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- A look at past episodes of current account adjustment
- A structural picture of Greek exports: insights from disaggregated data
- House price imbalances in the euro area

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Boxes

The global economic and financial crisis has put the spotlight on the macroeconomic imbalances that had built up in a number of Member States during the decade. It has also underscored the shortcomings of economic policy making and policy coordination in the EU, and especially in the euro area. The Commission's resulting determination to play its part in redressing previous coordination failures was embodied in its Communication of 30 June on 'Enhancing economic policy coordination for stability, growth and jobs – Tools for stronger EU economic governance'. This outlined the main requirements for an overhaul of the Stability and Growth Pact (SGP) and proposed important extensions of EU economic surveillance into a previous blind spot, namely the area of macroeconomic imbalances.

Since then the Commission has consulted widely on its proposals, notably with other EU institutions, national authorities and within the forum of the Task Force on Economic Governance chaired by President Van Rompuy. This dialogue has enabled the Commission to draw up a package of concrete legislative proposals designed to address the most urgent policy priorities in economic governance. The package was adopted by the College of Commissioners on 29 September and features four major building blocks:

1. A stronger Stability and Growth Pact

Important shortcomings in fiscal policy coordination at the EU level have been revealed by the crisis and by the toll it has taken on Member States' public finances. The Commission hence proposes to reinforce Member States' compliance with the SGP and to deepen fiscal policy coordination. Overall, the proposals aim to monitor debt developments more closely and to address excessive debt levels more seriously than in the past by setting a clear benchmark for defining a satisfactory pace of debt reduction.

On the so-called 'preventive arm' of the SGP, the proposals are partly motivated by the difficulties in identifying in real time how strong and sustainable a Member State's underlying fiscal position is. Related challenges include assessing correctly the business cycle but also gauging in how far fiscal revenues are temporarily buoyed by asset bubbles. Boom in asset prices caused many Member States to enter the crisis with weak underlying positions despite years of strong economic growth. As a more prudent expenditure rule, the Commission therefore proposes that Member States that have not yet reached their budgetary medium-term objective (MTO), which typically is for a balanced budget, should not increase expenditure faster than a prudent average rate of medium-term economic growth. Exceptions to this rule would be permitted only if Member States introduce the revenue measures necessary to fund this higher expenditure. That way, any "surprise" revenue is allocated to debt reduction by default.

The reform package also contains changes to the 'corrective arm' of the SGP, the Excessive Deficits Procedure (EDP). Too many countries had debt levels far in excess of the 60% ceiling when entering the crisis. We hence propose to place more weight on the debt criterion in the decision over whether to launch an EDP by taking into account both the level of debt and its recent changes. At the same time, the proposals foresee taking into consideration the characteristics of a country's debt stock, such as its maturity profile, implicit liabilities and guarantees, as well as the behaviour of private debt.

2. Stronger national fiscal frameworks

Member States' fiscal policy structures and processes help shape their budgetary decisions. Experience has shown that well-designed fiscal frameworks are key to achieving pre-determined budgetary objectives. For this reason the Commission's proposals identify a number of fiscal framework features relating to accounting and statistical issues, as well as forecasting and budgeting practices, which are indispensable to ensure a minimum level of quality and consistency with the EMU framework. The purpose of the corresponding draft Directive is to encourage those Member States where institutional weaknesses have interfered with their ability to ensure effective economic governance to upgrade their fiscal frameworks. Obviously, many other Member States already satisfy the proposed requirements.

3. Tackling macroeconomic imbalances

The third building block of the legislative package foresees a broadening of economic surveillance beyond fiscal policy to prevent and correct macroeconomic and competitiveness

imbalances in the euro area and the EU. Too little attention was paid previously to phenomena such as strong credit growth, asset bubbles and large and persistent current account and competitiveness divergences. The case of Spain serves as a good illustration of a country that showed a relatively solid fiscal position for much of the pre-crisis decade, but was caught out by other macroeconomic imbalances such as worsening competitiveness and a housing market bubble, the unwinding of which then fed back into a fiscal deterioration. To broaden surveillance, the Commission proposes to put in place an alert mechanism to identifying Member States with potentially problematic levels of macroeconomic imbalances. This mechanism consists of a scoreboard of economic and financial indicators. The numerical results of the scoreboard will be supplemented by expert analysis in order to draw up a list of countries at risk of experiencing harmful imbalances. All such Member States would then be subject to in-depth country reviews in order to ascertain the level of threat posed by their respective types of disequilibria.

If imbalances are perceived to be severe or jeopardising the functioning of EMU, the Member State concerned will be subject to an 'Excessive Imbalance Procedure' (EIP). This will involve stepped-up surveillance centred around a remedial action plan put forward by the Member State in response to country-specific policy recommendations issued by the Council. Progress reporting and implementation monitoring will accompany the process of correcting the imbalances. If a euro-area-Member State fails repeatedly to act in compliance with the Council recommendations to address excessive macroeconomic imbalances, it will have to pay a yearly fine, until the Council establishes that corrective action has been taken.

4. Clear sanctions to aid compliance

The above improvements to the surveillance framework will be backed up by financial sanctions for euro-area Member States that will be applied in a graduated, resolute and timely manner. Regarding the preventive arm of the Pact, a Member State that is making insufficient progress towards budgetary consolidation will be required to lodge an interest-bearing deposit with the Commission which will be returned with the interest accrued on it once the situation giving rise to it has come to an end. For the corrective arm, a Member State that enters an EDP will be required to lodge a non-interest-bearing deposit with the Commission which will be returned upon correction of the excessive deficit. By contrast, a Member State that does not comply with the Council recommendations to correct its excessive deficit will be required to pay a fine. Fines will also be used as tool of last resort in the Commission's proposed surveillance framework on economic imbalances.

The proposed sanctions only extend to euro-area-Member States as their policies have greater spill-over effects within EMU and there exist stronger policy constraints in a monetary union. However, a 'second stage' of enforcement is envisaged in the future, which would introduce the possibility of suspending or cancelling current and future financial appropriations from the EU budget for all EU Member States in case of non-compliance under the corrective arm of the SGP (not its preventive arm, nor the EIP). The required legal changes to the underlying Regulations could be incorporated in the Commission's 2011 proposals for the next financial perspectives, and these would help generate greater fiscal discipline within the entire EU. It is still too early to say which parts of the EU budget would be affected, but the aim is to achieve the widest possible coverage, to ensure true equality, fairness and effectiveness.

Towards an integrated 'European Semester'

Besides the recent Commission legislative proposals, steps have already been taken to strengthen policy coordination in the EU. On 7 September, the Ecofin Council endorsed plans for a ‘European Semester’ which implies that, as of next year, policy surveillance will be conducted in an integrated and simultaneous fashion, drawing together reporting and assessment strands under the Stability and Growth Pact, on macroeconomic imbalances and on structural reforms. The European Semester will apply to all the elements of economic surveillance, including policies to ensure fiscal discipline, macroeconomic stability, and to foster growth. The processes under the SGP and the EU2020 strategy will thereby be aligned in timing while remaining formally separated. The alignment will help avoid policy inconsistencies and will strengthen policy synergies.

* * *

Financial sector improves but still volatile

Looking at the economic outlook for the euro area in the second half of 2010, one of the most tumultuous periods of the economic crisis continues to reverberate. The extraordinary risk aversion of sovereign debt markets in May has receded although sovereign bond and CDS spreads remain high and volatile for some euro-area Member States. The fall in sovereign spreads since May has been supported by Greece's progress on budgetary consolidation and structural reforms. In August, a joint mission by the European Commission, the ECB and the IMF concluded that the Greek government's economic adjustment program had made a strong start led by vigorous implementation of the fiscal programme and impressive structural reforms. But obviously resolute implementation of the programme has to be maintained to ensure lasting success.

Some improvements have also been visible in the euro-area banking sector, where July's stress tests have helped to assuage balance sheet concerns. However, problems related to a lack of liquidity and difficulties in tapping wholesale funding have not disappeared altogether.

Positive news for the short-term outlook

Mixed developments in the financial sector contrast with the generally positive developments for the real economy of the euro area, which, while still fragile, is recovering at a faster pace than previously envisaged. According to our interim economic forecast published on 13 September, annual GDP growth in 2010 is now projected at 1.7% in the euro area. This represents a sizeable upward revision compared to the spring forecast (0.9% for the euro area), reflecting mainly a better-than-expected outcome in the first half of the year on the back of an export-led industrial rebound. The improved outlook also reflects signs of a favourable rebalancing of growth towards domestic demand. At the same time, revisions to the inflation forecast are minor, as the first half of the year came broadly in line with expectations.

Subdued Recovery

Looking further ahead, however, risks remain elevated, and the recovery can be expected to be fairly uneven and relatively moderate. As argued in previous editions of the Quarterly Report on the Euro Area, recoveries from major financial and banking crises tend to be sluggish as the economy undergoes important structural changes. As analysed in this issue of the Report, a force which could weigh on the short- to medium-term growth prospects is the ongoing balance sheet adjustment process in the euro-area corporate sector. Previous episodes of corporate balance sheet adjustment have been associated with sizeable negative macroeconomic consequences, including weak GDP growth due to lower investment rates and falls in labour compensation. From a policy perspective, it will therefore be crucial to counteract these dampening forces on growth, which are nonetheless necessary for a successful reduction of imbalances, by frontloading growth-enhancing reforms.

While corporate balance sheets are a source of concern for the recovery, the situation appears more favourable on the household side. Our assessment of house price developments presented in this report reveals a far smaller degree of overvaluation in the euro area than in the US at the end of 2008, and a smaller remaining degree of overvaluation by the end of 2009, notwithstanding considerable heterogeneity between Member States.

One important aspect of the short-term outlook is the likely unevenness of the upswing to come. At the heart of this divergence of growth lie the accumulated macroeconomic imbalances in some Member States. Competitiveness and current account divergences have aggravated the exposure of the euro area to the crisis. These call for a rebalancing of the strength of domestic demand relative to output in those Member States which have accumulated a large external debt but also in those that run large current account surpluses. Signs of relatively buoyant domestic demand in economies such as Germany and balance sheet adjustment in part of the Southern periphery are encouraging in this respect. But the rebalancing process will take time and be associated with a period of divergence in growth within the euro area.

According to the analysis of past episodes of current account rebalancing presented in this Quarterly Report, adjusting to external deficits generally means a period of sluggish growth and rising unemployment. However, this can be mitigated if prices and wages respond appropriately and competitiveness is improved. The issue is particularly critical in EMU where the nominal exchange rate of the euro cannot cater for the particular adjustment need of

individual Member States. So far, there have been only limited signs of rebalancing of prices and competitiveness across the euro area and further adjustment is clearly needed here.

Looking further into the specific situation of Greece, the analysis in this Quarterly Report sheds some light on some of the structural supply-side factors that may determine the length and the cost of the current account adjustment. Here, we find encouraging pre-conditions for a rebalancing of supply towards the export sector in the sense that a high proportion of companies are being involved in – and therefore responsive to - export activity. This suggests that competitiveness-boosting reforms in the country are likely to pay off all the more quickly.

While considerable challenges still await us in coping with - and adapting to - the crisis, one should not disregard the silver lining to this cloud. Provided that the current reform momentum is maintained, the Great Recession will have led to major policy changes at national level and a substantial reshaping of the EU policy coordination framework.

MARCO BUTI

DIRECTOR-GENERAL

Focus

I. Balance sheet adjustment in the corporate sector

The global economic crisis is associated with a significant adjustment of corporate balance sheets. This focus section presents an analysis of past episodes of large balance sheet adjustments in the corporate sector of advanced economies. Based on a sample of 31 episodes, adjustment is found to last on average 8 years. It is associated with sizeable macroeconomic consequences, including losses in GDP growth and strong falls in investment. Moreover, balance sheet adjustment translates into weaker growth of the wage bill, which in turn weighs on domestic demand and economic growth, a channel not so far explored in the economic literature. Case studies from Japan and Germany together with an econometric analysis show that adjustment episodes can be triggered by corporate over-indebtedness, stock market declines, business cycle downturns and negative shocks to GDP growth. Moreover, a deterioration of financial intermediation as well as changes in the tax system may cause or prolong adjustments. Due to its likely impact on risk attitudes and on the growth potential, the current crisis is likely to be associated with significant balance sheet adjustment weighing on economic growth, in particular in euro-area countries with large corporate debt overhang. Fixing banks' balance sheets and frontloading growth reforms under the Europe 2020 initiative will lessen the negative consequences of the adjustment.

The global economic and financial crisis has been associated with significant adjustments of private-sector balance sheets. Whereas economists' attention has generally focused on households' efforts to deleverage in the wake of falling house prices, there is also evidence that corporations have been going through an important adjustment process. This focus section presents an analysis of past balance sheet adjustment processes in the corporate sector of advanced economies. It discusses both the implications of the adjustment for the real economy and its likely causes. On the basis of the analysis of past trends, it then assesses potential risks to the recovery posed by the ongoing corporate deleveraging process in the euro area.

I.1. Assessing the macroeconomic effects of changes in corporate balance sheets

Corporate balance sheets depict the structure of assets as well as liabilities such as debt and equity holdings. The structure of the balance sheets of individual corporations responds to changing economic and financial conditions, including growth prospects, asset prices, taxation and interest rates. For example, large shocks to asset prices may significantly alter balance sheets, thereby triggering a balance sheet adjustment process. In normal times, changes in balance sheets of individual firms have little effect on the economy. Occasionally, when the economy is hit by major shocks, the sum of these micro-transformations may, however, be sufficiently large to have significant macroeconomic consequences.

Under very strict assumptions (perfect capital markets, no bankruptcy costs and a neutral tax system), changes in the structure of balance sheets should leave the value of the firm unaffected and should not influence output decisions (Modigliani and Miller 1958). ([1]) When these assumptions do not hold, however, the structure of balance sheets depends on economic conditions and firms' financial decisions can no more be separated from their output decision. Modern finance theory has emphasised the possible interactions between balance-sheet structure and the non-financial side of the economy when capital markets and information are imperfect. ([2]) In a world of imperfect access to equity and debt markets, deleveraging may require a period of cost cutting aimed at raising internal funds. This paves the way for a possible impact of major episodes of balance-sheet restructuring on GDP growth.

Measuring balance sheet adjustment at the macroeconomic level

National accounts provide a range of data to analyse developments in corporate balance sheets at the macroeconomic level. In particular, Eurostat's financial accounts include a balance sheet section which makes it possible to track developments in a number of aggregate indicators for the corporate sector, including debt to equity ratios, debt to GDP ratios and liquidity measures.

([1]) Modigliani, F. and M. Miller (1958), 'The cost of capital, corporation finance and the theory of investment', *American Economic Review*, Vol. 48, pp. 261-97.

([2]) See for instance Hubbard, G.L. (1998), 'Capital-market imperfections and investment', *Journal of Economic Literature*, Vol. 36 (March), pp. 193–225.

These stock data have their counterparts in flow data, particularly in income accounts for the corporate sector. In this focus section, episodes of significant balance sheet adjustment at the macroeconomic level are identified by large and persistent increases in a variable extracted from income accounts: corporate net lending or borrowing (NLB). Corporate NLB measures corporations' net needs in terms of external finance (if negative) or, alternatively, their net financial investments (if positive). A persistent rise in NLB marks corporations' efforts to raise internal funds in order to restructure balance sheets either by reducing debt or by accumulating financial assets.

