INTERNATIONAL MONETARY FUND

IMF Country Report No. 14/199

EURO AREA POLICIES

2014 ARTICLE IV CONSULTATION

July 2014

SELECTED ISSUES

This Selected Issues paper on the euro area was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member countries forming the euro area. It is based on the information available at the time it was completed on June 26, 2014.

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International Monetary Fund
Washington, D.C.

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EURO AREA POLICIES

SELECTED ISSUES

June 26, 2014

Approved By
The European Department

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CONTENTS

YOUTH UNEMPLOYMENT IN EUROPE: OKUN'S LAW AND BEYOND[1]

Youth unemployment rates increased sharply in the euro area after the crisis. Much of these increases can be explained by output dynamics and the greater sensitivity of youth unemployment to economic activity compared to adult unemployment. Labor market institutions also play an important role, especially the tax wedge, minimum wages, and spending on active labor market policies. Policies to address youth unemployment should be comprehensive and country specific, focused on reviving growth and implementing structural reforms.

A. Context

1. **Youth unemployment has increased sharply in Europe in the aftermath of the global crisis in 2008 and remains at historic highs in the current weak recovery.** Youth unemployment has moved up the policy agenda in Europe, and policies to deal with this issue have been formulated at both the EU (European Commission, 2012 and 2013a) and national levels.

2. **This paper assesses the youth unemployment problem in advanced European countries, especially the euro area.** It documents the main trends in youth and adult unemployment before and after the crisis (Section B), identifies the cyclical and structural drivers of youth and adult unemployment (Section C, D and E) and outlines elements of a comprehensive strategy to address the problem (Section F).

B. Stylized Facts

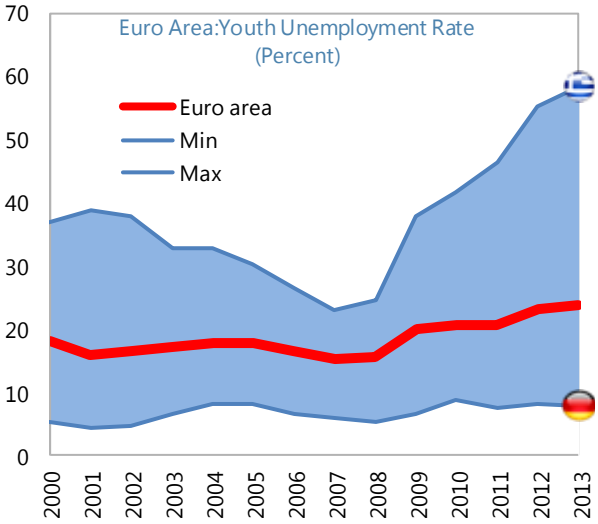
3. ***Historically high rates.*** Youth unemployment rates are currently at unprecedented levels in the euro area.[2] The global crisis has reversed a decade-long trend of modest declines in youth unemployment; the youth unemployment rate in the euro area in 2013 (some 28 percent) is almost double the pre-crisis level (15 percent in 2007).

4. ***Larger than adult unemployment***. Adult unemployment has also ticked up after the crisis, but less so than youth unemployment. While unemployment rates typically tend to be

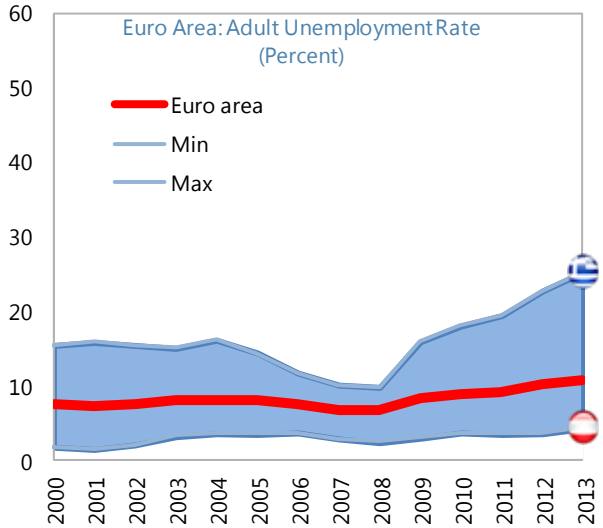
[1] Prepared by Angana Banerji, Huidan Lin, Sergejs Saksonovs (all EUR) and Rodolphe Blavy (EUO). We thank Xiaobo Shao for excellent research assistance and Katherine Cincotta for general assistance. We also thank Ana Lamo (ECB) and Alessandro Turrini (European Commission), the participants of seminars at the ECB and European Commission, as well as EUR country teams for helpful feedback and comments.

[2] Henceforth, youth refers to individuals aged 15–24 years, and adults refers to individuals aged 25–64 years. Unemployment refers to the unemployment rate.

higher for the youth than for adults because of a smaller youth labor force,[3] these differences have increased sharply after the global crisis.

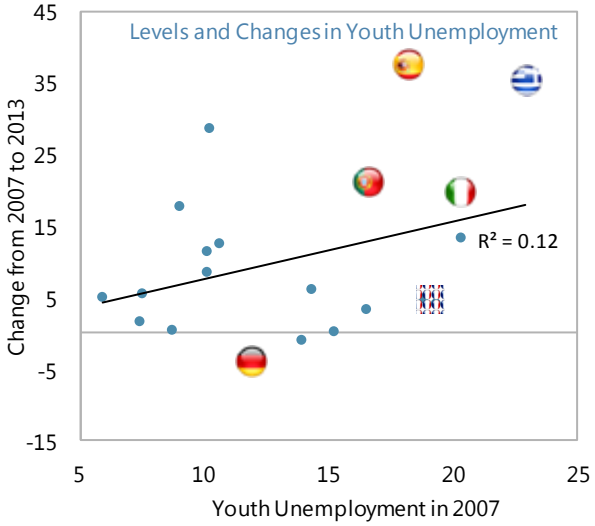


Source: Eurostat



Source: Eurostat

5. ***Wide divergence across countries.*** Youth unemployment rates vary widely across the euro area in magnitude as well as in trajectory. These cross-country differences have been exacerbated during the crisis. The hardest hit euro area countries have had unprecedented increases in youth unemployment rates, ranging from 25 percent in Ireland to 43 percent in Spain on average during 2007–13. In countries that fared better, youth unemployment rates increased only marginally (Austria, Netherlands) or even fell (Germany). Pre-crisis youth unemployment rates, however, have little bearing on the youth unemployment dynamics after the crisis.



Source: Eurostat, Staff estimates

6. ***Significant consequences.*** Large and persistent youth and adult unemployment rates lower potential output due to hysteresis effects (skill attrition and depreciated human capital) or the outward migration of skilled labor. Youth

[3] The youth labor force tends to be smaller than the labor force for other age cohorts because young individuals may choose to pursue full-time education, although participation in education does not necessarily exclude participation in the labor force (e.g., part-time work or apprenticeships). The youth labor market is also characterized by frequent search and matching as individuals look for better jobs, using intermediate stages for accumulating experience (and perhaps, occasionally, dropping out of the labor force).

unemployment erodes social cohesion and institutions. For individuals it may lead to scarring—a lower probability of future employment and lower wages.

C. Determinants

7. ***Framework.*** This paper analyzes the relative significance of two main drivers of youth unemployment—business cycle fluctuations and the institutional setup and features of the labor market. It contrasts the impact of these factors on youth versus the adult labor market.

8. ***Coverage.*** The analysis covers 22 advanced European countries—18 in the euro area, as well as Denmark, Sweden, Norway and the United Kingdom. It is based on annual data from 1980 to 2012, although the actual size of the sample varies depending on data availability, especially for labor market characteristics.

9. ***Labor market features.*** Labor market features are grouped into several interrelated categories: the opportunity cost of working; hiring costs; the role of collective bargaining; measures of labor market duality; education and training; and spending on active labor market policies. A number of different measures are used in each category. Labor market features vary widely across countries but change slowly over time (see Annex 1 for definitions).

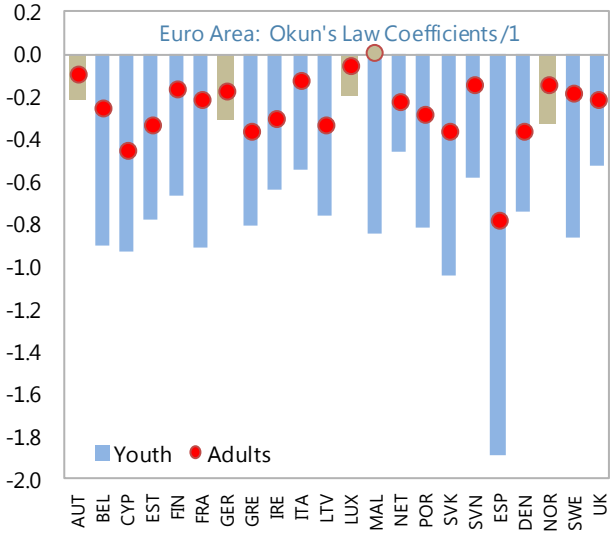
10. ***Addressing data limitations.*** Data on labor market characteristics is usually not available for the full sample period, and is especially limited for new entrants to the euro area. Data gaps make it infeasible to produce country-by-country estimations to determine the country-specific effects of institutional variables and the business cycle. As a workaround for the data limitations, a two-pronged approach was adopted. One approach was to restrict the impact of labor market features to be the same, while allowing the impact of the business cycle to vary across countries. This approach was implemented using one labor market factor at a time as well as a combination of factors. The second approach also assumes common effects of labor market factors across countries, *but* it allows the impact of labor market institutions to vary across countries via its interaction with the business cycle. However, to ensure robustness, only one institutional variable was considered at a time (see Annex 2 for more details).

D. The Business Cycle

11. ***Okun's Law***. The Okun's Law, proposed by Arthur Okun in 1962, is the empirical regularity that changes in unemployment rates and output growth are negatively related.[4] Many studies confirm this for overall unemployment but research on youth is less common. Some authors highlight the sensitivity of youth unemployment to the business cycle (OECD (2006), Scarpetta (1996), Scarpetta et.al. (2010), European Commission (2013b)).

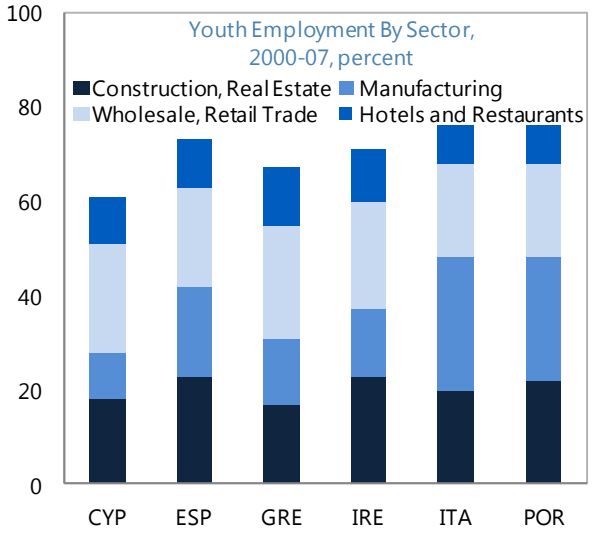
[4] See Ball, Leigh, Loungani, 2013 for an extensive discussion on this topic.

12. ***Okun's law holds…*** Empirical analysis unambiguously confirms that the Okun's law holds. This is true regardless of how the business cycle is measured—by real GDP growth or the output gap (i.e., the difference between the actual output and its potential). Cyclical factors explain around 50 percent of the changes in youth unemployment rates (and 70 percent of the increase in unemployment rates in stressed euro area countries) and around 60 percent of changes in adult unemployment rates across all advanced European countries.



/1 Shaded bars and dots indicate insignificant results
Source: Eurostat, Staff estimates

13. ***…with wide variation across countries.*** The sensitivity of unemployment rates to the business cycle (Okun's coefficient) varies across countries. Estimates range from not significantly different from zero (e.g., Austria[5]) to -1.9 in Spain, i.e., a one percent decline in growth increases youth unemployment rates by almost 2 percentage points. Countries with the biggest increases in youth unemployment rates since the crisis tend to be those that are most affected by the business cycle (i.e., they have the largest Okun's coefficients).



Source: Eurostat, Staff estimates

14. ***Much more sensitive to the cycle.*** In every country the estimated Okun's coefficient is higher for the youth than for adults, on average almost three times as large. This may be due to both the nature of youth labor force (described above) and special features of youth employment: concentration in cyclically sensitive industries and in small and medium-sized enterprises (SMEs).

15. ***Concentration in cyclically sensitive sectors.*** Youth employment is concentrated in sectors which tend to be more sensitive to the business cycle: manufacturing, construction and real estate, wholesale and retail trade, and hotels and restaurants. Together these sectors

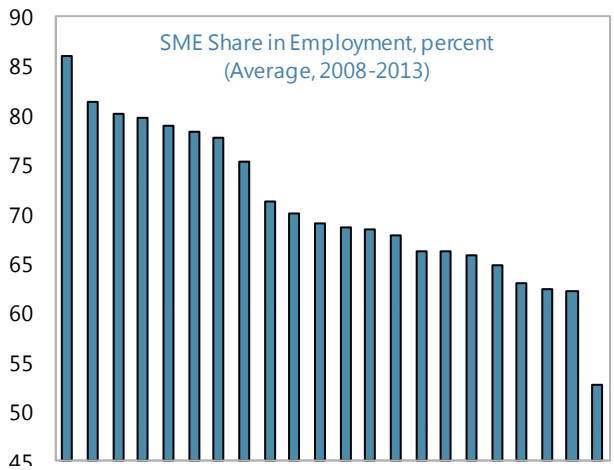
[5] Even in those cases, some studies have found that the Okun's law holds for measures of hours worked.

comprise between 65–75 percent of youth employment in countries where youth unemployment increased the most after the global crisis.

16. ***Concentration in SMEs.*** SMEs[6] employ the majority of the labor force, with the average employment share especially high in some Southern European countries—more than 75 percent for Spain, Italy and Portugal, for example. SMEs face unique financial constraints in the current environment of financial fragmentation and private sector deleveraging. This appears to increase the extent to which youth unemployment rates respond to growth (Box 1).

Box 1. SMEs. The Role of Financing Constraints and Youth Unemployment

Methodology. The Okun's law framework is augmented with the interaction of GDP growth and the average share of SMEs, or with financial constraints. Financing constraints are measured as the percentage of firms in industry and services sectors which report in surveys financial constraints as a factor limiting production. The surveys do not separate SMEs as a separate category, but it is reasonable to assume that they are more affected by financial constraints than larger firms.[1]



Source: European Commission staff estimates

Results.

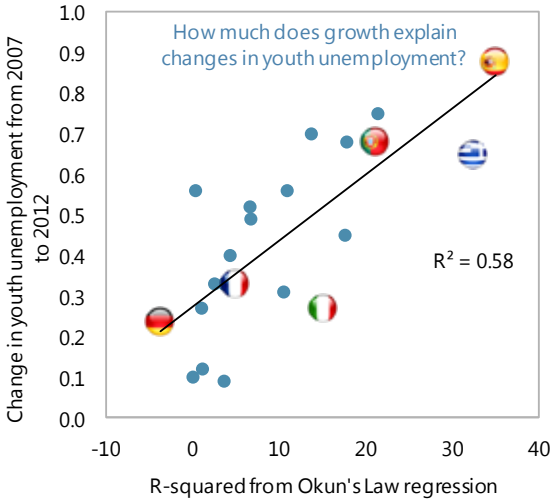
- Greater financial constraints are associated with higher youth unemployment. Controlling for country-specific fixed effects and output gap, an additional percentage point of firms reporting financial constraints raises youth unemployment rates by 0.3–0.4 percentage points (industrial and services sector respectively). The effect on adult unemployment rates is smaller (0.2 percentage points).
- A percentage point increase in the average employment share in SMEs (or the SME share of value added) lowers the Okun's coefficient by 0.01, making unemployment more pro-cyclical.

[1] There are data limitations. The average share of SME is used because the data is available only from 2008 and stays broadly constant. The percentage of firms reporting financial constraints is small (often zero) and relatively unchanged, e.g., before the financial crisis only 2 percent of industrial firms reported financial constraints, on average, compared to 2012-2013 when the average was 9.3 percent.

[6] SMEs are defined as firms with less than 250 employees, turnover of less than 50 million euro or a balance sheet less than 43 million euro.

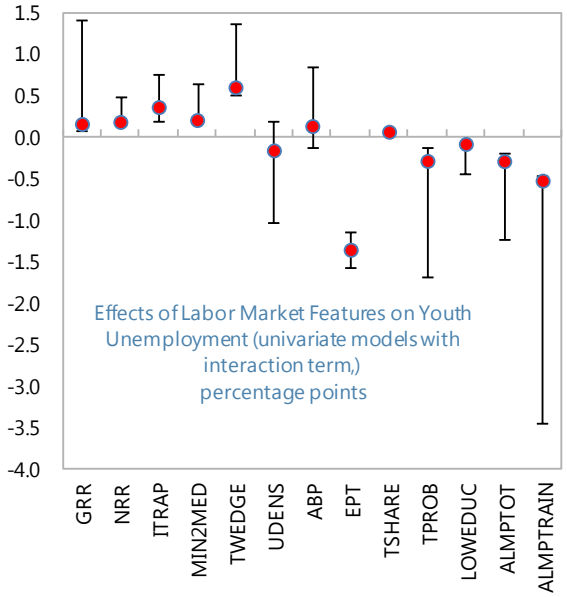
E. Labor Market Features

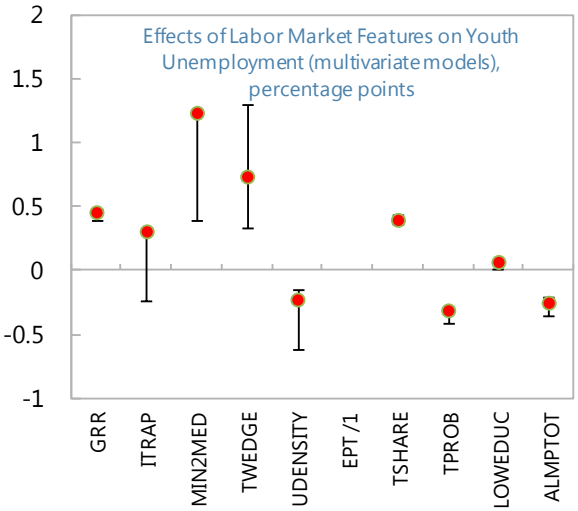
17. ***Not only the business cycle.*** Output changes on average explain much of the increase in youth unemployment, but not in every country in Europe. Excluding countries worst affected by the crisis—Greece, Portugal, Spain, Latvia, and Ireland—cyclical factors explain on average about 35 percent of the changes in youth unemployment rates across advanced European countries (e.g., 33 and 27 percent in France and Italy, both of whom have high youth unemployment rates). What are the other explanatory factors? In particular, to what extent do labor market institutions and skills play a role in explaining labor market outcomes across advanced European economies as well as within individual countries?



Source: Eurostat, Staff estimates

18. ***Role of labor markets.*** There is a large body of literature on the role of labor market characteristics in determining aggregate unemployment in Europe (most prominently, the much cited 1994 OECD Jobs Strategy). Some of the labor market characteristics considered in the literature to have an impact on youth unemployment include unionization (Bertola, 2007), hiring and firing regulations, minimum wages and hiring costs (Bernal-Verdugo, 2012), and labor market flexibility (OECD, 2006, Choudhury et.al. (2012)).





/1 Impact of EPL for temporary contracts not shown due to scale. Estimate range from -2.5 to -5.2.

Source: Eurostat, OECD, WEO, Staff Estimates

Notes: GRR – gross replacement rate, NRR – net replacement rate, ITRAP – inactivity trap, MIN2MED – ratio of minimum to median wage, TWEDGE – tax wedge, UDENS – union density, ABP – adjusted bargaining power, EPT – OECD temporary employment protection index, TSHARE – share of temporary employees for a given age group, TPROB – share of temporary employees on probation in total temporary employees for a given age group, ALMPTOT – total spending on ALMP (thousands euro per unemployed), ALMPTRAIN – spending on ALMP training policies. See Annex 1 for model details. Only significant results shown for univariate model.

