1	8325.9	8429.9	8695.6	8653.1	8769.9	8738.0
GFCF	9148.6	9065.5	9123.5	9493.1	9388.3	9329.7	9109.3	8889.0	8400.0	8475.4	8602.0	8076.5
Exports of goods and services	13148.0	13282.8	13466.4	13566.1	13820.1	13647.7	13578.5	12367.6	11241.7	11657.1	12362.6	12320.1
Goods	9427.9	9481.2	9516.4	9592.3	9815.2	9729.5	9704.6	8524.0	7564.7	7989.5	8758.3	8561.7
Services	3720.1	3801.6	3950.0	3973.8	4004.9	3918.2	3873.9	3843.6	3677.0	3667.6	3604.3	3758.4
Imports of goods and services	16213.0	16662.4	17054.4	17267.6	17340.3	17329.2	17638.1	16461.6	14638.1	14913.2	16255.1	16074.2
Goods	13845.8	14247.4	14559.8	14676.5	14830.7	14755.0	15046.1	13883.9	12248.4	12458.1	13876.8	13702.0
Services	2367.2	2415.0	2494.6	2591.1	2509.6	2574.2	2592.0	2577.7	2389.7	2455.1	2378.3	2372.2
GDP	41089.4	41079.7	41035.0	41456.0	41447.5	41352.2	41149.8	40696.6	39759.2	39893.0	40118.6	40086.7
Deflator (2006=1)												
Private consumption (residents)	1.0162	1.0275	1.0324	1.0445	1.0498	1.0615	1.0640	1.0510	1.0375	1.0324	1.0282	1.0338
Public consumption	1.0044	1.0111	1.0153	1.0194	1.0240	1.0332	1.0431	1.0500	1.0611	1.0661	1.0680	1.0692
GFCF	1.0172	1.0193	1.0251	1.0250	1.0453	1.0628	1.0654	1.0350	1.0306	1.0282	1.0406	1.0285
Exports of goods and services	1.0176	1.0180	1.0171	1.0247	1.0409	1.0466	1.0565	1.0339	0.9979	0.9846	0.9873	1.0011
Goods	1.0137	1.0130	1.0138	1.0144	1.0281	1.0384	1.0527	1.0215	0.9790	0.9611	0.9642	0.9856
Services	1.0274	1.0305	1.0251	1.0495	1.0721	1.0672	1.0660	1.0615	1.0369	1.0357	1.0433	1.0366
Imports of goods and services	1.0004	1.0075	1.0107	1.0308	1.0586	1.0778	1.0828	1.0323	0.9820	0.9599	0.9591	0.9603
Goods	0.9975	1.0036	1.0070	1.0305	1.0613	1.0824	1.0863	1.0295	0.9709	0.9443	0.9454	0.9449
Services	1.0177	1.0308	1.0322	1.0325	1.0427	1.0514	1.0621	1.0474	1.0390	1.0392	1.0386	1.0496
GDP	1.0206	1.0265	1.0309	1.0352	1.0392	1.0433	1.0483	1.0475	1.0529	1.0505	1.0537	1.0592

MAIN EXPENDITURE COMPONENTS								
		2010				2011		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)								
Private consumption (residents)	28074.6	28343.9	28622.3	28873.6	28470.0	28480.3	28500.7	27885.7
Public consumption	9339.2	9579.8	9047.4	9325.9	8782.3	8790.9	8486.6	8300.8
GFCF	8711.8	8625.8	8534.8	8251.9	8395.0	7841.6	7625.3	7063.7
Change in inventories	-113.3	-128.6	-106.7	63.7	2.1	-256.1	-206.6	-615.0
Exports of goods and services	12475.2	13144.1	13965.4	13976.4	14428.6	15153.1	15720.8	15433.0
Goods	8539.4	9037.3	9717.7	9716.9	10082.8	10600.1	11086.6	10932.0
Services	3935.8	4106.8	4247.7	4259.5	4345.8	4553.0	4634.2	4501.0
Imports of goods and services	15457.1	16691.5	16569.6	17218.9	16858.0	17248.4	17327.8	15920.2
Goods	12911.1	14004.9	13841.9	14509.7	14199.6	14333.8	14440.2	13104.0
Services	2546.0	2686.6	2727.7	2709.2	2658.4	2914.6	2887.6	2816.2
GDP	43030.4	42873.5	43493.6	43272.6	43220.0	42761.4	42799.0	42148.0
Chain-linked volume (reference year 2006)								
Private consumption (residents)	26992.0	27156.1	27171.2	27202.9	26342.7	26226.4	26211.9	25414.0
Public consumption	8750.7	9004.7	8541.9	8881.8	8443.7	8619.1	8420.5	8346.5
GFCF	8293.1	8098.1	8008.3	7774.1	7702.0	7247.4	7041.1	6552.9
Exports of goods and services	12311.8	12772.2	13404.3	13275.9	13350.8	13896.3	14298.7	14148.8
Goods	8571.4	8877.3	9427.6	9256.1	9307.7	9695.0	10072.3	10008.0
Services	3740.4	3894.9	3976.7	4019.8	4043.1	4201.3	4226.4	4140.8
Imports of goods and services	15634.4	16376.6	16468.6	16731.7	15466.8	15671.4	16010.0	14595.4
Goods	13228.5	13863.7	13926.8	14228.7	13049.9	12972.3	13409.4	12093.6
Services	2405.9	2512.9	2541.8	2503.0	2416.9	2699.1	2600.6	2501.8
GDP	40430.7	40551.8	40632.8	40481.4	40187.0	40088.1	39837.7	39311.4
Deflator (2006=1)								
Private consumption (residents)	1.0401	1.0437	1.0534	1.0614	1.0808	1.0859	1.0873	1.0973
Public consumption	1.0673	1.0639	1.0592	1.0500	1.0401	1.0199	1.0078	0.9945
GFCF	1.0505	1.0652	1.0657	1.0615	1.0900	1.0820	1.0830	1.0780
Exports of goods and services	1.0133	1.0291	1.0419	1.0528	1.0807	1.0904	1.0995	1.0908
Goods	0.9963	1.0180	1.0308	1.0498	1.0833	1.0934	1.1007	1.0923
Services	1.0522	1.0544	1.0681	1.0596	1.0749	1.0837	1.0965	1.0870
Imports of goods and services	0.9887	1.0192	1.0061	1.0291	1.0899	1.1006	1.0823	1.0908
Goods	0.9760	1.0102	0.9939	1.0197	1.0881	1.1050	1.0769	1.0835
Services	1.0582	1.0691	1.0731	1.0824	1.0999	1.0798	1.1104	1.1257
GDP	1.0643	1.0573	1.0704	1.0690	1.0755	1.0667	1.0743	1.0722

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PRIVATE CONSUMPTION (RESIDENTS)												
		19:	77			19.	78			19:	79	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption	594.5	631.5	669.8	696.0	728.4	757.5	802.7	856.6	884.0	934.6	1005.0	1094.4
Durables	66.8	72.7	73.8	74.5	78.6	82.0	86.8	89.3	96.2	99.2	114.4	124.8
Non-durables	527.7	558.7	595.9	621.5	649.8	675.5	715.9	767.3	787.8	835.4	890.6	969.6
Chain-linked volume (reference year 2006)												
Private consumption					9479.7	9467.4	9569.3	9704.3	9804.7	9950.8	10110.3	10311.4
Durables					879.9	888.3	906.3	903.1	961.8	957.9	999.4	1058.4
Non-durables					8637.6	8615.0	8697.7	8839.4	8873.2	9026.7	9140.8	9277.1
Deflator (2006=1)												
Private consumption					0.0768	0.0800	0.0839	0.0883	0.0902	0.0939	0.0994	0.1061
Durables					0.0893	0.0923	0.0958	0.0989	0.1000	0.1036	0.1144	0.1179
Non-durables					0.0752	0.0784	0.0823	0.0868	0.0888	0.0925	0.0974	0.1045
GROSS FIXED CAPITAL FORMATION												
		19	77			19	78			19	79	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Gross fixed capital formation	290.4	309.5	312.4	324.2	317.5	333.8	374.6	388.0	486.7	523.5	561.6	590.5
Machinery and equipment	52.5	65.6	70.3	75.9	75.6	82.1	85.2	83.7	87.6	96.4	107.7	114.2
Transport material	38.9	43.7	45.2	46.5	46.7	48.4	49.8	49.6	51.3	54.2	57.6	57.8
Construction	185.7	184.4	181.2	184.7	179.8	186.2	222.8	237.2	330.0	353.7	375.9	396.1
Other	13.3	15.8	15.8	17.1	15.4	17.1	16.8	17.5	17.7	19.2	20.4	22.4
Chain-linked volume (reference year 2006)												
Gross fixed capital formation					3718.4	3721.1	3953.8	3858.7	4542.3	4621.2	4682.1	4629.5
Machinery and equipment					416.0	435.4	430.5	402.7	403.1	427.6	450.7	442.4
Transport material					367.4	352.7	332.2	303.1	289.8	289.6	292.4	278.8
Construction					3001.6	2968.6	3368.9	3385.1	4409.3	4447.3	4447.3	4425.3
Other					181.3	187.1	171.8	164.4	159.4	160.7	168.7	169.9
Deflator (2006=1)												
Gross fixed capital formation					0.0854	0.0897	0.0947	0.1006	0.1071	0.1133	0.1200	0.1276
Machinery and equipment					0.1817	0.1886	0.1979	0.2077	0.2173	0.2254	0.2389	0.2582
Transport material					0.1270	0.1372	0.1500	0.1638	0.1772	0.1871	0.1970	0.2073
Construction					0.0599	0.0627	0.0661	0.0701	0.0748	0.0795	0.0845	0.0895
Other					0.0849	0.0913	0.0976	0.1066	0.1113	0.1194	0.1211	0.1320