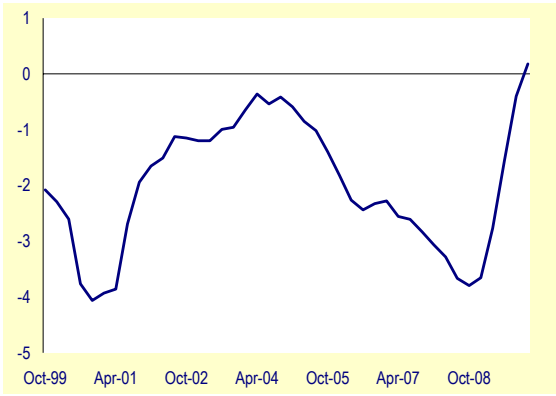
Balance sheet restructuring does not necessarily imply an increase in NLB. For instance, deleveraging can be achieved by raising new funds on equity markets. In a world of integrated global capital markets, such an operation should have only limited short-term effects on real activity. In contrast, deleveraging achieved by raising internal funds will have a measurable short-term impact on demand. NLB is indeed the difference between savings and investment (see Box I.1 for a description of the underlying accounting). An increase in corporate NLB can therefore be achieved either by raising corporate savings or by reducing corporate investment. In both cases the impact on demand is negative, either directly via lower corporate investment or indirectly via a cut in the corporate income distributed to workers and capital holders. NLB is therefore a key variable to monitor when assessing the short- to medium-term impact of balance sheet adjustment on GDP growth.

I.2. Past episodes of balance sheet adjustment

Corporate NLB has fluctuated substantially in the past in the euro area. As Graph I.1 shows, there is a strong cyclical element to these movements. Following the bursting of the dot-com bubble and during the ensuing recession, euro-area corporate NLB increased from -4% to -0.5% of GDP in 2004. It then fell steadily up to the beginning of the current crisis. During the current crisis, corporate NLB has again moved upwards sharply and has now reached a positive level. The corporate sector is therefore now a net provider of finance to the rest of the economy. Similar sharp rises in NLB have also been observed in a range of EU countries in the aftermath of big recessions.

Notwithstanding these recent cyclical movements of NLB in the euro area, historical evidence shows that corporate balance sheet adjustment can also be very protracted in advanced economies. Box I.2 describes two typical examples of balance sheet adjustments in Germany and Japan that have lasted 10 to 15 years. In Japan, the adjustment started in 1991 and is still ongoing. In Germany, the adjustment began in 2001 and is probably also still ongoing.

Graph I.1: **Corporate NLB, euro area** (in % of GDP) (1)



(1) Corporate net lending or borrowing (NLB). Based on quarterly national account data. 4 quarters backward moving average. Latest observation is 2010Q1.
Source: Eurostat, non-financial quarterly sector accounts, Commission services.

To go beyond the German and Japanese examples and shed more systematic light on balance sheet adjustment and its consequences, this focus section draws on the analysis of a broad sample of balance sheet adjustment episodes. The sample includes the 27 EU countries together with the US and Japan and covers the last three decades. A balance sheet adjustment event is defined as an increase in corporate NLB larger than 2% of GDP, which lasts for more than one year. ([3]) In the sample, 31 episodes were identified. On average, the adjustment episodes lasted for 8.3 years but there is substantial variation in the length of the adjustment, with a standard deviation of more than 5 years. Overall, the analysis of these episodes confirms that balance sheet adjustments can be very protracted.

([3]) More details are presented in Ruscher and Wolff (2010), 'Corporate balance sheet adjustment: stylised facts, causes and consequences', European Economy — Economic Paper (forthcoming).

Box I.1: **Some useful accounting identities and concepts**

National account data provide a full set of income accounts for the corporate sector. The following concepts can be useful when assessing balance sheet consolidation processes:

GOS: gross operating surplus
VA: value added
GBPI: gross balance of primary income
GS: gross savings
NLB: net lending or borrowing

These concepts are linked by the following identities:

GOS = VA – labour compensation – production taxes + production subsidies	(1)
GBPI = GOS – Net property income	(2)
GS = GBPI + net transfers received – taxes on income and wealth – other	(3) (*)
NLB = GS – investment – other capital expenditure	(4)
NLB = net acquisition of financial assets – net incurrence of liabilities	(5)

Net lending or borrowing (NLB) can be derived from two sets of accounts. In the income accounts of the institutional sectors, it corresponds to the difference between savings and investment (equations (1) to (4)). But NLB is also the balancing variable of the financial transactions accounts. It is then the difference between the acquisition of financial assets and the incurrence of new liabilities (equation (5)).

Corporate NLB is normally negative, reflecting the fact that the corporate sector is a net recipient of financial capital from other sectors of the economy (e.g. households). Corporations tend to issue more liabilities than they acquire financial assets because they need to raise financial capital to finance physical investment (machines, buildings etc…). But NLB may also move temporarily into positive territory when the corporate sector becomes a net acquirer of financial assets or pays back its debts. As can be seen from equations (1) to (4), corporations can mostly increase NLB by reducing wages, investment and capital payments (i.e. net property income) or by increasing value added (i.e. raising output prices). Government can affect corporate NLB via transfers and taxes.

National accounts also include detailed accounts on both the financial transactions and balance sheets of the various sectors of the economy (corporations, households etc..). These allow to analyse developments in typical balance-sheet ratios (e.g. the debt to equity ratio, debt to GDP ratio) and to identify the financial transactions that are the counterpart to a changes in NLB (e.g. whether the additional internal funds from an increase in NLB have been used to pay back debt or swap external capital with internal capital).

(*) The "other" category covers the "adjustment for the change in net equity of households in pension fund reverses" and is generally small.

I.3. Consequences of balance sheet adjustment

Balance sheet adjustment episodes can have important macroeconomic consequences. For Germany and Japan, Box I.2 presents evidence that the balance sheet adjustment was used to reduce the debt burden of the corporate sector. It also had a strong impact on aggregate demand, with a combination of weaker investment and higher gross savings in both countries. The increase in savings was achieved on the back of either wage moderation (Germany) or a reduction in net property income (Japan).

To assess more systematically the consequences of episodes of balance sheet adjustment, Table I.1 shows the development of a number of key variables for the larger sample of 31 balance sheet adjustment episodes described above. It shows the value of the variables in the year prior to the adjustment and in year 4 of the adjustment. To gauge the effect of the adjustment, the change during the balance sheet adjustment is compared to the change that typically happens in the entire sample (i.e. all years for which data are available irrespective of the existence of a balance sheet adjustment).

A number of results stand out. First, changes in corporate NLB are associated with major changes in a number of balance sheet variables. Corporate indebtedness falls by around 2 percentage points

Table I.1: **Consequences of balance sheet adjustment** (1)

	t=0	t=4	Actual change (2)	Average change in entire sample	Effect of balance sheet adjustment	Number of episodes
	(A)	(B)	(C)=(B)-(A)	(D)	(E)=(C)-(D)	(F)
Debt / GDP	60.3	58.4	-1.9	5.2	-7.1	12
Leverage (3)	101.2	85.3	-15.9	-1.2	-14.7	12
Liquidity / VA (4)	30.0	33.4	3.4	0.9	2.5	10
Investment / VA	26.1	23.2	-2.9	-0.2	-2.8	16
Savings / VA	17.2	22.3	5.0	0.4	4.6	16
Compensation of employees / VA	60.2	55.6	-4.6	-0.9	-3.7	20
Real growth			6.6	9.9	-3.3	24

(1) To ensure a constant size of the sample for every year, the table covers only those events which lasted more than 4 years and for which the respective data are available. The number of observations per variable differs for due to data availability reasons. Period. t=0 is the year prior to the balance sheet adjustment. "'VA'" is value added.
(2) In the case of "real growth" the actual change is the difference between the cumulated growth during the 4-year adjustment period and the cumulated growth in the broader sample during an average 4 year period.
(3) Leverage is measured by the ratio of debt to equity (data from the balance sheet section of national accounts).
(4) Liquidity is measured by corporations'' holdings of "'currency and deposits'" (data from the balance sheet section of national accounts).
Source: Commission services.

of GDP. This stands in contrast to the average increase of 5 percentage points of GDP occurring in the sample during a four-year period. Compared to the entire sample as a benchmark, the balance sheet adjustment has an effect of 7 percentage points of GDP on corporate debt. Similarly, corporate leverage (i.e. the ratio of debt to equity) is reduced by almost 16 percentage points. There is also a small build-up of corporate liquidity.

Adjustment can have significant effects on growth …

Second, the adjustment is associated with significant macroeconomic effects. Real economic growth during the four-year adjustment period is significantly below the average growth in the sample. While in the full sample cumulated growth over four years is almost 10%, growth in the adjustment episodes amounts to only 6.6%, leaving GDP 3.3% lower than it could have been without the adjustment.([4])

… via investment and the wage bill

The analysis identifies two principal drivers of the weaker growth performance. First, the adjustment is achieved by significantly lowering investment. Lower investment in turn leads to losses of aggregate demand and economic growth. Second, there is a strong reduction in the share of labour compensation in value added. In the adjustment sample, corporate wage payments decrease by 4.6 percentage points of value added. To raise the internal funds needed to fix balance sheets, corporations tend to cut their wage bill by reducing either wages or the labour force. The resulting curb on the wage share puts a drag on disposable income and ultimately on private consumption. In terms of aggregate demand, this wage bill channel actually emerges as more important for aggregate demand than the investment channel. It has so far been little discussed in the economic literature, which has tended to focus on the impact of changes in balance sheets on investment.

I.4. Causes of balance sheet adjustment

As corporate balance sheet adjustments can have significant effects on the economy, understanding their drivers is critical. There is a rich literature which explores the determinants of the structure of corporate balance sheets. ([5]) For example, transactions costs of debt issuance as well as managers' superior information about the firm's prospects may lead to increased reliance on retained earnings for new investments thereby lowering leverage ratios. ([6]) On the basis of firm-level data, the microeconomic literature generally finds that corporations adjust their balance sheets in response to changes in balance sheet ratios such

([4]) These numbers obviously reflect a two-way causality as balance sheet adjustment can affect GDP growth but changes in GDP can also trigger changes in balance sheets.

([5]) For example, Fama, E.F. and K.R. French (2002), 'Testing trade-off and pecking order predictions about dividends and debt', *The Review of Financial Studies*, Vol. 15, No 1, pp. 1-33.

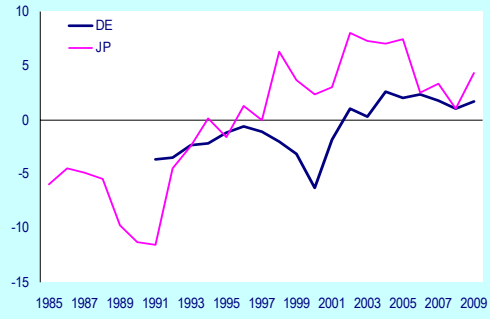
([6]) For example, Myers, S.C. (1984), 'The capital structure puzzle', *The Journal of Finance*, Vol. 39, pp. 575-592.

Box I.2: **Balance sheet adjustment in Germany and Japan: similarities and differences**

Both Germany and Japan have experienced very protracted and significant episodes of balance sheet adjustment in the corporate sector (see left panel of graph below). In Japan, the balance sheet adjustment started in 1991, lasted for around 15 years and involved an increase in corporate net lending/borrowing (NLB) by more than 15 percentage points of GDP. In Germany, there was an upward shift in corporate NLB around the turn of the century. While its magnitude was far smaller than in Japan, it was nevertheless very significant in economic terms, amounting to a shift of around 3 percentage points of GDP.

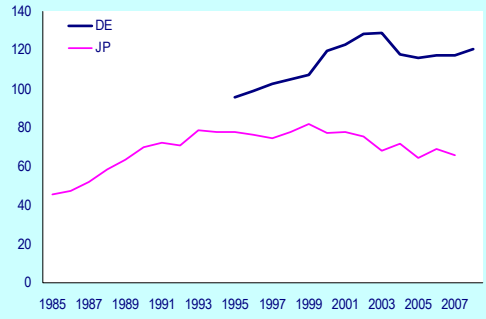
In both countries, the balance sheet adjustment process significantly transformed corporate balance sheets. As the right panel of the graph shows, in Germany as well as Japan, corporate indebtedness increased rapidly in the years preceding the balance sheet adjustment. In contrast, the consolidation process was associated with phases of stabilisation and/or fall of indebtedness. This suggests that part of the internal funds made available by the rise in NLB was used to reduce debt stocks. In the case of Germany, there is also evidence of corporate liquidity build-up (i.e. an accumulation of liquid assets). However, there is no evidence of a similar trend in Japan.

NLB in the corporate sector, Japan and Germany
(in % of GDP)



Source: Commission services.

Debt in the corporate sector
(in % of corporate value added)



Source: Commission services and Financial Statement Statistics, Ministry of Finance, Japan.

In both countries, the increase in corporate NLB resulted from both a fall in corporate investment and an increase in corporate savings (see the table below). Interestingly, both countries had, however, different strategies to achieve the rise in corporate savings. In Japan, in a situation of falling gross value added, the compensation of employees was held fairly constant and savings increased thanks to a sharp fall in net property income, with lower interest and/or dividend payments. In contrast, in Germany, corporate savings were raised by reducing the compensation of labour. The investment rate fell significantly in both countries.

Corporate balance sheet adjustment in Germany and Japan
(changes in pp of GDP during the adjustment period) (1)

	Investment	Savings	Wages	NFC wages	Net property income
DE	-1.8	4.0	-2.9	-6.5	0.2
JP	-4.9	8.8	N/A	0.8	-6.6

(1) Changes for the total corporate sector in percentage points of GDP except for 'NFC wages', where changes refer to changes in wage share in percent of value added of the non-financial sector. For DE, the change refers to 2000-2007 while for Japan it is 1990-2005.

Source: Ameco; for NFC wage share: Eurostat and Japanese Ministry of Internal Affairs, Statistics Bureau.

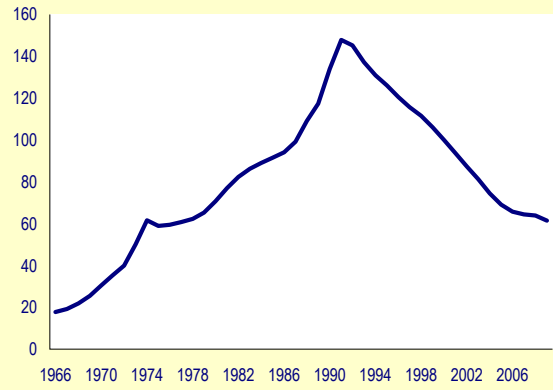
as leverage. There is, however, little empirical evidence on the causes of large balance sheet adjustments at the macroeconomic level. The detailed analysis of the specific episodes in Japan and Germany as well as an econometric analysis of the 31 episodes described above (see Box I.3) point to a number of factors that contribute to triggering large balance sheet consolidations.

First, **large shocks to asset prices** can trigger corporate balance sheet adjustment. In Japan, the collapse of the housing bubble (see Graph I.2) as well as the accompanying collapse of stock markets in the early 1990s put a large burden on Japanese corporate balance sheets. Also in Germany, there was a sharp stock market decline, which was particularly pronounced in the new

market segment that was actually closed in June 2003 (NEMAX, see Graph I.3). ([7])

According to Koo (2003), Japanese corporations responded to the massive shock in asset price values in the 1990s by adjusting their balance sheets. ([8]) As the companies were generating reasonable cash-flows, bankruptcy was rejected by many chief executives and instead the earnings from the core business were used to repay outstanding debt and improve balance sheets. ([9]) This translated into a massive increase in corporate NLB. The econometric evidence presented in Box I.3 corroborates these results. It shows that balance sheet adjustments are more likely to occur following a drop in the stock market.