19. ***Labor markets explain size of unemployment, not changes***. Labor market features have significant effects on the levels of youth and adult employment and unemployment, but not on changes.[7] Put simply, the rapid divergence of youth unemployment rates in the aftermath of the crisis has not been accompanied by dramatic changes in labor market features.

20. ***Several features matter***. A number of labor market features have an impact on youth unemployment rates, in particular, lower hiring costs (tax wedge, minimum wages relative to the median wage), and higher spending on active labor market policies per unemployed person (ALMP), especially on training, reduce unemployment. The opportunity costs of working (e.g., benefit replacement rates) and low skill levels tend to raise unemployment, whereas collective bargaining (e.g., union density), labor market duality (e.g., protection of workers), have mixed effects. These effects remain significant after controlling for several labor market features at a time.

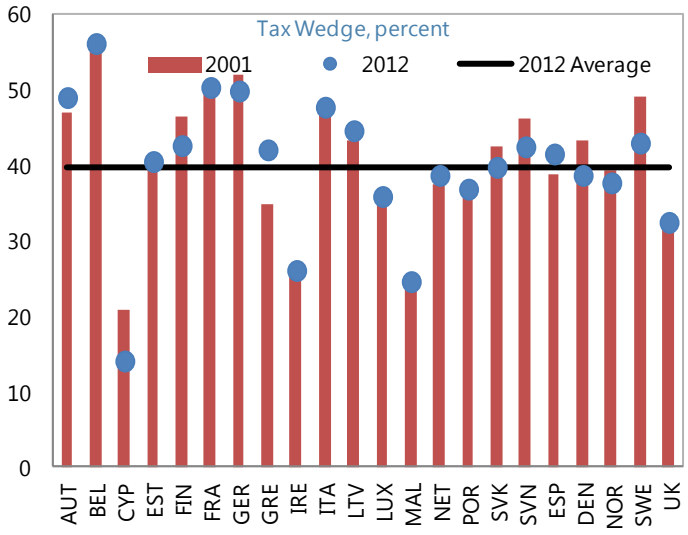
21. ***Variable effects across countries***. Allowing for interactions between labor market features and the business cycle reveals significant cross-country differences in the impact of labor market features on labor market outcomes. For instance, a 1 percentage point increase in the tax wedge increases youth unemployment rates by between 0.6–1.4 percentage points in univariate models with the interaction term.[8]

High Hiring Costs, High Unemployment

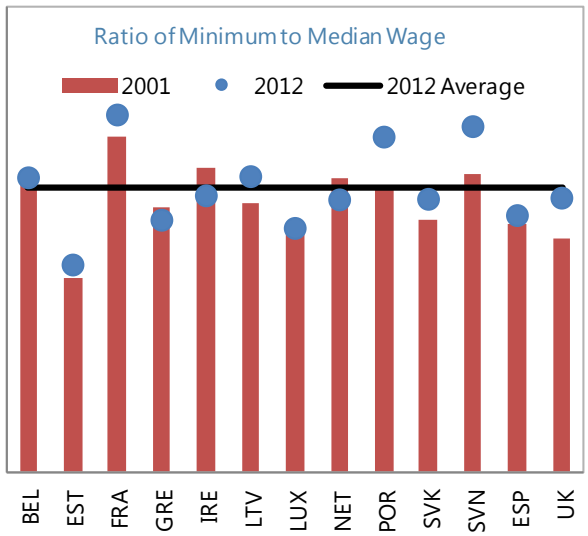
22. ***Theory.*** Taxes on employers and employees, in combination with statutory minimum wage rates, affect both the supply and demand for labor. High tax rates on labor income depress the supply of labor and drive a wedge between marginal productivity and the reward for work. If higher taxes translate into higher wages, then the increase in labor costs can reduce labor demand and increase unemployment. High payroll taxes and employers' social security contributions are even more likely to raise labor costs in the presence of wage floors generated by statutory minimum wages. If employers succeed in shifting the tax burden to the employees in the form of lower wages, this could reduce labor supply, especially for low-wage earners (which would conceivably include the youth). OECD (2012) shows that since 2007 young people have on average been at a big disadvantage in countries in which the minimum wage is relatively high as a percentage of median pay.

23. ***Recent developments.*** Hiring costs remain above average for several countries. The tax wedge declined in the Scandinavian countries and Germany, while either remaining unchanged or even increasing in other European countries (in particular, Greece and Spain). The minimum wage to median wage ratio has remained unchanged for the vast majority of advanced European countries while marginally increasing in France, Greece, Portugal and Spain.[9]

[7] These results are robust to changes in specification. Results for changes in unemployment rates are available upon request. Results discussed in the text refer to the multivariate model unless otherwise specified.
[8] Several studies find that higher labor tax wedge raise unemployment and the impact of the tax wedge is strengthened when combined with the impact of the minimum wages and the strength of collective bargaining.
[9] The minimum wage was frozen in Portugal in the second half of 2011 and cut in Greece in the second half of 2012 under the financial assistance programs.



Source: European Commission. Note: latest data for Cyprus is for 2007.



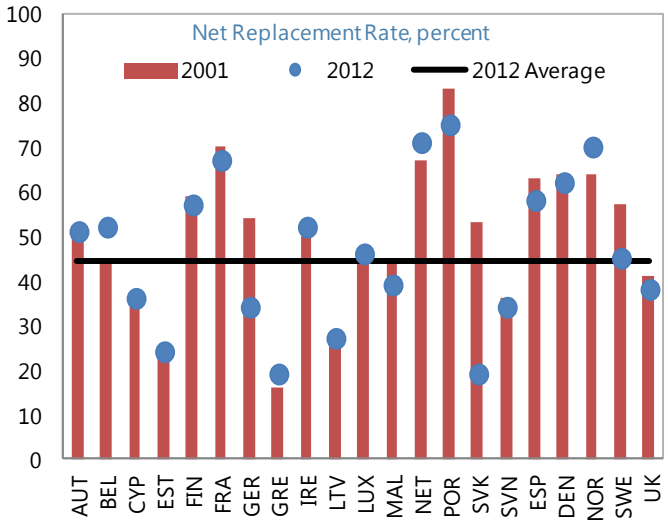
Source: OECD

24. ***Empirical results.*** The empirical analysis indicates that greater hiring costs—larger tax wedge and/or minimum wages relative to the median wage—are associated with higher youth and adult unemployment rates and lower employment rates for both youth and adults. A 1 percentage point increase in the tax wedge raises youth unemployment rates by between 0.3-1.3 percentage points. The effect on adult unemployment is smaller (around 0.4-0.5 percentage points). Higher minimum wages (relative to median wages) raise youth unemployment by 0.4–1.2 percentage points. Because many young people are hired at minimum wage jobs, they may be particularly vulnerable to increases in the cost of hiring.

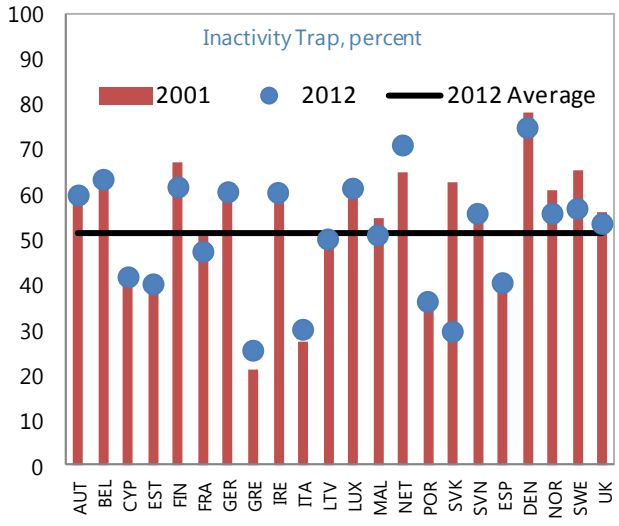
High Opportunity Cost of Working, High Unemployment

25. ***Theory.*** High unemployment benefits raise unemployment by reducing the willingness to search intensively for jobs and/or to accept job offers (lower labor supply), and by increasing the reservation wage, i.e., the salary at which the unemployed would be willing to work instead of receiving unemployment benefits (lower labor demand). Moreover, tax and benefit systems can interact to create an unemployment or inactivity trap which arises when individuals who qualify for social protection benefits have little financial incentive to work because the combined effects of increased tax payments and withdrawn income-tested benefits offset the potential gain in disposable incomes from increased earnings.

26. ***Recent developments.*** Overall, the picture remains largely unchanged over 2001–12, regardless of which indicators are used to capture the incentives of the unemployed to seek work (the net benefit replacement rate or the "inactivity trap"). There are a few exceptions, e.g., Germany and some Scandinavian countries which have reduced the benefit replacement rates and measures of the "inactivity trap." In contrast, these indicators have remained unchanged for the vast majority of advanced European countries while marginally increasing in the euro area countries under stress.



Source: European Commission



Source: European Commission

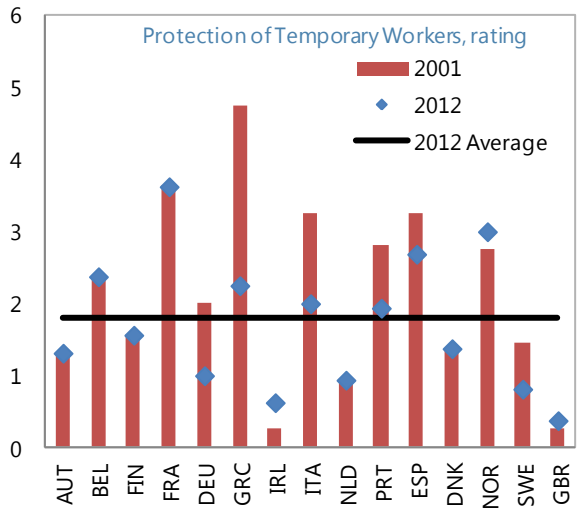
27. ***Empirical results.*** Higher opportunity costs of working are associated with higher youth and adult unemployment rates. In univariate models with the interaction term, a one percentage point increase in net replacement rates raises youth unemployment rate by 0.1–0.5 percentage points depending on the country, more than it does for adults (0.1–0.2 percentage points). Country-specific estimates find significant and positive effects of higher marginal tax rates on income (inactivity trap) on youth unemployment for most countries, with a stronger effect for youth unemployment than for adults. The young may be more sensitive to net replacement rates because unemployment benefits allow them time to find a more desirable job. However, an aggregate indicator may mask country-specific differences in eligibility for unemployment benefits, e.g. in some countries, people who never had a job may not be eligible for unemployment benefits.

Dual Labor Markets, Shifting Composition of Unemployment

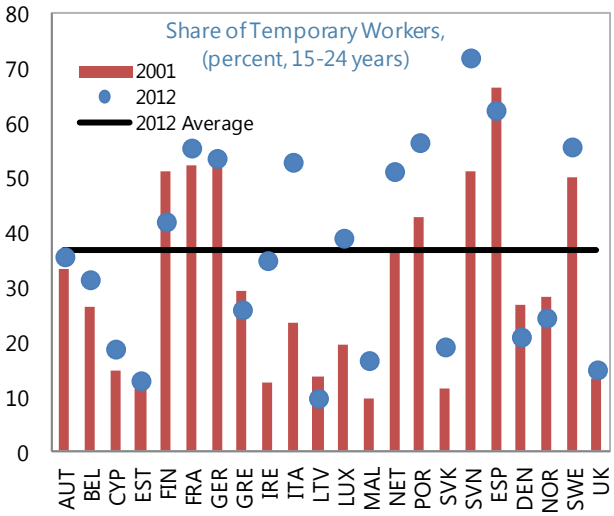
28. ***Theory.*** Dual labor markets feature a high share of temporary employment contracts with lower employment protection. Studies show that the impact of employment protection legislation (EPLs)—legislation governing the hiring and firing of employees—on labor market outcomes is small and ambiguous.[10] It can lower job separation rates by increasing the cost of firing, but also the job finding rate by increasing the reluctance to hire workers in the first place. Labor market duality has been associated with lower youth employment rate in a sample of 17 OECD countries over 1960–1996 (Bertola et al., 2007).

[10] Labor market duality is measured by the OECD's employment protection indicator (EPL) for temporary and permanent workers, and the share of temporary workers as a percent of total employees. In-sample variation in the data is larger for temporary employment protection indicators than permanent employment protection indicators.

29. ***Recent developments.*** Young workers tend to be employed on temporary contracts more so than adult workers. The disparity between the adults and youth in this regard is particularly large in Spain, Italy and Portugal, which have had some of the largest increases in youth unemployment. In Spain, labor market adjustments have focused on shedding workers on temporary contracts, i.e. mainly the youth.



Source: OECD



Source: Eurostat

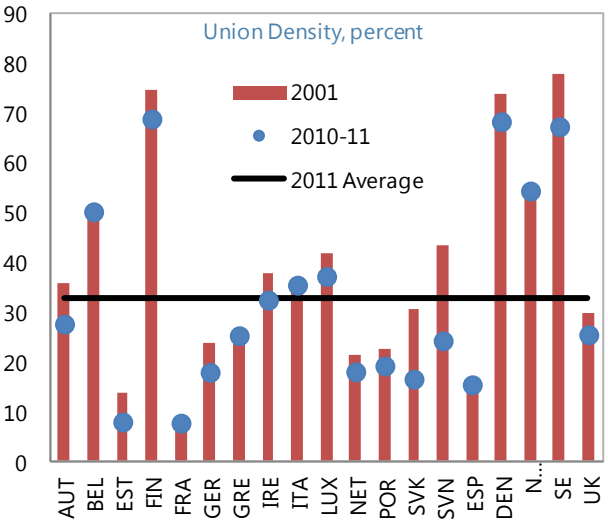
30. ***Empirical results.*** Higher protection for temporary contracts lowers unemployment rates for youth and adults, but the effects for youth are stronger since a higher share is employed on temporary contracts. A unit increase in the EPL rating[11] lowers youth unemployment rates by 2.5-5 percentage points and adult unemployment by 1.5–2 percentage points. A higher share of youth on temporary contracts increases youth unemployment and lowers employment by 0.3–0.4 percentage points, but it has no significant effects on adult employment or unemployment rates. Hence stronger labor market duality can shift the composition of employment toward adults.

Stronger Collective Bargaining, Limited Effect on Youth Unemployment

31. ***Theory.*** Higher incidence of collective bargaining has the potential to lower employment, but the impact of collective bargaining depends on the level at which the bargaining occurs. Firm level bargaining tends to limit wage increases beyond productivity levels, thereby having less of an impact on employment and unemployment rates. Very centralized or coordinated bargaining systems may also be less detrimental to employment as the overall impact on the labor force can be explicitly incorporated in the bargaining process, and thereby minimize the effect on unemployment. Thus the relationship between the strength of collective bargaining and unemployment tends to be hump-shaped, having the worst effects on unemployment when collective bargaining systems are neither fully centralized nor decentralized.

[11] The rating is on a scale from 1 to 6.

32. ***Empirical results.*** Overall, higher union density has a limited effect on youth unemployment (i.e., not significant). Some specifications indicate that a percentage point increase in union density could lower youth unemployment rates by 0.2–0.6 percentage points.[12] However, this finding is not robust to alternative specifications, including variations in control variables or allowing country specific interactions. The results from some specifications suggest that higher union density may be associated with an altered employment composition as well, perhaps because employers prefer to hire the non-unionized youth instead of the unionized adults in order to preserve the flexibility to adjust the work force as needed, leading to higher employment for the youth and lower employment for adults.

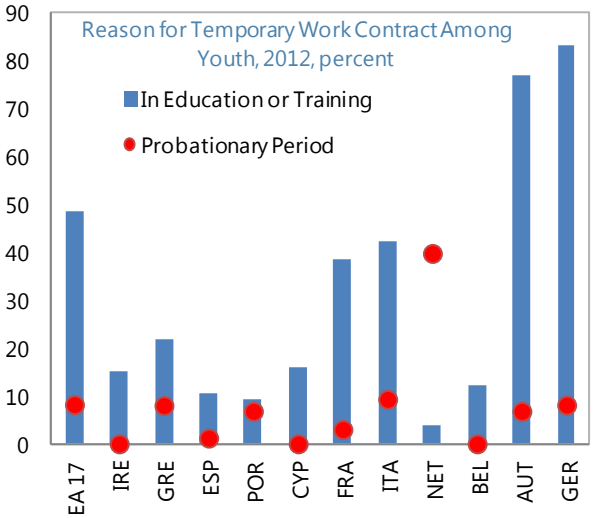


Source: OECD

More Vocational Training, Less Unemployment

33. ***Theory.*** Educational attainment may have a large impact on employability (OECD, 2013). Vocational training and expanded access to training could play a significant role in reducing temporary work and contribute to making temporary jobs a stepping stone toward open-ended contracts (OECD, 2004).

34. ***Recent developments.*** The share of workers in the population with low-education has been declining steadily across all countries. But the level of formal education may not provide a complete picture of the skills of the young unemployed. Vocational training and apprenticeships are also important forms of skilling, but are difficult to measure. Survey data on the reason for temporary contracts suggests that temporary contracts for the youth are associated with education, training, or probation in countries with low youth unemployment rates like Germany, Netherlands, and Austria. The



Source: Eurostat

[12] This result is based on the OECD's indicator on union density which measures the incidence of unionization among the employed, but does not measure the degree of centralization.

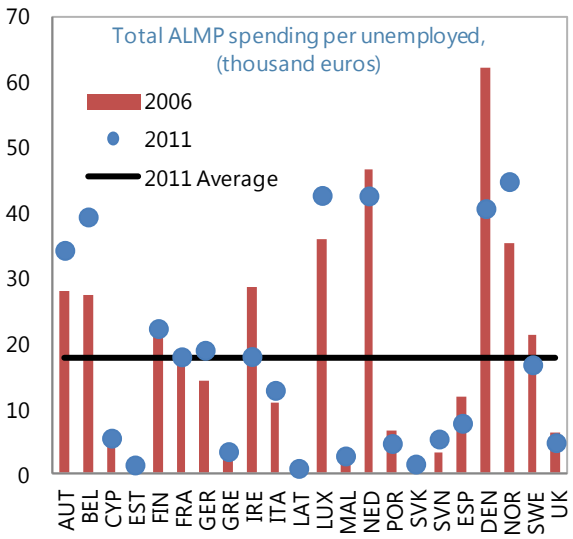
share of those in education, training and probation is relatively smaller in Greece, Spain, Portugal, and Cyprus.

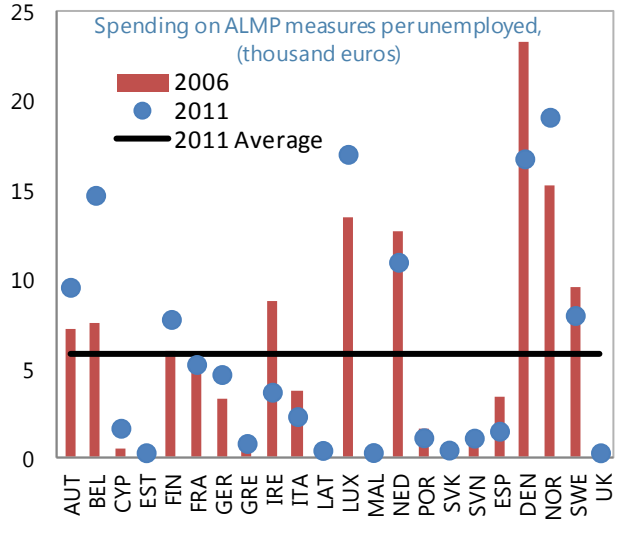
35. ***Empirical results***. Access to vocational training—measured by the share of temporary workers under probation or vocational training—significantly reduces youth unemployment by around 0.3 percentage points, but has no significant effect for adults. A higher share of individuals with low education has generally no significant effects on youth unemployment or employment rates, but has a strong negative effect on adult unemployment and employment rates. Low education may be less of an obstacle for youth employment, perhaps because young workers can be more easily trained than adults.

More Spending on Active Labor Market Policies, Lower Unemployment

36. ***Theory.*** According to OECD (2006), most macro-econometric studies have found significant positive effects of spending on ALMP, especially on training, on aggregate unemployment. However, microeconomic evaluation studies of ALMPs find that the effectiveness of programs vary, and that apparently similar programs can yield very different outcomes (e.g., Card, et. Al., 2010, and Kluve, 2010). Studies also show that ALMP programs that specifically target young people are not very effective regardless of the type of the program (i.e., they have a lower probability of yielding positive results).