PRIVATE CONSUMPTION (RESIDENTS)												
		19	80			19	81			19	82	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption	1182.1	1262.3	1333.7	1389.1	1477.1	1548.2	1649.8	1732.6	1814.5	1901.0	1977.7	2049.2
Durables	150.3	154.9	178.7	177.9	193.2	195.3	202.9	209.5	209.9	223.0	226.4	230.7
Non-durables	1031.8	1107.4	1154.9	1211.1	1283.9	1352.8	1446.9	1523.1	1604.6	1678.0	1751.4	1818.4
Chain-linked volume (reference year 2006)												
Private consumption	10638.1	10907.1	11062.7	11149.0	11152.9	11238.2	11301.1	11350.9	11480.4	11565.4	11612.1	11596.7
Durables	1105.9	1140.4	1187.8	1173.4	1170.1	1155.1	1119.0	1123.2	1096.1	1133.1	1095.6	1098.3
Non-durables	9556.2	9790.4	9894.5	9998.6	10006.9	10113.4	10223.3	10269.2	10437.6	10478.2	10573.9	10554.6
Deflator (2006=1)												
Private consumption	0.1111	0.1157	0.1206	0.1246	0.1324	0.1378	0.1460	0.1526	0.1581	0.1644	0.1703	0.1767
Durables	0.1359	0.1358	0.1505	0.1516	0.1651	0.1691	0.1813	0.1865	0.1915	0.1968	0.2066	0.2101
Non-durables	0.1080	0.1131	0.1167	0.1211	0.1283	0.1338	0.1415	0.1483	0.1537	0.1601	0.1656	0.1723
CDOCC FIVED CARITAL FORMATION												
GROSS FIRED CAFILAL FORMATION												
		19	80			19	81			19	82	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Gross fixed capital formation	546.6	580.3	593.1	635.6	740.1	782.0	862.4	875.1	902.5	941.8	985.4	1034.0
Machinery and equipment	128.1	139.6	149.4	161.2	177.9	186.7	204.0	204.1	216.9	228.3	232.1	231.0
Transport material	61.7	65.6	71.9	82.3	96.1	105.4	112.8	108.9	106.9	106.3	106.5	109.3
Construction	334.2	349.1	345.0	362.1	431.8	452.4	509.1	522.9	541.8	566.5	604.4	649.6
Other	22.7	26.0	26.8	30.1	34.3	37.6	36.6	39.2	36.9	40.8	42.4	44.0
Chain-linked volume (reference year 2006)												
Gross fixed capital formation	4073.6	4058.0	4000.3	4082.9	4493.7	4519.9	4849.7	4817.7	4744.8	4713.4	4733.6	4735.1
Machinery and equipment	466.4	469.9	501.6	528.3	555.7	559.8	604.4	606.4	590.8	583.2	574.6	560.5
Transport material	287.7	288.0	309.7	335.9	363.6	377.5	399.7	394.0	374.7	363.7	359.2	361.7
Construction	3542.4	3502.7	3262.0	3232.4	3654.0	3648.3	3936.5	3889.6	3893.5	3894.4	3940.8	3985.7
Other	172.1	176.7	188.1	194.5	210.5	210.4	211.0	217.2	202.6	202.3	212.5	204.2
Deflator (2006=1)												
Gross fixed capital formation	0.1342	0.1430	0.1483	0.1557	0.1647	0.1730	0.1778	0.1816	0.1902	0.1998	0.2082	0.2184
Machinery and equipment	0.2746	0.2970	0.2978	0.3050	0.3201	0.3335	0.3375	0.3366	0.3672	0.3914	0.4039	0.4122
Transport material	0.2143	0.2277	0.2323	0.2449	0.2644	0.2792	0.2823	0.2763	0.2852	0.2923	0.2964	0.3023
Construction	0.0943	0.0997	0.1058	0.1120	0.1182	0.1240	0.1293	0.1344	0.1391	0.1455	0.1534	0.1630
Other	0.1320	0.1470	0.1427	0.1547	0.1630	0.1785	0.1732	0.1806	0.1820	0.2015	0.1997	0.2155

PRIVATE CONSUMPTION (RESIDENTS)												
		19	83			19	84			19	85	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption	2202.8	2319.1	2496.0	2675.9	2795.6	2956.1	3153.3	3218.9	3376.1	3493.4	3589.0	3739.9
Durables	262.5	267.2	284.8	291.5	292.4	303.1	333.5	335.0	362.2	366.5	387.3	388.8
Non-durables	1940.3	2051.9	2211.2	2384.5	2503.2	2653.0	2819.8	2883.9	3013.9	3126.8	3201.7	3351.2
Chain-linked volume (reference year 2006)												
Private consumption	11555.4	11515.3	11479.1	11388.2	11350.2	11314.6	11336.9	11331.1	11272.4	11315.6	11354.2	11490.7
Durables	1125.6	1108.5	1085.6	1058.1	1025.0	1031.1	1055.9	1052.3	1044.0	1032.7	1046.5	1036.8
Non-durables	10478.1	10458.1	10449.1	10389.7	10391.2	10347.2	10339.6	10338.1	10288.7	10345.8	10369.3	10519.7
Deflator (2006=1)												
Private consumption	0.1906	0.2014	0.2174	0.2350	0.2463	0.2613	0.2781	0.2841	0.2995	0.3087	0.3161	0.3255
Durables	0.2333	0.2410	0.2624	0.2754	0.2853	0.2940	0.3159	0.3184	0.3469	0.3549	0.3701	0.3750
Non-durables	0.1852	0.1962	0.2116	0.2295	0.2409	0.2564	0.2727	0.2790	0.2929	0.3022	0.3088	0.3186
GROSS FIXED CAPITAL FORMATION												
		19	83			19	84			19	85	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
(unitant nuicae (EUD millione)												

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Gross fixed capital formation	1102.1	1167.1	1238.9	1276.7	1234.7	1311.6	1334.0	1423.4	1466.0	1512.6	1536.3	1620.2
Machinery and equipment	243.9	255.1	285.8	281.8	259.7	293.2	302.8	331.4	324.9	321.8	334.7	371.0
Transport material	118.8	126.2	136.2	128.9	110.8	112.0	109.5	116.3	115.6	118.1	126.2	143.7
Construction	683.0	725.0	750.7	800.0	814.5	851.8	870.3	919.2	967.4	1010.4	1007.3	1028.7
Other	56.5	60.9	66.2	66.0	49.6	54.6	51.5	56.5	58.1	62.3	68.1	76.8
Chain-linked volume (reference year 2006)												
Gross fixed capital formation	4780.7	4793.8	4744.5	4549.7	4298.4	4368.9	4229.1	4257.1	4248.3	4256.8	4200.7	4276.4
Machinery and equipment	566.5	568.1	569.9	496.2	462.0	498.5	484.3	492.9	481.3	477.0	483.8	507.9
Transport material	374.1	379.5	372.2	317.9	277.3	271.5	252.8	252.6	250.4	255.9	267.6	290.1
Construction	3939.6	3947.9	3891.3	3961.7	3855.5	3864.1	3766.1	3781.2	3786.9	3800.4	3661.8	3648.7
Other	254.7	250.8	250.2	223.2	170.4	172.7	159.1	159.6	171.2	170.8	186.1	192.4
Deflator (2006=1)												
Gross fixed capital formation	0.2305	0.2435	0.2611	0.2806	0.2872	0.3002	0.3154	0.3344	0.3451	0.3553	0.3657	0.3789
Machinery and equipment	0.4305	0.4490	0.5015	0.5679	0.5622	0.5882	0.6253	0.6723	0.6749	0.6746	0.6918	0.7304
Transport material	0.3176	0.3325	0.3659	0.4054	0.3995	0.4126	0.4331	0.4605	0.4618	0.4614	0.4716	0.4952
Construction	0.1734	0.1836	0.1929	0.2019	0.2113	0.2204	0.2311	0.2431	0.2555	0.2659	0.2751	0.2819
Other	0 2217	0 2427	0 2648	0 2957	0 2911	03158	0 3734	0 3542	0 3396	0 3648	0 3659	0 3991

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PRIVATE CONSUMPTION (RESIDENTS)												
		19	86			19	87			19	88	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption	3967.4	4205.2	4352.0	4556.1	4674.0	4920.5	5072.1	5264.4	5675.3	5939.2	6261.7	6612.8
Durables	392.2	424.3	464.0	487.8	547.1	599.5	618.8	638.6	772.6	849.2	910.9	991.9
Non-durables	3575.2	3780.9	3887.9	4068.3	4127.0	4321.0	4453.2	4625.8	4902.7	5090.0	5350.8	5620.9
Chain-linked volume (reference year 2006)												
Private consumption	11706.1	12068.7	12215.1	12555.6	12629.3	13037.4	13121.4	13317.8	13918.3	14165.9	14375.7	14731.2
Durables	996.8	1052.4	1096.9	1163.4	1218.9	1313.4	1295.4	1357.4	1515.7	1633.6	1673.1	1790.9
Non-durables	10787.7	11092.4	11189.5	11458.9	11467.6	11772.4	11879.9	12006.8	12425.4	12532.9	12699.6	12918.3
Deflator (2006=1)												
Private consumption	0.3389	0.3484	0.3563	0.3629	0.3701	0.3774	0.3865	0.3953	0.4078	0.4193	0.4356	0.4489
Durables	0.3935	0.4032	0.4231	0.4192	0.4488	0.4564	0.4777	0.4704	0.5097	0.5198	0.5444	0.5538
Non-durables	0.3314	0.3409	0.3475	0.3550	0.3599	0.3670	0.3749	0.3853	0.3946	0.4061	0.4213	0.4351
GROSS FIXED CAPITAL FORMATION												
		19	86			19	87		1988			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)	1592.7	1703.1	1781.8	1883.9	2030.8	2150.4	2300.6	2439.9	2667.4	2766.6	2961.6	3040.4
Gross fixed capital formation	363.7	420.6	441.4	498.9	520.9	577.1	619.1	678.8	728.2	773.4	822.9	827.2
Machinery and equipment	146.9	172.3	196.0	220.8	252.3	278.6	266.7	303.8	324.7	340.1	355.9	378.6
Transport material	1004.7	1020.5	1054.8	1063.2	1162.9	1189.8	1305.8	1340.8	1482.2	1512.6	1634.7	1675.8
Construction	77.4	89.6	89.5	101.0	94.6	104.9	109.0	116.4	132.3	140.5	148.1	158.8
Other												
Chain-linked volume (reference year 2006)	4149.0	4298.5	4440.8	4521.3	4817.0	4985.6	5283.0	5380.2	5766.7	5838.8	6033.4	6092.3
Gross fixed capital formation	500.3	547.8	575.3	620.1	654.9	715.9	775.3	800.4	846.0	876.2	883.3	892.3
Machinery and equipment	297.4	329.5	369.6	391.2	440.9	472.3	450.0	486.0	514.0	531.8	538.9	576.5
Transport material	3492.3	3496.7	3537.4	3486.4	3714.5	3709.7	3972.1	3975.4	4294.2	4272.5	4489.9	4460.8
Construction	190.9	203.5	210.2	214.3	207.4	219.6	236.6	235.4	260.6	267.7	276.5	287.9
Other												
Deflator (2006=1)	0.3839	0.3962	0.4012	0.4167	0.4216	0.4313	0.4355	0.4535	0.4626	0.4738	0.4909	0.4991
Gross fixed capital formation	0.7270	0.7677	0.7673	0.8045	0.7955	0.8061	0.7985	0.8481	0.8608	0.8827	0.9317	0.9270
Machinery and equipment	0.4941	0.5230	0.5304	0.5644	0.5722	0.5899	0.5926	0.6251	0.6316	0.6395	0.6604	0.6568
Transport material	0.2877	0.2919	0.2982	0.3050	0.3131	0.3207	0.3287	0.3373	0.3452	0.3540	0.3641	0.3757
Construction	0.4054	0.4405	0.4257	0.4715	0.4563	0.4779	0.4605	0.4946	0.5076	0.5248	0.5354	0.5516
Other	0.3974	0.4143	0.4334	0.4520	0.4561	0.4478	0.4643	0.4711	0.5123	0.4902	0.5520	0.5100