Graph I.2: **Land prices in Japan** (Index 100= 2000) (1)



(1) Index covers total average of urban land in Japan.
Source: Ministry of Internal Affairs and Communications, Statistics Bureau, Japan.

Second, **corporate indebtedness and high leverage** are a further factor determining corporate balance sheet adjustment. In the so-called trade-off model, firms target an optimal leverage ratio which depends on the costs and benefits of additional debt. ([10]) In an uncertain and changing environment, this process may lead to periods of overshooting in the debt level. To the extent that they signal a deviation from the optimal leverage ratio, large debt levels or high leverage ratios should increase the likelihood of corporate balance sheet adjustments. This is confirmed by the econometric evidence in Box I.3. Balance sheet adjustments are significantly more likely to occur when the ratio of debt to GDP or leverage ratios are high.

Third, a **significant fall in economic growth** is also likely to trigger a phase of balance sheet consolidation. The econometric evidence presented in Box I.3 shows that a negative shock to growth in the year prior to the adjustment increases the likelihood of balance sheet adjustment. This seems to reflect a response of corporations to both cyclical and structural factors. On the one hand, faced with a temporary slump in activity, corporations tend to adopt more prudent financial behaviours. They postpone debt issuance and accumulate precautionary buffers in the form of liquid financial assets. This cyclical effect was successfully tested in the regressions using the output gap as a regressor. On the other hand, changes in the long-term growth potential alter the expected future income streams of corporations. This changes the optimal level of investment but also the optimal level of debt. Moreover, it also changes the time profile of financing needs, rendering a switch to internal finance more likely. The econometric evidence indicates that a fall in the long-term growth potential also increases the likelihood of balance sheet adjustments.

Graph I.3: **Neuer Markt in Germany** (1)

(1) Index NEMAX50 and DAX.
Source: Bloomberg.

Fourth, **changes in the cost of financing** can also trigger balance sheet adjustments in the non-financial corporate sector. There is some evidence

([7]) The index continued to be computed up to 17 December 2004 to assure the continuity of derivatives transactions. For an in-depth analysis of the Neuer Markt, see von Kalckreuth, U. and L. Silbermann (2010), 'Bubbles and incentives: a post-mortem of the Neuer Markt in Germany', *Deutsche Bundesbank Discussion Paper* No 15.

([8]) Koo, R.C. (2003), 'Balance sheet recession: Japan's struggle with uncharted economics and its global implications', John Wiley and Son, Hoboken, USA.

([9]) An alternative interpretation is that banks continued to roll over loans since they wanted to avoid realising large losses, see Caballero, R.J., T. Hoshi and A.K. Kashyap (2008), 'Zombie lending and depressed restructuring in Japan', *American Economic Review*, Vol. 98, No 5, pp. 1943-77.

([10]) See for example: Fama and French (2002), op. cit.

Box I.3: **Determinants of balance sheet adjustments – Evidence from a large panel of countries**

To get a better understanding of the macroeconomic factors that can trigger balance sheet adjustments, this box presents a probit analysis of past episodes of balance sheet adjustment in advanced economies. The probit estimation approach allows to test whether a range of explanatory macroeconomic variables increase the probability to observe an episode of balance sheet adjustment.

The sample of balance sheet episodes covers the 27 EU countries together with the US and Japan with data going as far back as the 1970s for some countries. A balance sheet adjustment event is defined as an increase of corporate net lending/borrowing (NLB) larger than 2% of GDP, which lasts for more than one year. Altogether, 31 episodes were identified in the sample. On average, the adjustment episode lasted for 8.3 years but there is substantial variation in the length of the adjustment with a standard deviation of more than 5 years.

The table below presents the main regression results. All explanatory variables were included with the first lag to mitigate reverse causality problems. *

Determinants of balance sheet adjustment (1)

	A	B	C	D	E	F	G
Δ(growth)(t-1)	**-7.80**	**-31.65**	**-31.44**				
	-3.11	-4.57	-4.56				
debt/VA(t-1)		**0.005**		**0.005**	**0.009**		
		1.98		1.73	2.2		
liquidity/VA(t-1) (2)		**-0.01**	**0.00**	**-0.01**	**-0.03**	**-0.01**	**0.00**
		-0.82	-0.67	-1.39	-1.87	-0.6	-0.64
Δstock(t-1)				**1.89**	**-1.70**		
				3.1	-2.67		
leverage(t-1) (3)			**0.01**			**0.00**	**0.01**
			2.16			1.93	2.17
Δ(sentiment)(t-1)						**-0.05**	
						-3.31	
Output gap							**-0.16**
							-3.25
Δ(potential growth)(t+1)							**-0.63**
							-2.81
N	795	315	315	251	224	237	278
Pseudo R^2	0.04	0.21	0.21	0.14	0.16	0.15	0.17
Obs. excluded					Japan		

(1) Δ represents the first difference operator. Z-values below the coefficients
(2) Liquidity is measured by corporations' holdings of "currency and deposits" (data from the balance sheet section of national accounts).
(3) Leverage is measured by the ratio of debt to equity (data from the balance sheet section of national accounts).
Source: Commission services.

The Probit estimations allow identifying several drivers of balance sheet adjustment episodes, including negative shocks to growth, high leverage and falls in equity prices. A fall in the rate of real GDP growth significantly increases the probability of observing a balance sheet adjustment (Column A). High indebtedness in the corporate sector also significantly raises the likelihood of balance sheet adjustments. This is true whether indebtedness is captured via the ratio of debt to value added (Column B) or via a measure of leverage (Column C), with the latter regressor showing a slightly stronger explanatory power. Regressions were also run using the first difference of the main national stock market index (Dax, Cac40 etc.) as regressor. They show that a negative shock to equity prices increases the probability of balance sheet adjustments (Column D). However, this variable is correlated with the growth variable which then becomes insignificant. The ratio of liquidity to valued added generally comes out as statistically insignificant. If, however, Japan (where liquidity developments have been very different from the typical pattern observed in other countries) is excluded from the sample, the liquidity coefficient becomes significant (Column E): a low level of liquidity raises the probability of occurrence of a balance sheet adjustment episode. Finally, tests were also carried out to assess the respective effects of the business cycle and long-term

(Continued on the next page)

Box (continued)

changes in potential growth. Regressors in regression F include the economic sentiment indicator to capture the business cycle. Results show that a drop in economic sentiment increases the probability of balance sheet adjustment. In regression G, the output gap and the expected change in potential growth (as proxied by estimates of potential growth for the next year) are both added as regressors. While this exercise should be taken with a grain of salt due to possible serious endogeneity problems, the results nevertheless suggest that balance sheet adjustments not only react to cyclical downturns but also to changes in long-term trends in potential growth.

Overall, results show that corporate balance sheet adjustments happen in response to bad balance sheet fundamentals, negative shocks to equity markets, sharp growth downturns as well as reductions in long-term growth potentials. Policies that facilitate balance sheet adjustment and improve bad balance sheet ratios therefore appear to be key factors in reducing the negative effects of protracted balance sheet adjustments on the economy.

* More detailed results and robustness checks are described in: Ruscher, E and G. Wolff (2010), "Corporate balance sheet: stylized facts, causes and consequences", *European Economy – Economic Paper*, forthcoming.

that changes in bank lending conditions could have contributed to the balance sheet adjustment in Germany. ([11]) In the regression analysis, no effect is found for the impact of the interest rate ([12]) but, as noted earlier, financing costs as captured by stock market prices were found to be a significant determinant.

Fifth, a further factor influencing non-financial corporate balance sheet adjustments is the **functioning of the financial sector**. The NLB adjustment in Japan started before the Japanese credit crunch of 1997-98. So it is unlikely that the adjustment was triggered by difficulties in the financial intermediation sector. However, it was clearly aggravated by the credit crunch as evidenced by a surge in NLB of 7.5 pp of GDP in 1998. The negative effects of a dysfunctioning financial sector are, however, not restricted to episodes of credit crunch. Corporate NLB remained at high levels even after the credit crunch in Japan, pointing to continued reliance on internal finance despite an easing of credit conditions.

The literature on the Japanese crisis helps to understand how persistent difficulties in the financial sector can aggravate the negative macroeconomic impact of balance sheet adjustment in the non-financial corporate sector. Peek and Rosengren (2005) ([13]) document that credit continued to be extended to corporations with balance sheet difficulties by those banks that were closely affiliated to the respective companies (keiretsu), thereby locking capital into less productive incumbent firms. Caballero, Hoshi and Kashyap (2008) argue that subsidised lending to firms (i.e. lower requested interest payments) kept 'zombie' firms alive, slowed down adjustment and significantly weakened productivity and employment growth.

This 'zombie' story can be linked to a high level of NLB. Japanese corporations with severe balance sheet problems increased NLB to repair balance sheets. Instead of bankruptcy, they continued to survive as banks were willing to roll over outstanding debt in order to avoid acknowledging large losses. ([14]) The 'special' relationship between banks and corporations in Japan thus slowed adjustment in the corporate sector with negative consequences for productivity growth while at the same time putting a drag on demand via higher corporate NLB. While stable bank-corporate relations can be beneficial during crisis times, interrelated linkages can also stifle adjustment and innovation after crisis. There is a need to investigate this in greater detail for euro-area countries.

Overall, a weak banking sector can therefore matter for adjustments in the non-financial corporate sector via two channels. First, a "credit crunch", i.e. a lack of external credit, forces companies to rely on internal finance. This will show up in rapidly rising NLB and weak growth of the credit constrained companies. Second, in the "zombie" case, rapid adjustment of balance

([11]) Schumacher, D. (2006), "Capital markets and the end of Germany Inc", Goldman Sachs, *Global Economics Paper*, No. 144.

([12]) This may be due to the fact that, in the absence of proper series of corporate debt yields, only government bond yields were tested as a regressor.

([13]) Peek, J. and E.S. Rosengren (2005), 'Unnatural selection: perverse incentives and the misallocation of credit in Japan', *American Economic Review*, Vol. 95, No 4, pp. 1144-66.

([14]) Corporate defaults would have burdened the balance sheets of banks and increased stress in the financial system.

sheets in the non-financial corporate sector via bankruptcy is held back by continued bank lending to weak companies in the fear of credit losses if lending is terminated.

Finally, the **corporate governance system as well as the tax system** can influence corporate balance sheet behaviour. Corporate governance issues can influence the decision to rely on internal finance instead of debt. For example, in the absence of appropriate equity markets, small and medium-sized companies have stronger incentives to rely on internal finance than large companies. Corporate NLB could therefore be influenced by firm governance structures. ([15])

Tax issues could explain some of the German developments in NLB. In 2000, Germany passed a new tax law affecting corporations and households after 2000. ([16]) The reform included changes in income as well as corporate taxation. The Bundesbank in an article in its monthly bulletin of August 2000 discusses the allocation effects of the law. It is shown that corporate taxes on profits are reduced. The reduction is particularly significant for those profits that are retained in the company. An important conclusion drawn by the Bundesbank is therefore that this 'clear favouring of self-financing will tend to interfere with the allocation function of capital markets and will put young firms at a disadvantage.' ([17]) It is therefore plausible to relate part of the increase in corporate NLB after 2000 to the effects of the law. Moreover, it appears likely that this tax law actually weighed on the growth performance of the German corporate sector as a whole since it favoured incumbent firms.

Overall, this section has highlighted a number of drivers of corporate balance sheet adjustment based on two case studies and econometric evidence. The results show that corporate balance sheets are adjusted in response to large asset price shocks and high debt or high leverage in the corporate sector. Moreover, a fall in growth and growth potential can contribute to triggering an adjustment. The results also indicate that problems in the financial system can aggravate non-financial corporate balance sheet adjustment processes. Finally, although the tax system usually favours debt financing, some changes in the tax system may alter economic incentives so as to increase firms' reliance on internal finance.

I.5. Implications for the recovery

Part of the recent rise in corporate NLB is probably cyclical …

As documented at the beginning of this focus section, corporate NLB has surged in the euro area since the beginning of the global recession. Part of the increase is probably of a cyclical nature. The analysis of past episodes of balance sheet adjustment presented earlier shows that balance sheets respond to the business cycle. In the euro area, a cyclical pattern was clearly visible in NLB data during the downturn of the early 2000s and is likely to be repeated in the current business cycle. If the previous downturn is to be of any guidance, balance sheets could, however, be a relatively persistent source of cyclical pressures on aggregate demand: in the first half of the decade, corporate NLB reached its peak only 2.5 to 3 years after the beginning of the downturn and several quarters after the output gap began to close.

… but lasting balance sheet effects could weigh on the recovery

In addition to cyclical effects, there are also several reasons to worry about more protracted structural forces that could weigh on corporate balance sheets and aggregated demand in the euro area during the recovery. These include the existence of a debt overhang in the private sector, changes in risk attitudes and medium-term downside risks to potential growth. There is evidence that the euro-area corporate sector entered the global recession with **a debt overhang** that was both significant and higher than at the beginning of the previous downturn. According to estimates by Kok Sørensen et al. (2009), corporate debt was close to the level suggested by fundamentals in the early 2000s but about 15% above equilibrium on the eve of the global recession. ([18])

To the best of our knowledge, estimates of equilibrium credit levels are not available for individual Member States but in some of them, where booming credit in pre-crisis years has led to

([15]) See also Schumacher (2006), op. cit. Corporate NLB might increase more strongly following a negative shock in those countries where the average firm size is rather small.

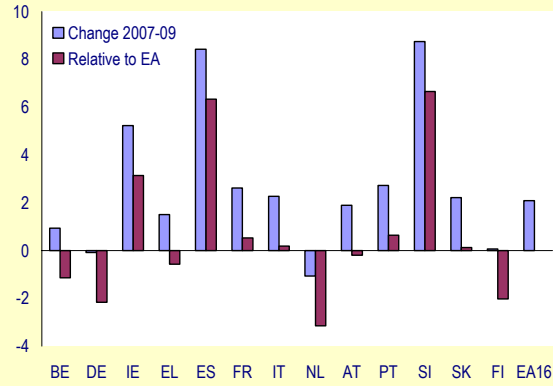
([16]) NLB in the non-financial corporate sector in Germany fell steeply in 2000, a year in which corporate tax payments were exceptionally high. Taxation already played an important role for NLB prior to the tax reform.

([17]) Deutsche Bundesbank, Monthly Report, August 2000, p. 61.

([18]) Kok Sørensen, C., D. Marqués Ibáñez and C. Rossi (2009),'Modelling loans to non-financial corporations in the euro area', ECB Working Paper Series No 989 (January).

very high leverage, the overhang is in all likelihood considerably higher than for the euro area as a whole. In fact, during the current recession corporate NLB has increased much more strongly in some countries than in others (see Graph I.4). Especially Slovenia, Spain and Ireland experienced a corporate balance sheet adjustment far exceeding the euro-area average. At the same time, the adjustment was lower than the average in particular in the Netherlands, Germany and Finland.

Graph I.4: **Changes in corporate NLB across euro-area countries** (in pp of GDP, 2007-09)

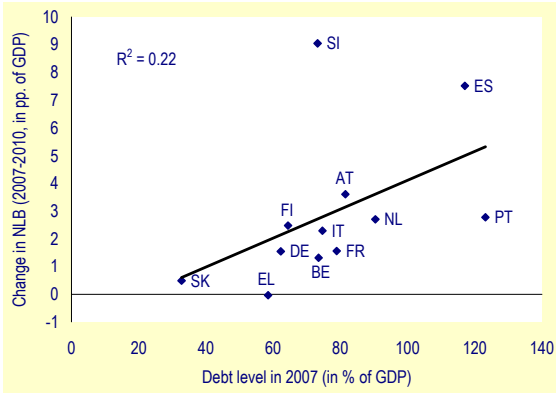


Source: Commission services.