37. ***Recent developments.*** Spending on ALMP varies widely across countries, and several countries have increased spending in this area after the crisis. Given dramatic increases in unemployment during the crisis, ALMP funds have had to be distributed across greater numbers of the unemployed.





Source: Eurostat. ALMP measures include training as one of the main components, while total spending combines measures, supports and services.

38. ***Empirical results***. Higher spending on active labor market policies, especially training, is associated with significant reductions in youth unemployment rates. An additional 1000 euro per unemployed increase in ALMP spending reduces youth unemployment by around 0.3 and adult

unemployment by around 0.1 percentage points. It also raises employment rates by 0.2 percentage points for youth and 0.1 percentage points for adults.

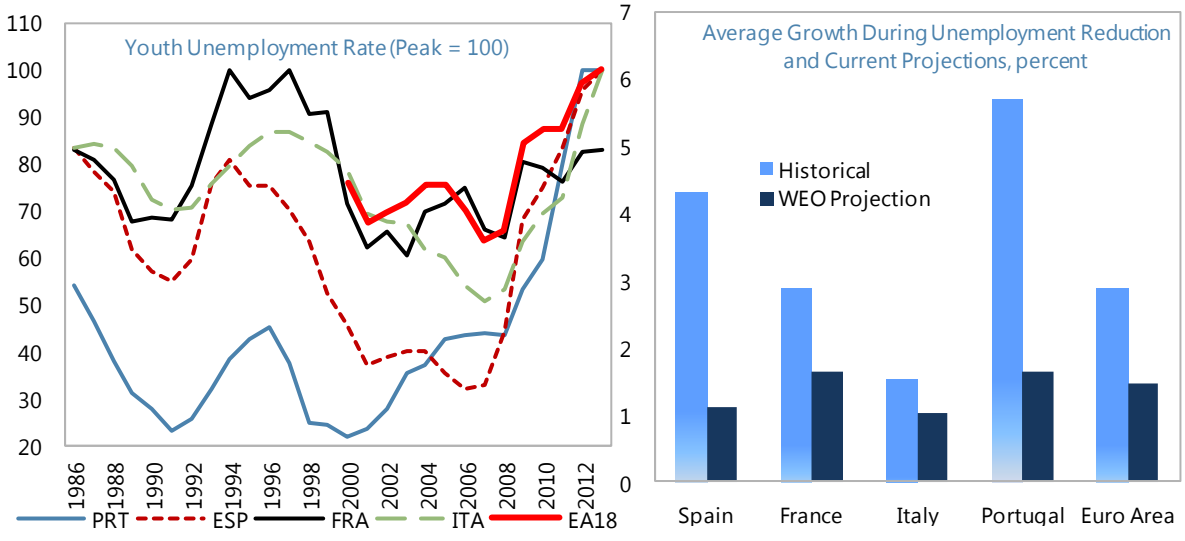
F. Conclusions and Policy Recommendations

39. ***No magic bullet.*** The youth unemployment problem in the euro area is multi-faceted and varies across countries. Substantial cross-country differences in the composition and dynamics of youth unemployment suggest that no single policy at the EU or national level is likely to solve the problem. The solution would need to target the country-specific factors affecting youth unemployment. Experience from other countries indicates that there is no one-size-fits all approach to tackling youth unemployment (ILO, 2013).

40. ***Strong sustainable growth is key…***. A comprehensive strategy to tackle youth unemployment in the euro area should focus on creating conditions for sustainable growth, given the higher sensitivity of youth unemployment to the business cycle. In the short-term, policies to restore the housing sector, improve competitiveness in trade and tourism activities would be particularly beneficial as these are also sectors where youth employment is concentrated. Historically, euro area countries have reduced youth unemployment rates by growing much more strongly than they are currently expected (Box 2).

Box 2. A Historical Perspective on Growth and Youth Unemployment

Not unprecedented. Youth unemployment rates are peaking in the euro area, but such unemployment levels are not unprecedented. In Spain, for example, youth unemployment rates are close to (around 90 percent of) the previous peak (1986 and 1994). Youth unemployment rates remains below their historical peaks for France and Italy.



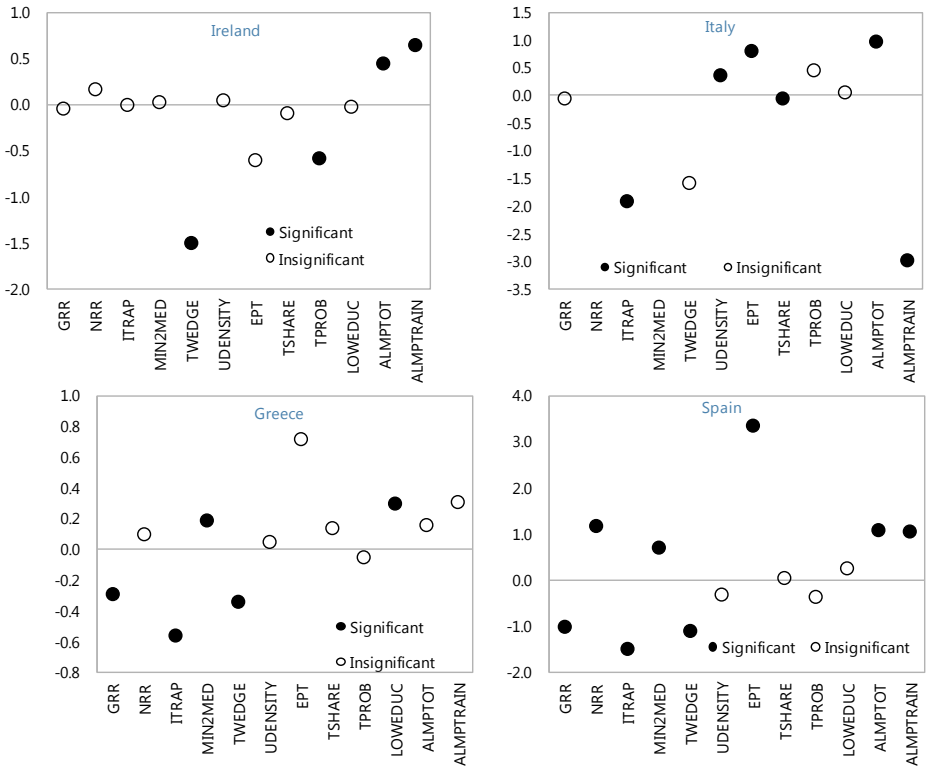
Source: Eurostat, WEO, Staff estimates

Helped by growth. Euro area countries succeeded in reducing high youth unemployment rates in the past, but they have done so in the context of stronger growth than currently envisaged. In some cases, growth rates would have to be double or even triple the current forecasts.

41. ***Labor market reforms will help.*** The empirical results show that growth explains about half the increase in youth unemployment overall, and about a third in some high youth unemployment countries (such as France and Italy). Therefore, growth alone cannot solve the youth unemployment problem. Empirical analysis also shows that labor market reforms would pay dividends. As the economic recovery solidifies and unemployment rates return closer to their historical averages, labor market institutions may play an increasingly large role in labor market dynamics. Reforms could include: lowering hiring costs by reducing the tax wedge and reconsidering minimum wage policies (which largely affect the youth) to increase labor demand; reform of unemployment benefits to better incentivize the transition from inactivity to work; improvements in skill levels and work-related training; and, ALMPs.

42. ***…and may complement the effect of the business cycle***. Labor market institutions affect the sensitivity of youth unemployment rates to the business cycle in Greece, Ireland, Italy and Spain. For example, an increase in the tax wedge increases the cyclical responsiveness of youth unemployment in Greece and also for Spain. Similarly ALMP spending seems to significantly reduce the effect of cyclical changes on youth unemployment in Ireland, Italy and Spain. Thus, a reduction in ALMP spending per unemployed in Ireland and Spain in the aftermath of the crisis may have aggravated the effect of the sharp drop in growth on youth unemployment rates.

Interaction between labor market features and output gap, coefficient



Notes: GRR – gross replacement rate, NRR – net replacement rate, ITRAP – inactivity trap, MIN2MED – ratio of minimum to median wage, TWEDGE – tax wedge, UDENS – union density, EPT – OECD temporary employment protection index, TSHARE – share of temporary employees for a given age group, TPROB – share of temporary employees on probation in total temporary employees for a given age group, LOWEDUC – share of population with lower secondary education, ALMPTOT – total spending on ALMP (thousands euro per unemployed), ALMPTRAIN – spending on ALMP training policies.

Source: Staff Estimates

43. ***Reforms better as a package***. Given the estimated effects on youth unemployment, the amounts of ALMP spending required to make a sizeable dent in historically high youth unemployment rates would be too large to be feasible. Thus ALMP spending will need to be complemented with growth and other labor market reforms to yield the maximum effect. Empirical analysis shows that ALMPs are likely to be more effective if they are part of the broader, comprehensive strategy to address structural impediments to greater youth employment, e.g., higher tax wedges reduce the effectiveness of ALMP spending in Austria and Germany.

44. ***However, ALMP is not a panacea by itself***. ALMP programs need to be designed and monitored properly as meta analysis of such programs show that the impact and cost-effectiveness of ALMPs vary significantly based on their design.

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Annex 1. Data Definitions

Variable	Definition	Source
Output gap	(Real GDP - Real potential GDP) as a percent of real potential GDP	WEO
GDP growth	Year-on-year growth of GDP, constant price	WEO
Unemployment rate	Unemployed population as a percent of labor force in corresponding age cohort.	Eurostat
Net replacement rate	Net benefits replacement rate is defined as the ratio of net income while out of work (mainly unemployment benefits if unemployed, or means-tested benefits, if on social assistance) divided by net income while in work. A lower net replacement rate is associated with greater incentive to search for and take up a job when unemployed.	European Comission Tax and Benefits Indicators Database
Gross replacement rate	Average of the gross unemployment benefit replacement rates for two earnings levels, three family situations and three durations of unemployment.	OECD
Inactivity trap	The inactivity trap - or the implicit tax on retuning to work for inactive persons - measures the part of additional gross wage that is taxed away when an inactive person (not entitled to receive unemployment benefits but eligible for income-tested social assistance) takes up a job. In other words, this indicator measures the financial incentives to move from inactivity and social assistance to employment.	European Comission Tax and Benefits Indicators Database
Minimum wage/Median wage	Minimum wage relative to median wage for full-time workers. This ratio is set to be zero for countries without a national minimum wage.	OECD
Protection of temporary workers	Strictness of employment protection for tempororary contracts.	OECD
Share of temporary workers	Temporary employees as percentage of the total number of employees.	Eurostat
Tax wedge (EC)	The tax wedge is defined as the proportional difference between the costs of a worker to their employer (wage and social security contributions, i.e. the total labour cost) and the amount of net earnings that the worker receives (wages minus personal income tax and social security contributions, plus any available family benefits). Tax wedge measures both incentives to work (labour supply side) and to hire persons (labour demand side).	European Comission Tax and Benefits Indicators Database
Union density	Trade union density corresponds to the ratio of wage and salary earners that are trade union members, divided by the total number of wage and salary earners (OECD Labour Force Statistics). Density is calculated using survey data,	OECD
Adjusted bargaining power	Employees covered by wage bargaining agreements as a percentage of all wage and salary earners in employment with the right to bargaining, adjusted for the possibility that some sectors or occupations are excluded from the right to bargain (removing such groups from the employment count before dividing the number of covered employees over the total number of dependent workers in employment).	The QOG (Quality of Government) Institute, University of Gothenburg
Share of temporary workers on probation	Proportion of total temporary workers on probation (other reasons for being on temporary contracts include "could not find a permanent job", "did not find a permanent job", "in education or training").	Eurostat
Share of low-educated workers	Persons with lower secondary education attainment.	Eurostat
ALMP total spending per unemployed	Active labor market policy: total spending per unemployed.	Eurostat
ALMP spending per unemployed on training	Active labor market policy: spending on training per unemployed.	Eurostat

Annex 2. Methodology

A. Estimating the Okun's Coefficient

1. **The estimation of Okun's coefficient for individual countries was conducted using the following specification:**

Change in unemployment rate over time

$$Urate_{it} - Urate_{it-1} = Constant + \sum_{i=1}^{22} b_i * Growth_{it} * Country\ dummy_i + Country_i + \varepsilon_{it}$$

Where:
$Urate_{it}$: Unemployment rate in a certain age group in country i, year t
$Urate_{it}^{*}$: Structural (equilibrium) unemployment rate in a certain age group in country i, year t (estimated by using HP filter, with λ=100)
$Growth_{it}$: GDP growth rate in country i, year t
$Output\ gap_{it}$: Output gap in country i, year t (Source: WEO)
$Country_i$: Country fixed effect

The estimated b_i would be the Okun's coefficient.

B. Impact of Labor Market Institutions

2. ***Specification in levels.*** Economists have advanced a number of models for unemployment rate, which are consistent with using unemployment rate in levels as dependent variable in reduced form equations. For example, Nickell and Layard (1999) develop a wage bargaining model with numerous identical firms, showing that equilibrium *level* of unemployment rate will be decreasing in any exogenous factor that increases job separation rate (represented in our case by the output gap), increases the search effectiveness of the unemployed (represented by ALMP policies), lowers the benefit replacement ratio, lowers the strength of the workers in the wage bargain (union density) or raises the elasticity of product demand facing the firm. The latter argument even suggests scope for including variables associated with product market regulation into unemployment equations. Other examples of similar models include Scarpetta (1996) and Bassanini and Duval (2006), who estimate a specification very similar to ours.[13]

3. ***Univariate model with interaction terms.*** This model assumes that: (i) the effects of the business cycle may depend on labor market features, (ii) this dependence may be different across

[13] Bassanini and Duval (1996) estimate a reduced form equation consistent with a variety of theoretical models of labor market $u_{i,t} = \sum_j \beta_j X_j + \chi G_{i,t} + \alpha_i + \lambda_t + \varepsilon_{i,t}$ equilibrium (job search, wage setting), where unemployment is regressed on a series of structural variables (in vector X), an output gap measure (G), as well as country and time fixed effects. We depart from this specification by including interaction terms and excluding time fixed effects.

countries and (iii) that the effect of the structural variable itself does not depend on the country, except indirectly via the business cycle. These assumptions, together with limitations of data availability mean that structural variables can only be considered one at a time, otherwise the high number parameters to estimate relative to the size of the sample will prevent efficient estimation of the coefficients.

We consider the following specification:

$$u_{i,t} = \beta_0 + \beta_{1,i}c_i + \beta_2 x_{i,t} + \beta_{3,i}c_i y^*_{i,t} + \beta_{4,i}c_i x_{i,t} y^*_{i,t} + \varepsilon_{i,t},$$

where $u_{i,t}$is one out of six dependent variables (youth and adult unemployment and long-term unemployment rates, as well as employment rates), c_i is the dummy variable equal to 1, if dependent variable is from country *I*, $y^*_{i,t}$is the control variable for the regression in levels: output gap, $\Delta y_{i,t}$ is the control variable for the regression in differences: output growth and $x_{i,t}$ is a given labor market feature. Finally $\varepsilon_{i,t}$ is the error term with standard assumptions.

4. ***Marginal effects***. The marginal impact of the change in labor market feature $x_{i,t}$ on the *level* of unemployment or employment is given by the partial derivative:

$$\frac{\partial u_{i,t}}{\partial x_{i,t}} = \beta_2 + \beta_{4,i}c_i y^*_{i,t},$$

that is the impact of a change in labor market feature differs depending on the country considered and its' output gap. Crucially, therefore the marginal effects of the change in structural variable will depend on the value of the output gap $y^*_{i,t}$ at which they are evaluated. In this note, this point is *the country-specific average output gap (*average growth rate for the specification in differences). The standard errors for the marginal effects are computed using the delta method.

5. ***Multivariate approach.*** This specification considers several labor market features at a time and assumes that the impact of labor market features, if any, is common across all countries. It allows the impact of the business cycle (output gap) to vary across countries.

$$Urate_{it} = Constant + \sum_j \gamma_j X_{ijt} + \sum_{i=1}^{22} b_i * Output\ gap_{it} * Country\ dummy_i + Country_i + \varepsilon_{it}$$

Where:
$Urate_{it}$: Unemployment rate in a certain age group in country i, year t
X_{ijt}: Labor market institution j, in country i, year t

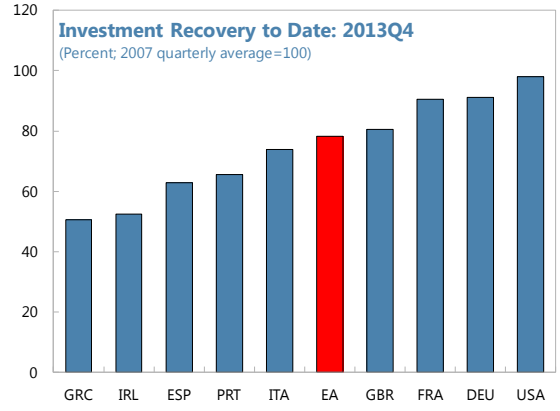
A variety of robustness checks are performed e.g. including time effects, using different measures of the output gap, and youth unemployment, etc. These results are available upon request.

INVESTMENT IN THE EURO AREA: WHY HAS IT BEEN WEAK?[1]

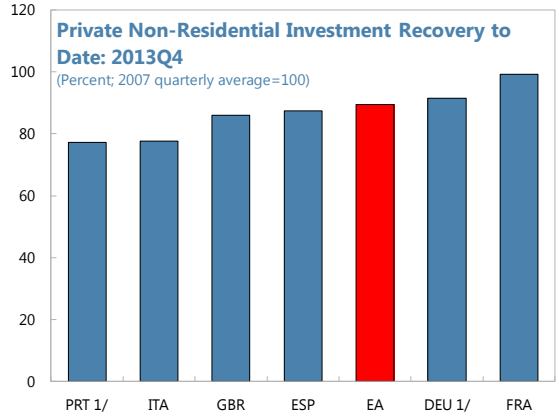
Investment across the euro area—both in real terms and in percent of GDP—remains below its pre-crisis level. Its performance has been weaker than in most previous recessions and financial crises. Staff analysis shows that much of this weakness can be explained by output dynamics, although a high cost of capital, financial constraints, corporate leverage, and uncertainty have also constrained investment in parts of the euro area. Investment is expected to pick up as the recovery strengthens and uncertainty declines. However, financial fragmentation and high corporate leverage in some countries will likely continue to weigh on investment.

A. Investment in the Euro Area: Post-crisis Trends

1. **Investment has been hit hard since the onset of the crisis.** It has not recovered since, including in many of the core economies. Total (real) investment remains below its pre-crisis level across the euro area.[2] Part of this decline reflects declines in public and housing investment in certain countries. For example, housing investment declined from about 12–13 percent of GDP before the crisis to 6 percent of GDP in Spain and to 2-3 percent of GDP in Greece and Ireland after the crisis. Similarly, following the sovereign debt crisis, public investment, as well as private non-residential investment remains well below its pre-crisis levels, in most of the euro area, particularly in stressed countries.[3]



Sources: Eurostat; and staff calculations.



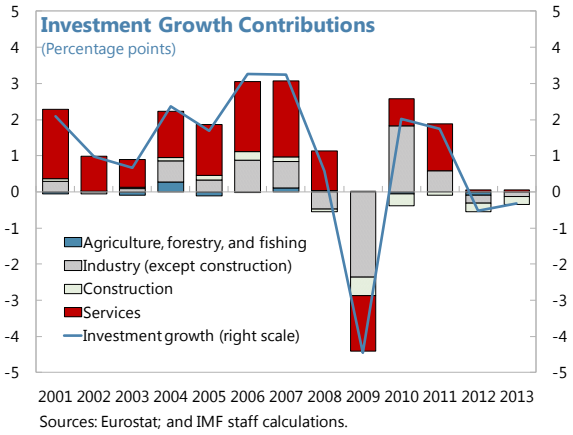
Sources: Eurostat, and staff calculations
Notes: 1/ DEU - last available data point 2012Q4; PRT = 2013Q3.