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PRIVATE CONSUMPTION (RESIDENTS)												
		19	89			19	90			19	91	
	Q1	Q2	G3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption	6723.6	6929.4	7221.6	7430.0	7835.6	8243.9	8670.4	9083.2	9552.7	10020.7	10448.6	10761.7
Durables	985.1	915.5	950.1	971.7	1036.7	1082.2	1156.1	1193.3	1256.8	1316.7	1405.6	1419.7
Non-durables	5738.5	6013.9	6271.6	6458.2	6798.9	7161.7	7514.3	7890.0	8295.9	8704.0	9043.0	9342.0
Chain-linked volume (reference year 2006)												
Private consumption	14574.0	14744.2	14964.8	15195.8	15550.6	15932.2	16309.9	16659.6	17045.2	17520.8	17894.0	18131.4
Durables	1760.8	1648.7	1661.5	1684.6	1771.0	1825.2	1896.5	1949.4	1992.6	2091.5	2191.5	2211.8
Non-durables	12791.3	13111.2	13322.6	13531.4	13787.3	14112.4	14412.9	14707.0	15051.0	15420.5	15684.2	15902.6
Deflator (2006=1)												
Private consumption	0.4613	0.4700	0.4826	0.4890	0.5039	0.5174	0.5316	0.5452	0.5604	0.5719	0.5839	0.5935
Durables	0.5595	0.5553	0.5718	0.5768	0.5854	0.5929	0.6096	0.6121	0.6307	0.6296	0.6414	0.6419
Non-durables	0.4486	0.4587	0.4707	0.4773	0.4931	0.5075	0.5214	0.5365	0.5512	0.5644	0.5766	0.5875
GROSS FIXED CAPITAL FORMATION												
		16	989			19	90			19	91	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Gross fixed capital formation	3099.8	3195.5	3345.8	3519.2	3590.4	3684.5	3773.6	3908.2	3965.8	4066.5	4261.0	4320.5
Machinery and equipment	821.3	855.5	887.1	936.4	989.1	1008.2	1072.1	1088.2	1126.9	1124.1	1134.2	1139.2
Transport material	359.8	347.4	368.9	402.0	379.6	405.8	385.3	419.7	394.8	427.3	444.9	452.4
Construction	1768.1	1830.4	1924.9	2011.7	2048.3	2085.5	2128.8	2197.2	2250.3	2312.9	2469.2	2512.4
Other	150.6	162.1	165.0	169.0	173.3	185.0	187.5	203.1	193.9	202.1	212.8	216.4
Chain-linked volume (reference year 2006)												
Gross fixed capital formation	5992.0	6044.5	6115.3	6295.4	6297.3	6344.3	6350.5	6487.0	6404.8	6459.8	6637.0	6650.3
Machinery and equipment	855.6	885.3	903.5	961.8	1007.4	1039.1	1094.0	1133.9	1121.6	1125.3	1132.5	1137.2
Transport material	522.0	513.2	501.8	534.6	518.2	550.1	515.7	557.8	550.1	587.8	590.5	599.2
Construction	4546.4	4543.2	4611.0	4646.6	4568.4	4484.1	4412.5	4397.6	4356.0	4351.7	4531.8	4515.8
Other	268.0	278.1	279.4	279.8	283.9	295.0	301.7	320.2	316.2	320.7	336.3	343.2
Deflator (2006=1)												
Gross fixed capital formation	0.5173	0.5287	0.5471	0.5590	0.5702	0.5808	0.5942	0.6025	0.6192	0.6295	0.6420	0.6497
Machinery and equipment	0.9599	0.9663	0.9818	0.9736	0.9818	0.9702	0.9800	0.9597	1.0047	0666.0	1.0016	1.0018
Transport material	0.6893	0.6769	0.7352	0.7520	0.7326	0.7377	0.7472	0.7524	0.7176	0.7270	0.7534	0.7550
Construction	0.3889	0.4029	0.4175	0.4330	0.4484	0.4651	0.4824	0.4996	0.5166	0.5315	0.5449	0.5564
Other	0.5621	0.5831	0.5904	0.6041	0.6105	0.6272	0.6213	0.6342	0.6130	0.6300	0.6327	0.6305

PRIVATE CONSUMPTION (RESIDENTS)												
		19	92			19	93			19	94	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption	11055.2	11495.5	11751.0	11955.7	12185.7	12268.6	12589.7	12853.3	12992.6	13312.4	13519.3	13790.4
Durables	1525.1	1597.9	1585.4	1636.6	1589.2	1525.4	1556.5	1552.7	1592.6	1634.8	1627.0	1713.2
Non-durables	9530.1	9897.6	10165.6	10319.1	10596.5	10743.2	11033.2	11300.6	11400.0	11677.6	11892.3	12077.3
Chain-linked volume (reference year 2006)												
Private consumption	18302.4	18580.0	18720.8	18905.8	19024.3	18964.6	19101.5	19143.2	18999.2	19210.7	19226.8	19356.3
Durables	2340.5	2434.6	2354.5	2421.4	2283.8	2181.8	2164.6	2137.3	2139.4	2184.9	2127.5	2225.3
Non-durables	15933.8	16110.2	16342.2	16455.1	16723.0	16772.9	16929.6	17001.1	16854.2	17018.2	17097.4	17120.9
Deflator (2006=1)												
Private consumption	0.6040	0.6187	0.6277	0.6324	0.6405	0.6469	0.6591	0.6714	0.6839	0.6930	0.7032	0.7125
Durables	0.6516	0.6563	0.6734	0.6759	0.6958	0.6992	0.7191	0.7265	0.7444	0.7482	0.7648	0.7699
Non-durables	0.5981	0.6144	0.6220	0.6271	0.6336	0.6405	0.6517	0.6647	0.6764	0.6862	0.6956	0.7054
GROSS FIXED CAPITAL FORMATION												
		19	92			19	93			19	94	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Gross fixed capital formation	4673.3	4735.5	4800.6	4786.3	4431.2	4549.0	4383.5	4465.1	4578.3	4602.4	4625.0	4865.5
Machinery and equipment	1126.8	1120.6	1131.7	1115.5	1069.7	1134.5	1070.1	1072.7	1055.6	1014.9	981.0	1027.4
Transport material	495.9	501.6	494.4	458.2	433.7	432.4	404.5	411.7	448.2	490.6	453.3	628.2
Construction	2827.0	2888.4	2950.4	2983.2	2718.8	2767.8	2709.8	2774.6	2854.4	2866.2	2967.2	2952.5
Other	223.4	224.9	224.1	229.4	209.0	214.3	199.1	206.0	220.0	230.7	223.5	257.4
Chain-linked volume (reference year 2006)												
Gross fixed capital formation	7135.0	7176.1	7207.7	7095.2	6543.1	6608.8	6311.1	6296.5	6430.1	6423.9	6433.6	6695.4
Machinery and equipment	1145.1	1163.7	1188.0	1168.1	1142.4	1177.7	1118.1	1084.1	1050.7	1011.6	994.0	1017.8
Transport material	656.6	650.2	634.4	582.3	565.2	567.7	522.6	507.2	579.9	630.1	581.2	796.7
Construction	4989.7	5013.3	5034.8	5000.5	4475.4	4482.9	4330.3	4380.5	4461.5	4436.3	4547.1	4479.6
Other	348.2	347.4	340.8	349.5	314.3	319.2	293.9	302.7	325.5	340.1	329.6	377.9
Deflator (2006=1)												
Gross fixed capital formation	0.6550	0.6599	0.6660	0.6746	0.6772	0.6883	0.6946	0.7091	0.7120	0.7165	0.7189	0.7267
Machinery and equipment	0.9841	0.9629	0.9527	0.9550	0.9363	0.9633	0.9571	0.9895	1.0047	1.0033	0.9869	1.0094
Transport material	0.7553	0.7715	0.7793	0.7869	0.7673	0.7616	0.7741	0.8117	0.7730	0.7786	0.7799	0.7885
Construction	0.5666	0.5761	0.5860	0.5966	0.6075	0.6174	0.6258	0.6334	0.6398	0.6461	0.6525	0.6591
Other	0.6416	0.6475	0.6576	0.6564	0.6650	0.6713	0.6774	0.6808	0.6759	0.6783	0.6783	0.6812

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PRIVATE CONSUMPTION (RESIDENTS)												
		19	995			19	96			19	97	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption	14111.7	14431.0	14322.5	14444.7	14831.2	15018.0	15440.6	15530.0	15888.4	15985.5	16426.7	16641.0
Durables	1669.1	1778.3	1730.2	1631.7	1838.8	1809.2	1930.8	1921.6	1984.4	1983.3	2070.1	2092.1
Non-durables	12442.6	12652.7	12592.3	12813.0	12992.4	13208.8	13509.8	13608.4	13904.0	14002.2	14356.6	14548.9
Chain-linked volume (reference year 2006)												
Private consumption	19397.2	19747.0	19525.4	19537.3	19992.7	20043.2	20350.9	20348.8	20664.2	20696.1	21111.2	21213.0
Durables	2124.7	2245.5	2169.5	2029.4	2288.0	2237.7	2369.7	2336.7	2394.7	2381.8	2478.2	2499.7
Non-durables	17272.5	17501.5	17355.9	17507.9	17704.7	17805.5	17981.2	18012.1	18269.5	18314.3	18633.0	18713.3
Deflator (2006=1)												
Private consumption	0.7275	0.7308	0.7335	0.7393	0.7418	0.7493	0.7587	0.7632	0.7689	0.7724	0.7781	0.7845
Durables	0.7856	0.7919	0.7975	0.8040	0.8037	0.8085	0.8148	0.8224	0.8287	0.8327	0.8353	0.8369
Non-durables	0.7204	0.7229	0.7255	0.7318	0.7338	0.7418	0.7513	0.7555	0.7610	0.7646	0.7705	0.7775
GRUDD FIAED CAPITAL FURMATION												
		1	995			19	96			19	97	
	Q1	Q2	G3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	G3	Q4
Current prices (EUR millions)												
Gross fixed capital formation	4999.9	5161.1	4995.2	5103.9	5087.9	5382.7	5650.2	5886.7	6063.1	6486.1	6692.5	6820.8
Machinery and equipment	1084.2	1109.1	1082.9	1122.7	1179.8	1178.6	1236.4	1312.1	1343.5	1400.8	1476.2	1506.1
Transport material	429.5	537.6	463.1	507.4	495.5	544.3	567.1	604.6	610.7	715.7	733.7	827.4
Construction	3252.5	3277.9	3211.0	3234.3	3171.5	3415.9	3598.2	3714.9	3845.1	4095.6	4197.2	4189.5
Other	233.7	236.5	238.2	239.5	241.1	243.9	248.5	255.1	263.8	274.0	285.4	297.8
Chain-linked volume (reference year 2006)												
Gross fixed capital formation	6806.2	6950.2	6741.2	6737.3	6648.1	7024.1	7375.5	7644.9	7709.9	8196.3	8353.7	8497.1
Machinery and equipment	1064.3	1086.6	1098.1	1099.6	1107.8	1116.7	1176.1	1243.7	1233.5	1292.5	1338.1	1410.5
Transport material	541.9	675.7	567.7	614.1	605.1	665.7	695.8	735.7	728.6	851.2	871.6	979.2
Construction	4865.8	4850.1	4735.6	4681.3	4590.7	4897.2	5155.4	5312.0	5384.5	5678.7	5758.4	5709.4
Other	334.2	337.8	339.8	342.3	344.5	344.5	348.2	353.5	363.3	373.9	385.6	398.0
Deflator (2006=1)												
Gross fixed capital formation	0.7346	0.7426	0.7410	0.7576	0.7653	0.7663	0.7661	0.7700	0.7864	0.7913	0.8011	0.8027
Machinery and equipment	1.0187	1.0207	0.9862	1.0210	1.0650	1.0554	1.0513	1.0550	1.0892	1.0838	1.1032	1.0678
Transport material	0.7926	0.7956	0.8157	0.8262	0.8189	0.8176	0.8150	0.8218	0.8382	0.8408	0.8418	0.8450
Construction	0.6684	0.6758	0.6781	0.6909	0.6909	0.6975	0.6979	0.6993	0.7141	0.7212	0.7289	0.7338
Other	0.6993	0.7001	0.7010	0.6997	0.6999	0.7080	0.7137	0.7216	0.7261	0.7328	0.7401	0.7482