These differences are indicative of different adjustment needs across euro-area countries and corroborate the idea of the existence of pockets of excess indebtedness in the euro-area periphery. ([19]) This can be further seen in Graph I.5. The financial crisis has generally triggered a much steeper rise in corporate NLB in the Member States which entered the recession with comparatively elevated levels of corporate debt. This is suggestive of the beginning of a debt consolidation process across the euro area which is unevenly distributed.

In addition to the correction of past debt excesses, the global crisis has triggered **changes in attitudes towards risks** that may also have a lasting impact on corporate balance sheets. The crisis will likely entail a general and lasting increase in risk premia that will push up the cost of capital. For corporations, this will entail an increase in the cost of external funds relative to internal funds and a strong incentive to rely more on self-finance. Furthermore, the change in risk attitudes is likely to be particularly potent in the case of bank lending as both banks and their customers become more aware of the risks associated with their lending and borrowing activity. Changes in bank lending practices could have a particularly strong impact on small and medium-sized companies, for which banks constitute the only source of external funding, leading to lasting deleveraging pressures in that sector.

Graph I.5: **Debt levels and changes in NLB in the corporate sector, euro-area Member States**



Source: Commission services.

Finally, unless appropriate policies are put in place, the crisis could have a **negative legacy for the production potential** via its impact on the accumulation of capital and knowledge, as well as hysteresis effects on the labour market. ([20]) The econometric work presented in this focus section has identified a strong relationship between growth (both cyclical and structural) and the probability of balance sheet adjustment episodes. Durable losses in production potential would therefore aggravate considerably the risks of a protracted phase of balance sheet adjustment in the euro area.

Policy implications and conclusion

The analysis presented in this focus section suggests that the euro area is facing a period of balance sheet adjustment in response to changes in risk attitudes brought by the crisis, a debt overhang, difficulties in the banking sector as well as weaker growth prospects. The evidence suggests that the adjustment could take several years and given the magnitude of the shock it is possible that several countries face up to a decade of balance sheet adjustment. In a world of

([19]) See also: European Commission (2010), 'Surveillance of intra-euro area competitiveness and imbalances', European Economy 1/2010.

([20]) See for instance: European Commission (2009), 'The impact of the crisis on potential growth', Quarterly Report on the Euro Area, Vol. 8(2).

imperfect capital markets, such an adjustment may have a protracted effect on aggregate demand – in particular in some countries – as companies strive to curb costs and investment. The negative consequences on macroeconomic demand could be magnified if the appropriate policies are not put in place. In particular, action would be needed in three areas.

First, and as advocated repeatedly by the European Commission in the past year, fixing the banking sector is essential to lay solid foundations for a sustainable recovery. As shown by the Japanese experience, persistent weakness in the balance sheets of the financial sector has a counterpart in the non-financial corporate sector, where it can aggravate balance sheet adjustment processes and their negative macroeconomic effects.

Second, it is important to put in place the policy required to mitigate the impact of the crisis on potential growth. This is needed because losses in output potential have clear welfare implications for households but also because a downshift in potential growth is likely to be associated with a protracted phase of retrenchment in aggregate demand due to corporate balance sheet consolidation. The frontloading initiative under the Europe 2020 strategy is critical in this respect as it calls for urgent implementation of significant reform measures that contribute to growth within a two to three year period. Measures that should be considered in that context include those that support the ongoing reform of the financial sector, those that positively and rapidly impact on confidence but also structural reforms in the labour and product markets whose effects start to be felt in the short to medium term (say after some 2 years). The full and, where possible early, implementation of Community legislation (e.g. services directive, opening up of energy markets) could also contribute to support growth.

Third, policies that would ease the ongoing balance sheet process would also help to shore up the recovery. Further work is needed to identify practical policy instruments but several broad areas for policy intervention can be identified. Given that banking crises tend to weigh particularly on smaller companies, for which bank lending is the main source of external funds, measures aimed at facilitating access to equity markets by SMEs would be useful. As shown by the analysis of the past German experience, limiting the negative consequences of balance sheet adjustment on growth may also require acting on those structural features of the economy that restrict companies' access to capital markets. These may include elements of the tax system that favour financial investment by corporations, as seems to have been the case in Germany since the late 1990s. Features of the corporate governance system that hinder the use of external capital (e.g. because of corporate control considerations) could also be examined.

II. Special topics on the euro-area economy

Persistent, large current account deficits in some euro-area Member States are a cause for concern. A durable correction of these imbalances is of great importance for the functioning of the economy of the euro area. The first section in this chapter looks at a large sample of past episodes of rebalancing of current account deficits in advanced economies. It draws some preliminary conclusions on the patterns and factors shaping adjustment episodes. It concludes that the corporate sector played an essential role in the correction of external imbalance and that flexibility in prices, wages and exchange rates, including in the non-tradable part of the economy, helped to make adjustment more sustainable and less costly in terms of GDP growth and unemployment. There is also evidence that, in many cases, the burden of the adjustment fell primarily on investment, thereby hampering potential growth. In episodes that took place under fixed exchange rate arrangements, price and wage flexibility was usually not high enough to compensate for the lack of nominal exchange rate adjustment, leading to losses in competitiveness. This is probably one of the main explanations for the weaker developments in GDP and employment observed in those episodes relative to the broader sample.

In July, a joint mission by the European Commission, the ECB and the IMF concluded that the Greek government's economic adjustment programme had made a strong start led by vigorous implementation of the fiscal programme and impressive structural reforms. However, important challenges remained, in particular regarding the country's external imbalances. To shed some light on these external imbalances, the second section in this chapter looks at the Greek export sector on the basis of industry and firm-level data. To reduce its current account deficit, Greece needs to redirect a significant part of its output from the domestic sector to exports. This will require protracted efforts to reverse some of the past losses in price competitiveness and to boost non-price competitiveness. However, an analysis of firm-level data shows that the Greek export sector presents some structural features that could facilitate this process. In particular, most Greek firms export some of their output. The share of output exported is generally low but firms with an existing export base can contribute more easily and more rapidly to boosting total exports than firms that have never exported. Raising the quantity sold through an established foreign distribution network is indeed less costly than entering new markets. Overall, this suggests that future efforts to restore competitiveness could pay off relatively rapidly in terms of boosting Greece's export performance.

The final section presents a quantitative assessment of imbalances on housing markets based on estimations of equilibrium house prices and price-to-rent ratios. According to estimations of equilibrium house prices, the overvaluation of house prices in the euro area was approximately half of that of the US at the end of 2008, with the two regions experiencing similar price drops during 2009. There are, however, significant differences across Member States. By the end of 2009, the house-price correction was quite advanced, especially in the Netherlands, France and Ireland. At the other end of the spectrum, German house prices are an outlier as they appear to be slightly undervalued. Cyclical deviations of price-to-rent ratios from their long-term trends confirm these econometric results.

II.1. A look at past episodes of adjustment to current account deficits

Large and persistent current ac count deficits in some euro-area Member States are a cause for concern. They are a manifestation of domestic imbalances that have built up in pre-crisis years. ([21]) They have increased the vulnerability of euro-area economies, which was brutally exposed by the crisis. The crisis has triggered the beginning of a current account rebalancing in some of the Member States concerned. It is of great importance for the euro-area economy that the adjustment process continues, expands to all the countries concerned and leads to a durable correction of external imbalances.

In order to better understand the macroeconomic consequences of rebalancing processes, this section offers a first look into a wide sample of episodes of rebalancing of current account deficits in industrialised economies.

More specifically, the analysis is based on a sample of adjustment episodes that took place in 23 industrialised economies during the period 1970-2009 (for more information on methodology and data see Box II.1.1). Developments in a broad range of macroeconomic variables around the time of the adjustment are averaged across the episodes to identify typical adjustment patterns.

([21]) European Commission (2010), Surveillance of intra-euro-area competitiveness and imbalances, European Economy No 1.

The initial sample of episodes is then broken down into sub-samples to identify specific features present in specific adjustment episodes.

In the economic literature, a number of studies have adopted a similar approach to study current account rebalancing. ([22]) This strand of research was initially centred on emerging markets. However, with the build-up of current account imbalances in advanced economies, its focus has recently been extended to industrial economies. Overall, this literature has addressed a range of questions related to current account adjustment. Nevertheless, some issues that are particularly relevant for euro-area Member States may not have received sufficient attention. In particular, the present analysis endeavours to shed some light on the effect of adjustment on GDP growth and unemployment, the role of price and wage flexibility and differences between fixed and flexible exchange rate regimes. The issue of the sustainability of the adjustment, which has been largely ignored in the literature, is also discussed.

A typical episode of current account adjustment involves the domestic side of the economy …

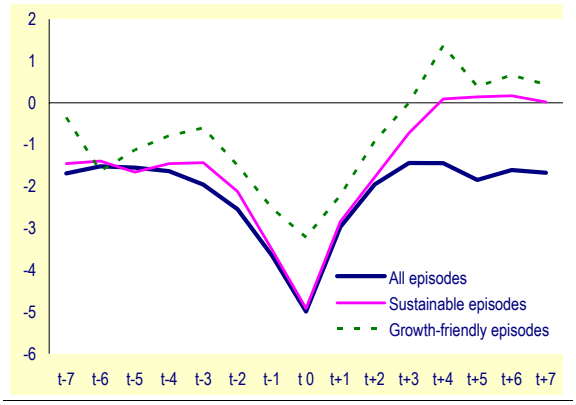
Based on the criteria set out in Box II.1.1, the base sample of episodes contains 44 episodes of adjustments to current account deficits (labelled 'All episodes' in the charts). The base sample is also divided into two smaller sub-samples ("Sustainable episodes" and "Growth friendly episodes" in the charts) to study episodes of sustainable current account rebalancing and more growth-friendly adjustments (see Box II.1.1 for details).

Looking first into the base sample (other sub-samples will be discussed later), on average, the current account starts to adjust when the deficit reaches 5% of GDP (the trough year) (Graph II.1.1). This improvement in the current account is an outcome of an adjustment taking place on both the domestic and the external side of the economy.

From an accounting point of view, the current account can be viewed as the saving-investment balance of the economy. Therefore, the current account can improve either via a fall in investment and/or via an increase in savings. Both effects are visible in the base sample, but the effect of falling investment dominates (Graph II.1.2). While investment drops sharply already in the first year of adjustment, savings take more time to adjust and the saving rate starts increasing only in the third year (Graph II.1.3).

The total current account (i.e. the net lending or borrowing position of the economy or NLB) is the sum of saving and investment decisions by the main institutional sectors, namely households, corporations and the general government sector. Therefore, the adjustment of the total current account can be broken down into sectoral contributions. ([23]) This breakdown shows that, on average in the sample, the improvement in the external position is mainly due to the corporate sector, where the NLB increases sharply in the first two years of the adjustment episode (Graph II.1.4). The household sector seems to contribute more to the phase of deterioration of the current account than to its improvement. The government sector, on the other hand, plays a moderately offsetting role. While its contribution to the build-up of the current account deficit is very small, when the adjustment starts, government balances deteriorate, moderating the impact of the private sector's adjustment on growth and the external position.

Graph II.1.1: **Current account** (% of GDP) (1)



(1) Based on adjustment episodes in 23 industrialised economies during the period 1970-2009. See Box II.1.1 for a definition of the different samples.
Source: Commission services.

The balance sheet adjustment by the private sector has visible negative effects on domestic demand. On average, demand starts slowing down already in the year of the current account trough and shrinks slightly in the first year of adjustment.

([22]) For a review of the literature see Algieri, B. and T. Bracke (2007) 'Patterns of current account adjustments — insights from past experience', *CESifo Working Paper*, No 2029.

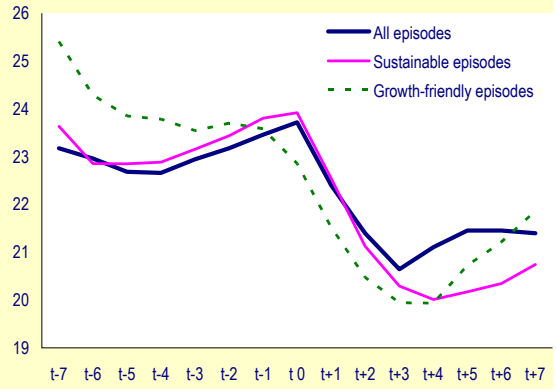
([23]) Due to data limitations the sectoral breakdown into corporations, households and general government is limited to 13 cases for which data are available for all sectors for 10 years around the adjustment.

Consistent with the larger role of corporations in adjustment, investment, which contracts by 3 % in the first year, is the main driver of the weakening of domestic demand. Consumption slows down as well (a deceleration which actually starts before the current account adjustment) but is less affected than investment.

… as well as the external sector …

The average episode also points to a significant contribution of exports to the rebalancing process. Exports, which due to moderating foreign demand had been slowing down gradually before the adjustment, pick up again in the adjustment phase. The acceleration of exports is linked to increases in market shares, with world trade moderating further during the adjustment phase. The surge in exports and market shares is due to improving price competitiveness. Various measures of the real exchange rates show an improvement which starts already two years before the trough in current account. Although competitiveness gains are partly explained by a depreciating nominal exchange rate, they also reflect substantial wage moderation: nominal wages moderate sharply at the beginning of the adjustment process (Graph II.1.5). Real wages adjust as well. An increase in inflation, probably induced by nominal depreciation, leads to a virtual freeze of real wages in the first two years of adjustment.

Graph II.1.2: **Investment rate** (% of GDP, total economy) (1)



(1) Based on adjustment episodes in 23 industrialised economies during the period 1970-2009. See Box II.1.1 for a definition of the different samples.
Source: Commission services.

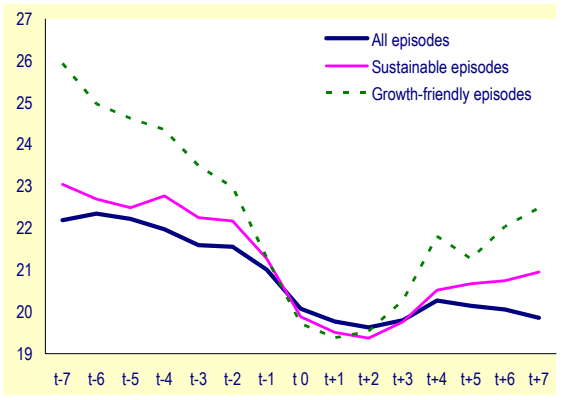
Adjusting to current account deficits is usually costly …

All in all, these developments on the domestic and external side of the economy visible in the base sample show that the average current account adjustment bears costs in terms of growth and employment. On average in the sample, GDP growth moderates slightly already before the adjustment starts, slows down sharply in the first year and recovers only after three years (Graph II.1.6). Similarly, the output gap, which is still slightly positive in the year of the current account trough, turns negative in the first year of the adjustment. The gap widens further and reaches the level of almost 2 % of potential output in the third adjustment year, before slowly closing. Falling GDP growth has a visible negative impact on unemployment, which increases by 2 pp in the first three years.

… and is not always sustainable

The typical pattern of current account adjustment has a worrying feature. The current account improves for three consecutive years, and after remaining flat for one year, relapses slightly. The relapse is small but the large sample hides large variations. In around a quarter of the episodes, the current account starts to deteriorate again in the third year and in the fifth reaches on average the same level as in the trough year. As improving the functioning of EMU requires a sustainable correction of external imbalances, a new sub-sample was built comprising 27 episodes of sustainable adjustment (see Box II.1.1 for details).