[1] Prepared by Bergljot Barkbu, Pelin Berkmen, Pavel Lukyantsau, Sergejs Saksonovs, and Hanni Schoelermann. We are grateful for the comments provided by Philip Vermeulen and other participants at the ECB seminar, as well as the European Commission staff.

[2] Investment in percent of GDP remains below its pre-crisis long-term (1995-2007) level, particularly for stressed countries.

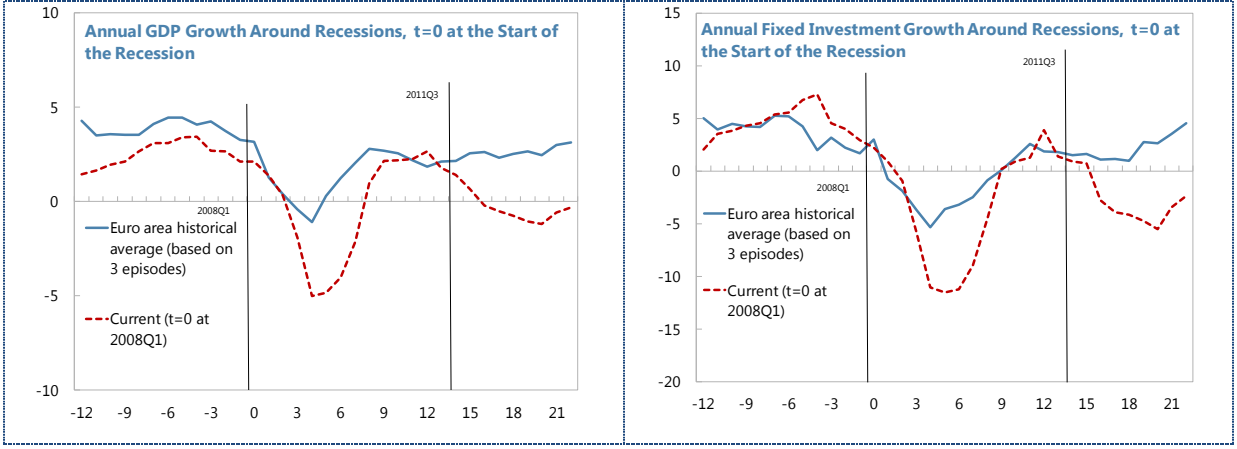
[3] For these charts and regressions, private non-residential investment data are obtained from Eurostat to ensure consistency and comparability across countries. Looking into other data sources also shows weak investment dynamics. For example, real fixed-investment in equipment in Germany and real investment by NFCs in France, equipment and transportation machinery in the euro area are also weaker than their pre-crisis levels.

2. **Overall the behavior of investment and its determinants vary largely across the euro area.** Across countries, stressed countries have suffered more than the core countries. Across firm sizes, SMEs have suffered more than the larger corporations. And across sectors, services have suffered substantially.

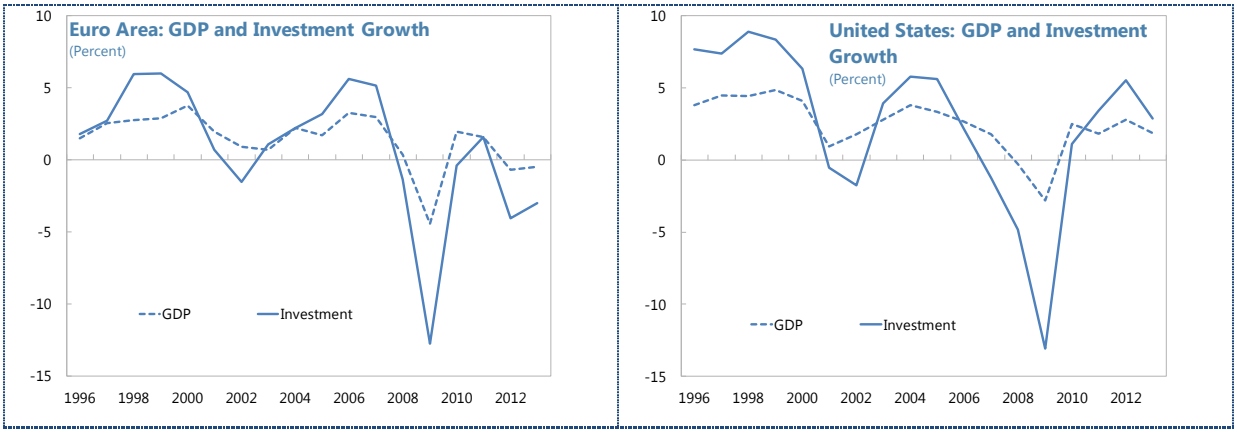


Sources: Eurostat; and IMF staff calculations.

3. **Weak investment performance is associated with weak aggregate demand.** Real GDP in the euro area remains below its pre-crisis level and is more sluggish than in typical recessions. While the recovery is gaining momentum, domestic demand growth is still fragile, and the output gap for the euro area is still negative and large. Given subdued aggregate demand, it is not surprising that investment has also lagged behind the trends observed in most previous recessions. Indeed, investment growth is still lower than real GDP growth in the euro area, unlike the recovery in the U.S.

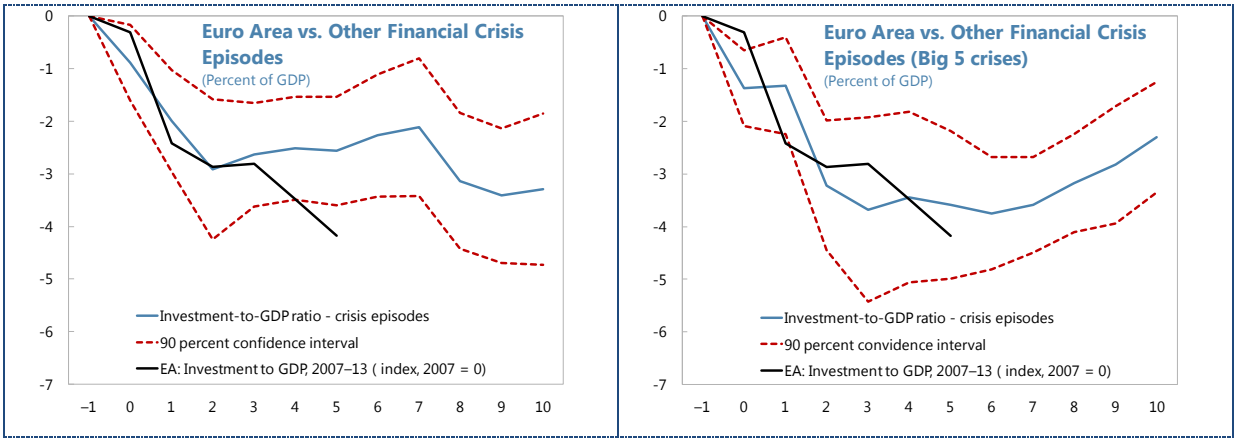


Source: OECD; Eurostat; Staff calculations.
Notes: Quarterly data and yoy change. t=0 at 2008 Q1; the shade area starts from 2011 Q3 (t=15) to indicate the back-to-back recession in the euro area; historical episodes are based on CEPR-dated recessions: 1974Q3 to 1975Q1, 1980Q1 to 1982Q3, and 1992Q1 to 1993Q3.



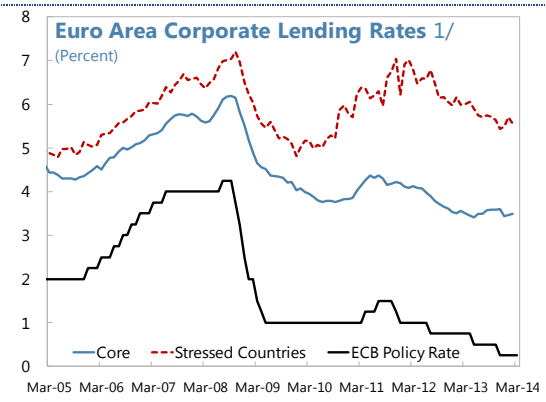
Source: Eurostat; Staff calculations.

4. **In addition, financial crises tend to have durable effects on investment, reflecting credit supply constraints, balance sheet problems, and other supply-side factors.** Previous experience with financial crises shows that the decline in the investment-to-GDP ratio could be long-lasting, with a peak impact of 3 to 3½ percentage points three years after the crisis (WEO 2014). In the euro area, the observed decline in investment-to-GDP ratio since the beginning of the crisis is more severe than the standard financial crisis but is in line with the decline observed in the most severe crises— with the ratio standing at 4¼ percentage points below the pre-crisis level.

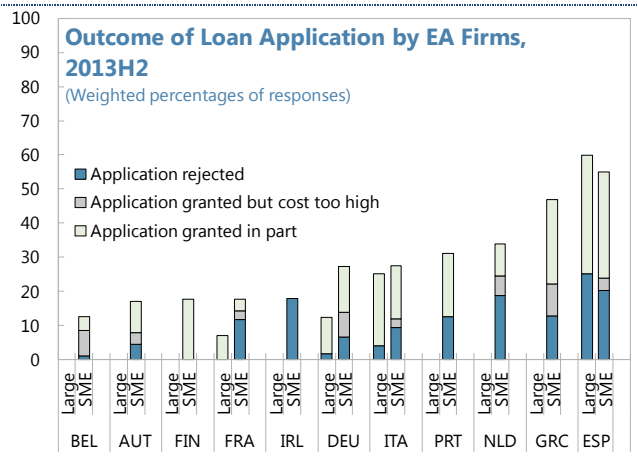


Source: WEO 2014, Chapter 3; and staff calculations.
Notes: Gross fixed capital formation in percent of GDP. The entire sample of advanced economy financial crises between 1970 and 2007 identified by Laeven and Valencia (2012). Big 5 financial crises are those in Spain, 1977; Norway, 1987; Finland, 1991; Sweden, 1991; and Japan, 1992.Dashed red lines denote 90 percent confidence bands; and black line denotes the actual evolution of the investment-to-GDP ratio in the euro area from 2007 to 2013. X-axis units are years; t = 0 denotes the year of the financial crisis.

5. **In the euro area, the high cost of capital and limited access to funding could impose additional impediments to investment in certain countries.** While the ECB's policy rate is close to zero, lending rates remain elevated in some countries as financial fragmentation persists. Given that debt financing in the euro area is mostly bank-based (about 90 percent), this increases the cost of capital, particularly for smaller firms. In addition, many smaller companies have difficulty accessing credit (SAFE survey). Recent improvements in corporate bond and stock markets are likely to benefit only larger corporations.

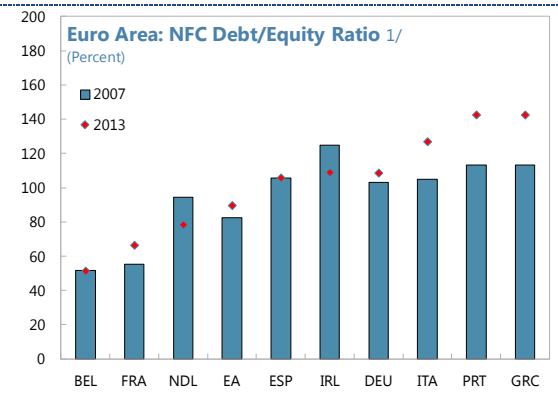


Sources: Haver, ECB, staff calculations.
1/ Unweighted average; MFI lending to corporations under €1 million, 1–5 years maturity. Core: Germany, France, Belgium, Netherlands. Stressed countries include Greece, Ireland, Italy, Portugal, and Spain. In the sample, Ireland is excluded from May 2011 and Greece from September 2012.

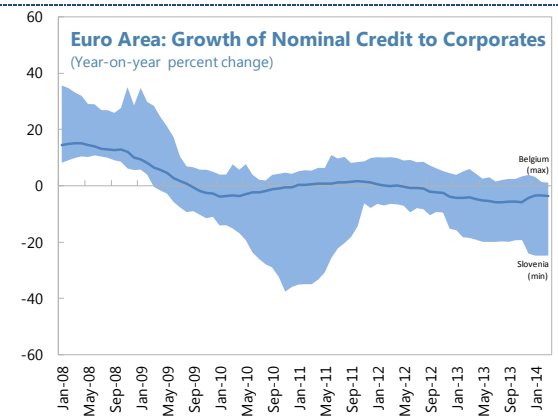


Source: ECB, Safe survey.

6. **Moreover, the corporate sector is highly leveraged in some countries, further depressing credit flows to the private sector.**[4] Corporate debt-to-equity ratios remain elevated in some stressed countries, and the deleveraging process is still at an early stage. As companies repair their balance sheets and reduce debt, this feeds back into the banking sector through low demand for credit and higher NPLs. As a result of both corporate and banking sector deleveraging, the credit to the private sector continues to shrink.



Source: ECB.
1/ Debt at EA level is non-consolidated



Source: Haver. The stock of credit for Slovenia includes the December 2013 transfer of nonperforming loans to BAMC.

7. **Investment in the euro area could recover without credit, but credit-less recoveries are associated with lower investment and GDP growth.** Empirically, credit-less recoveries are rare, especially in advanced economies, which suggests risks to recovery unless credit growth resumes (IMF, 2014). In addition such recoveries are associated with lower investment and output growth than in recoveries with credit. This, in turn, could have long-term consequences through lower potential output.

8. **Against this backdrop, the paper explores to what extent output dynamics and other factors can explain private non-residential investment across the euro area.** First, to analyze the impact of the output dynamics, an accelerator model is estimated for the euro area and selected euro area countries.[5] While this model tracks investment closely, actual post-crisis investment has remained below its model-implied value for most countries. Second, to explore the impact of the cost of capital and financial constraints, we augment the model with the (real) cost of capital and a proxy for financial constraints (EC survey). These additional factors are significant for some of the countries; however, actual investment continues to remain below its estimated level for most countries. Finally, to explore the effects stemming from uncertainty, corporate leverage, and cash flow, a more eclectic (bond market) model is estimated. Controlling for these factors, changes in output are more representative of demand factors. Accordingly, uncertainty is associated with low investment in most countries. In addition, high corporate

[4] In addition to these standard factors, investment in many smaller European countries has been affected by availability of the EU structural funds. For instance, there are indications that investment in Portugal in certain sectors was too high prior to the crisis (see OECD WP 994).

[5] Select countries are Germany, France, Italy, Spain, Portugal, Ireland and Greece. We use quarterly data for 1990/99 and 2012/13.

leverage is associated with subdued investment in Italy and Portugal, and to a lesser extent in Spain, and France. Overall, this model seems to be a better fit for stressed countries, with the residuals substantially smaller than in the previous two models.

B. Drivers of Investment: Output Changes versus Other Factors

9. **Three types of investment models are used to explain the dynamics of private non-residential investment,** following Lee and Rabanal (2010): 1) an accelerator model (Clark, 1917; and Jorgenson, 1971); 2) a neoclassical model (Jorgenson, 1971; and Caballero, 1994); and 3) a bond-market model (Philippon, 2009; Bloom, 2009; Lee and Rabanal, 2010).[6] Appendix 1 presents data sources and definitions.

Are output changes enough to explain the decline in investment (Accelerator Model)?

10. **The first step is to explore whether changes in the output are sufficient to explain investment dynamics in the euro area.** The accelerator model relates real investment to past changes in real output, taken to be the primary determinants of the changes in the desired capital stock. A common approach is to run these regressions on the investment-to-capital stock ratio:

$$\frac{I_t}{K_{t-1}} = \frac{\alpha}{K_{t-1}} + \sum_{i=1}^{N} \beta_i \frac{\Delta Y_{t-i}}{K_{t-1}} + \delta + e_t ,$$

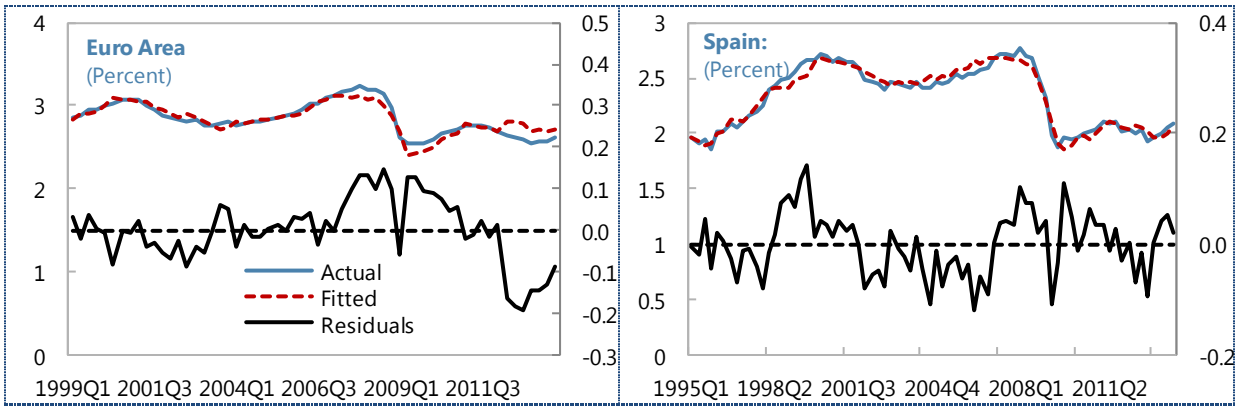
where *I* is real private non-residential investment, *K* is the total capital stock, *ΔY* is the change in real GDP. [7]

11. **The results indicate that changes in output can capture broad changes in the investment but cannot fully account for the decline in investment after the crisis in most cases (Appendix 2).** Lags of changes in the real GDP (up to 12) are correctly signed and significant. While the model provides a good fit for overall trends, real non-residential private investment, particularly during the second phase of the crisis, is lower than in-sample fitted values, with the exception of Spain. The model seems to track Spain's investment closely, implying that output has played an important role in investment dynamics. For most countries, underinvestment becomes smaller towards the end of the sample. The model does not seem to

[6] A model based on Tobin's Q was also estimated. This model relates the real investment-to-capital ratio to the ratio of firm value to the replacement cost of the existing capital stock (Tobin, 1969; and Hayashi, 1982). Alternative definitions of Tobin's Q (for NFCs) are used: i) interpolated from annual Tobin's Q (CVU, Woldscope); ii) price-to-book ratio; iii) stock prices deflated by GDP deflator. The model also controls for firms' leverage (debt-to-asset ratio) and cash-flow (CVU, Worldscope). Among the Tobin's Q proxies used, only price-to-book ratio appears to be significant in a few specifications for Germany, France, and Portugal. Controlling for endogeneity (by two-stage least squares) and running the regressions for the pre-crisis period, the significance of the results increases: price-to-book ratio and leverage are significant and correctly signed for Germany, Greece, Portugal, and the euro area. Overall, however, model performance remains weak.

[7] For Ireland and Greece, total real investment is used. As the residuals are highly correlated—a common result in the literature— we report Newey-West standard errors. Note that the constant δ can be interpreted as an indirect estimate of the depreciation rate.

explain well the behavior of total investment in Greece and Ireland. As a robustness check, the regressions are run for machinery and equipment investment in Ireland and Germany (with data up to 2013Q4). For both cases, the results are broadly the same.

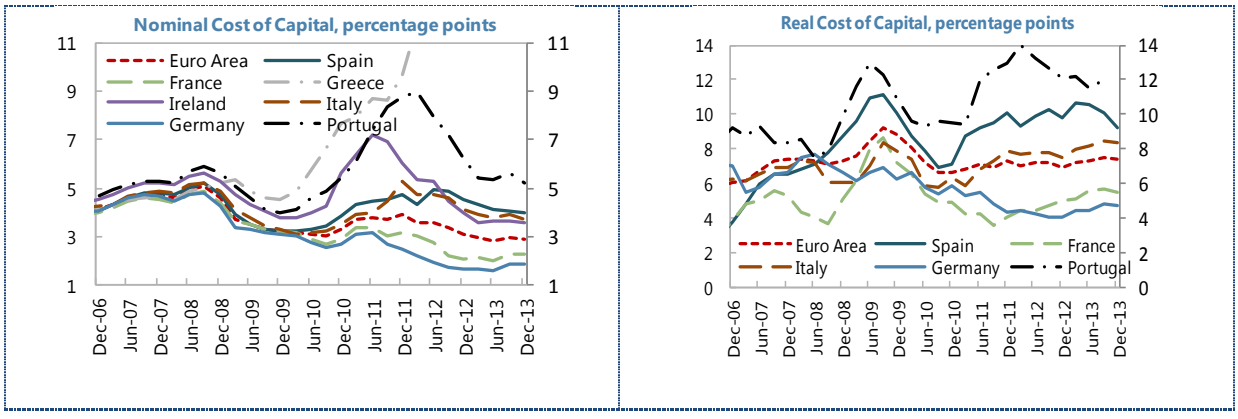


Do cost of capital and financial constraints matter for investment (neoclassical model)?