PRIVATE CONSUMPTION (RESIDENTS)												
		1	998			19	66			20	00	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption	16890.4	7.302/1	2.884/1	18060.3	183/8.1	7.8009.F	d.243.1	0.7227.b	19863.7	20000.3	20443.3	20669.0
Durables	2185.2	2312.0	2387.5	2600.3	2672.1	2696.0	2753.0	2729.6	3006.4	2762.4	2836.0	2887.4
Non-durables	14705.2	14993.2	15200.8	15460.0	15706.0	15913.5	16290.5	16598.0	16857.3	17237.9	17607.3	17781.6
Chain-linked volume (reference year 2006)												
Private consumption	21459.6	21859.8	22082.4	22511.3	22863.6	23010.5	23351.2	23529.1	24034.7	23871.1	24135.3	24248.4
Durables	2610.7	2739.8	2820.5	3053.5	3143.0	3158.9	3217.5	3173.0	3456.2	3166.6	3227.7	3282.1
Non-durables	18848.9	19120.0	19261.9	19457.8	19720.6	19851.6	20133.7	20356.1	20578.5	20704.5	20907.6	20966.3
Deflator (2006=1)												
Private consumption	0.7871	0.7916	0.7965	0.8023	0.8038	0.8087	0.8155	0.8214	0.8265	0.8378	0.8470	0.8524
Durables	0.8370	0.8439	0.8465	0.8516	0.8502	0.8535	0.8556	0.8603	0.8699	0.8724	0.8786	0.8797
Non-durables	0.7802	0.7842	0.7892	0.7945	0.7964	0.8016	0.8091	0.8154	0.8192	0.8326	0.8421	0.8481
GROSS FIXED CAPITAL FORMATION												
		19	398			19	66			20	00	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Gross fixed capital formation	7180.4	7407.7	7452.6	7815.7	7762.7	7938.8	8226.7	8412.6	8975.6	8573.7	8873.6	8815.5
Machinery and equipment	1562.9	1752.6	1725.5	1744.8	1716.3	1775.9	1892.6	1924.0	2014.6	2033.2	2094.9	2024.0
Transport material	816.1	844.3	851.1	7.666	930.7	954.3	969.0	960.5	1070.4	985.8	965.3	1069.9
Construction	4490.5	4486.4	4538.0	4719.5	4750.7	4830.9	4975.7	5128.8	5483.9	5144.1	5402.0	5310.6
Other	310.9	324.4	338.0	351.7	365.0	377.7	389.4	399.3	406.7	410.6	411.4	411.0
Chain-linked volume (reference year 2006)												
Gross fixed capital formation	8948.2	9027.1	9101.8	9553.3	9544.4	9566.9	9792.6	9930.2	10416.9	9856.9	10107.5	9977.8
Machinery and equipment	1474.9	1575.6	1560.7	1622.6	1659.5	1666.8	1754.1	1766.9	1830.4	1812.4	1855.7	1742.5
Transport material	979.2	1012.2	1022.7	1163.7	1089.5	1103.3	1108.3	1087.5	1196.1	1101.9	1072.6	1187.9
Construction	6086.7	6019.2	6085.6	6320.1	6332.3	6321.4	6444.6	6584.5	6898.3	6451.8	6692.3	6563.8
Other	407.4	420.1	432.8	446.9	463.1	475.4	485.6	491.3	492.1	490.8	486.9	483.6
Deflator (2006=1)												
Gross fixed capital formation	0.8024	0.8206	0.8188	0.8181	0.8133	0.8298	0.8401	0.8472	0.8616	0.8698	0.8779	0.8835
Machinery and equipment	1.0597	1.1123	1.1056	1.0753	1.0342	1.0655	1.0790	1.0889	1.1006	1.1218	1.1289	1.1615
Transport material	0.8334	0.8341	0.8322	0.8591	0.8542	0.8650	0.8743	0.8832	0.8949	0.8946	0006.0	0.9007
Construction	0.7378	0.7453	0.7457	0.7467	0.7502	0.7642	0.7721	0.7789	0.7950	0.7973	0.8072	0.8091
Other	0.7631	0.7722	0.7810	0.7870	0.7882	0.7945	0.8019	0.8127	0.8265	0.8366	0.8449	0.8499

PRIVATE CONSUMPTION (RESIDENTS)												
		50	01			20	02			20	03	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption	20976.1	21157.9	21259.1	21482.3	21804.8	22003.3	22307.9	22277.2	22359.9	22471.3	22833.8	23134.8
Durables	2770.4	2717.7	2651.1	2675.4	2719.7	2727.2	2615.6	2451.9	2393.3	2343.3	2466.1	2489.3
Non-durables	18205.7	18440.2	18608.0	18806.9	19085.1	19276.1	19692.3	19825.3	19966.6	20128.0	20367.7	20645.5
Chain-linked volume (reference year 2006)												
Private consumption	24280.2	24356.2	24320.0	24545.3	24710.6	24747.2	24756.3	24579.5	24495.6	24481.2	24713.2	24877.3
Durables	3114.9	3035.2	2936.3	2937.0	2960.6	2943.5	2792.7	2602.2	2536.5	2480.7	2608.9	2626.1
Non-durables	21165.3	21321.0	21383.7	21608.3	21750.0	21803.7	21963.6	21977.3	21959.1	22000.5	22104.3	22251.2
Deflator (2006=1)												
Private consumption	0.8639	0.8687	0.8741	0.8752	0.8824	0.8891	0.9011	0.9063	0.9128	0.9179	0.9240	0.9300
Durables	0.8894	0.8954	0.9029	0.9109	0.9186	0.9265	0.9366	0.9422	0.9435	0.9446	0.9453	0.9479
Non-durables	0.8602	0.8649	0.8702	0.8704	0.8775	0.8841	0.8966	0.9021	0.9093	0.9149	0.9214	0.9278
			0.4	l	l			l	l	00		
	5	V2 V1	10	2	5	N7 CO	20	2	5	77	50	5
	5	77	5	5	5	77	5	t 7	2	77	5	5
Current prices (EUR millions)												
Gross fixed capital formation	8676.0	9095.5	9161.2	9335.4	9187.5	9146.8	8847.1	8796.7	8567.3	8350.1	8452.6	8476.5
Machinery and equipment	2130.9	2128.3	2049.0	2013.3	1967.5	1955.4	1898.4	1907.1	1805.6	1751.7	1839.2	1862.2
Transport material	882.4	945.5	894.0	928.6	864.1	868.6	802.7	780.0	730.5	768.5	748.4	750.0
Construction	5250.2	5601.3	5781.9	5934.6	5872.1	5818.9	5630.8	5592.3	5517.7	5319.3	5353.1	5345.4
Other	412.5	420.4	436.3	458.9	483.8	503.9	515.2	517.3	513.5	510.6	511.9	518.9
Chain-linked volume (reference year 2006)												
Gross fixed capital formation	9740.9	10180.2	10234.6	10455.8	10205.3	9991.8	9616.9	9513.5	9205.7	9068.9	9184.6	9081.9
Machinery and equipment	1867.7	1886.9	1855.3	1897.3	1804.2	1782.6	1734.6	1743.5	1686.4	1679.4	1779.7	1778.1
Transport material	949.2	1015.6	965.5	989.3	934.8	904.7	825.8	815.7	759.1	799.2	779.7	787.1
Construction	6444.3	6794.3	6917.0	7051.1	6926.2	6747.0	6491.4	6389.7	6203.6	6039.5	6075.6	5963.7
Other	479.7	483.4	496.8	518.1	540.1	557.5	565.1	564.6	556.6	550.8	549.6	553.0
Deflator (2006=1)												
Gross fixed capital formation	0.8907	0.8935	0.8951	0.8928	0.9003	0.9154	0.9200	0.9247	0.9307	0.9207	0.9203	0.9333
Machinery and equipment	1.1409	1.1279	1.1044	1.0611	1.0905	1.0969	1.0944	1.0938	1.0707	1.0431	1.0334	1.0473
Transport material	0.9296	0.9310	0.9259	0.9386	0.9244	0.9601	0.9720	0.9562	0.9623	0.9616	0.9599	0.9529
Construction	0.8147	0.8244	0.8359	0.8417	0.8478	0.8624	0.8674	0.8752	0.8894	0.8808	0.8811	0.8963
Other	0.8599	0.8697	0.8782	0.8857	0.8958	0.9039	0.9117	0.9162	0.9226	0.9270	0.9314	0.9383

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PRIVATE CONSUMPTION (RESIDENTS)												
		2(004			20	05			20	06	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Private consumption	23435.1	23761.5	24032.1	24368.8	24571.9	24991.0	24895.8	25388.3	25773.2	26053.0	26334.6	26586.9
Durables	2487.1	2540.1	2611.2	2657.3	2699.7	2887.1	2573.8	2739.9	2821.5	2825.1	2764.2	2791.8
Non-durables	20948.0	21221.4	21420.9	21711.5	21872.2	22103.9	22322.0	22648.4	22951.7	23227.9	23570.4	23795.1
Chain-linked volume (reference year 2006)												
Private consumption	25074.6	25245.6	25390.0	25486.1	25579.4	25906.5	25558.9	25838.7	26014.8	26122.3	26256.1	26354.4
Durables	2604.2	2644.7	2708.4	2738.2	2771.4	2959.6	2618.7	2765.8	2833.2	2825.9	2759.0	2784.5
Non-durables	22470.4	22600.9	22681.6	22747.9	22808.0	22946.9	22940.2	23072.9	23181.6	23296.4	23497.1	23569.9
Deflator (2006=1)												
Private consumption	0.9346	0.9412	0.9465	0.9562	0.9606	0.9647	0.9741	0.9826	0.9907	0.9973	1.0030	1.0088
Durables	0.9550	0.9604	0.9641	0.9705	0.9741	0.9755	0.9829	0.9906	0.9959	0.9997	1.0019	1.0026
Non-durables	0.9322	0.9390	0.9444	0.9544	0.9590	0.9633	0.9731	0.9816	0.9901	0.9971	1.0031	1.0096
GROSS FIXED CAPITAL FORMATION												
		2(004			20	05			20	006	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)	8560.0	8689.5	8700.3	8750.1	8712.9	8911.7	8842.4	8945.8	9096.6	9080.3	8881.7	8831.5
Gross fixed capital formation	1906.5	1897.2	1912.5	1974.4	1929.8	1971.4	1970.2	1951.5	2020.2	2006.4	1963.4	2071.9
Machinery and equipment	741.3	743.3	694.2	775.6	738.7	759.3	769.0	817.0	792.0	903.2	817.0	776.2
Transport material	5383.0	5510.6	5550.1	5456.4	5503.9	5643.4	5566.3	5637.6	5738.1	5615.5	5535.4	5405.9
Construction	529.2	538.4	543.5	543.7	540.5	537.6	536.9	539.7	546.3	555.2	565.9	577.5
Other												
Chain-linked volume (reference year 2006)	9188.3	9124.7	9126.2	9096.5	9085.1	9212.8	9018.3	9053.1	9116.6	9043.8	8890.7	8839.1
Gross fixed capital formation	1852.1	1810.8	1852.9	1892.3	1889.4	1938.3	1915.6	1905.7	1944.2	1987.6	2058.7	2071.4
Machinery and equipment	769.7	770.9	720.7	806.1	763.0	786.3	771.2	822.0	806.0	895.0	810.5	777.1
Transport material	6002.8	5972.4	5980.6	5830.3	5873.4	5935.2	5783.1	5777.0	5814.3	5603.9	5457.7	5418.9
Construction	563.7	570.6	572.0	567.8	559.3	553.0	548.4	548.4	552.1	557.3	563.8	571.7
Other												
Deflator (2006=1)	0.9316	0.9523	0.9533	0.9619	0.9590	0.9673	0.9805	0.9881	0.9978	1.0040	0666.0	0.9991
Gross fixed capital formation	1.0294	1.0477	1.0322	1.0434	1.0214	1.0171	1.0285	1.0240	1.0391	1.0095	0.9537	1.0002
Machinery and equipment	0.9631	0.9642	0.9632	0.9622	0.9682	0.9657	0.9971	0.9939	0.9826	1.0092	1.0080	0.9988
Transport material	0.8967	0.9227	0.9280	0.9359	0.9371	0.9508	0.9625	0.9759	0.9869	1.0021	1.0142	0.9976
Construction	0.9388	0.9436	0.9502	0.9576	0.9664	0.9722	0.9790	0.9841	0.9895	0.9962	1.0037	1.0101
Other	0.9546	0.9228	0.9661	0.9366	0.9823	0.9528	0.9957	0.9660	1.0062	0.9803	1.0195	0.9940