Graph II.1.3: **Saving rate** (% of GDP, total economy) (1)



(1) Based on adjustment episodes in 23 industrialised economies during the period 1970-2009. See Box II.1.1 for a definition of the different samples.
Source: Commission services.

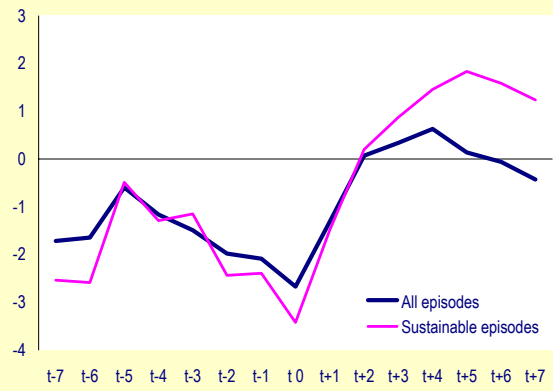
Sustainable adjustments are larger …

A comparison of the base sample ('all episodes') with the sustainable episodes reveals interesting patterns. First, the size of the current account imbalance is the same in both samples (Graph II.1.1). This suggests that a deficit of a

given size can be corrected in either a sustainable or a non-sustainable way. Second, in episodes of sustainable rebalancing, the improvement of the current account is larger.

Larger adjustment is visible on both the domestic and the external side. On the domestic side the additional adjustment is mainly due to sharper and more prolonged weakening of domestic demand with investment playing a central role (Graph II.1.2). In contrast, savings fall even slightly more during the first two years of the adjustment than in the base sample (Graph II.1.3). However, after the initial fall, savings recover and, unlike the base scenario, continue rising, contributing to the sustainability of the current account adjustment. The central role of the corporate sector is even further strengthened here, with households and the government sector maintaining patterns similar to those in the base sample.

Graph II.1.4: **NLB of corporations** (% of GDP) (1)



(1) Based on adjustment episodes in 23 industrialised economies during the period 1970-2009. See Box II.1.1 for a definition of the different samples.
Source: Commission services.

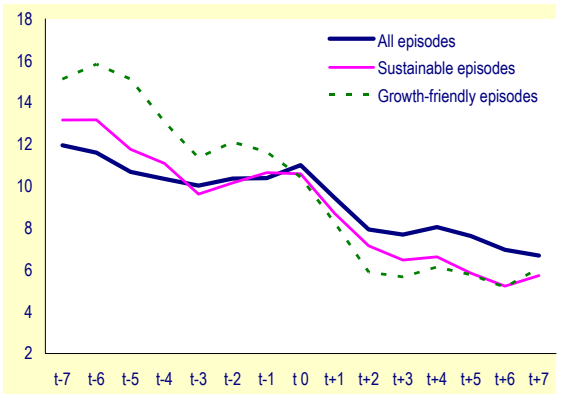
The external sector also behaves differently in sustainable cases of rebalancing, notably in the later stages of the adjustment process. In the third and fourth year of the adjustment, exports grow visibly faster than in the base sample, suggesting a key role in securing the sustainability of the adjustment. The difference in export patterns can be explained by additional gains in competitiveness in the sustainable cases, with all measures of the real exchange rate depreciating more sharply and more durably than in the base sample. The nominal exchange rate plays a role in this pattern, but domestic prices and wages seem to adjust more as well. Wages moderate faster and more strongly than in the base sample. After five years of adjustment, sustainable episodes record more than 1 pp of additional wage moderation compared to all the episodes. Real wages also moderate more significantly.

Finally, the comparison of the two samples of episodes also suggests that sustainable current account adjustments tend to have some additional costs in terms of GDP, even if the gap in growth ultimately closes. The impact on unemployment is also larger. After four years of adjustment the unemployment rate is a half percent higher than in the base sample.

… but vary in terms of growth effects

This average growth picture hides, however, a substantial degree of heterogeneity. The 27 episodes of sustainable adjustment show large differences in the impact on GDP growth. Comparing average GDP growth five years before and after the beginning of the adjustment, the growth performance during adjustment episodes ranges from an acceleration of 2.2 pp to a sharp drop of 5.3 pp. There are a few clear outliers in the sample. The cases of large losses in GDP are mainly episodes of adjustment to very large current account deficits, such as in Portugal (1982), New Zealand (1974, 1985) or Ireland (1981). This suggests that adjustments to very large imbalances are generally related to significant GDP slowdowns. Nevertheless, even after removing these outliers from the sample, the dispersion in GDP impact remains significant.

Graph II.1.5: **Nominal wages** (annual % change) (1)



(1) Based on adjustment episodes in 23 industrialised economies during the period 1970-2009. See Box II.1.1 for a definition of the different samples.
Source: Commission services.

Box II.1.1: **Current account adjustment — An analysis of past episodes in industrialised countries**

Episodes of current account adjustment used in this section were identified on the basis of the following joint criteria:

- the current account level in the trough year (t_0) is equal to or lower than -1 % of GDP;
- the current account improves by at least 1.5 % of GDP in three years;
- the current account improvement in the first year of adjustment (t_1) is larger than 0.5 % of GDP;
- the current account level in the second year (t_2) is above its initial level (t_0);
- the troughs in the current account between two successive episodes have to be separated by at least four years.

Based on these criteria a first sample of 44 episodes was identified ('all episodes'). To identify episodes of sustainable adjustment, an additional criterion was included, requiring the initial adjustment (minimum 1.5 %) to be maintained for at least the next two years. On the basis of this additional criterion, a sample of 27 'sustainable episodes' was created. Finally, the sample of episodes in fixed exchange rate systems was selected from the base sample using the *de facto* classification of exchange rate systems of Reinhart and Rogoff (2002). ([1]) However, if during the period of three years before or after the trough year (t_0) a realignment (in cases of formal fixed exchange rate arrangements) or significant nominal adjustment (in cases of *de facto* arrangements) took place, the episode was removed from the sample. This procedure initially led to a sample containing 10 episodes, which was reduced to 9 after removing an outlier (Greece 2002). Current account adjustment episodes identified in the above samples were then mapped to other economic variables in order to analyse their behaviour during the period of adjustment.

Data used here come from the Commission's AMECO database. The sample covers 23 industrial countries (AT, AU, BE, CA, CH, CY, DE, DK, EL, ES, FI, FR, HK, IE, IT, JP, LU, NL, NZ, PT, SE, UK, US). The current account is defined as the net lending/borrowing of the total economy, supplemented with the balance on current transactions if the former is not available.

([1]) Reinhart, C.M. and K.S. Rogoff (2002), 'The modern history of exchange rate arrangements: a reinterpretation', *National Bureau of Economic Research Working Paper*, No 8963.

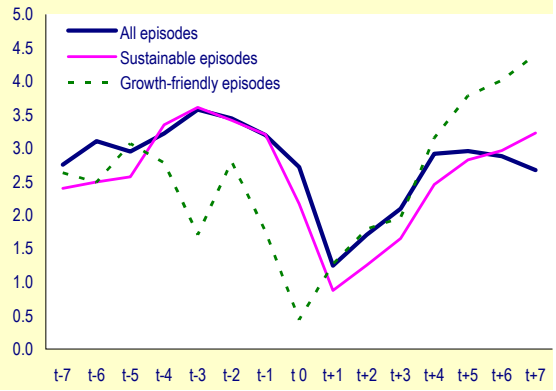
To check the factors influencing the differences in GDP effects of sustainable current account adjustments, the 7 best cases were grouped into a separate 'growth-friendly' sub-sample. The comparison of the 7 best cases with the rest of the sustainable episodes (less the outliers mentioned above) shows that the pattern of current account in the two sub-samples is virtually the same. In other words, apart from the case of very large deficits, the size of the current account imbalance does not seem to determine its GDP effects.

Two additional interesting features in this sub-sample of growth-friendly episodes should be mentioned. The first is the behaviour of savings and investment. In the growth-friendly cases, the burden of adjusting the savings-investment ratio is clearly shifted towards savings, which rebound sharply after the first year of adjustment (Graph II.1.3). ([24]) At the same time, the investment rate recovers, providing support for medium-term growth and potential output. The second feature worthy of attention is the role of wages and prices in the growth-friendly adjustment. The comparison of the samples confirms the common finding of the literature, namely that real depreciation helps mitigate the negative impact of current account adjustment on growth.

However, the literature remains silent on the sources of this depreciation during adjustment episodes. The growth-friendly sample identified here shows that the improvement in competitiveness is partly related to the nominal exchange rate depreciation, but domestic price adjustments also play an important role in the episodes of growth-friendly current account adjustments. The size of wage moderation in this sample is indeed impressive (Graph II.1.5). Real wages also moderate strongly. Wage moderation helps to gain external competitiveness, which boosts exports.

([24]) Saving ratio falls also more sharply than in other samples before the adjustment and the link between pre- and post-adjustment behaviour of savings would have to be investigated further.

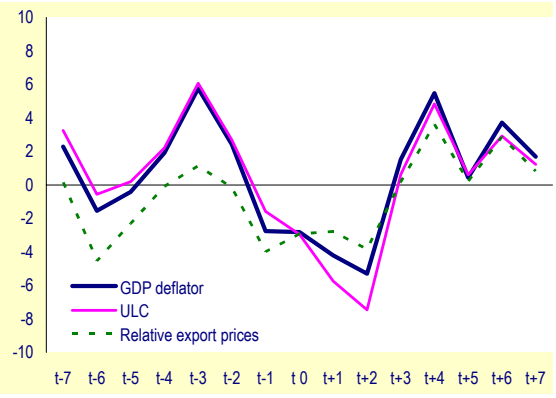
Graph II.1.6: **GDP growth** (annual % change) (1)



(1) Based on adjustment episodes in 23 industrialised economies during the period 1970-2009. See Box II.1.1 for a definition of the different samples.
Source: Commission services.

Moreover, the growth-friendly episodes exhibit relatively large differences (compared to other episodes) in the developments of various measures of the real exchange rate (Graph II.1.7). Specifically, broader measures (based on GDP deflator or unit labour costs) depreciate more than the export price-based measure. The broad measures are based on costs and prices of both the tradable and non-tradable sectors, while the export-price measure covers only the tradable sector.

Graph II.1.7: **Real effective exchange rate developments in growth-friendly adjustment episodes** (annual % change) (1)



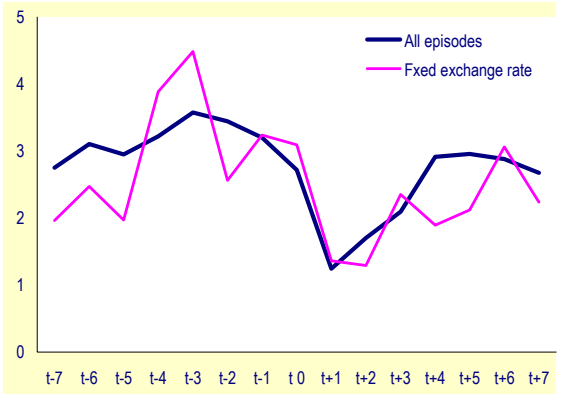
(1) Real effective exchange rate deflated by the GDP deflator, unit labour costs and export prices.
Source: Commission services.

Different developments in the two types of measures of real effective exchange rate can be interpreted as changes in relative prices of tradables and non-tradables. Larger depreciation in broad measures of real effective exchange rate suggests that growth-friendly episodes involve also more downward adjustment in the relative prices of non-tradables, pointing to the potentially important role of the non-tradable sector in rebalancing processes. ([25])

What about current account rebalancing in fixed exchange rate regimes?

In general, nominal exchange rates seem to have played a role in the adjustment episodes analysed above, even if changes in domestic prices were also important. In order to draw conclusions more relevant for the euro area, it can be useful to investigate in more detail the role of nominal exchange rate flexibility in adjustment episodes. For that purpose, episodes taking place in fixed exchange rate systems were selected from the base sample and grouped into a new sub-sample (see Box II.1.1). The sample is, however, very small (9 episodes) and conclusions derived from these data should be interpreted with caution.

Graph II.1.8: **GDP growth** (annual % change) (1)



(1) Based on adjustment episodes in 23 industrialised economies during the period 1970-2009. See Box II.1.1 for a definition of the different samples.
Source: Commission services.

Two features of past adjustments in fixed exchange rate regimes emerge from this exercise. First, without the help of nominal exchange-rate depreciation, external price competitiveness does not improve and even deteriorates somewhat if broader real exchange rate measures are looked at. Nominal wages moderate eventually but with a

([25]) Narrow measures of the real exchange rate are based on price or cost indices restricted to the tradable sector, while broad measures cover both the tradable and the non-tradable sector. Broad measures can thus be broken down into components capturing the price or cost competitiveness of the tradable sector and of the non-tradable sector. For a discussion of the role of the tradable and the non-tradable sectors in current account fluctuations, see Ruscher, E. and G.B. Wolff (2009), 'External rebalancing is not just an exporters' story: real exchange rates, the non-tradable sector and the euro', *European Economy — Economic Papers*, No 375.

significant time lag. As a consequence, and in contrast to the base sample, exports do not contribute to the adjustment and remain broadly flat during the adjustment phase.

Second, GDP appears more negatively affected by the adjustment in episodes with fixed exchange rate systems than in the broader sample (Graph II.1.88). Similarly, the increase in unemployment is larger and in the fifth year of adjustment the unemployment rate is half a percentage point higher than in the base sample. More in-depth analysis would obviously be needed to take into account other possible differences between fixed exchange rate cases and other episodes. But the data a priori suggest that insufficient competitiveness adjustment is probably a key explanation of the weaker growth performance in fixed exchange rate arrangements during rebalancing periods. Indeed, various checks indicate that the weaker growth cannot be ascribed to monetary policy (which is generally looser during adjustment periods in fixed exchange rate episodes than in the broader sample where nominal depreciation fuels inflation and forces monetary authorities to step in) or differences in long-term interest rates.

Conclusions

This short review of past episodes of current account adjustment allows some preliminary, but important lessons to be drawn for the ongoing current account adjustment in the euro area.

First, it emphasises the critical role of balance sheet adjustment in the private sector and especially in the corporate sector. With much of the burden of adjustment falling on investment, current account rebalancing poses risks for potential growth.

Second, it shows the importance of flexibility in domestic costs and prices, which helps to improve external competitiveness, achieve sustainable current account adjustment and reduce its impact on growth. Flexibility concerns the prices of both traded and non-traded goods and services. In particular, the role of adjustment in the prices of non-tradables should not be underestimated. Moreover, the analysis shows that wage flexibility has a distinct role in adjustment episodes and plays an especially important role in moderating the impact of adjustment on growth.

Third, the patterns visible in the episodes taking place in the fixed exchange rate regimes are a warning signal for the euro area. They confirm that in the absence of nominal exchange rate flexibility, rigidities in domestic costs and prices can be harmful for GDP growth and employment. For the Member States facing large current account adjustments, these findings underscore the urgent need for wage moderation and gains in competitiveness and, more generally, for reforms aimed at increasing the flexibility of the economy.([26])

Finally, adjustments of current account deficits often bear costs in terms of growth and are not always sustainable.

The above observations drawn from past experiences of current account adjustments are a strong argument for closely monitoring current accounts with a view to avoiding the re-emergence of imbalances in the future. They underline the importance of putting in place a structured framework to monitor and address macroeconomic imbalances, including large current accounts deficits, in the euro area and the EU as proposed by the Commission in its legislative package of 29 September.

([26]) For empirical evidence on the link between structural reforms and adjustment capacity see Biroli, P, G. Mourre and A. Turrini (2010), 'Adjustment in the euro area and regulation of product and labour markets: an empirical assessment', *CEPR Discussion Paper*, No. 8010.