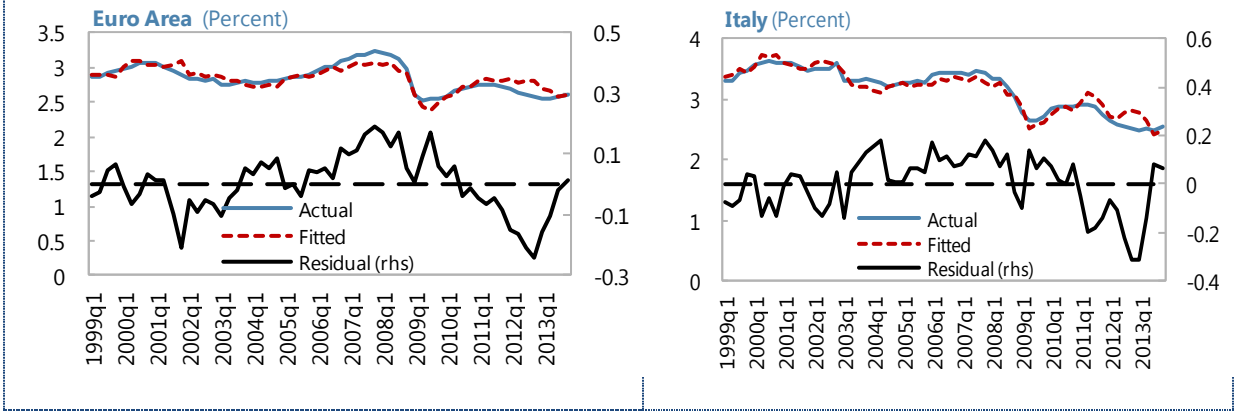
12. **Since output developments cannot explain fully the decline in investment after the crisis, we explore whether the cost of capital and financial constraints are additional impediments.** In the neo-classical model, current investment is a function of the lags of changes in desired capital stock, which in turn is determined by the cost of capital. Under the additional assumption that the cost of capital is equal to its marginal product, investment can be related to the past changes in output and changes in the real cost of capital. This baseline specification is then augmented with a variable to capture credit rationing (based on a question on financial constraints from the EC consumer and business survey). Up to 12 lags are found to be significant.

$$\frac{I_t}{K_{t-1}} = \frac{\alpha}{K_{t-1}} + \sum_{i=1}^{N} \beta_i \frac{\Delta\left(\frac{Y_{t-i}}{r_{t-i}}\right)}{K_{t-1}} + \sum_{i=0}^{N} \gamma_i \, fc_{t-i} + \delta + \varepsilon_t$$

13. **Both nominal and real costs of capital are elevated for the stressed countries** (See Appendix 1 for definition of the cost of capital)**.** While reduced policy rates have translated into lower cost of borrowing in the core countries, these rates have remained elevated in the stressed countries—a sign of continued fragmentation.



14. **The high cost of capital and financial constraints help explain part of the decline in investment in Italy, but actual investment remains below the estimated level for others** (Appendix 3).[8] Lagged coefficients of real cost of capital are generally positive and statistically significant. This is consistent with the expectation that lagged desired investment—captured by the changes of the ratio of output to the cost of capital—has a positive effect on investment in the current period. In addition, in line with expectations, the financial constraint variable is significant for investment in the euro area, Spain, and Italy. The gap between the actual and fitted investment in the euro area and Italy closes towards the end of the estimation period. Focusing on core countries and including longer lags for Germany and France, the underinvestment result survives for Germany but not for France.[9] The robustness checks using series for machinery and equipment investment in Ireland and Germany produce marginally better results, but the broad messages are the same.



15. **Out-of-sample projections also imply underinvestment.** For all countries, one-step-ahead forecasts from 2008Q3 onward produce projected investment levels that are above realized investment levels, particularly during the second phase of the crisis. In the case of Germany, during the first phase of the crisis, the decline in projected investment was deeper than the actual decline. This has reversed during the second phase of the crisis. To test whether the crisis has changed the investment dynamics, an intercept and interaction dummies are added to the specification. While the intercept terms are generally significant, the results are mixed for the interaction terms (All results are available upon request).

[8] Similar to the accelerator model, the residuals are serially correlated and the model is not a good fit for Greece and Ireland. Macroeconomic adjustment in those countries has been especially severe, which, combined with the relatively small sample, may affect estimation results. In addition, the sample size is smaller for Greece, limited by cost of capital calculations. Appendix 3 presents the results for the extended model; the results for the baseline model without financial constraints are available upon request.

[9] We have also modeled the short and long-run investment dynamics using a vector error correction model, controlling for cost of capital, output, and labor costs. While we did not obtain consistently significant coefficients for the cost of capital measure, output and labor costs were significant, showing that higher labor costs dampen investment growth. Augmenting the VECM model with indicators of capacity utilization and uncertainty generally failed to establish significant results.

Do other factors (uncertainty, leverage, and cash flow) play a role in investment dynamics?

16. **To account for other factors that could potentially weigh on investment, we use a more eclectic model**. Philippon (2009) suggests using bond prices instead of equity prices to estimate the value of Tobin's Q. The proposed measure, called "Bond Market's Q", is a function of the real risk-free rate, the spread between bond yields and government bonds, leverage, and uncertainty. We substitute the real rate with the real lending rate for non-financial corporations in our baseline model, and following Lee and Rabanal (2010), include a measure of cash flow.

17. **The model captures any additional impact on investment from uncertainty and corporate leverage.** The ratio of private non-residential investment to total capital stock is modeled as a function of overall real lending rates to NFCs, corporate bond spreads, uncertainty, corporate leverage, and the cash flow-to-sales ratio. To account for demand effects, we augment the baseline model with changes in real output over total capital stock. This also allows us to compare this model with the accelerator and neoclassical models. Finally, similar to the neoclassical model, we control for financial constraints to account for possible credit rationing (Appendix 4):[10]

$$\frac{I_t}{K_{t-1}} = \alpha + \beta_1 cbond_{t-1} + \beta_2 rlrate_{t-1} + \beta_3 lnuncer_{t-1} + \beta_4 leverage_{t-1} + \beta_5 cash\ flow_{t-1} + i=1N\gamma i\Delta Yt-iKt-1+\beta 18fct+\varepsilon t$$

18. **High uncertainty is associated with low investment, particularly for the stressed countries.** In the baseline model (without controlling for output changes and financial constraint variable), uncertainty reduces investment in most countries and in the euro area as a whole, though the effect is fairly small. An increase in uncertainty by one standard deviation reduces the investment-to-capital-stock ratio by around 0.1 percentage points—except for Greece and Ireland for which the effect is larger). The results remain broadly unchanged when we control for output changes and financial constraints.

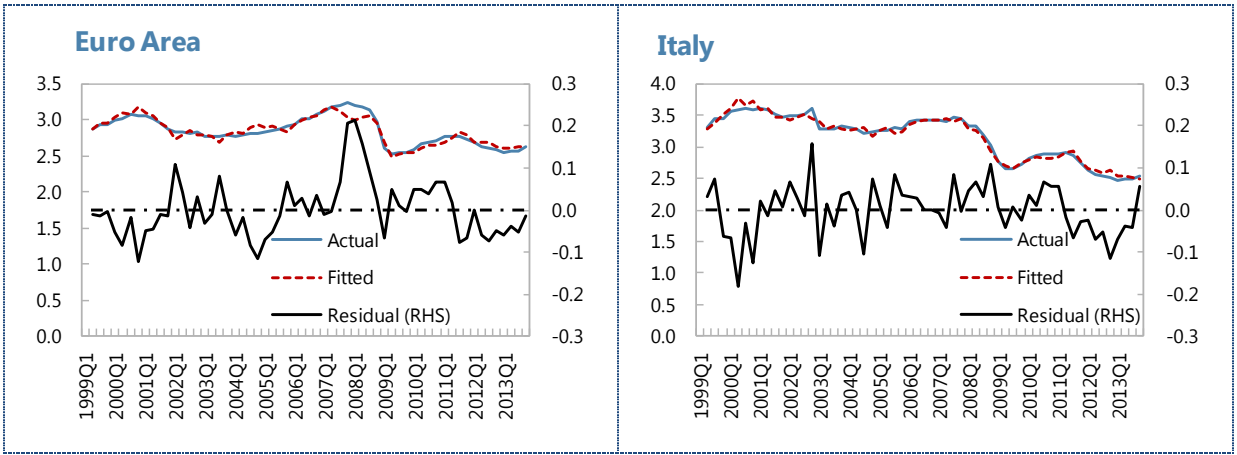
19. **Higher corporate leverage is associated with weak investment in some countries.** In the baseline model, corporate leverage reduces investment in Italy, Portugal, France, and Spain by between 0.1 and 0.4 percentage points for every 10 percentage-point increase in the debt-to-equity ratio. Controlling for output changes and financial constraints, leverage is still important for Italy, Portugal, and France. Cash flow is significant for a few countries in the baseline model, but only has the expected positive sign for Germany, Greece, and, after controlling for the changes in output, Spain.

20. **Corporate bond spreads and real lending rates are significant and correctly signed only for a few countries.** The former are significant for Ireland, as well as for Germany and Spain once we control for output changes and financial constraints. A 100 basis-point increase in

[10] Appendix 4 presents the results for the extended model. The results for the baseline and other steps are available upon request.

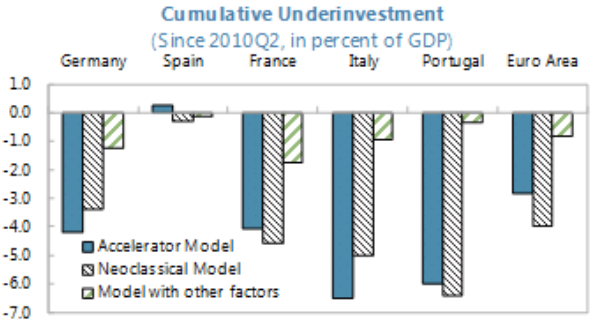
the spread of corporate over government bond yields decreases investment by about 0.1-0.8 percentage points. Real lending rates (deflated by GDP deflator) are correctly signed and significant for determining investment in Italy once we control for the output changes and financial constraints.[11] The financial constraint variable is significant for Italy and Portugal.

21. **Overall, the model seems to work better for stressed countries, in particular for Spain and Italy,** and to a lesser extent for Portugal and the euro area as a whole. It performs comparatively poorly for Germany and France.[12] The robustness checks using the series for machinery and equipment investment in Ireland and Germany (with data up to 2013Q4) produced broadly similar results.



The magnitude of missing investment

22. **Since the European debt crisis, investment has been systematically lower than its estimated level, except for Spain.** To better gauge how much investment has been missing since the start of the European sovereign crisis, we look at the cumulative underinvestment since then. Overall, controlling only for output, the cumulative underinvestment is about 3–6 percent of GDP (excluding Spain). Once we also control for other determinants, the cumulative underinvestment declines substantially to about ½–2 percent. In Spain, output changes alone are enough to explain much of the decline in investment. However, other factors such as cost of capital, financial constraints, and uncertainty also important factors affecting investment in Spain, implying that these factors may affect investment through their impact on output.



Notes: Germany ends in 2012Q4 and Portugal in 2013Q3.

[11] The coefficients for the euro area, Germany, and Spain have the reverse sign, which is a common finding in the literature, possibly reflecting difficulties in identifying credit demand and supply.

[12] Pérez Ruiz (2014) uses a broader set of determinants to explain the level of business investment in France. The model provides a good fit for France.

C. Conclusions

23. **Investment has been weak across the euro area.** Empirical evidence suggests that output dynamics can explain the broad trends in investment, including its collapse after the financial crisis. In particular, output accounts for the behavior of investment in Spain. In other countries (including in Germany and France), private non-residential investment has been lower than implied by output developments only since the onset of the crisis.

24. **In addition to output dynamics, there is evidence that the cost of capital and financial constraints matter for investment.** Real cost of capital and financial constraints have been important factors in constraining investment, particularly for Italy and Spain. Nevertheless, controlling for these factors reduces the underinvestment only for Italy.

25. **High uncertainty and corporate sector leverage are additional impediments to investment,** particularly in Italy, Spain, Portugal, and France. After controlling for all of these factors, investment (in cumulative terms) is lower than its estimated level by up to about 2 percent of GDP since the beginning of the European debt crisis.

26. **Investment is expected to pick up as the recovery strengthens and uncertainty declines.** However, a sustained recovery in investment will require dealing with the corporate debt overhang and financial fragmentation. Corporate debt-to-equity remains elevated in some stressed countries, and the deleveraging process is still at an early stage. At the same time, borrowing costs need to be substantially lower particularly for smaller firms.

27. **Future work will focus on firm level investment, particularly for SMEs.** Firm-level analysis will supplement macro-level regressions. The use of microeconomic data will allow to differentiate between the investment patterns of large and small corporations, as well as the impact of firm-specific variables, such as cash-flow, leverage, and Tobin's Q.

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Appendix 1. Data

1. ***Real investment.*** Investment data are downloaded from the Eurostat. Private non-residential investment is the sum of investment in transport and other machinery and equipment, cultivated assets and intangible fixed assets.

2. ***Capital stock*** series are from AMECO database—the annual series were linearly interpolated so that the stock of capital in the last quarter would match the corresponding annual figure. Alternative measures of capital stock are also calculated using perpetual inventory method. The initial capital stock values from the AMECO capital stock were scaled by applying appropriate investment subcomponent ratios. Depreciation rates are assumed constant and equal to average rates implied by the AMECO series.

3. ***Real GDP*** on quarterly basis was obtained from the World Economic Outlook database.

4. ***Real cost of capital.*** The correct measure of the cost of capital depends on the structure of financing of the firm. The flow of funds data suggests that liabilities of non-financial corporations consist primarily of loans and equity with the share of bond financing being less than 10 percent in most periods and countries. The following formula is used for the real cost of capital:

$$r_{i,t} = \left[\left(\frac{D_{i,t}}{D_{i,t}+B_{i,t}+E_{i,t}}\right) l_{i,t} + \left(\frac{B_{i,t}}{D_{i,t}+B_{i,t}+E_{i,.t}}\right) i_t + \left(\frac{E_{i,t}}{D_{i,t}+B_{i,t}+E_{i,t}}\right) c_{i,t} - \pi_{i,t} + \delta_i\right] \times \frac{P^I_{i,t}}{P_{i,t}},$$

where $D_{i,t}$, $B_{i,t}$ and $E_{i,t}$, are the amounts of bank loans, bonds (securities other than shares), and equity in the liabilities of non-financial corporations. For the nominal costs of different kind of capital we use MFI lending rates in a given country for new business at all maturities, $l_{i,t}$, for bank loan liabilities, yield on the euro area wide corporate bond index, i_t, for bond liabilities and the yield on 10 year government bond $c_{i,t}$ to price equity liabilities.[13] In line with the literature, from the nominal rate, we subtract the year-on-year change in investment deflator $\pi_{i,t}$, add the depreciation rate, which is assumed to be constant but different across countries δ_i and multiply the result by the relative price of investment goods (investment deflator) and output $P^I_{i,t}/P_{i,t}$. We also report the "nominal cost of capital", which is simply the first three terms in the above equation. In addition, we also use a measure of real cost of capital for debt financing, composed of bond and bank lending (available upon request).

5. **In most countries the real cost of capital has been declining throughout the 2000s, however, after the crisis Southern European countries diverged from France and Germany.**

[13] We have experimented with alternative approaches to price equity capital – such as variations on the dividend growth model; however, they tend to produce counterintuitive implications for the ranking of the cost of capital across different countries. Using a 10 year government bond establishes a sensible lower bound for the cost of equity and, assuming that the risk premium is constant, is not expected to affect the results. For the euro area we use the simple average of the 10-year bond yields in France, Germany, Spain and Italy.

Figure 1 shows the nominal and real cost of capital for the countries considered. As of the latest available data, the lowest real cost of capital is in Germany (5 percent), while Portugal has the highest cost (12.0 percent). The volatility of real cost of capital in Greece (for which only a shorter sample is available) is driven by the volatility of the investment deflator.

6. ***Financial constraints:*** This variable is from European Commission Business and Consumer Survey (quarterly). Seasonally adjusted series are for survey of manufacturing industry: percent of correspondents listing financial constraints as the factor limiting production.

7. ***Corporate bond prices.*** We use the average spread of corporate over government bonds with 1 to 5 years maturity for the euro area as a whole for all countries in the sample, to proxy corporate bond market conditions. This measure inherently gives more weight to large euro area economies and applies to large firms. (Merill-Lynch indices, Bloomberg). This is in basis points.

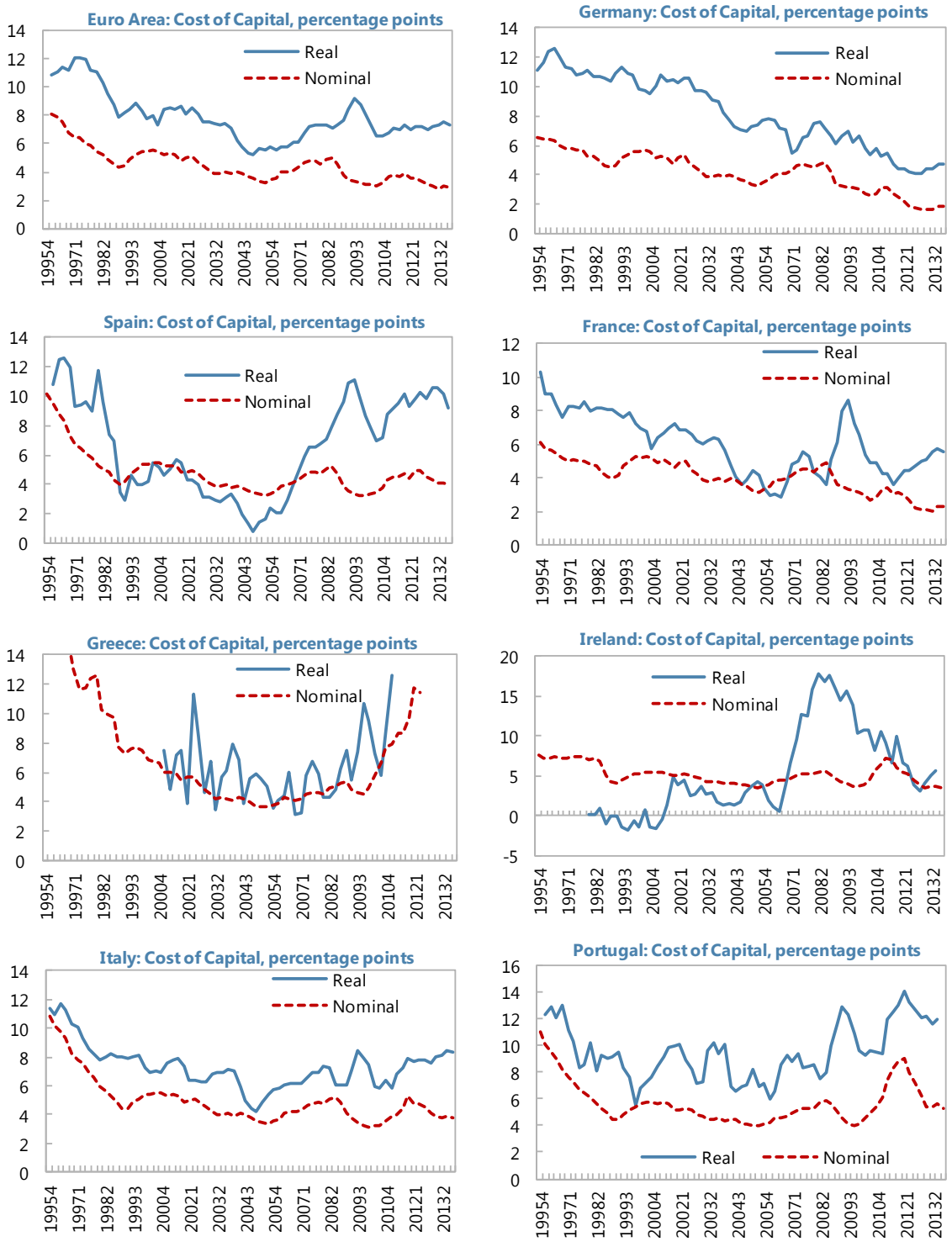
8. ***Uncertainty index*****:** Bloom (2009). Natural log of uncertainty index*100

9. ***Corporate sector leverage: Debt-to-equity ratio from the ECB (in percent).***

10. ***Cash flow-to-sales:*** Worldscope. Corporate vulnerability unit (median).