PRIVATE CONSUMPTION (RESIDENTS)												
		20	007			20	08			20	60	
	Q1	Q2	G3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	G3	Q4
Current prices (EUR millions)												
Private consumption	27009.7	27495.2	27782.5	28347.5	28536.2	28791.5	29126.5	28502.2	27336.7	27204.5	27432.5	27800.1
Durables	2857.3	3056.0	2879.6	2917.5	2976.7	2880.3	2931.6	2821.7	2323.5	2328.2	2465.8	2510.8
Non-durables	24152.4	24439.2	24902.9	25430.0	25559.5	25911.2	26194.9	25680.5	25013.2	24876.3	24966.7	25289.3
Chain-linked volume (reference year 2006)												
Private consumption	26578.3	26758.7	26910.4	27140.0	27183.8	27124.4	27373.4	27119.7	26348.1	26350.4	26680.8	26891.6
Durables	2843.0	3039.5	2878.8	2934.8	3017.8	2927.0	2979.4	2856.3	2341.7	2360.7	2512.2	2576.5
Non-durables	23735.3	23719.2	24031.6	24205.2	24166.0	24197.4	24394.0	24263.4	24006.4	23989.7	24168.6	24315.1
Deflator (2006=1)												
Private consumption	1.0162	1.0275	1.0324	1.0445	1.0498	1.0615	1.0640	1.0510	1.0375	1.0324	1.0282	1.0338
Durables	1.0050	1.0054	1.0003	0.9941	0.9864	0.9840	0.9840	0.9879	0.9922	0.9862	0.9815	0.9745
Non-durables	1.0176	1.0304	1.0363	1.0506	1.0577	1.0708	1.0738	1.0584	1.0419	1.0370	1.0330	1.0401
GROSS FIXED CAPITAL FORMATION												
		20	007			20	08			20	60	
	Q1	Q2	G3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	G3	Q4
Current prices (EUR millions)												
Gross fixed capital formation	9306.4	9240.4	9352.2	9730.1	9813.5	9915.5	9705.4	9200.2	8657.0	8714.6	8950.9	8306.9
Machinery and equipment	2108.0	2124.0	2174.8	2272.2	2397.2	2437.1	2438.5	2261.9	2007.6	2087.3	2205.1	1806.0
Transport material	827.0	921.2	915.2	939.0	959.5	963.0	767.1	804.5	599.9	641.0	695.7	757.2
Construction	5781.1	5591.1	5643.5	5886.0	5811.6	5862.1	5843.8	5480.2	5401.6	5345.2	5414.9	5112.4
Other	590.3	604.1	618.7	632.9	645.2	653.3	656.0	653.6	647.9	641.1	635.2	631.3
Chain-linked volume (reference year 2006)												
Gross fixed capital formation	9148.6	9065.5	9123.5	9493.1	9388.3	9329.7	9109.3	8889.0	8400.0	8475.4	8602.0	8076.5
Machinery and equipment	2071.1	2176.6	2184.2	2264.0	2409.0	2439.9	2478.6	2346.6	2159.6	2268.5	2329.2	1960.8
Transport material	819.6	902.2	902.9	926.1	936.1	943.6	748.5	787.1	590.5	631.0	692.9	756.7
Construction	5676.8	5397.6	5436.5	5694.7	5432.1	5331.6	5268.0	5147.0	5043.9	4976.9	4987.0	4771.4
Other	581.1	589.1	599.9	608.3	611.1	614.6	614.2	608.3	606.0	599.0	592.9	587.6
Deflator (2006=1)												
Gross fixed capital formation	1.0172	1.0193	1.0251	1.0250	1.0453	1.0628	1.0654	1.0350	1.0306	1.0282	1.0406	1.0285
Machinery and equipment	1.0178	0.9758	0.9957	1.0036	0.9951	0.9989	0.9838	0.9639	0.9296	0.9201	0.9467	0.9211
Transport material	1.0090	1.0211	1.0136	1.0139	1.0250	1.0206	1.0248	1.0221	1.0159	1.0158	1.0040	1.0007
Construction	1.0184	1.0358	1.0381	1.0336	1.0699	1.0995	1.1093	1.0647	1.0709	1.0740	1.0858	1.0715
Other	1.0158	1.0255	1.0313	1.0404	1.0558	1.0630	1.0681	1.0745	1.0691	1.0703	1.0713	1.0744

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PRIVATE CONSUMPTION (RESIDENTS)								
		2010				2011		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)								
Private consumption	28074.6	28343.9	28622.3	28873.6	28470.0	28480.3	28500.7	27885.7
Durables	2599.7	2656.8	2561.7	2794.7	2341.1	2238.7	2093.4	1842.2
Non-durables	25474.9	25687.1	26060.6	26078.9	26128.9	26241.6	26407.3	26043.5
Chain-linked volume (reference year 2006)								
Private consumption	26992.0	27156.1	27171.2	27202.9	26342.7	26226.4	26211.9	25414.0
Durables	2677.3	2731.1	2608.3	2824.0	2380.5	2279.7	2151.2	1909.5
Non-durables	24314.7	24425.0	24562.9	24378.9	23962.2	23946.7	24060.7	23504.5
Deflator (2006=1)								
Private consumption	1.0401	1.0437	1.0534	1.0614	1.0808	1.0859	1.0873	1.0973
Durables	0.9710	0.9728	0.9821	0.9896	0.9834	0.9820	0.9731	0.9648
Non-durables	1.0477	1.0517	1.0610	1.0697	1.0904	1.0958	1.0975	1.1080
GROSS FIXED CAPITAL FORMATION								
		2010				2011		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)								
Gross fixed capital formation	8711.8	8625.8	8534.8	8251.9	8395.0	7841.6	7625.3	7063.7
Machinery and equipment	2008.2	1822.8	1823.9	1845.9	1775.2	1713.8	1658.2	1518.4
Transport material	722.1	745.5	618.4	676.3	622.9	568.8	487.6	463.3
Construction	5351.9	5428.2	5462.5	5098.4	5364.3	4925.3	4845.2	4447.7
Other	629.6	629.3	630.0	631.3	632.6	633.7	634.3	634.3
Chain-linked volume (reference year 2006)								
Gross fixed capital formation	8293.1	8098.1	8008.3	7774.1	7702.0	7247.4	7041.1	6552.9
Machinery and equipment	2174.5	2000.5	2012.8	1982.0	1915.7	1914.7	1868.3	1670.3
Transport material	712.8	728.0	612.0	662.9	605.7	557.7	478.9	452.9
Construction	4818.5	4784.3	4801.3	4548.2	4602.3	4199.2	4121.0	3859.1
Other	587.3	585.3	582.2	581.0	578.3	575.8	572.9	570.6
Deflator (2006=1)								
Gross fixed capital formation	1.0505	1.0652	1.0657	1.0615	1.0900	1.0820	1.0830	1.0780
Machinery and equipment	0.9235	0.9112	0.9062	0.9313	0.9267	0.8951	0.8875	0.9091
Transport material	1.0130	1.0240	1.0105	1.0202	1.0284	1.0199	1.0182	1.0230
Construction	1.1107	1.1346	1.1377	1.1210	1.1656	1.1729	1.1757	1.1525
Other	1.0720	1.0752	1.0821	1.0866	1.0939	1.1006	1.1072	1.1116

HOUSEHOLDS' DISPOSABLE INCOME												
		19	77			19	78			19	79	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Compensation of employees	606.2	614.7	632.1	656.9	688.6	719.9	748.8	775.7	801.6	838.6	883.0	938.8
Domestic transfers	98.7	100.2	103.1	107.5	113.4	118.7	123.5	127.7	131.4	138.7	149.7	164.3
External transfers	51.8	56.6	55.3	55.4	63.7	84.0	92.5	117.2	136.9	141.1	163.9	156.8
Corporate and property income	163.6	173.4	189.9	219.5	231.3	259.3	280.9	298.8	313.2	331.7	352.9	380.1
Direct taxes	30.5	31.1	32.2	34.0	36.4	39.2	42.5	46.3	50.5	54.1	57.3	59.9
Social Security contributions	96.2	97.9	101.3	106.4	113.3	119.4	124.8	129.4	133.2	140.2	150.3	163.6
Disposable income	793.6	815.9	846.9	898.8	947.3	1023.3	1078.4	1143.9	1199.5	1255.9	1342.0	1416.5
LABOUR MARKET												
		19	77			19	78			19	79	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Thousands of heads												
Labour force	4057.7	4055.2	4086.6	4092.1	4161.5	4172.4	4227.7	4243.1	4270.4	4289.3	4323.1	4344.3
Employment	3899.5	3890.9	3877.0	3863.7	3858.4	3854.1	3866.4	3879.9	3901.8	3924.3	3950.3	3976.6
Unemployment	212.2	216.6	220.9	237.1	234.1	248.4	250.8	255.2	255.3	256.0	256.0	255.9
Full-time equivalent employment	3752.0	3760.3	3778.4	3804.4	3834.5	3863.8	3890.5	3908.3	3930.8	3955.4	3978.3	4010.4
Employees	3183.8	3197.7	3227.4	3262.7	3300.1	3334.4	3356.6	3370.5	3380.3	3404.9	3426.8	3460.4
Other forms of employment	568.3	562.5	550.9	541.7	534.4	529.5	533.9	537.8	550.5	550.4	551.5	550.0
EUR thousands												
Compensation per employee	0.190	0.192	0.196	0.201	0.209	0.216	0.223	0.230	0.237	0.246	0.258	0.271
Per cent												
Unemployment rate	5.2	5.3	5.4	5.8	5.6	6.0	5.9	6.0	6.0	6.0	5.9	5.9