II.2. A structural picture of Greek exports: insights from disaggregated data

In August, a joint mission by the European Commission, the ECB and the IMF concluded that the Greek government's economic adjustment program had made a strong start led by vigorous implementation of the fiscal programme and impressive structural reforms. ([27]) However, important challenges remain, in particular regarding the country's external imbalances. Greece has indeed been running sizeable deficits in its external position since 2000, with the current account and the balance of trade in goods and services reaching lows of -14.6% and -11.1% of GDP in 2007. ([28])

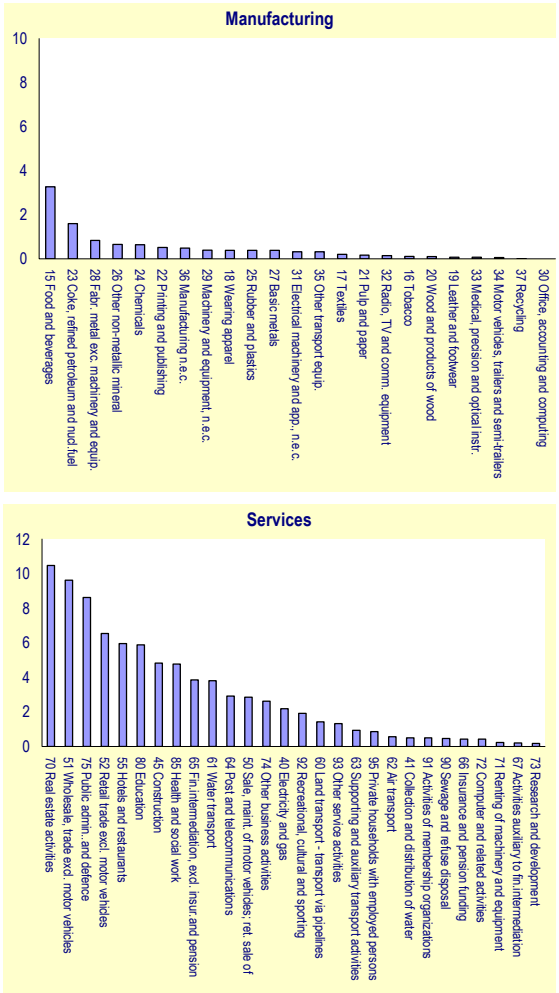
To curb its external deficit, Greece will have to boost its export sector. This will require protracted efforts both to reverse some of the losses in price competitiveness incurred since the beginning of the 2000s and to boost non-price competitiveness. However, the firm-level analysis presented in this section suggests that the Greek export sector displays some structural features that could facilitate this process.

To better understand the structural features and the export potential of the Greek manufacturing and service industries, this section presents a series of stylised facts emerging from detailed industry-level data and firm-level balance sheet data. ([29]) Export structure and dynamics depend on the decisions and on the characteristics of individual firms. ([30]) Thus, firm-level analysis may be useful because it enables the contribution of the extensive margin (how many firms are engaged in export activities) to be disentangled from that of the intensive margin (which share of sales is exported by each firm). The distinction is important from a policy perspective because it is easier to boost exports by firms already engaged in export activities than by firms that have no export experience.

Low-skill intensive production dominates both the manufacturing and the service sectors

To place the firm-level evidence in the right context, the analysis first outlines a series of stylised facts of interest that emerge from industry-level data for Greece. Industry-level data show that the share of manufacturing industries in total value added is small especially if compared to the share of low-skill intensive services and public administration (Graph II.2.1). ([31])

Graph II.2.1: **Industry-level distribution of value added, Greece**
(2008, % of total excluding agriculture)



Source: OECD STAN Database for Structural Analysis (Nace Rev 1.1 classification), Commission services.

([27]) European Commission, 'The economic adjustment programme for Greece. First review – summer 2010', *European Economy, Occasional Papers,* No. 68 (August).

([28]) For an extensive discussion of Greece's external imbalances, see Moschovis, G. and M. Capo Servera (2009), 'External imbalances of the Greek economy: the role of fiscal and structural policies', ECFIN Country Focus, Vol. VI, Issue 6.

([29]) Firm-level balance sheet data come from the Bureau Van Dijk ORBIS database.

([30]) The recent trade literature has emphasised the marked heterogeneity in productivity, size and other economic characteristics observed at the level of firms, even within narrowly-defined industries. Within an industry, only few firms export. Exporters are larger, more productive, and pay higher wages than other firms within the same industry. See Redding, S. (2010), 'Theories of heterogeneous firms and trade', *CEPR Discussion Paper,* No 7961.

([31]) The industry-level data come from the OECD STAN Database for Structural Analysis and the OECD STAN Bilateral Trade Database. The data used refer to 2008 because this is the most recent year for which complete firm-level balance sheet data are also available.

Table II.2.1: **Trade in manufacturing, Greece** (2008, in %)

	Exports as a share of total manufacturing exports	Exports as a share of industry production	Domestic production as a share of absorption (1)
15 Food products and beverages	14.42	12.10	86.74
16 Tobacco products	1.06	28.19	91.01
17 Textiles	4.80	67.68	61.79
18 Wearing apparel, dressing and dyeing of fur	5.78	51.01	61.93
19 Leather, leather products and footwear	0.61	21.98	34.48
20 Wood and products of wood and cork	0.45	7.37	66.66
21 Pulp, paper and paper products	0.84	11.25	53.53
22 Printing and publishing	0.84	5.17	91.96
23 Coke, refined petroleum products and nucl.fuel	12.59	14.75	93.35
24 Chemicals and chemical products	13.93	49.24	40.63
25 Rubber and plastics products	3.77	30.42	73.96
26 Other non-metallic mineral products	2.87	11.74	89.00
27 Basic metals	15.76	43.95	82.47
28 Fabr. metal products, except machinery and equip.	3.26	10.81	86.56
29 Machinery and equipment, n.e.c.	5.12	39.22	35.41
30 Office, accounting and computing machinery	0.78	1451.10	0.78
31 Electrical machinery and apparatus, n.e.c.	3.67	25.19	73.30
32 Radio, television and communication equipment	2.17	56.35	25.38
33 Medical, precision and optical instruments	1.17	51.68	19.52
34 Motor vehicles, trailers and semi-trailers	1.35	55.37	7.78
35 Other transport equipment	3.45	31.37	37.28

(1) Absorption = Domestic Production + Imports – Exports.
Source: OECD STAN Bilateral Trade Databases, Commission services.

Manufacturing industry contributes only 11% to total value added and almost 19% to total output. Graph II.2.1 shows that the manufacturing industries that contribute the most to total value added, Food and beverage products (Nace 15) and Refined petroleum (Nace 23), together account for less than 5% of value added and less than 8.5% of total output. The rest of the manufacturing industries, and notably technology-intensive ones, are very small and contribute only marginally to total value added. Services sector production (70% of total output and 74% of value added) is more diversified than manufacturing (less skewed distribution) but, even in this case, production is biased towards low-skill intensive sectors (such as Wholesale and Retail trade, Nace 51 and 52, and Hotels and restaurants, Nace 55).

Domestic absorption exceeds domestic production for every manufacturing product

Greece exports in all manufacturing industries. But the export distribution in manufacturing does not mirror the value added distribution: bigger industries contribute less to total manufacturing exports than smaller industries. ([32]) Hence, the export specialisation of Greece does not fully reflect the specialisation in production. Table II.2.1 shows that the industries with the highest share of manufacturing output (Food products and Refined petroleum) only account for 30% of manufacturing exports while industries such as Textiles and apparel, Basic metals, Chemicals and rubber products, Machinery and equipment, that together produce only 4.5% of domestic output and 3% of value added, account for almost 50% of total manufacturing exports. Table II.2.1 also shows that all manufacturing industries, even the most export-oriented, are net importers. The negative Greek trade balance in manufacturing is the combination of individual industries' negative balances: domestic absorption exceeds domestic production for every manufacturing product.

Firm-level insights: within industries, few big firms produce most of the industry output

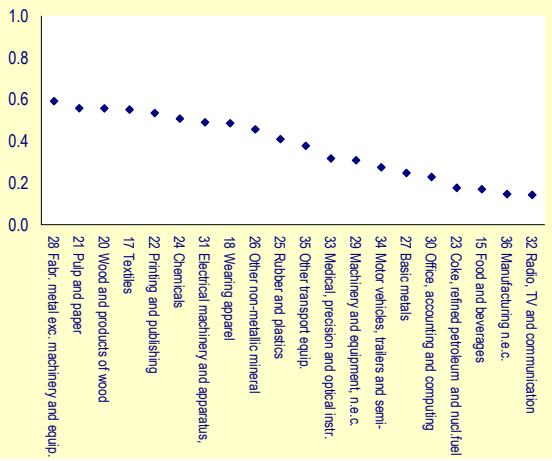
Firm-level data show that, within industries, the distribution of firm size can be very skewed in Greece, with few big firms producing most of the industry output. ([33]) Graph II.2.2 shows the ratios

([32]) In general, given a country's specialisation, the industries that contribute most to total output (and value added) are also the industries where exports are more concentrated (for example Italy, with Machinery and Chemicals). This is, however, not always true and specialisation in exports and production (or value added) may differ due to a range of factors including the international fragmentation of production in some industries or differences in trade openness across industries.

([33]) Firm-level balance sheet data are collected from the ORBIS database and refer to 2008, the latest available year. ORBIS is a commercial database compiled by Bureau Van Dijk, Netherlands that covers manufacturing and service firms with more than €10 million turnover (operating revenue)

between each industry's median and mean. Some industries have a relatively even distribution of employment as the size of the median firm is relatively close to the average industry size. Other industries, such as Food and beverages or Radio, TV and communication equipment, are characterised by few big firms and a majority of small firms since the size of the median firm is much lower than the average firm size of the industry. Similar patterns emerge for the service industries, where Water transport has a less skewed distribution than Retail trade or Construction. ([34])

Graph II.2.2: **Firm's size distribution, Greece** (2008, manufacturing industries) (1)

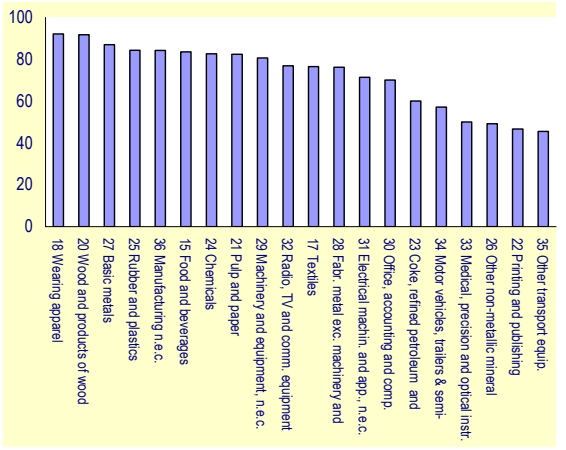


(1) Ratio median number of employees over mean number of employees, smaller values of the ratio indicate a more skewed (concentrated) distribution towards bigger firms; results for Leather and footwear (Nace 19), Recycling (Nace 37) and Tobacco (Nace 16) are not shown because data for 2008 include only a very small number of firms (respectively 5, 3 and 4).
Source: ORBIS database, Commission services.

Although most firms in the sample are exporters …

Despite the skewed size distribution, the majority of the Greek firms in the sample, and not only the biggest, sell at least part of their production abroad. Graph II.2.3 shows the share of exporting firms for each industry. Particularly for manufacturing the evidence contrasts with what previous firm-level studies have generally found for other countries, where the majority of firms are only serving the domestic market and exports in each industry are generally accounted for by a small group of firms. ([35])

Graph II.2.3: **Share of exporting firms, Greece** (in %, 2008)



(1) Manufacturing sector; year: 2008. Results for Leather and footwear (NACE 19), Recycling (NACE 37) and Tobacco (NACE 16) are not shown because data for 2008 include only a very small number of firms (respectively 5, 3 and 4).
Source: ORBIS database, Commission services.

… they sell abroad only a small fraction of their output

In most sectors, Greek exporters sell abroad only a small fraction of their output (Graph II.2.4). This is especially true for industries such as Food products and beverages where, on average, each firm only exports 30% of its production. Also big firms (size above the average firm size of the industry) appear to have low export shares in most sectors. Particularly in manufacturing, bigger firms do not contribute substantially to the industry's total output exported (Graph II.2.5).

Hence, contrary to many other countries, aggregate exports do not seem to be driven by a small number of top exporters. For the entire manufacturing sector, the top 5% exporters account for only 53% of total exports in Greece while they contribute 68% in Italy and about 70% in Spain, Germany and Belgium. ([36]) ([37])

according to the latest balance sheet information available. This dataset includes information on firm size, export turnover and foreign ownership status for 2934 firms. Overall, these firms represent 63% of total manufacturing employment. The selection of companies according to turnover makes results more representative for industries where small firms are less prevalent. This is the case, for instance, of Food processing and Basic metals (where the firms in the sample represent more than 90% of the industry's employment) but less so of Chemicals or Rubber products (where the share falls to 60%) and Textiles and Apparel (where the share is 28% and 22% respectively).

([34]) Data not reported here but available upon request.

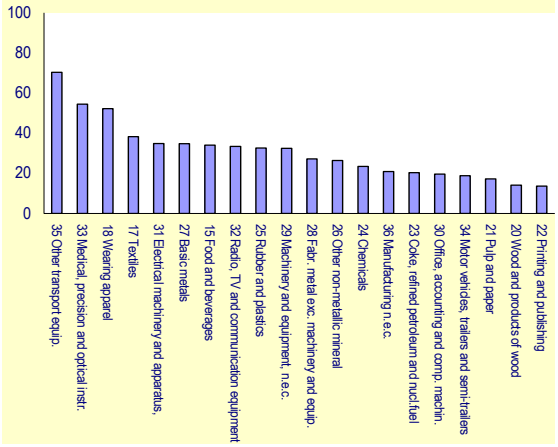
([35]) Mayer T. and G. Ottaviano (2007), 'The happy few: new facts on the internationalisation of European firms', Bruegel-CEPR Bruegel Blueprint Series, Vol. III.

([36]) Firms occupying the top 5% positions in terms of export turnover.

([37]) Evidence reported in Table 1 of International Study Group on Exports and Productivity (2008), 'Understanding cross-

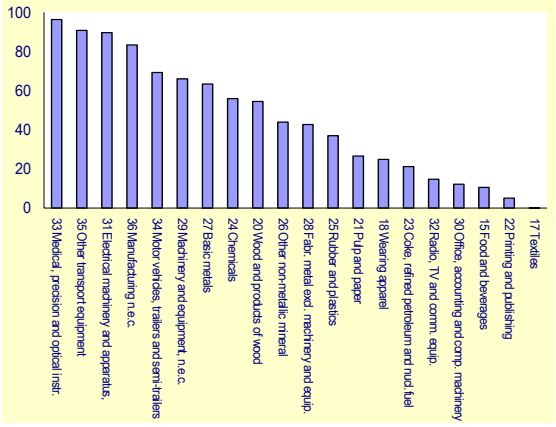
However, the pattern is different for services where, contrary to manufacturing, the top 5% exporters account for 78% of total exports. These top exporters are often big and foreign-owned. ([38])

Graph II.2.4: **Average share of exports in production, Greece**
(in%, exporting firms only, 2008) (1)



(1) Manufacturing sector; year: 2008; (1) export revenue/turnover; Results for Leather and footwear (19), Recycling (37) and Tobacco (16) need to be interpreted with caution because, in the sample, for 2008, there are only 5, 3 and 4 firms respectively.
Source: ORBIS database, Commission services.