11. ***Crisis dummy***: crisis =1 from 2008Q3 (used only for robustness checks).

Figure 1. Cost of Capital Calculations



Source: Haver Analytics; and IMF staff estimates.

Appendix 2. Results of the Accelerator Model[1]

$$\frac{I_t}{K_{t-1}} = \frac{\alpha}{K_{t-1}} + \sum_{i=0}^{N} \beta_i \frac{\Delta Y_{t-i}}{K_{t-1}} + \delta + e_t$$

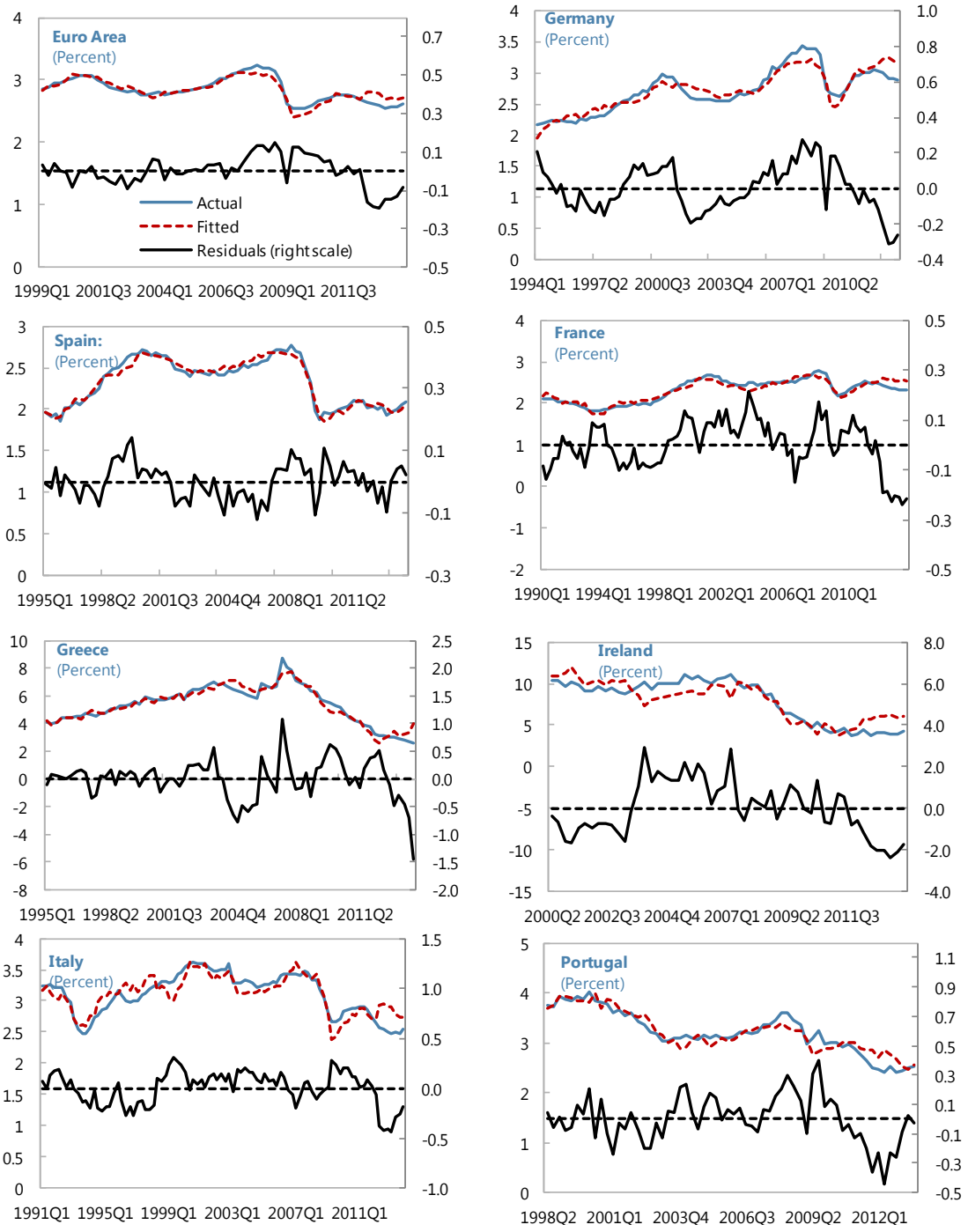
Table. Accelerator Model - Total Investments (Newey-West HAC standard error estimates)

	Euro Area	Germany	France	Italy	Spain	Greece	Ireland	Portugal
β1	0.32 ***	0.21 ***	0.26 ***	0.47 ***	0.41 ***	0.38 **	0.75 **	0.29 ***
	(0.06)	(0.06)	(0.06)	(0.08)	(0.09)	(0.17)	(0.28)	(0.08)
β2	0.21 **	0.23 ***	0.23 ***	0.39 ***	0.49 ***	0.70 ***	0.99 **	0.26 **
	(0.1)	(0.07)	(0.05)	(0.09)	(0.06)	(0.15)	(0.42)	(0.1)
β3	0.25 ***	0.25 ***	0.23 ***	0.37 ***	0.23 ***	1.10 ***	0.92 **	0.26 ***
	(0.06)	(0.06)	(0.05)	(0.07)	(0.07)	(0.1)	(0.38)	(0.06)
β4	0.22 ***	0.18 ***	0.20 ***	0.19 **	-0.05	0.71 ***	0.76 **	0.24 ***
	(0.07)	(0.04)	(0.05)	(0.08)	(0.08)	(0.12)	(0.29)	(0.07)
β5	0.13 *	0.13 ***	0.20 ***	0.27 ***	0.12 *	1.04 ***	0.37	0.21 **
	(0.07)	(0.04)	(0.05)	(0.09)	(0.07)	(0.12)	(0.35)	(0.08)
β6	0.16 ***	0.10 **	0.17 ***	0.18 ***	0.39 ***	1.12 ***	0.30	0.19 **
	(0.05)	(0.04)	(0.06)	(0.07)	(0.06)	(0.16)	(0.39)	(0.08)
β7	0.17 **	0.07	0.09 *	0.28 ***	0.09	0.82 ***	0.28	0.22 ***
	(0.07)	(0.05)	(0.06)	(0.07)	(0.06)	(0.18)	(0.33)	(0.07)
β8	0.06	0.09 *	0.12 **	0.24 ***	0.00		0.57 **	0.10
	(0.04)	(0.05)	(0.05)	(0.07)	(0.05)		(0.25)	(0.07)
β9	0.10 **	0.12 **	0.11 **	0.09	0.05		0.55	0.16 **
	(0.05)	(0.06)	(0.05)	(0.07)	(0.04)		(0.34)	(0.08)
β10	0.09 *	0.07	0.10 **	0.18 ***	0.15 ***		0.71 *	0.16 *
	(0.05)	(0.05)	(0.05)	(0.06)	(0.03)		(0.39)	(0.09)
β11	0.05	0.10 *	0.08	0.26 ***	0.06 *		1.04 ***	0.17 *
	(0.04)	(0.05)	(0.05)	(0.07)	(0.03)		(0.35)	(0.09)
β12	0.18 ***		0.20 ***	0.38 ***			0.75 **	0.16 *
	(0.05)		(0.06)	(0.08)			(0.3)	(0.08)
δ	3.43 ***	5.99 ***	3.98 ***	4.29 ***	2.76 ***	10.65 ***	8.92 ***	3.81 ***
	(0.38)	(0.35)	(0.16)	(0.3)	(0.05)	(0.48)	(2.75)	(0.66)
N	60	76	96	92	76	76	54	62
R-squared	0.84	0.82	0.87	0.75	0.95	0.39	0.75	0.86
Akaike info criterion	0.50	-0.88	0.33	0.35	0.99	0.69	0.50	0.80
Schwarz Bayesian criterio	-1.31	-0.48	-1.57	-0.05	-2.21	1.33	4.40	0.11
S.E. of regression	0.09	0.14	0.10	0.18	0.06	0.39	1.52	0.18

Note: * - significant at 10 percent; ** - significant at 5 percent; *** - significant at 1 percent.

[1] Results are in percent terms. Total investment is used for Greece and Ireland.

Figure 1. Accelerator Model: Private Non-residential Investment/Capital Ratio



Sources: Eurostat; IMF. World Economic Outlook database; OECD, Analytical database; European Commission, AMICO database; and IMF staff calculations.

Note: Total investment for Greece and Ireland.

Appendix 3. Results of the Neoclassical Model

$$\frac{I_t}{K_{t-1}} = \frac{\alpha}{K_{t-1}} + \sum_{i=0}^{N} \beta_i \frac{\Delta\left(\frac{Y_{t-i}}{r_{t-i}}\right)}{K_{t-1}} + \sum_{i=0}^{N} \gamma_i \, fc_{t-i} + \delta + \varepsilon_t$$

Table 2: Neoclassical Model augmented with Financial Constraints : Estimates with Newey West Standard Errors

	Euro Area	Germany	Spain	France	Greece	Ireland	Italy	Portugal
β1	6.183***	3.873	3.360*	2.067*	15.72***	-9.450	12.24***	4.648***
	(1.792)	(2.577)	(1.811)	(1.204)	(4.581)	(8.255)	(2.358)	(1.685)
β2	-0.0346	3.105	2.041	3.749**	15.31***	-6.810	3.926*	4.157*
	(3.003)	(2.622)	(1.418)	(1.463)	(3.727)	(9.855)	(2.235)	(2.089)
β3	3.028	5.457**	3.935***	1.609	26.88***	-3.002	7.987***	3.796**
	(2.009)	(2.130)	(1.147)	(1.034)	(5.621)	(9.119)	(2.163)	(1.879)
β4	0.765	2.754*	2.843**	-0.0542	20.16***	0.369	1.157	4.805***
	(1.471)	(1.523)	(1.321)	(1.288)	(4.895)	(6.930)	(2.157)	(1.533)
β5	3.154	2.797	2.771**	2.259*	22.75***		4.364*	5.473***
	(2.041)	(2.136)	(1.205)	(1.320)	(4.431)		(2.551)	(1.555)
β6	3.044**	2.493	3.221***	2.930*	18.40***		7.284***	4.709***
	(1.461)	(1.824)	(1.170)	(1.543)	(4.645)		(2.253)	(1.166)
β7	5.105***	2.239	4.572***		14.02***		9.379***	5.336***
	(1.713)	(1.696)	(1.405)		(3.527)		(2.354)	(1.269)
β8	-1.474	0.209	3.127**		2.593		3.516	3.576**
	(1.776)	(1.509)	(1.266)		(4.416)		(2.160)	(1.382)
β9	1.493	1.487	2.085				2.098	4.544**
	(1.740)	(3.198)	(1.353)				(2.842)	(1.907)
β10	1.106	1.443	2.568**				0.418	4.244**
	(1.795)	(2.057)	(1.042)				(2.915)	(1.778)
β11	5.952**	5.005*	2.166*				5.717**	2.797
	(2.725)	(2.483)	(1.193)				(2.694)	(1.758)
β12			3.161**				6.957***	2.934*
			(1.319)				(2.468)	(1.717)
γ1	-0.102**	-0.0474	-0.0461**	-0.0139	-0.0171		-0.0613***	
	(0.0430)	(0.0396)	(0.0192)	(0.00929)	(0.0496)		(0.0206)	
γ2	-0.0141		0.0154				-0.0118	
	(0.0279)		(0.0221)				(0.0203)	
δ	5.869***	6.715***	3.263***	3.341***	15.39***	-1.793	4.695***	3.579***
	(1.070)	(1.700)	(0.418)	(0.593)	(3.107)	(2.868)	(0.914)	(1.066)
N	60	57	59	66	33	58	60	58
R-squared	0.751	0.638	0.869	0.314	0.897	0.503	0.893	0.790
Adjusted R-squared	0.673	0.528	0.824	0.217	0.850	0.456	0.857	0.728
RMSE	0.111	0.177	0.118	0.131	0.432	1.904	0.137	0.217
D-W Statistic	0.380	0.376	0.488	0.180	1.017	0.112	0.602	0.519

Appendix 4. Results of the Bond Market Model

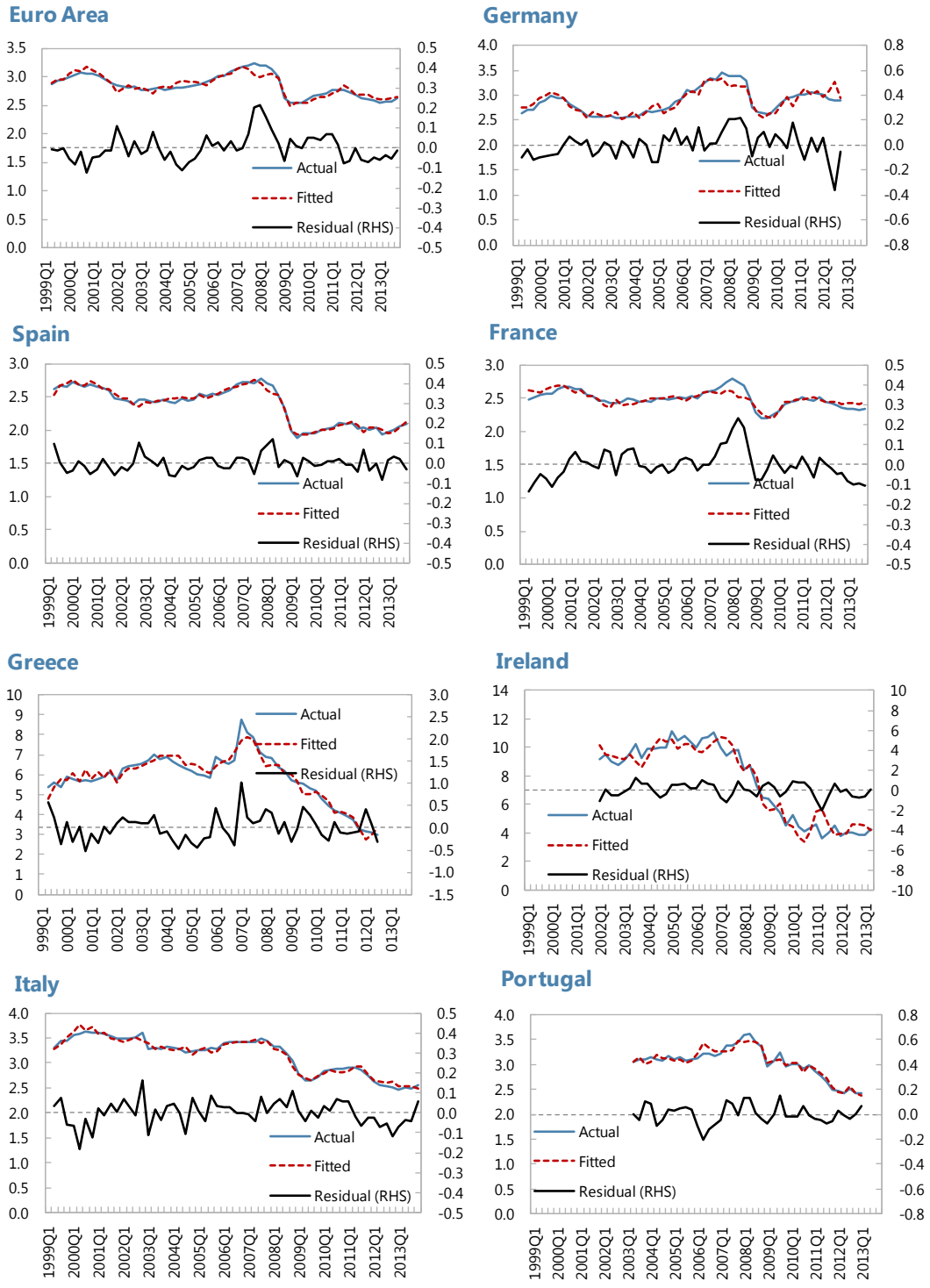
$$\frac{I_t}{K_{t-1}} = \alpha + \beta_1 cbond_{t-1} + \beta_2 rlrate_{t-1} + \beta_3 lnuncer_{t-1} + \beta_4 leverage_{t-1} + \beta_5 cash\ flow_{t-1} + \sum_{i=1}^{N} \gamma_i \frac{\Delta Y_{t-i}}{K_{t-1}} + \beta_{18} fc_t + \varepsilon_t$$

Table 2. Bond Market Model (Controlling for Output Changes and Financial Constraints)

	Euro Area	Germany	Spain	France	Greece	Ireland	Italy	Portugal
α	3.554***	2.014***	1.956***	2.674***	10.102***	15.715***	4.692***	7.379***
	(0.577)	(0.578)	(0.226)	(0.443)	(1.205)	(3.069)	(0.382)	(0.732)
β_1	-0.0004	-0.001*	-0.002***	-0.0004	0.0002	-0.008***	0.0003	-0.001
	(0.0005)	(0.0004)	(0.0003)	(0.0005)	(0.001)	(0.003)	(0.0004)	(0.001)
β_2	0.089**	0.067**	0.038***	0.013	-0.012	0.094	-0.07***	0.06
	(0.036)	(0.025)	(0.013)	(0.032)	(0.031)	(0.056)	(0.015)	(0.036)
β_3	-0.003***	-0.0003	-0.001*	0.0004	-0.012***	-0.027***	-0.003***	0.0001
	(0.001)	(0.001)	(0.0004)	(0.0004)	(0.002)	(0.005)	(0.0005)	(0.001)
β_4	0.005	-0.003	0.006***	-0.007**	0.01***	0.033***	-0.005*	-0.043***
	(0.004)	(0.002)	(0.002)	(0.003)	(0.003)	(0.006)	(0.003)	(0.013)
β_5	-0.019	0.077**	0.01***	-0.01	-0.065	-0.15	0.018	-0.047*
	(0.03)	(0.036)	(0.003)	(0.06)	(0.053)	(0.189)	(0.018)	(0.025)
β_6	0.203***	0.109**	0.293***	-0.115	0.72***	0.008	0.333***	-0.215*
	(0.065)	(0.045)	(0.094)	(0.092)	(0.216)	(0.198)	(0.065)	(0.117)
β_7	0.091**	0.165**	0.308**	-0.008	0.814***	0.362	0.194***	-0.277*
	(0.043)	(0.073)	(0.115)	(0.071)	(0.209)	(0.225)	(0.065)	(0.159)
β_8	0.182***	0.385***	0.209***	0.205***	1.012***	0.502**	0.26***	-0.237
	(0.064)	(0.076)	(0.076)	(0.063)	(0.206)	(0.231)	(0.073)	(0.139)
β_9	0.203***	0.302***	-0.044	0.205**	0.751***	0.871***	0.137**	-0.145
	(0.058)	(0.063)	(0.076)	(0.082)	(0.152)	(0.228)	(0.058)	(0.092)
β_{10}	0.118*	0.184***	0.327***		1.171***	0.608*	0.138**	-0.09
	(0.061)	(0.054)	(0.096)		(0.142)	(0.327)	(0.054)	(0.074)
β_{11}	0.047	0.148	0.345***		0.965***	0.445	0.116*	-0.147
	(0.071)	(0.091)	(0.102)		(0.225)	(0.32)	(0.059)	(0.104)
β_{12}	0.041	0.115	0.093		0.549***	0.446	0.132**	-0.206*
	(0.051)	(0.09)	(0.065)		(0.168)	(0.315)	(0.063)	(0.116)
β_{13}	0.047	0.199**	-0.048			0.493*	0.105	-0.186*
	(0.073)	(0.077)	(0.064)			(0.263)	(0.075)	(0.102)
β_{14}	0.165***	0.215**	0.153*			0.185	0.107*	0.099
	(0.056)	(0.1)	(0.087)			(0.182)	(0.058)	(0.088)
β_{15}		0.218***	0.176***			0.34	0.092	0.184**
		(0.07)	(0.057)			(0.389)	(0.06)	(0.065)
β_{16}		0.112				0.408	0.107	0.214***
		(0.08)				(0.339)	(0.067)	(0.065)
β_{17}							0.1*	0.131**
							(0.058)	(0.06)
β_{18}	0.029	0.137***	-0.011	-0.005	-0.005		-0.034***	-0.07***
	(0.017)	(0.024)	(0.012)	(0.005)	(0.022)		(0.007)	(0.015)
N	59	55	59	59	54	46	59	40
R-squared	0.88	0.84	0.98	0.68	0.94	0.93	0.97	0.94
DW statistic	0.71	1.26	1.55	0.5	1.57	1.09	1.71	1.19

Figure 1. Bond Market Model

(Controlling for Output Changes and Financial Constraints)



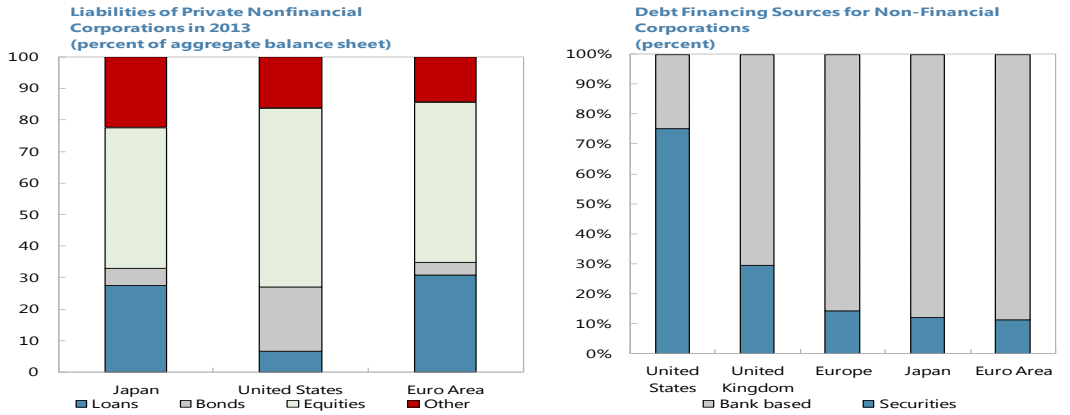
Sources: AMECO database; Haver Analytics; Eurostat; and IMF staff estimates.