HOUSEHOLDS' DISPOSABLE INCOME												
		19	30			190	31			19	82	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Compensation of employees	1004.2	1068.4	1132.7	1194.0	1252.4	1315.5	1384.8	1461.2	1544.6	1631.2	1722.4	1818.4
Domestic transfers	182.6	200.3	217.5	234.1	250.2	266.6	283.4	300.5	318.1	337.7	359.5	383.4
External transfers	178.8	179.2	190.9	191.3	202.8	229.7	219.9	225.2	232.4	257.0	270.2	289.2
Corporate and property income	403.6	438.0	476.1	514.2	563.6	604.7	652.1	702.7	747.1	800.3	850.0	904.8
Direct taxes	62.0	65.7	71.1	78.0	86.6	94.9	102.8	110.4	117.6	125.5	133.9	142.9
Social Security contributions	180.1	194.9	208.0	219.4	229.2	242.5	259.2	279.5	303.2	327.1	351.2	375.4
Disposable income	1527.1	1625.3	1738.1	1836.2	1953.2	2079.2	2178.3	2299.8	2421.3	2573.7	2717.0	2877.4
LABOUR MARKET												
		19	30			198	31			19	82	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Thousands of heads												
Labour force	4370.1	4371.4	4387.9	4398.9	4390.0	4398.4	4396.3	4386.4	4422.0	4423.9	4403.7	4402.4
Employment	3992.8	4008.9	4033.1	4056.8	4070.1	4083.5	4072.9	4061.1	4060.7	4058.3	4055.9	4053.0
Unemployment	252.4	240.6	249.2	241.1	260.8	258.3	262.6	262.1	254.7	258.3	251.3	252.3
Full-time equivalent employment	4030.6	4051.4	4060.9	4065.6	4050.7	4046.0	4046.4	4045.7	4078.1	4079.0	4073.4	4064.3
Employees	3497.5	3523.0	3542.9	3548.0	3540.9	3533.5	3529.2	3529.8	3534.6	3532.8	3528.4	3522.1
Other forms of employment	533.1	528.4	517.9	517.6	509.8	512.6	517.2	515.9	543.5	546.2	545.0	542.2
EUR thousands												
Compensation per employee	0.287	0.303	0.320	0.337	0.354	0.372	0.392	0.414	0.437	0.462	0.488	0.516
Per cent												
Unemployment rate	5.8	5.5	5.7	5.5	5.9	5.9	6.0	6.0	5.8	5.8	5.7	5.7

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HOUSEHOLDS' DISPOSABLE INCOME												
		198	83			19	84			19	85	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Compensation of employees	1907.9	1979.8	2031.3	2066.0	2141.9	2184.2	2254.8	2356.5	2489.5	2620.8	2751.5	2884.2
Domestic transfers	409.4	433.0	454.3	473.1	489.5	513.4	544.6	583.3	629.3	666.3	694.1	712.8
External transfers	283.2	280.6	304.2	310.8	371.8	365.7	397.2	415.6	391.2	413.0	449.0	509.8
Corporate and property income	931.3	1027.4	1146.9	1239.8	1352.2	1440.9	1509.3	1614.5	1632.0	1720.2	1826.3	1854.9
Direct taxes	152.5	162.5	172.7	183.3	194.2	208.3	225.8	246.5	270.6	284.7	288.9	283.3
Social Security contributions	399.8	421.7	441.1	458.0	472.4	490.3	511.9	537.1	565.8	595.9	627.4	660.2
Disposable income	2979.3	3136.6	3322.8	3448.5	3688.9	3805.6	3968.2	4186.3	4305.7	4539.7	4804.6	5018.2
-ABOUR MARKET												
		190	83			19	84			19	85	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Thousands of heads												
Labour force	4352.0	4357.7	4368.0	4374.2	4432.6	4443.3	4473.1	4484.5	4479.9	4478.8	4466.2	4464.9
Employment	4041.9	4039.6	4037.2	4034.3	4038.7	4048.0	4049.3	4058.1	4060.5	4062.3	4067.1	4061.0
Unemployment	276.7	284.2	305.0	313.5	319.6	322.7	334.4	338.6	346.8	344.0	349.4	352.8
Full-time equivalent employment	4009.1	3990.7	3973.4	3964.1	4042.4	4040.8	4044.2	4049.6	4048.0	4047.6	4035.9	4022.6
Employees	3493.2	3471.7	3450.9	3435.8	3524.1	3508.8	3496.7	3492.6	3496.2	3493.3	3486.1	3478.8
Other forms of employment	516.0	518.9	522.5	528.3	518.4	532.0	547.5	557.0	551.8	554.3	549.7	543.8
EUR thousands												
Compensation per employee	0.546	0.570	0.589	0.601	0.608	0.623	0.645	0.675	0.712	0.750	0.789	0.829
Per cent												
Unemployment rate	6.4	6.5	7.0	7.2	7.2	7.3	7.5	7.5	7.7	7.7	7.8	7.9

HOUSEHOLDS' DISPOSABLE INCOME												
		19	86			198	37			19	88	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Compensation of employees	3016.4	3151.0	3286.2	3422.9	3567.4	3714.6	3860.6	4000.8	4128.7	4283.8	4476.3	4703.4
Domestic transfers	722.3	744.4	779.1	826.2	885.9	935.5	974.8	1003.9	1022.9	1051.8	1090.5	1139.2
External transfers	484.5	485.3	482.0	494.7	564.1	580.7	601.2	615.4	625.6	636.1	644.8	655.0
Corporate and property income	2008.9	2074.5	2142.6	2230.8	2321.0	2412.9	2482.0	2570.5	2603.4	2707.6	2822.7	3007.7
Direct taxes	267.8	254.8	244.4	236.5	231.2	236.6	252.7	279.4	316.9	359.7	407.6	460.9
Social Security contributions	694.4	731.9	772.9	817.3	865.0	906.9	943.1	973.4	997.8	1031.4	1074.2	1126.1
Disposable income	5270.0	5468.5	5672.6	5920.8	6242.2	6500.2	6722.8	6937.8	7065.8	7288.2	7552.5	7918.3
LABOUR MARKET												
		19	86			198	37			19	88	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Thousands of heads												
Labour force	4433.5	4440.6	4454.6	4462.4	4492.8	4514.9	4537.1	4545.5	4556.5	4564.2	4592.5	4608.9
Employment	4046.3	4053.7	4082.4	4105.0	4131.1	4168.7	4197.4	4221.7	4250.5	4267.3	4283.3	4313.3
Unemployment	362.1	363.0	357.5	346.9	334.3	326.1	315.5	304.2	294.5	288.6	281.2	273.3
Full-time equivalent employment	3996.3	3992.3	4006.5	4024.3	4066.5	4101.8	4132.9	4158.0	4166.6	4186.9	4214.3	4256.8
Employees	3468.1	3466.1	3469.9	3479.7	3501.7	3529.2	3558.2	3584.5	3602.2	3624.2	3658.4	3700.8
Other forms of employment	528.2	526.2	536.7	544.5	564.9	572.6	574.7	573.5	564.4	562.7	556.0	556.0
EUR thousands												
Compensation per employee	0.870	0.909	0.947	0.984	1.019	1.053	1.085	1.116	1.146	1.182	1.224	1.271
Per cent												
Unemployment rate	8.2	8.2	8.0	7.8	7.4	7.2	7.0	6.7	6.5	6.3	6.1	5.9

HOUSEHOLDS' DISPOSABLE INCOME												
		19	89			19	06			19	91	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Compensation of employees	4957.4	5207.9	5464.8	5713.6	5951.4	6206.3	6476.3	6764.6	7081.9	7407.1	7724.6	8055.2
Domestic transfers	1197.8	1258.6	1321.8	1387.2	1455.0	1532.8	1620.8	1718.9	1827.1	1941.9	2063.3	2191.3
External transfers	725.1	719.2	728.8	719.7	713.5	798.2	827.4	801.6	755.6	904.9	796.4	821.0
Corporate and property income	3219.1	3398.3	3557.4	3649.1	3768.1	3839.7	3984.8	4115.5	4320.2	4480.9	4627.7	4787.7
Direct taxes	519.4	565.3	598.8	619.8	628.2	645.5	671.4	706.2	749.7	806.3	876.0	958.7
Social Security contributions	1187.0	1247.6	1307.6	1367.1	1426.2	1489.9	1558.3	1631.4	1709.1	1798.8	1900.4	2013.9
Disposable income	8393.0	8771.2	9166.3	9482.7	9833.6	10241.7	10679.5	11063.1	11525.9	12129.6	12435.7	12882.7
LABOUR MARKET												
		19	89			19	06			19	91	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Thousands of heads												
Labour force	4679.6	4698.9	4730.6	4737.7	4727.2	4742.6	4743.9	4791.0	4794.4	4813.4	4781.3	4782.7
Employment	4344.3	4368.9	4393.2	4407.1	4418.6	4439.6	4479.6	4540.0	4598.3	4628.3	4630.8	4631.2
Unemployment	271.1	270.4	268.8	264.5	264.8	263.1	262.9	261.2	258.7	253.4	235.7	236.5
Full-time equivalent employment	4307.2	4340.5	4369.2	4381.8	4379.9	4384.2	4395.4	4415.2	4441.4	4455.4	4452.8	4453.3
Employees	3743.4	3774.9	3803.8	3819.9	3822.8	3825.8	3827.4	3829.8	3838.8	3844.3	3838.2	3832.8
Other forms of employment	563.8	565.7	565.5	561.8	557.0	558.4	568.0	585.4	602.6	611.0	614.7	620.5
EUR thousands												
Compensation per employee	1.324	1.380	1.437	1.496	1.557	1.622	1.692	1.766	1.845	1.927	2.013	2.102
Per cent												
Unemployment rate	5.8	5.8	5.7	5.6	5.6	5.5	5.5	5.5	5.4	5.3	4.9	4.9

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HOUSEHOLDS' DISPOSABLE INCOME												
		19	92			19	93			19	94	
	Q1	Q2	63	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Compensation of employees	8453.4	8747.5	9074.2	9203.0	9305.9	9403.3	9429.9	9469.4	9480.5	9565.9	9732.6	10005.9
Domestic transfers	2325.9	2438.3	2528.5	2596.4	2642.1	2689.1	2737.3	2786.8	2837.4	2899.7	2973.6	3059.0
External transfers	814.1	781.1	786.5	774.7	841.3	686.0	734.9	764.2	725.4	720.4	626.7	753.8
Corporate and property income	4856.7	4978.3	5042.9	5035.2	5099.4	5127.0	5161.4	5180.6	5255.2	5387.2	5539.7	5694.8
Direct taxes	1054.4	1121.3	1159.2	1168.2	1148.3	1138.2	1138.0	1147.6	1167.1	1185.0	1201.4	1216.3
Social Security contributions	2139.3	2250.4	2347.1	2429.5	2497.7	2540.6	2558.3	2550.8	2518.1	2534.8	2601.0	2716.4
Disposable income	13256.5	13573.6	13925.8	14011.7	14242.8	14226.6	14367.3	14502.6	14613.4	14853.4	15070.2	15580.7
LABOUR MARKET												
		19	92			19	93			19	94	
	Q1	Q2	63	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Thousands of heads												
Labour force	4776.2	4770.0	4782.0	4769.4	4764.4	4761.2	4750.7	4763.9	4778.1	4799.0	4841.0	4838.6
Employment	4660.5	4566.7	4581.2	4564.1	4535.7	4515.5	4483.4	4484.8	4480.6	4492.4	4521.8	4515.9
Unemployment	198.3	203.3	200.7	205.3	228.6	245.6	267.3	279.1	297.5	306.6	319.3	322.7
Full-time equivalent employment	4475.3	4470.4	4492.7	4464.4	4436.1	4419.7	4393.8	4387.6	4393.1	4396.2	4413.2	4427.5
Employees	3855.8	3847.5	3875.6	3831.2	3796.4	3773.2	3732.1	3709.6	3687.2	3670.3	3661.9	3672.4
Other forms of employment	619.4	622.9	617.1	633.3	639.8	646.5	661.7	677.9	705.9	725.9	751.3	755.1
EUR thousands												
Compensation per employee	2.192	2.274	2.341	2.402	2.451	2.492	2.527	2.553	2.571	2.606	2.658	2.725
Per cent												
Unemployment rate	4.2	4.3	4.2	4.3	4.8	5.2	5.6	5.9	6.2	6.4	9.9	6.7