Graph II.2.5: **Share of total exports of big firms by industry** (in %) (1)



(1) Manufacturing sector; year: 2008; (1) firms above the average firm-size of the industry. Results for Leather and footwear (NACE 19), Recycling (NACE 37) and Tobacco (NACE 16) are not shown because data for 2008 include only a very small number of firms (respectively 5, 3 and 4).
Source: ORBIS database, Commission services.

This substantial presence of marginal exporters, especially in manufacturing in Greece, can partly explain the poor past export performance. At the same time it suggests potential for future export development and growth. Indeed, facing reduced domestic demand, firms that have already established a commercial presence can expand foreign sales through existing distribution networks (intensive margin) without having necessarily to incur the fixed set-up costs of an expansion of sales in new foreign markets (extensive margin). Hence, necessary improvements in competitiveness, when they take place, could boost exports relatively rapidly in Greece.

Conclusions

The analysis of industry and firm-level data highlights some weakness of the Greek productive and export system, notably the prevalence of low-skill intensive industries. However, it also shows potential avenues for future export growth. The prevalence of marginal exporters explains part of the disappointing export performance in manufacturing in recent years. However, the fact that most firms in the available sample already have a commercial presence abroad can be an advantage at times when a substantial part of domestic output needs to be redirected from domestic demand to the export sector: firms with a commercial presence can contribute more easily and more rapidly to an expansion of exports than firms that have never exported. Increasing the quantity sold through an already established foreign distribution network is much less costly than entering new markets because the fixed costs in terms of information or distribution networks have already been overcome.

Overall, these results suggest that efforts to improve competitiveness or upgrade workers' skills could pay off relatively rapidly in terms of boosting Greece's export performance. In this context, it is worth recalling that the medium-term objective of the Greece's economic adjustment programme is to improve competitiveness and alter the economy's structure towards a more investment- and export-led growth model. For that purpose, the programme includes a wide range of ambitious reforms of wage setting mechanisms, labour markets and product markets. These structural reforms should help to curb undue wage pressures and to improve the business environment. Important steps forward have already been made with the structural reform agenda, whereby efforts are expected to intensify in the medium term.

country differences in exporter premia: Comparable evidence for 14 countries' *Review of World Economics*, 144(4), pp. 598-635, and in Mayer and Ottaviano (2007); see note 7.

([38]) Data not reported here but available upon request.

II.3. House price imbalances in the euro area

Fluctuations in house prices are a defining feature of the business cycle. Moreover, housing markets have played an important role in the emergence of macroeconomic imbalances within the euro area since the launch of the euro. ([39]) Monitoring developments in house prices and assessing possible imbalances on housing markets is part and parcel of the Commission's macroeconomic surveillance process.

This section presents two methods for quantifying the magnitude of house price imbalances that are part of the Commission's surveillance toolbox: estimated equations of equilibrium house prices and estimates of price-to-rent ratios. Both methods have pros and cons and, as they rely on different data sets, should be seen as largely complementary.

A strong correction after a long period of price increases

During 1998-2006, real house prices in the euro area rose on average by 4% a year, or by a cumulated 45%. The expansion phase was followed by a downward adjustment which started at the end of 2007 and reached a cumulated decline of 8.3% by the third quarter of 2009. The most pronounced corrections took place in those countries that exhibited the strongest house price increases previously: Ireland (-37%), Spain (-18%) and France (-15%). These changes are comparable to those observed in the US, although with a slight lag. There, real house prices increased at an annual rate of 4.5% between 1998 and 2006, resulting in a cumulated rise of almost 50%, and then decreased by almost 15% by the fourth quarter of 2009.

In a historical perspective, large movements in real house prices are far from exceptional. During the previous house price cycle, prices in the euro area increased by 30% between the second quarter of 1985 and the third quarter of 1991 and then decreased by 9% over some five years until the first quarter of 1997. The current decrease is much sharper nevertheless, because the same reduction was realised in only two years.

Econometric estimates of equilibrium house prices

Equations of equilibrium house prices were estimated for seven euro-area countries and two non-euro-area countries (see Box I.1 for a detailed description of the methodology and the data). The estimated equations relate the real house price to the following fundamentals: disposable income, credit conditions and the tax-adjusted mortgage interest rate. For any given point in time, the equilibrium house price is taken as the value of house prices provided by the equation. It can therefore be interpreted as the value of house prices that should normally be observed given the value of the determinants and the historical relationship between house prices and these determinants in the country considered. As the value of the determinants may change significantly over time, so do the estimates of equilibrium house prices. ([40])

Table II.3.1: **House price imbalance and adjustment** (in %)

Country	Price misalignments (1)	Real price changes betw. 2008Q4 and 2009Q4
Finland	15	9
France	9	-5
Germany	-4	-2
Ireland	3	-19
Italy	8	-3
Netherlands	-1	-5
Spain	24	-7
Euro area (median)	8	-5
United Kingdom	18	-2
United States	15	-6

(1) Difference between actual and equilibrium prices in 2008Q4. Equilibrium prices are estimated on the basis of estimated equations (see Box I.1). Estimates are model-dependent and subject to considerable uncertainty. They should therefore be interpreted with prudence.

Source: Commission services.

The first column of Table II.3.1 reports the house price misalignment estimates as derived from the equation for the fourth quarter of 2008. ([41]) The estimates should be interpreted with prudence as they are the result of specific modelling choices and subject to significant uncertainty. But, bearing these limitations in mind, results indicate that

([39]) See for instance the following two issues of the Quarterly Report on the Euro Area:
Vol. 9, No 1 (2010), 'Special issue: The impact of the global crisis on competitiveness and current account divergences in the euro area'
Vol. 8, No 1 (2009), 'Special report: Competitiveness developments within the euro area'.

([40]) The determinants may also diverge from their equilibrium values. To the extent possible, this divergence is corrected when estimating equilibrium house prices. For instance, disposable income is adjusted for cyclical fluctuations.

([41]) This is the most recent quarter for which historical data are available for the three determinants of house prices.

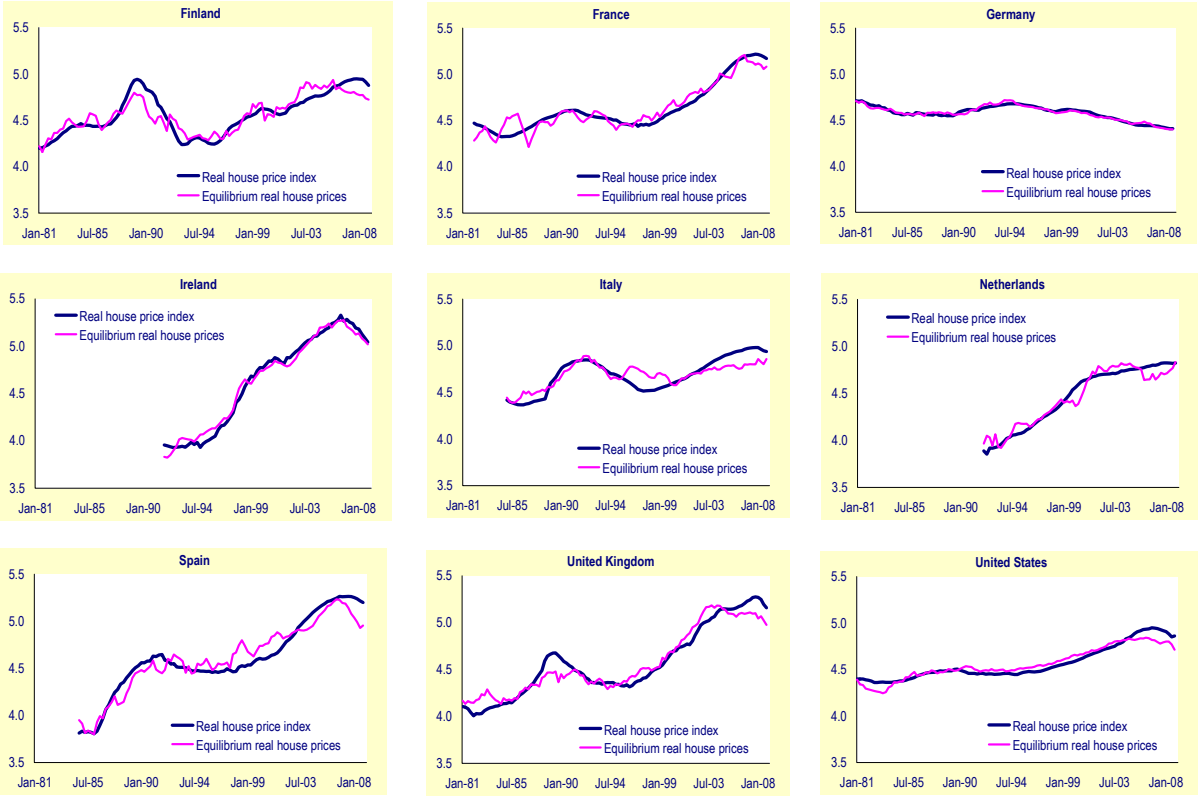
house prices were overvalued in all euro-area countries except for Germany and the Netherlands at the end of 2008. Countries with moderate overvaluation (<10%) included France, Ireland and Italy, while larger overvaluation was suggested for Finland and Spain. Looking at misalignments outside the euro area, house prices in the United States and the UK were significantly overvalued at the end of 2008, by about 15-20%. This was clearly higher than for the euro area as a whole, where the misalignment was below 10%.

The second column of Table II.3.1 presents the changes in house prices during 2009. Due to missing data, estimates of equilibrium house prices cannot yet be calculated for that year. However, comparing changes in prices in 2009 with estimates of equilibrium house prices for the end of 2008, two country groups can be distinguished: converging and diverging economies. In the first group (the majority of the countries concerned), house prices seem to have moved in the direction of reducing past price misalignments in 2009. Some Member States, such as France and Italy, probably reached a more or less balanced price level in the third quarter of 2009. Spain, however, still showed sizeable overvaluation at that time and some countries, such as Ireland, may have undershot their equilibrium level (i.e. posted house prices that were below their equilibrium level). A second group of countries, Finland, Germany and the Netherlands, showed divergence from the equilibrium price level during 2009. House prices in Finland actually increased despite signs of overvaluation in 2008Q4. This suggests that house price developments in Finland merit closer attention. In the Netherlands and Germany house prices fell from a balanced level or from a slight undervaluation position. ([42])

To put recent house price developments in perspective, Graph II.3.1 plots the equilibrium (solid blue line) against the actual real house prices (red dashed line) over the past three decades. There is a clear indication that, in most countries, house prices rose above their equilibrium value around the middle of the decade and entered the global economic crisis significantly overvalued. There is also a drop in equilibrium prices at the end of the sample which can be traced back to two variables of the estimated model: sluggish developments in

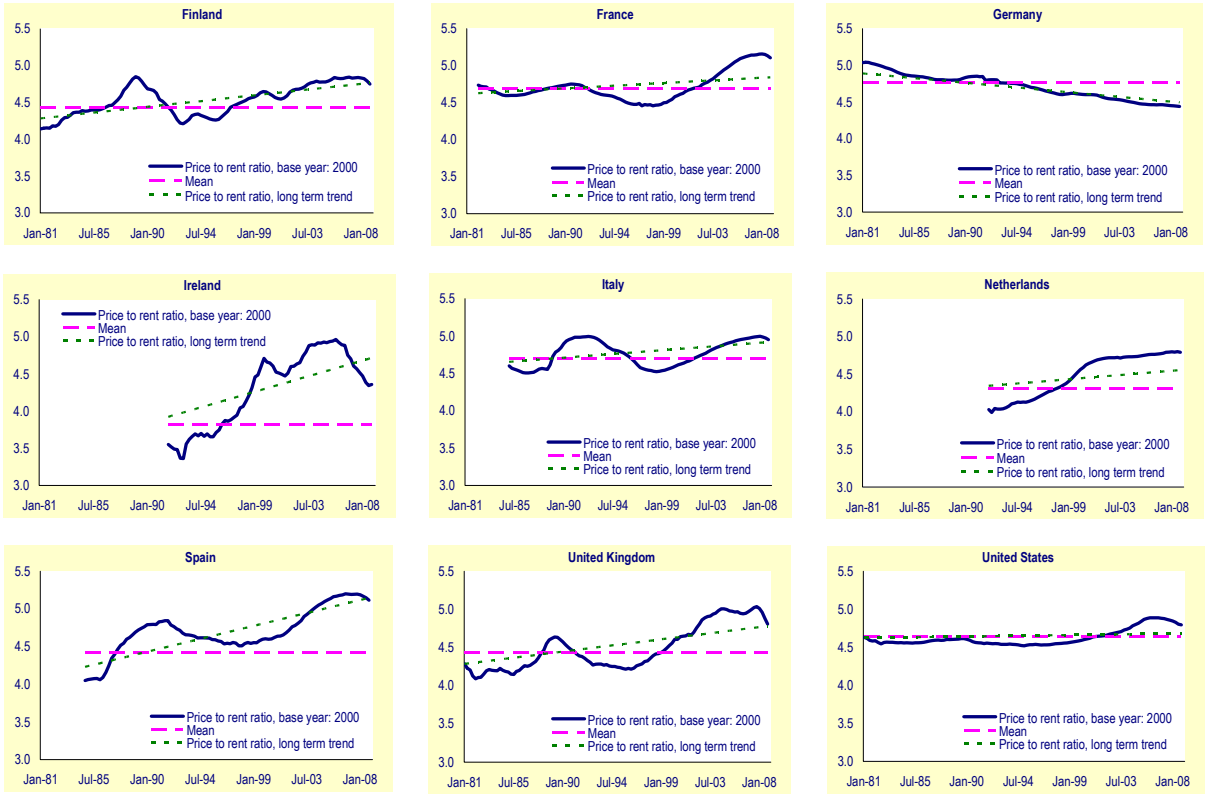
([42]) It is, however, important to stress that the conclusion rests on the assumption that the level equilibrium prices did not change in 2009.

Graph II.3.1: **Equilibrium and actual house prices (in logs, base year 2000, 1981Q1 to 2008Q4)**



Source: Commission services.

Graph II.3.2: **Price-to-rent ratio** (in logs, base year 2000, 1981Q1 to 2008Q4)



Source: Commission services.

disposable income and tightening credit conditions. These general findings are broadly in line with estimates of house price imbalances available in the empirical literature. The main exception to the general picture is Germany, which was characterised by more balanced house price developments during the years preceding the global economic and financial crisis. The peculiar behaviour of equilibrium house price developments in Germany is accounted for by a very low response of house prices to income in the estimated model for Germany. Beyond Germany, the estimated equilibrium house prices shown in Graph II.3.1 also point to other differences across euro-area countries. In the Dutch housing market, after a period of overvaluation in the late 1990s/early 2000s, house prices seem to have undershot their equilibrium level during much of the present decade. Interestingly, the Netherlands' fundamentals do not seem to have deteriorated markedly after the crisis contrary to most of the other countries considered. Estimated results also point to moderate but stable overvaluation in France and Italy in the second part of the 2000s. In Ireland, overvaluation appears to have remained relatively modest in recent years despite very rapid growth in house prices. This finding is explained by the fact that the model points to very rapid growth in the equilibrium price level during much of the 2000s on the back of strong growth in household disposable income. A rapid and sharp correction in prices since 2007 may also have helped to mitigate imbalances. Spain is also characterised by rapid growth in the estimated equilibrium house price during much of the 2000s on the back of strong income growth. Hence, despite rapidly increasing, house prices appear to have remained in line with fundamentals up to the mid-2000s before overshooting in more recent years. In Finland, the model points to a relatively long period of undervaluation in the early part of the decade, followed by a period of sizeable overvaluation.