CAPITAL MARKET DEVELOPMENT: SME FINANCING IN THE EURO AREA[2]

The corporate sector in Europe is highly dependent on bank financing. This has constrained the recovery of credit supply in the wake of the crisis, particularly to small- and medium-sized enterprises (SMEs). Developing alternative funding sources for SMEs would enhance the resilience of the financial system and help ensure lending to viable smaller firms. An expansion of the SME securitization market would move firmly in this direction, while drawing upon a large existing pool of assets. It would also improve the transmission of monetary policy and the allocation of capital from surplus to deficit economies. Assets from European securitization markets performed relatively well through the crisis, likely reflecting more conservative origination standards. But, further developing these markets requires greater regulatory differentiation of structured finance, cross-country harmonization of asset structures, and official sector support as a catalyst to expand the market, including by underwriting riskier tranches.

A. Background

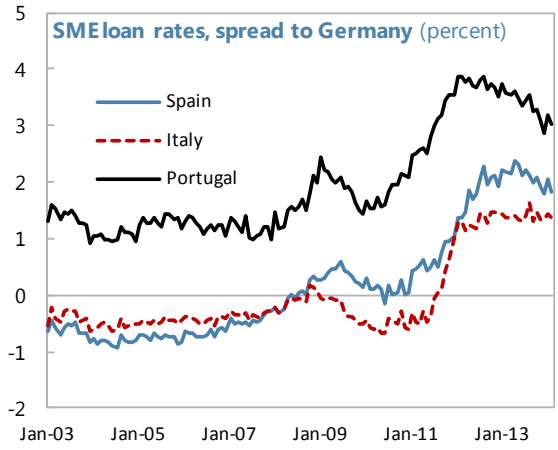
1. **Euro area nonfinancial corporations (NFCs) are more reliant on banks for financing than their U.S. counterparts.** About a third of euro area NFC liabilities are bank loans, roughly similar to what is seen in Japan. By contrast, in the United States, they only account for about 7 percent of NFC liabilities; firms are much more reliant on capital markets for their financing (e.g. bonds). Equities also account for a larger share of firm financing in the United States. Focusing only on debt, the picture is similarly stark, with the euro area, Japan, and Europe more broadly, all having about four-fifths of debt finance supplied by banks.

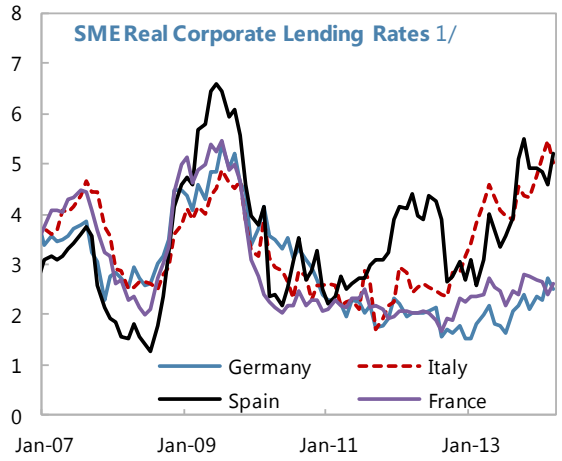


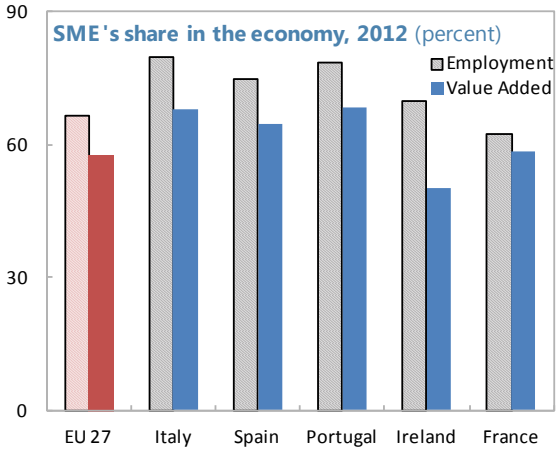
Source: Flow of funds from Bank of Japan, Federal Reserve, and ECB; Federal Reserve, Bank of England, ECB, and Bank of Japan.
Note: Total private nonfinancial corporation liabilities were about 2 quadrillion JPY in Japan, 34 trillion USD in the United States, and 27 trillion EUR in the euro area in 2013. Europe is the sum of the euro area and the United Kingdom. Data in right panel are end-2013:Q3, apart from Japan which is end-2012.

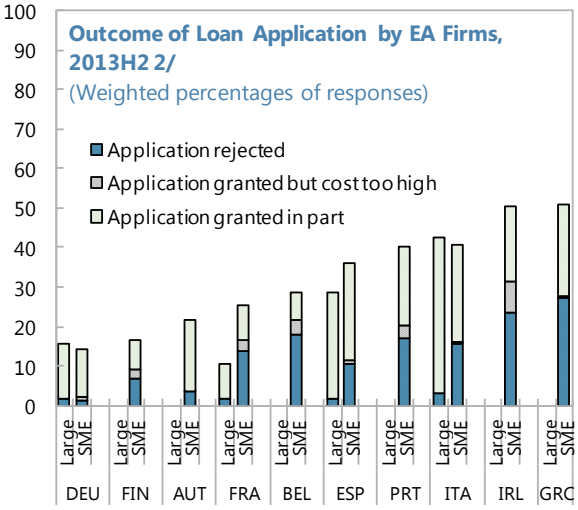
[2] Prepared by Ali Al-Eyd, Bergljot Barkbu, S. Pelin Berkmen, John Bluedorn, Andreas (Andy) Jobst, and Alexander Tieman (all EUR).

2. **Only the largest euro area NFCs are able to directly access capital markets.** And even though concerns over sovereign risks in the euro area have abated significantly, funding constraints and the high cost of risk for banks in stressed economies have contributed to reduced lending to SMEs. Interest rates charged for small loans in stressed countries are higher than those charged for similar loans in core countries (Al-Eyd and Berkmen, 2013). This is compounded by the fact that low inflation in these countries, and across the euro area, has pushed-up real borrowing rates.









Sources: ECB, Eurostat, Haver Analytics, and IMF staff calculations.
1/ MFI lending to corporations under €1 million, for 1-5 years. Real rates are calculated ex post using realized HICP inflation by country.
2/ Among those firms that applied within the last six months.

3. **SMEs are disproportionately affected by weak credit supply.** The ECB's SAFE survey shows that SMEs applying for loans are experiencing difficulties in obtaining credit from banks. This is particularly the case in Spain and Italy, despite some recent improvement in approval

rates.[3] In these countries, "finding customers" and "access to finance" are among the largest concerns.

4. **Ensuring credit availability to viable SMEs is essential to supporting the recovery in the euro area.** In 2012, more than 20 million SMEs in the European Union comprised 99.8 percent of all non-financial enterprises, employed 87 million people (67 percent of total employment), and generated 58 percent of total added value. SMEs account for around 80 percent of employment and 70 percent of value added in Italy, Spain, and Portugal.[4] In addition, SME sectors in these economies are dominated by micro-firms with less than 10 employees (about 90–95 percent of total firms).

B. Rationale for Securitization of SME Loans

5. **Diversification of funding sources would enhance the resilience of the corporate sector**. Broader access to finance would limit the exposure of corporates to banking sector difficulties and help ensure the flow of credit to viable smaller firms, also reducing the vulnerability of the financial system to shocks. In this regard, a number of markets could be further developed, including those in commercial paper (mini-bonds), private equity, and venture capital. On the equity side, European venture capital and growth funding in SMEs amounted to about €5 billion in 2013 (which is about one-half the size of the outstanding stock of actively traded, placed senior tranches of SME securitization transactions) (EVCA, 2014).[5] On the debt side, mini-bonds (Italy) and commercial paper markets exist, but these too are relatively small in size. Given the dominance of bank lending, these markets tend to be small or nationally focused.

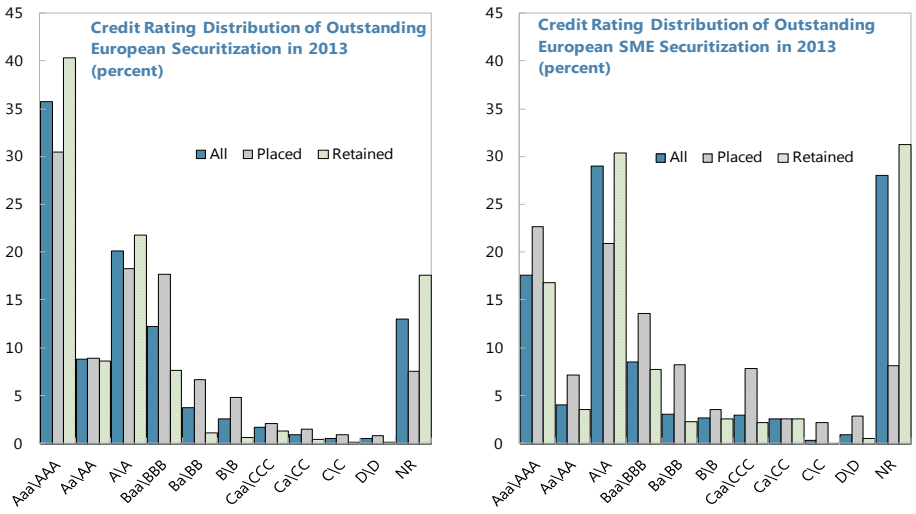
6. **A focus on promoting a more vibrant SME securitization market would have several advantages, including by:**

- Readily drawing upon a large pool of existing bank assets (SME loans) to provide additional funding for SMEs;
- Boosting bank liquidity and releasing regulatory capital, thus incentivizing banks to cleanse their balance sheets and lend to viable firms;[6]
- Helping SMEs to rebalance their financial structure towards longer maturities;
- Attracting non-bank investors to SMEs, particularly in a low-yield environment.

[3] Survey on the access to finance of small and medium-sized enterprises (SAFE) in the euro-area (October 2013-March 2014). The survey covers about 7,520 firms, of which 93 percent are SMEs.
[4] SMEs are defined by the European Commission (2013a) as having fewer than 250 employees. They should also have an annual turnover of up to €50 million, or a balance sheet total of no more than €43 million.
[5] For the purposes of the venture capital and growth funding, SMEs are defined solely by the number of employees in the EVCA dataset. See also Kraemer-Eis and others (2014).
[6] Many large European banks depend on either a large deposit base or rely on wholesale funding for large parts of their balance sheet. Securitization of SME loans would increase secured funding for lending over longer terms, creating high-quality collateral and transferring credit risk to non-bank investors.

7. **A more developed SME securitization market could also improve the monetary transmission mechanism through the bank lending channel** (Jobst and others, 2009). In the context of banks' reducing their exposure to SMEs and fragmentation across countries, monetary easing has a limited impact on bank credit to SMEs. With SME securitization, SMEs and banks would be able to draw on more funding sources for credit growth, with a smaller charge on capital, thereby making monetary easing through interest rates and standard liquidity facilities more effective. It could also boost the supply of collateral for liquidity provision in a crisis situation.

8. **European securitization markets performed comparatively well during the financial crisis, likely reflecting more conservative origination standards.** The cumulative default rate on securitization products was relatively low, at around two percent. At the same time, the cumulative default rate for U.S. securitization products was about 18 percent. But, the comparison of U.S. and European securitizations is not straightforward since the underlying assets for these securities differ in their riskiness (Bank of England and ECB, 2014a). About one-third of European securitization products are rated "AAA" (which is the mode), and over half are rated "A" or better. SME securitization shows a slightly lower average rating, with the modal rating of "A". But almost one-third of SME securitizations are unrated, possibly reflecting their higher likelihood to be retained.



Source: SIFMA and IMF staff calculations.
Note: The value of total outstanding European securitization was about 1.5 trillion EUR in 2013. Of this, about 46 percent was placed and 54 percent retained. SME securities accounted for 8 percent of total outstanding European securitization in 2013. Of this, 14 percent were placed, while 86 percent were retained. Europe is a geographic designation here, including both EU and non-EU countries.

9. **Given the high reliance on bank lending in the euro area, this note focuses on developing SME loan securitization markets**—intermediated through banks as opposed to direct asset securitization—as a readily available source of finance and means to overcome the allocation problem that is reflected in divergent private borrowing costs for similar firms across the euro area.

Box 1. Overview of the European Securitization Market

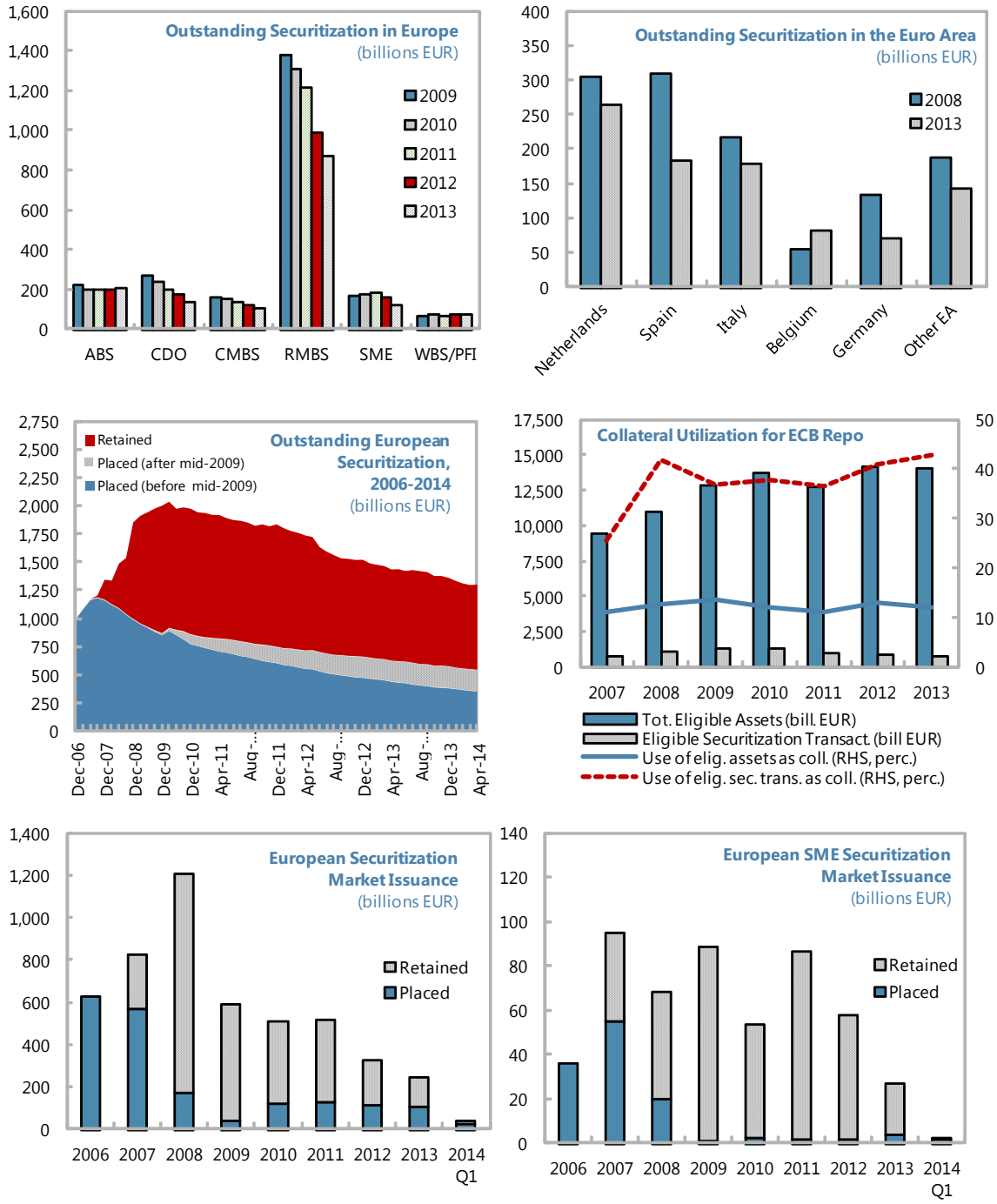
The securitization market in the euro area is relatively small and concentrated, making them a limited alternative for firm financing. The outstanding stock of transactions is about €1.5 trillion, which is about the size of the U.S. market if agency-sponsored residential mortgage-backed securities (RMBS) issued by Fannie Mae and Freddie Mac are excluded (Galizia and Gentili, 2014; IMF, 2009 and 2011) (see box figure, upper left panel). The European market is dominated by bank-sponsored RMBS, which amounted to around €860 billion at the end of 2013. SME loan-backed securities (SME) constitute less than one-eighth of the total market (€122 billion), broadly comparable with the share of other securities. Moreover, the euro area securitization market is concentrated, with a handful of countries accounting for the majority of the market. Together, transactions from the Netherlands, Spain, Italy, Belgium, and Germany accounted for about 85 percent of the securitization market in the euro area in 2013 (see box figure, upper right panel).

The securitization market in Europe has contracted by about one-third since the start of the crisis. New placements peaked in 2008 (see box figure, bottom right panel). These have dropped to about one-fourth their earlier size, hovering around €100 billion for 2013. The bulk of the decline in these markets reflects the approximately €500 billion (or about one-third) fall in the RMBS segment between 2009 and 2013. But, in relative terms, the CDO and CMBS markets experienced larger declines, shrinking by almost half, while the SME market similarly fell by about one-third.

As securitization issuance has fallen, the share retained has typically shrunk. But for the SME securitization segment, the share retained has risen throughout the crisis. At the peak, the market was evenly split between retained and placed securitization (see box figure, middle left panel). However, since 2009, placed securitization has fallen by about a half. This mostly reflects the amortization of contracts prior to 2009 that have not been fully offset by new placements (see box panel, bottom left panel). Of new issuances, about two-thirds remain on bank books, while for SME securitizations (securities backed by loans to SMEs), nearly 90 percent are retained. These retained securities can often be used as collateral for short-term funding from the Eurosystem (see box figure, middle right panel). However, although the size of the eligible asset pool for Eurosystem collateral has increased, the pool of eligible securitization has actually dropped, likely reflecting the attrition of these assets (and the net issuance of SME securitization) rather than a tightening of Eurosystem collateral standards (which have been relaxed for some asset classes over the recent past).