HOUSEHOLDS' DISPOSABLE INCOME												
		19	95			19	96			19	97	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Compensation of employees	10450.8	10513.2	10592.9	10741.4	10961.6	11214.4	11516.5	11676.0	11915.5	12148.1	12473.8	12752.9
Domestic transfers	3156.0	3239.3	3308.8	3364.7	3406.9	3454.3	3507.0	3564.9	3628.1	3703.6	3791.2	3891.2
External transfers	583.9	610.6	635.5	678.9	686.0	662.2	655.6	648.2	720.7	731.1	736.7	723.2
Corporate and property income	5862.9	5974.9	6032.6	6132.8	6107.3	6077.1	6095.5	6089.8	6148.0	6114.3	6096.5	6169.8
Direct taxes	1229.6	1250.9	1280.1	1317.2	1362.2	1395.4	1416.8	1426.3	1423.9	1426.1	1432.9	1444.3
Social Security contributions	2996.7	3008.3	3031.4	3066.1	3112.3	3169.5	3237.8	3317.0	3407.3	3498.0	3589.2	3680.9
Disposable income	15827.2	16078.8	16258.4	16534.6	16687.2	16843.1	17120.1	17235.6	17581.1	17772.9	18076.1	18411.7
LABOUR MARKET												
		19	95			19	96			19	97	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Thousands of heads												
Labour force	4851.8	4848.7	4846.1	4874.7	4891.1	4879.7	4895.0	4891.9	4916.0	4946.6	4978.0	4987.9
Employment	4524.0	4521.0	4519.5	4540.1	4556.0	4538.0	4559.3	4559.8	4590.1	4628.3	4661.7	4681.5
Unemployment	327.8	327.7	326.6	334.6	335.1	341.8	335.7	332.1	325.9	318.3	316.3	306.5
Full-time equivalent employment	4430.9	4430.2	4418.2	4446.4	4467.8	4489.8	4522.7	4532.6	4559.6	4587.6	4645.4	4679.8
Employees	3677.6	3668.1	3653.2	3652.4	3665.9	3692.9	3738.8	3734.2	3759.7	3781.3	3833.3	3867.3
Other forms of employment	753.3	762.1	764.9	794.0	801.9	796.9	783.9	798.4	799.9	806.3	812.1	812.5
EUR thousands												
Compensation per employee	2.842	2.866	2.900	2.941	2.990	3.037	3.080	3.127	3.169	3.213	3.254	3.298
Per cent												
Unemployment rate	6.8	6.8	6.7	6.9	6.9	7.0	6.9	6.8	9.9	6.4	6.4	6.1

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HOUSEHOLDS' DISPOSABLE INCOME												
		19	98			19	66			20	00	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Compensation of employees	13033.5	13332.5	13569.7	13897.0	14203.1	14289.7	14431.9	14780.1	15310.9	15352.6	15875.6	16126.1
Domestic transfers	4003.3	4109.9	4210.9	4306.3	4411.8	4334.3	4546.7	4606.3	4685.8	5045.7	4949.3	5153.7
External transfers	755.5	747.4	768.8	743.4	749.4	758.1	858.3	768.9	818.9	888.1	845.4	924.3
Corporate and property income	6083.3	6147.4	6284.3	6404.8	6791.5	6823.3	6925.9	6906.5	7031.4	7144.5	7235.5	7370.3
Direct taxes	1460.4	1481.4	1507.5	1538.7	1587.6	1587.7	1625.5	1625.6	1733.2	1744.3	1834.3	1867.9
Social Security contributions	3773.1	3850.8	3914.0	3962.8	3925.1	4008.7	4065.3	4109.8	4308.6	4398.7	4530.2	4614.7
Disposable income	18642.3	19005.0	19412.1	19850.1	20643.0	20609.1	21072.1	21326.4	21805.2	22287.9	22541.2	23091.8
LABOUR MARKET												
		19	98			19	66			20	00	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Thousands of heads												
Labour force	5036.3	5042.1	5022.3	5059.3	5054.6	5081.8	5080.6	5092.5	5132.1	5139.3	5187.3	5195.5
Employment	4728.2	4779.1	4760.0	4795.5	4803.6	4819.5	4841.2	4860.5	4898.7	4916.7	4957.6	4986.9
Unemployment	308.1	263.0	262.3	263.9	251.0	262.3	239.4	232.0	233.4	222.5	229.7	208.6
Full-time equivalent employment	4734.8	4789.3	4770.9	4807.9	4806.2	4827.1	4842.9	4869.5	4922.7	4942.7	4975.4	4999.6
Employees	3900.1	3937.2	3951.9	3994.4	4004.1	4011.5	4019.9	4041.1	4098.1	4117.0	4131.6	4142.9
Other forms of employment	834.6	852.0	819.1	813.5	802.1	815.6	823.0	828.4	824.7	825.7	843.8	856.7
EUR thousands												
Compensation per employee	3.342	3.386	3.434	3.479	3.547	3.562	3.590	3.657	3.736	3.729	3.842	3.892
Per cent												
Unemployment rate	6.1	5.2	5.2	5.2	5.0	5.2	4.7	4.6	4.5	4.3	4.4	4.0

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10USEHOLDS' DISPOSABLE INCOME												
		20	01			20	02			2(003	
	Q1	Q2	Q3	Q4	q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
urrent prices (EUR millions)	16198.1	16565.4	16513.4	16799.9	17167.3	17280.4	17455.1	17412.1	17523.2	17682.0	17992.9	18006.1
Compensation of employees	5255.4	5290.5	5576.8	5741.5	5801.8	5941.9	6072.1	5983.8	6148.8	6223.6	6164.3	6414.4
Domestic transfers	889.4	955.0	889.1	889.2	759.5	657.3	695.9	648.7	664.0	574.4	580.6	589.1
External transfers	7246.1	7521.1	7369.2	7203.8	7387.6	7371.6	7533.7	7651.5	7743.1	7918.7	8005.8	7962.0
Corporate and property income	1880.2	1948.8	1883.5	1914.4	1937.8	1939.8	1933.7	1960.2	1973.6	1995.7	1891.3	2004.2
Direct taxes	4591.6	4778.2	4759.7	4760.4	4896.7	4928.0	5059.7	5054.1	5149.8	5183.1	5166.1	5460.7
Social Security contributions	23117.1	23604.9	23705.3	23959.7	24281.7	24383.4	24763.4	24681.8	24955.7	25220.0	25686.2	25506.8
Disposable income												
ABOUR MARKET												
		20	01			20	02			2(003	

		200	11			20(02			20	03	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Thousands of heads												
Labour force	5238.5	5247.5	5265.6	5294.8	5306.1	5348.1	5374.5	5366.4	5403.8	5406.3	5407.5	5413.7
Employment	5010.9	5015.3	5030.6	5060.4	5059.4	5071.7	5071.5	5015.4	5036.9	5030.5	5037.9	5036.6
Unemployment	227.6	232.2	235.0	234.5	246.7	276.4	303.0	351.0	366.9	375.8	369.6	377.1
Full-time equivalent employment	5011.9	5014.2	5023.2	5048.8	5057.4	5068.0	5066.7	5008.8	5016.1	5003.2	5002.8	4996.6
Employees	4165.2	4142.0	4169.2	4198.2	4222.6	4227.4	4240.4	4219.0	4199.4	4180.5	4181.1	4179.9
Other forms of employment	846.7	872.2	853.9	850.5	834.8	840.6	826.3	789.9	816.7	822.7	821.8	816.7
EUR thousands												
Compensation per employee	3.889	3.999	3.961	4.002	4.066	4.088	4.116	4.127	4.173	4.230	4.303	4.308
Per cent												
Unemployment rate	4.3	4.4	4.5	4.4	4.6	5.2	5.6	6.5	6.8	7.0	6.8	7.0

HOUSEHOLDS' DISPOSABLE INCOME												
		20	04			20	05			20	06	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Compensation of employees	18089.2	18291.1	18459.7	18690.1	18909.7	18953.8	19520.7	19814.3	19576.8	19764.0	19962.0	20217.1
Domestic transfers	6407.6	6541.2	6646.7	6740.0	6783.9	6908.3	6831.8	7103.9	7280.9	7583.1	7389.3	7833.0
External transfers	580.1	622.4	621.6	607.8	550.2	592.0	499.1	506.8	656.1	605.5	604.1	646.5
Corporate and property income	7948.5	8176.6	8211.1	8383.3	8382.9	8602.2	8527.6	8603.7	8370.8	8547.1	8562.2	8575.3
Direct taxes	1958.3	2000.6	2002.4	1951.8	2031.2	2047.2	2109.6	2121.7	2148.2	2123.0	2322.3	2282.9
Social Security contributions	5161.0	5274.6	5391.2	5470.7	5566.1	5621.9	5921.1	6057.9	6108.7	6115.8	6106.3	6172.3
Disposable income	25906.2	26356.2	26545.5	26998.8	27029.5	27387.1	27348.6	27849.1	27627.7	28261.0	28089.1	28816.8
LABOUR MARKET												
		20	04			20	05			20	06	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Thousands of heads												
Labour force	5411.5	5427.4	5445.9	5464.5	5471.6	5490.2	5508.1	5527.5	5521.7	5543.8	5551.7	5549.5
Employment	5041.4	5035.2	5032.3	5052.1	5029.9	5040.8	5037.2	5052.1	5062.0	5087.0	5096.0	5060.3
Unemployment	370.2	392.1	413.6	412.4	441.7	449.4	470.9	475.4	459.8	456.8	455.7	489.3
Full-time equivalent employment	4999.9	4998.1	4990.6	5006.9	4981.2	4988.6	4979.4	4992.5	4987.3	5004.9	5004.2	4965.3
Employees	4189.1	4229.4	4198.4	4233.3	4210.6	4227.8	4226.8	4246.6	4262.5	4255.6	4276.5	4264.4
Other forms of employment	810.8	768.8	792.2	773.6	770.6	760.8	752.6	746.0	724.8	749.3	727.7	700.9
EUR thousands												
Compensation per employee	4.318	4.325	4.397	4.415	4.491	4.483	4.618	4.666	4.593	4.644	4.668	4.741
Per cent												
Unemployment rate	6.8	7.2	7.6	7.5	8.1	8.2	8.5	8.6	8.3	8.2	8.2	8.8