Finally, it is interesting to note that the regression results suggest that most countries adjust to price misalignment only slowly, halving their imbalances in approximately two to four years. The exception is Ireland, which adjusts 30 % of its price imbalances each quarter. This rapid adjustment implies more volatile house prices.

Price-to-rent ratios

Price-to-rent ratios are frequently used to evaluate periods of house price over- and under-valuation.

Box II.3.1: **Estimates of house price misalignments**

House price misalignments can be estimated as the differences between equilibrium house prices and actual house prices. Equilibrium prices are assessed from the price equation of a reduced-form supply-demand system. This reduced form expresses the house price index as a function of disposable income, credit conditions and the tax-adjusted mortgage interest rate:

$$\ln(ph_{it} / pc_{it}) = \beta_{0i} + \beta_{1i} \ln(y_{it}) + \beta_{i2} cc_{it} + \beta_{3i} mr_{it} + e_{it}, \qquad (1)$$

where t=1,…,T indexes time and i=1,…,N indexes countries, ph_{it} denotes the house price index, pc_{it} the consumer price index, y_{it} the real disposable income, cc_{it} the credit conditions, mr_{it} the tax-adjusted mortgage interest rate and e_{it} the disturbance term. β_{0i}, β_{1i}, β_{2i}, β_{3i} denote the parameters to be estimated. All parameters in (1) are indexed by i in order to allow for country differences in the specification of the equation and account for country differences in the structure of the housing market. Accordingly (1) is estimated country by country instead of using panel regressions.

While disposable income and the tax-adjusted mortgage rate are directly observable, credit conditions (cc_{it}) are unobserved and a proxy has to be used instead. The change in the log of the mortgage stock was chosen as the proxy variable, reflecting the acceleration and slowdown in the flow of mortgage credit. This definition captures the mortgage credit cycle and therefore the loosening and tightening of credit markets. In order to capture structural shifts and to address endogeneity concerns, credit conditions were instrumented by their lagged values and the Fraser index when estimating regression (1).

The specification in (1) differs from housing demand models (for example Muellbauer and Murphy, 1997, Oxford Economics 2009) that assume perfectly elastic supply and regress the house price on both quantities and fundamentals. By dropping this assumption the specification in (1) acknowledges that based on the available macro data structural demand parameters can hardly be identified. This comes at the cost of clarity in interpreting the parameters, however, because estimated parameters will contain both supply- and demand-side effects. On the other hand it allows (1) to be interpreted as a reduced-form price equation from which equilibrium house prices can be predicted directly. The data used in the estimation were collected by Oxford Economics and contain quarterly observations from 1970 to the last quarter of 2008.

Since the price and income series are integrated variables the regression was estimated as a cointegrating relationship in an Engle-Granger two-step framework, using a DOLS estimator with one lead and lag. The baseline model in (1) had to be fine-tuned in the case of Italy with two modifications. First, the unemployment rate was added to the model in order better to capture demand for housing and second, an indicator of building activity was also included, in order to control for Italian housing supply fluctuations. The source of the second variable is the Commission's business survey. The parameter estimates for (1) are presented in the table below. Given that these are reduced-form parameters their values cannot be interpreted directly as elasticities, although when comparing them across countries they provide information on the relative importance of the different fundamentals. An error correction model (ECM) corresponding to (1) is estimated as well, in order to estimate the speed of adjustment. The lag structure of the ECM was chosen using the BIC criterion. Using the coefficients on the long-term residual as a test for cointegration shows that Germany is the only country where cointegration is questionable, most probably due to the continuous oversupply of houses since unification. Estimates of the error correction coefficient show generally quite slow adjustment: most countries adjust 3 to 7% of their misalignment in a quarter. The higher end of this range, 7%, implies that it takes two and a half years to reduce imbalances by half. The exception is Ireland, which adjusts 30% of its imbalances each quarter.

Given the set of parameter estimates b_{0i}, b_{1i}, b_{2i}, b_{3i} the equilibrium price is calculated as:

$$\ln(ph_{it} / pc_{it})^* = b_{0i} + b_{1i} \ln(\bar{y}_{it}) + b_{i2} \bar{cc}_{it} + b_{3i} mr_{it}, \qquad (3)$$

where the bar above the exogenous variables indicates corrected versions of disposable income and credit conditions that reflect their long-term trends. The potential disposable income was adjusted to show the same 'gap' with respect to observed disposable income as between potential GDP and observed GDP. (Similarly the NAIRU rate was used instead of the actual unemployment rate in the case of Italy.) Also the instrumented version of credit conditions was used. Based on these equilibrium prices the over/undervaluation is expressed in percentage terms, with positive values indicating overvaluation:

(Continued on the next page)

Box (continued)

$$misalignment = \ln(ph_{it} / pc_{it}) - \ln(ph_{it} / pc_{it})^{*}. \quad (4)$$

Several alternative routes for estimating house price misalignments have been used in existing studies. One alternative is to base estimates on price-rental ratios (e.g. Girouard, Kennedy, van den Noord and André, 2006; André, 2010). Asset pricing theory predicts a clear relation between house prices, rents, and discount rates based on the exploitation of arbitrage opportunities between buying and renting houses. This approach nevertheless has disadvantages. It only allows imbalances in price-to-rent ratios to be assessed and not imbalances in house prices (because only index numbers of price-to-rent ratios are available) and a period has to be assumed when price-to-rent ratios were in equilibrium outside the estimation. Moreover, the methodology is well justified only in liquid rental and housing markets where arbitrage opportunities can be fully exploited. Another alternative is to estimate determinants of house price growth rates (e.g. IMF, 2004). This methodology enables stationary data to be used (thus avoiding the difficulties of a cointegration framework) but it means that the computation of house price imbalances must be based on assumptions regarding a base period where house prices are not subject to misalignment.

Dependent variable: real house prices (in log)

	FI	FR	DE	IE	IT	NL	ES	UK	US
Log disposable	1.005***	1.615***	-0.174***	1.420***	3.169***	3.878***	1.788***	1.889***	0.616***
income	(0.0402)	(0.0696)	(0.0381)	(0.0333)	(0.194)	(0.0914)	(0.0558)	(0.0415)	(0.0226)
Credit	2.475***	4.274***	1.932***	2.049***	0.282***	-0.932***	2.432***	3.723***	1.310***
conditions	(0.179)	(0.294)	(0.0911)	(0.197)	(0.231)	(0.139)	(0.407)	(0.176)	(0.175)
Tax adjusted	0.0495***	0.0109**	-0.00650*	0.00360	0.0263***	0.00570	0.0226***	-0.0223***	-0.0199***
mortgage rate	(0.00671)	(0.00508)	(0.00286)	(0.00431)	(0.00425)	(0.00753)	(0.00701)	(0.00186)	(0.00272)
Building activity					-0.117*				
					(0.0689)				
Unemployment					-0.0607***				
					(0.00580)				
Constant	-5.472***	-15.53***	5.492***	-9.443***	-33.47***	-10.99***	-16.33***	-18.31***	-0.0276
	(0.383)	(0.877)	(0.230)	(0.313)	(2.386)	(0.363)	(0.602)	(0.500)	(0.168)
Observations	112	105	109	66	93	65	94	137	137
R-squared	0.893	0.942	0.811	0.996	0.926	0.985	0.922	0.971	0.924

(1) Robust standard errors in parenthesis. ***p<0.01, **p<0.05, *p<0.1.

Source: Commission services.

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It is therefore useful to compare the cyclical deviations of the price-to-rent ratios from their long-term trends with the estimates of misalignments based on the house price equations in order to check whether they point to the same conclusion. Graph II.3.2 presents the price-to-rent ratio. In all countries, except Germany, price-to-rent ratios suggest overvaluation in some part of the 2000s with actual ratios above their estimated long-term trends. Regarding the most recent past,

only Ireland shows a price-to-rent ratio well below its long-term trend in the last quarter of 2008 but the assessment should be considered with prudence as the trend rises very steeply and appears difficult to estimate in a market which has been subject to major structural changes (e.g. large swings in immigration flows).

Most countries (Finland, France, Italy and the Netherlands) experienced moderately increasing trends in the price-to-rent ratio over the past two decades. Except for the Netherlands, price-to-rent ratios showed a strong cyclicality around these trends: a boom period in the late 1980s was followed by a bust in the early 1990s and another boom period starting in the early 2000s and ending late 2006. Considerable variations in the evolution of the trend price-to-rent ratio are worth noting outside this group. Spain and Ireland experienced much more rapid trend growth than other countries while Germany was the only country where the price-to-rent ratio actually fell. In the US, the price-to-rent ratio showed no clear upward trend over the past two decades, but still a cyclical pattern with a period of boom starting in the early 2000s.

Overall, the analysis of price-to-rent ratios broadly confirms the results of the econometric estimates of equilibrium house prices. A word of caution is, however, necessary in the case of Ireland, where significant differences between the results of the two methods point to a considerable degree of uncertainty regarding the size and sign of house price misalignments.

Conclusion

This section has presented estimations of equilibrium house prices. Such estimations are surrounded by significant uncertainty and should therefore be interpreted with prudence but they suggest that the euro area entered the global economic crisis with overvalued house prices. The overvaluation was approximately half of that of the US at the end of 2008, with the two regions experiencing similar price drops during 2009. Much of the misalignment now seems to have been corrected in the euro area although not in the US. The average euro-area picture hides significant differences across Member States. By the end of 2009, the house-price correction was quite advanced in some Member States but still had some way to go in others. In addition, a couple of Member States, notably Germany, now show undervalued house prices. Cyclical deviations of price-to-rent ratios from their long-term trends broadly confirm these econometric results.

III. Recent DG ECFIN publications

1. Policy documents

EUROPEAN ECONOMY 1. May 2010.
Surveillance of Intra-Euro-Area Competitiveness and Imbalances
http://ec.europa.eu/economy_finance/publications/european_economy/2010/ee1_en.htm

EUROPEAN ECONOMY 2. May 2010.
European economic forecast – spring 2010
http://ec.europa.eu/economy_finance/publications/european_economy/2010/ee2_en.htm

EUROPEAN ECONOMY 3. May 2010.
Convergence report 2010
http://ec.europa.eu/economy_finance/publications/european_economy/2010/ee3_en.htm

EUROPEAN ECONOMY 4. June 2010.
Public finances in EMU - 2010
http://ec.europa.eu/economy_finance/publications/european_economy/2010/ee4_en.htm

EUROPEAN ECONOMY 5. July 2010.
Labour market and wage developments in 2009
http://ec.europa.eu/economy_finance/publications/european_economy/2010/ee5_en.htm

EUROPEAN ECONOMY. OCCASIONAL PAPERS. 62. June 2010.
The pre-accession economies in the global crisis: from exogenous to endogenous growth?
http://ec.europa.eu/economy_finance/publications/occasional_paper/2010/op62_en.htm

EUROPEAN ECONOMY. OCCASIONAL PAPERS. 63. June 2010.
2010 Economic and Fiscal Programmes of potential candidate countries: EU Commission's assessments
http://ec.europa.eu/economy_finance/publications/occasional_paper/2010/op63_en.htm

EUROPEAN ECONOMY. OCCASIONAL PAPERS. 64. June 2010.
Short time working arrangements as response to cyclical fluctuations
http://ec.europa.eu/economy_finance/publications/occasional_paper/2010/op64_en.htm

EUROPEAN ECONOMY. OCCASIONAL PAPERS. 65. July 2010.
Macro structural bottlenecks to growth in EU Member States
http://ec.europa.eu/economy_finance/publications/occasional_paper/2010/op65_en.htm

EUROPEAN ECONOMY. OCCASIONAL PAPERS. 66. August 2010.
External Imbalances and Public Finances in the EU
http://ec.europa.eu/economy_finance/publications/occasional_paper/2010/op66_en.htm

EUROPEAN ECONOMY. OCCASIONAL PAPERS. 67. August 2010.
National fiscal governance reforms across EU Member States. Analysis of the information contained in the 2009-2010 Stability and Convergence Programmes
http://ec.europa.eu/economy_finance/publications/occasional_paper/2010/op67_en.htm

EUROPEAN ECONOMY. OCCASIONAL PAPERS. 68. August 2010.
The Economic Adjustment Programme for Greece. First review – summer 2010
http://ec.europa.eu/economy_finance/publications/occasional_paper/2010/op68_en.htm

2. Analytical documents

EUROPEAN ECONOMY. ECONOMIC PAPERS. 415. June 2010
Marga Peeters (European Commission)
The changing pattern in international trade and capital flows of the Gulf Cooperation Council countries in comparison with other oil-exporting countries
http://ec.europa.eu/economy_finance/publications/economic_paper/2010/ecp415_en.htm

EUROPEAN ECONOMY. ECONOMIC PAPERS. 416. July 2010
Lucjan T. Orlowski (Sacred Heart University)
Proliferation of Tail Risks and Policy Responses in the EU Financial Markets
http://ec.europa.eu/economy_finance/publications/economic_paper/2010/ecp416_en.htm

EUROPEAN ECONOMY. ECONOMIC PAPERS. 417. July 2010
Bartosz Przywara (European Commission)
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http://ec.europa.eu/economy_finance/publications/economic_paper/2010/ecp418_en.htm

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EUROPEAN ECONOMY. ECONOMIC PAPERS. 420. July 2010
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http://ec.europa.eu/economy_finance/publications/economic_paper/2010/ecp422_en.htm

EUROPEAN ECONOMY. ECONOMIC PAPERS. 423. September 2010
Rossella Calvi (MSc Economics and Social Sciences, Bocconi University)
Assessing financial integration: a comparison between Europe and East Asia
http://ec.europa.eu/economy_finance/publications/economic_paper/2010/ecp423_en.htm

EUROPEAN ECONOMY. ECONOMIC PAPERS. 424. September 2010
Alexandr Hobza and Gilles Mourre (European Commission)
Quantifying the potential macroeconomic effects of the Europe 2020 strategy: stylised scenarios
http://ec.europa.eu/economy_finance/publications/economic_paper/2010/ecp424_en.htm

EUROPEAN ECONOMY. ECONOMIC PAPERS. 425. September 2010
Anton Jevčák, Ralph Setzer and Massimo Suardi (European Commission)
Determinants of Capital Flows To the New EU Member States Before and During the Financial Crisis
http://ec.europa.eu/economy_finance/publications/economic_paper/2010/ecp425_en.htm

3. Regular publications

Business and Consumer Surveys (harmonised surveys for different sectors of the economies in the European Union (EU) and the applicant countries)
http://ec.europa.eu/economy_finance/db_indicators/surveys/index_en.htm

Business Climate Indicator for the euro area (monthly indicator designed to deliver a clear and early assessment of the cyclical situation)
http://ec.europa.eu/economy_finance/db_indicators/surveys/documents/2010/bci_2010_08_en.pdf

Key indicators for the euro area (presents the most relevant economic statistics concerning the euro area)
http://ec.europa.eu/economy_finance/db_indicators/key_indicators/documents/key_indicators_en.pdf

Monthly and quarterly notes on the euro-denominated bond markets (looks at the volumes of debt issued, the maturity structures, and the conditions in the market)
http://ec.europa.eu/economy_finance/publications/bond_market/index_en.htm

Price and Cost Competitiveness
http://ec.europa.eu/economy_finance/db_indicators/competitiveness/index_en.htm

Contributors to this issue are:

Focus: Balance sheet adjustment in the corporate sector	*E. Ruscher and G. Wolff*
A first look at past episodes of current account adjustment	*M. Żogała*
A structural picture of Greek exports: insights from disaggregated data	*A. Tucci*
House price imbalances in the euro area	*G. Koltay*
Data assistance	*G.M. Isbasoiu*
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