		20	07			20	80			2(60	
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)												
Compensation of employees	20423.6	20637.8	20753.1	21042.1	21266.2	21394.1	21439.5	21561.2	21508.0	21420.2	21347.0	21481.8
Domestic transfers	7904.5	8111.3	7920.3	7920.2	8355.6	8209.5	8887.1	8787.8	9024.9	8929.8	9567.5	9124.0
External transfers	709.2	751.0	684.2	674.1	676.9	637.0	754.1	809.9	544.3	564.2	605.4	571.0
Corporate and property income	8773.0	8722.1	9122.5	9138.4	9246.1	9336.0	9177.7	9691.0	9146.7	8998.5	8590.2	8359.8
Direct taxes	2262.0	2384.6	2532.8	2543.7	2503.1	2541.9	2509.8	2521.9	2571.0	2417.1	2603.8	2550.4
Social Security contributions	6199.4	6251.7	6309.1	6420.8	6475.8	6821.5	6547.0	6809.7	6671.9	6664.4	6681.8	6664.4
Disposable income	29349.0	29585.9	29638.3	29810.4	30565.9	30213.1	31201.6	31518.2	30981.0	30831.3	30824.6	30321.9
LABOUR MARKET												
		20	07			20	08			2(60	
	Q1	Q2	G3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	G3	Q4
Thousands of heads												
Labour force	5572.6	5553.7	5595.6	5575.5	5577.2	5590.6	5582.4	5564.1	5558.5	5545.7	5533.6	5552.9
Employment	5069.1	5060.0	5111.5	5104.8	5120.8	5131.5	5110.5	5093.4	5027.2	4981.9	4938.0	4943.5
Unemployment	503.4	493.7	484.1	470.7	456.4	459.1	472.0	470.7	531.3	563.8	595.6	609.4
Full-time equivalent employment	4975.1	4962.3	5007.9	5000.8	5018.0	5026.3	4998.1	4999.8	4930.9	4881.0	4838.1	4849.8
Employees	4268.7	4259.8	4275.2	4278.6	4289.3	4301.5	4256.7	4289.9	4221.0	4175.0	4146.9	4157.1
Other forms of employment	706.4	702.5	732.7	722.2	728.7	724.8	741.5	709.9	709.9	706.0	691.2	692.8
EUR thousands												
Compensation per employee	4.785	4.845	4.854	4.918	4.958	4.974	5.037	5.026	5.095	5.131	5.148	5.168
Per cent												
Unemployment rate	0.0	8.9	8.7	8.4	8.2	8.2	8.5	8.5	9.6	10.2	10.8	11.0
Compensation per employee Per cent	4.785	4.845	4.854	4.918	4.958	4.974	5.037	5.026	5.095	5.131	5.148	

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HOUSEHOLDS' DISPOSABLE INCOME								
		2010				2011		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Current prices (EUR millions)								
Compensation of employees	21610.2	21791.7	21653.6	21609.0	21578.2	21509.2	21384.3	21085.6
Domestic transfers	9265.8	9577.4	9515.6	9437.3	9266.5	9315.3	9421.4	9680.0
External transfers	543.2	629.0	665.6	643.7	711.8	634.6	583.2	648.5
Corporate and property income	8988.2	8981.4	9293.5	9496.6	9471.2	9409.8	9504.1	9526.3
Direct taxes	2613.7	2427.2	2449.1	2553.6	2626.1	2609.4	2616.6	3200.5
Social Security contributions	6690.3	6719.4	6689.5	6770.8	6723.1	6800.9	6680.3	6626.9
Disposable income	31103.3	31833.0	31989.7	31862.3	31678.5	31458.7	31596.1	31112.9
LABOUR MARKET								
		2010				2011		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Thousands of heads								
Labour force	5572.0	5550.0	5549.8	5542.0	5553.2	5564.3	5547.2	5507.9
Employment	4936.3	4897.8	4887.0	4870.7	4872.9	4879.4	4857.1	4738.7
Unemployment	635.8	652.2	662.8	671.3	680.3	684.9	690.1	769.2
Full-time equivalent employment	4845.6	4805.6	4780.9	4767.3	4771.1	4766.7	4745.6	4621.4
Employees	4173.9	4170.2	4141.6	4154.5	4166.7	4173.8	4158.7	4079.6
Other forms of employment	671.7	635.3	639.3	612.9	604.4	592.9	586.9	541.9
EUR thousands								
Compensation per employee	5.178	5.226	5.228	5.201	5.179	5.153	5.142	5.169
Per cent								
Unemployment rate	11.4	11.8	11.9	12.1	12.3	12.3	12.4	14.0

ANNUAL SERIES ON IV HOUSEHOLD WEALTH

1980-2011

ANNUAL SERIES ON HOUSEHOLD WEALTH: 1980-2011

This section relases annual series on household wealth for the period 1980-2011, which correspond to an update to estimates published in Box 5.1 "Updating of household wealth estimates: 1980-2010" in the 2010 Annual Report of Banco de Portugal. These wealth estimates include the financial component (assets and liabilities) and housing (the main component of non-financial wealth).¹ The underlying concepts and methodology are identical to those described in Cardoso, Farinha and Lameira (2008).²

As the previous estimates, the financial series (assets and liabilities) presented here are consistent with the financial national accounts published by Banco de Portugal (see the above-mentioned box on the procedure used to backdate series due to the revision of financial accounts occurred in 2009).

The methodology used to calculate housing wealth is based on a method normally used to calculate capital stock estimates – the perpetual inventory method. This method consists of, first, successively accumulating fixed capital investment (in this case, in housing), and then postulating reasonable hypotheses for its service life and depreciation method. These estimates, which are based on long series of GFCF on housing, have been compiled using the latest national accounts data. Moreover, with the release of data from the Survey of Household Finances (*Inquérito à Situação Financeira das Famílias – ISFF*), the series on housing wealth was adjusted, taking the new estimate derived from that survey as benchmark for 2010. The procedure used in this instance was similar to that described by Cardoso, Farinha and Lameira (2008) as regards the incorporation of Household Wealth Survey (*Inquérito ao Património das Famílias*) data for 2006/2007. Therefore, survey data provide a one-off estimate for the reference year (in this case, 2010), while the remaining years are calculated in compliance with rates of change implicit in the series updated with the usual methodology, which explains levels revisions since 1980. It should be noted that the series thus obtained does not correspond to a significant change from those figures that would be obtained solely by updating the previous estimates (using 2007 as benchmark), since the value of the previous series updated to 2010 was very close to the estimate of the resulting *ISFF*.

Annual Series on Household Wealth

¹ An electronic version of the series is available on Banco de Portugal's website.

² Cardoso, F., Farinha, L. and Lameira, R. (2008), "Household wealth in Portugal: revised series", Banco de Portugal, Occasional Paper 1.

ESTIN	IATES OF H	HOUSEHOLE	WEALT	I													
					Financial ass	ets				-	iabilities		Net financial	Non financial	Total	Net total	per memory
					of which		of which						wealth	wealth			
Year	Currency and deposits	Securities other than shares	Loans	Shares and other equity	mutual funds shares	Insurance technical reserves	life insurance and pension funds	Total assets (exl. loans)	Total assets	Loans	Trade credits	Total liabilities		Housing			Disposable income (a)
1980	5354	186	NA	1835	0	134	56	7509	AN	826	366	1192	QN	19401	ΝA	NA	6755
1981	7284	284	NA	2470	0	163	64	10200	NA	1256	554	1810	QN	24832	ΝA	NA	8539
1982	9298	259	NA	3023	0	245	77	12825	AN	1724	759	2484	ΟN	30404	NA	ΝA	10664
1983	11400	327	AN	3040	0	295	06	15063	AN	2098	923	3020	ND	39323	NA	ΝA	13021
1984	14771	385	NA	3146	0	344	106	18647	AN	2670	1174	3844	ND	49133	NA	NA	15804
1985	18453	601	NA	4126	0	404	117	23584	NA	3381	1482	4863	ND	60526	NA	NA	18896
1986	21681	1309	NA	6527	44	504	146	30021	NA	4301	1885	6186	ND	67668	ΝA	NA	22467
1987	25097	2018	NA	8323	233	734	294	36172	NA	5492	2402	7894	ND	76355	NA	NA	26454
1988	29208	2487	NA	12949	204	1150	612	45794	NA	6618	2879	9497	ND	87567	NA	ΝA	29807
1989	33300	2829	ΝA	15224	894	1756	1101	53109	ΝA	7656	3315	10971	ND	103566	ΝA	ΝA	35777
1990	38075	3416	ΝA	19378	1733	3252	2462	64121	NA	8830	3786	12616	ND	122884	ΝA	ΝA	42174
1991	46653	2790	ΝA	24547	3912	4825	3933	78814	ΝA	10965	4588	15554	ND	142431	ΝA	ΝA	49572
1992	56000	1984	NA	28385	5480	6663	5570	93032	ΝA	13079	5450	18529	ND	157939	ΝA	NA	55571
1993	62581	1592	NA	37743	8015	9258	7950	111174	ΝA	17159	7024	24182	ND	171030	ΝA	NA	58356
1994	69485	1514	NA	43367	9224	11243	9793	125609	ΝA	21343	8564	29907	ND	181763	ΝA	NA	61010
1995	75535	1859	NA	52082	9569	14802	13180	144278	NA	26735	8611	35345	ND	193197	ΝA	NA	65615
1996	80895	2058	NA	61762	11185	18164	16388	162878	NA	33246	9776	43022	ND	201445	NA	ΝA	68891
1997	84417	1975	29170	75243	15067	23063	20973	184698	213868	41338	9951	51289	162579	212783	426651	375363	72869
1998	88173	7203	28521	87699	18121	26442	24143	209518	238039	51782	12634	64416	173623	224765	462804	398388	77864
1999	95520	11977	27163	96902	18835	30923	28462	235322	262484	64966	14564	79529	182955	238032	500517	420987	84381
2000	104150	12594	26582	91957	20052	35372	32557	244073	270655	75848	15114	90961	179694	255379	526034	435073	90566
2001	111223	13564	25915	87328	21350	39616	36544	251732	277647	84637	14730	99367	178280	270013	547660	448293	94961
2002	112374	14698	25480	84723	21616	42652	39441	254447	279927	94779	11468	106248	173680	285395	565322	459074	98521
2003	112133	16656	24754	92676	24706	46058	42786	267524	292278	103904	12251	116155	176123	296437	588715	472559	101677
2004	114742	18651	24239	101327	26843	48407	45047	283128	307367	114822	13121	127943	179424	312308	619675	491732	106174
2005	115904	16499	23434	112654	28930	56667	53043	301724	325158	126325	13235	139561	185597	328439	653597	514036	110921
2006	121657	17639	24067	122763	30717	62330	58452	324390	348457	138863	14012	152876	195581	346889	695346	542471	113896
2007	131467	19840	25640	124590	27890	68064	63995	343961	369602	150303	14705	165008	204594	359784	729386	564378	118952
2008	144654	20437	27741	106802	15174	68095	64021	339988	367729	157829	14801	172630	195099	379166	746895	574265	123692
2009	145708	20341	27112	110858	17337	73059	68909	349967	377080	160737	15984	176721	200358	374958	752037	575316	123148
2010	148628	22693	27781	108917	16122	75974	72163	356212	383993	162799	15105	177904	206089	381257	765250	587346	126922
2011	157223	21281	27846	101050	11662	62059	58180	341613	369459	158023	15447	173470	195989	379167	748626	575156	125955
Source Note: (Portuga	ss: INE and Ba (a) Includes a al.	anco de Portug idjustment for	Jal. the chang	e in net equit	y of households	in pension f	unds reserve:	s. Data of <i>INE</i> 's r	lational accol	ints for the per	iod 1995-20	11, retropola	ted using the	growth rates	s implicit in c	quarterly long s	eries of Banco de

IV

Annual Series on Household Wealth