Against this background, there is substantial scope to further develop capital market-based funding for SMEs, with a particular focus on securitization. Euro area banks are holding a large stock of relatively illiquid loans that could be transformed into liquid assets through securitization. This could help to spur more lending to SMEs, by releasing regulatory capital and also by bringing new investors to the table.

Figure 1. Securitization in Europe



Sources: AFME, RBS estimates, ECB, and IMF staff calculations

Note: ABS = asset-backed securities, CDO = collateralized debt obligations, CMBS = commercial mortgage-backed securities, RMBS = residential mortgage-backed securties, SME = ABS backed by small- and medium-sized enterprise (SME) loans, WBS/PFI = whole business securities/project finance initiatives. Europe is a geographic designation, including EU Member States and non-EU countries (top left panel). Other EA is the sum of other euro area members' outstanding securitization for which separate data are available. It includes Austria, Finland, France, Greece, Ireland, and Portugal (top right panel). Europe includes EU and non-EU countries (bottom panels).

C. Impediments to SME Securitization Markets

10. **Several challenges must be addressed to further develop SME securitization in Europe.** In particular, *structural market factors*, including unfavorable economic terms (e.g., high cost of issuance), adverse cyclical factors (e.g., ongoing economic weaknesses) and inefficient and fragmented national insolvency regimes, reduce the incentives for issuance. In addition, *regulatory factors*, including pending regulatory changes that raise the capital intensity of holding less risky ABS, weaken the investor base.

Structural market factors

11. **The economic cost of issuance is high, and a bank must balance this against the potential capital relief from securitization and the cost of alternative sources of funding.** High issuance costs reflect lower net interest margins (and thus difficulty in pricing attractive yields), a high cost of structuring SME-backed transactions (e.g., legal cost, due diligence, pooling, ratings, and credit enhancements),[7] and the lack of a sufficiently large investor base (e.g., due to regulatory burdens and stringent internal risk guidelines).

12. **There can also be high sunk costs in securitizing SME loan portfolios.** In particular, setting up IT systems to handle the granular information and variety of collateral related to SME loan portfolios, and operational constraints, such as a lack of uniform reporting standards and credit scoring, make securitization of SME-related claims more costly than, for example, mortgages. The significant heterogeneity of SME portfolios across country loan pools, and differences in national insolvency frameworks all limit the scope for broader securitization markets, both on the supply and demand sides. Also insufficient volumes of long-term loans (which complicate the estimation of the cash flows pattern of SME portfolios) continue to hamper faster market growth.

- *Pooling*. Certain conditions must be satisfied to ensure a loan's suitability for pooling, raising the cost of due diligence. Among these conditions, a few are crucial: a clean credit history, sufficient tenor with a cash stream (i.e., an amortizing loan rather than a bullet loan), clarity on collateral and its availability, and sufficient sectoral diversification. From a bank's perspective, achieving a critical mass of loans with such characteristics is more difficult in the SME sector than, for example, in the residential mortgage sector where there is more uniformity of loans, longer maturity tenors, and regularity of payment streams due to amortization.

- *Securitizing*. Once a pool of loans is identified, legal documentation must be drawn, and ratings must be assigned by a commercial agency. Regarding the latter, SME securitization issuances typically require a compromise on the part of issuers, for example

[7] Upfront costs related to the due diligence process required to securitize assets can be significant. Credit enhancements (e.g., high subordination levels for senior tranches, overcollateralization, and interest reserve accounts) may also often be required by ratings agencies.

by providing greater credit enhancement than comparable securitization. Overall, these costs provide a degree of transparency (or reduce riskiness), but they must be balanced against the size of the pool to ensure an adequate cost ratio. Typically, the larger the pool, the less costly are such considerations, except perhaps for credit enhancements.

- *High yields*. Investors require a favorable risk/return profile. This can be achieved through a sufficiently high-yielding asset (relative to risk), an inherently less risky asset (relative to yield), or a combination of these. However, it can be difficult for a bank to ensure a high-yielding asset with adequate differentiation between tranches from a heterogeneous pool of SME loans since such assets are costly to securitize and command relatively low returns. This contrasts, for example, with the scope for high-yielding securitization from credit card payments given their high relative interest rates. As a result, low returns on SME loans make for low yielding securitized assets.

- *Investor base*. More stringent internal risk metrics for institutional investors, reflecting the combination of higher capital charges for securitization transactions (see below) and heightened risk aversion, have narrowed the investor base, which is mostly regulated in Europe (banks, (re)insurance companies, and pension funds). Other types of investors, typically hedge funds, represent only a small portion of the market.

Regulatory hurdles

13. **Ongoing reforms tend to set high capital charges on securitization instruments relative to other funding instruments of similar risk.**[8] Under the proposed regulatory treatment for securitization, senior tranches of transactions compare unfavorably with other funding instruments, such as senior unsecured debt or covered bonds. In particular, the proposed revision to the definition of risk-weighted assets for securitization exposures by banks effectively raises the capital intensity of simpler (or less risky) assets to the level of complex (or more risky) assets, rendering differentiation of these instruments based on actual market performance irrelevant.[9] Furthermore, the proposed capital charges under the Solvency II Directive for insurers investing in securitization transaction are higher than those for other assets with comparable risks. Although the capital charge on these assets has recently been lowered,[10] it is unlikely to be sufficient to draw institutional investors, particularly given their still-high risk

[8] See Bank of England and European Central Bank (2014b) for a comprehensive discussion of regulatory impediments to securitization.

[9] The latest consultation on the treatment of securitization exposures held in the banking book (which closed for comments in late March) proposes higher risk weights for exposures rated "BB+" or above, yet a lower and more risk sensitive approach for securitization tranches rated "BB" or lower. For instance, the risk weighting on "AAA"-rated tranches will increase from 7 percent to 25 percent in the five-year tenor under the standardized approach.

[10] The European Commission has recently proposed to further lower the currently proposed capital charge of 4.3 percent per year of duration to be assigned to the highest quality ABS assets as an attempt by EIOPA to differentiate such assets from lower quality ones.

aversion.[11] At current market conditions, the proposed regulatory capital charges for highly-rated SME structured finance instruments (securitization and covered bonds) would reduce balance sheet leverage to a point where insurance companies (and to a lesser extent banks) can no longer achieve a sufficient return on equity based on current profitability (Box 2 illustrates how capital charges affect potential returns).

14. **Preferential treatment of "high-quality" securitization instruments in the forthcoming European liquidity standards would increase investor appetite for these assets**. The Basel definition of the liquidity coverage ratio (LCR) mostly excludes securitization instruments from the measure of liquid assets, apart from some limited types of RMBS, but will allow the inclusion of highly-rated covered bonds up to 70 percent of high quality, liquid asset (HQLA). Failure to broaden the pool of eligible assets to a wider range of securitization structures of sufficient credit quality will reduce investor appetite for such instruments.[12] However, the pending LCR under the Capital Requirements Regulation (CRR) is likely to include a wider range of HQS (see Annex 1) in the definition of liquid assets.

15. **Recent EU retention rules help ensure that issuers have "skin in the game,"** but may also put a burden on investors to fund retained portions once transaction structures for genuine risk transfer replace the current "securitization to repo" issuance. In 2013, more than half of all issuances (and far more than what would be required under the existing "skin in the game" rule of five percent under CRD2) were "retained" by the originators, i.e., the current retention rule is non-binding. Steps are being taken at the EU level to improve access to information to enhance investors' confidence in the quality of the instrument and the underlying asset. Under the Capital Requirements Regulation (CRR), the EBA has drafted Regulatory Technical Standards that specify requirements for due diligence for institutions becoming exposed to a securitization position as well as for originators, sponsors and lenders to retain economic interest.

[11] Note that Solvency II assigns a lower capital charge for covered bonds compared to other non-government and/or unsecured assets. Furthermore, covered bonds will be exempted from "bail-in" that would subject unsecured senior debt of failed banks to forced write-downs or conversion into equity in resolution.

[12] However, it is currently being debated at the European level whether HQS could be included in the EU liquidity coverage ratio under the Capital Requirements Regulation.

Box 2. Regulatory Hurdles

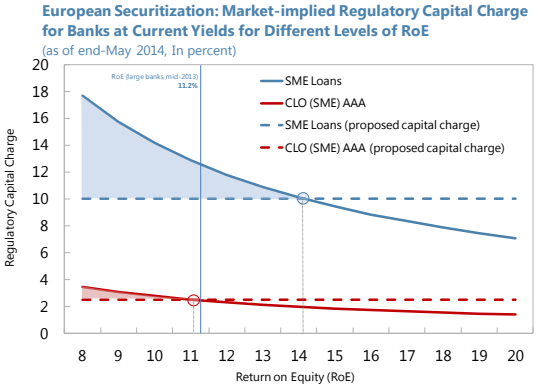
This Box presents the results of a simple cost-benefit analysis of the proposed capital charges of banks and insurance companies for investments in securitized and non-securitized SME loans under the standardized regulatory approaches (Basel III-Securitization Framework and Solvency II-Capital Charges for Long-term Investment). For these "regulated" investors, the interaction of their desired return on equity (RoE) and the economic cost of capital based on the current yield/net interest margin determines whether the proposed capital charges are binding or not.[1]

At current market prices (as of end-May 2014), insurance companies (and to a lesser extent, banks) have an incentive to hold SME loans rather than invest in SME-backed securitization transactions. The blue and red curves depict feasible combinations of the regulatory capital charge and the return on equity (RoE) for any given market rate of return on an asset. Higher capital charges are associated with lower rates of return and vice-versa. The intersection of these curves with the dotted horizontal lines showing the proposed capital charges under Basel III and Solvency II regimes illustrate that investment in highly rated senior bonds ("CLO (SME) AAA") would result in an RoE of about 11.5 percent for banks and 4.5 percent for insurers. This is well below the RoE that banks and insurers would earn by simply holding the SME loan on their books (14.5 percent and 7.5 percent, respectively). Moreover, in the case of insurers, the RoE from holding the security is well below the current RoE for large insurers. Note that investing in (or not securitizing) SME loans remains profitable for both banks and insurers, with the intersection (or asymptotic convergence) of the blue curves and lines occurring to the right of the current RoE. Thus, the regulatory incentives are stacked against securitization.

European Securitization: Market-implied Regulatory Capital Charge for Banks and Insurance Companies at Current Yields (as of end-May 2014), *In percent*

Banking Sector

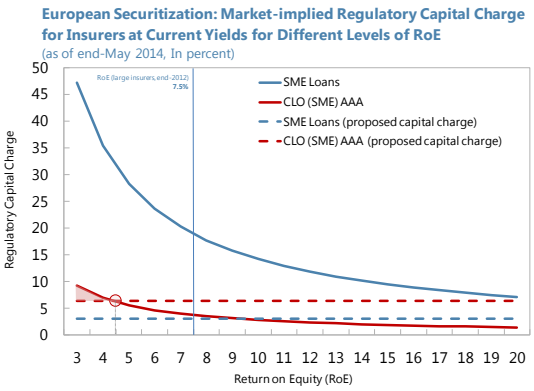
(Basel III)



Sources: BCBS, Bloomberg LP, IMF staff calculations.

Insurance Sector

(Solvency II)



Sources: EIOPA, Bloomberg LP, IMF staff calculations.

Sources: IMF staff calculations, BCBS and EIOPA. Note: Current yields for benchmark deals of "AAA"-rated collateralized loan obligations (CLO) and covered bonds (CB) as well as average net interest margin of SME lending in the euro area after provisioning (20 percent); return on equity after taxes; for the capital charge of insurers, a maturity tenor of three years was assumed for the CLO to derive the solvency capital requirement (EIOPA, 2013); for banks, the calculation of the regulatory capital charge assumes CAR=10% based on given risk weightings according to BCBS (2013). This analysis reflects the standardized approach under the proposed regulatory regimes for banks and insurers. For an assessment of internal model-based approaches in banking, for instance, one would need to apply the so-called "ratings-based approach (RBA)" to rated tranches and the "supervisory formula approach (SFA)" to unrated tranches retained by originators. For investing banks, unrated tranches would need to be fully deducted from capital unless the application of the SFA is granted by the national supervisor.

[1] Sophisticated investors are likely to use approved internal models; however, given the overall consistency between internal model-based estimates and standardized approaches, the presented results provide broad guidance regarding the firms' sensitivity to changes in capital charges.

D. Relative Performance

16. **Simple structures and limited, targeted official support have enhanced the relative performance of European securitization markets.** Unlike some other jurisdictions, most transactions in Europe showed remarkable resilience during the recent crisis.[13] This might be explained by many features of HQS that have developed as a result of both bank-based issuance and established public sector programs—these include traditionally conservative loan origination standards in Europe, with high equity participation of the originator; servicing being retained by the originator ("servicer continuity") together with issuer due diligence; adequate post-issuance performance monitoring; and treatment of securitization as part of ongoing balance sheet operations (see Annex 2). Moreover, some countries, such as Germany and Spain, have operating successful platforms for bank-sponsored SME securitization.

E. Lessons from Previous SME Support Programs

17. **Most SME securitization transactions in Europe have benefitted from public sector-sponsored programs, which have enhanced their relative performance**. However, the customized nature of these programs has limited the potential scope for broadening capital market access for SMEs (see Annex 1, Annex 3 and Annex 4). The most significant national programs in Europe are the Asset Securitization Funds for SMEs ("Fondos de Titulización de Activos para Pymes" or FTPYME) in Spain and Kreditanstalt für Wiederaufbau (KfW)'s PROMISE (Programme for *Mittelstand*-loan Securitisation) platform, which provide cost-efficient funding support to bank-originated loans to SMEs. Such support has generally been motivated by the cost implications of recent structural/regulatory changes for banks' SME lending, such as the shift towards fee-generating business, the greater risk-sensitivity of capital standards, and a more competitive pricing of SME loans (which in the past was hindered by high public sector presence in many European countries, such as Germany, France, and Spain).

18. **In some cases, the European Investment Fund (EIF) has acted as credit guarantor for public sector programs or banks' own securitization vehicles.** These actions help facilitate credit risk transfer and improve market liquidity of SME securitization transactions by widening the investor base. In this regard, the main role of the EIF is to support enhanced debt finance to SMEs. The EIF typically covers tranches rated in the range of "BB" to "A" (mezzanine tranches), for which the secondary market is particularly illiquid.[14] Such guarantee schemes are very effective in providing market access to smaller banks with low issuer ratings and mitigating the influence of "sovereign ceilings" in deficit countries, which cap the highest rating issuers can achieve due to the general level of sovereign default risk. During the financial crisis, the EIF also provided

[13] Note, however, that some SME loan-backed transactions with non-granular references portfolios, especially those including unsecured (mezzanine) loans, did experience very significant downgrades and defaults during the financial crisis. These transactions represented only a small part of the market and did not exhibit the properties of HQS listed above.

[14] As opposed to credit insurance, an EIF guarantee also implies a substantial leverage effect. In structured transactions, the risk transfer can be achieved with a limited nominal EIF guarantee exposure that covers only a small portion of the loan portfolio, but results in significant "rating uplift" for more senior investors.

"wrappers" for senior tranches issued by banks in stressed economies, making their placement possible with a wider investor base.

19. **Schemes also exist at the European level, but their use has been limited to supporting "on-lending" rather than SME securitization.** The SME Guarantee Facility was set up under the EU's 2007-13 Multiannual Financial Framework (MFF) to improve SME's access to finance, including through co-, counter- and direct guarantees to banks. While the facility was used in 21 countries, generating €15 billion in lending to more than 275,000 SMEs, there was only one agreement under the securitization window.[15] The SME Guarantee Facility was closed at the end of the 2007-13 MFF, but its activities, including a securitization instrument, are expected to be continued under the EU's new COSME program for the 2014–20 MFF.

20. **There are also private sector initiatives, such as True Sale International GmbH (TSI).** The TSI platform was created in 2004 by a consortium of 13 German commercial banks to promote the German securitization market. It provides issuers of transactions with a cost-efficient, standardized issuance process that is compliant with national competition law and regulatory requirements. The TSI platform allows participating banks to securitize reference loan portfolios through a specially created limited-liability SPV owned by three charitable foundations (Jobst, 2006).[16] In 2010, the TSI created the German securitization certification standard ("Deutscher Versicherungsstandard"), which establishes clear rules for transparency, disclosure, lending and loan processing. The platform is heavily used by consumer loan and lease ABS structures; only two SME securitizations have been completed via the TSI so far.

F. Recent Efforts

21. **Current initiatives at the European and national levels move in the right direction, but are too small in size or too narrowly focused on bank lending to have a broad impact.** These include the joint EC-EIB SME Initiative and the Banque de France (BdF)'s approval of securitized credit claims for collateralized refinancing by originating banks. Both proposals envisage greater official support to bank-sponsored SME lending, but fall short of mechanisms to solicit non-banking funding sources and schemes that would allow direct capital market access:

- *Joint EC-EIB Initiative*—This initiative aims to kick-start lending to SMEs by blending EU structural funds, EU funds and EIB resources through guarantees and securitization, thereby offering more generous conditions than existing EU initiatives. However, the take-up among EU countries has been limited, with only a few countries participating so far, partly due to complex procedures governing the use of structural funds as well as funds having already

[15] Under this agreement, the EIF took the second loss risk and Italian mutual guarantee funds (Confidi) took the first loss tranche, reducing the capital requirement for the originating bank (Unicredit) and facilitating Italian SMEs access to €120 million of new loans.

[16] It is commonplace for charitable foundations to act as SPV shareholders, in order to achieve tax-exempt status, and, thus, eliminating income taxation on funds managed by the SPV. The use of multiple foundations ensures the loans are "bankruptcy remote" from the originating banks. TSI Services GmbH, a limited-liability subsidiary of TSI, organizes and coordinates the establishment of the SPV.

been committed. The option of cross-country pooling of resources and risk, which would significantly leverage resources and reduced the effects of financial fragmentation, is unlikely to be used in the near term, reflecting the limited uptake and, possibly, concerns about an adverse selection bias.

- *Banque de France (BdF) proposal*—The BdF developed a scheme for the standardization of securitized credit claims by allowing banks to bundle SME loans rated "BBB-" and higher (through a commonly owned special purpose vehicle ("Euro Secured Notes Issuer")) as collateral for refinancing via the central bank or interbank repurchase agreements.[17] This scheme draws on the experience of the Eurosystem in instituting greater transparency about collateral assets and their performance over time in "retained" securitization transactions via the ECB's loan-level data initiative. The first transaction was completed in April 2014. However, the current implementation requires detailed supervisory information on loan characteristics, which may limit a broader (pan-European) application.

22. **The ECB's loan-level data initiative will help improve transparency of securitization instruments**. The initiative has established requirements for transparency and standardization as necessary preconditions for ABS, including SME ABS, to be considered eligible for Eurosystem collateral. The detailed information on borrower and loan characteristics can be used by current and potential investors to carry out their own credit analysis, and will help address information asymmetries. The benefits are likely to take some time to materialize and will require steadfast implementation of the standards and data requirements.

G. Suggested Measures to Facilitate the Development of SME Securitization

23. **Official sector involvement would help promote credit risk transfer via the securitization market.** The official sector should support the development of ABS structures that facilitate the transfer of SME lending risks from banks to capital markets, and take steps to align the underlying risks of these instruments with regulatory charges. Low bank funding costs have limited the supply of (more expensive) transactions that involve credit risk transfer and the inclusion of asset types that are generally more costly to securitize, such as SME loans.[18] At the same time, higher regulatory capital charges and cumbersome operational requirements for investment have inhibited demand for SME securitization transactions (relative to other forms of investment). Moreover, risk-adjusted returns of senior tranches of such transaction are currently too low for institutional investors (banks, insurance companies, and pension funds) while the non-bank investor base is limited.

[17] The acceptance of such assets as collateral for Eurosystem credit operations is still under assessment.

[18] Any securitization transaction would require a structure whereby issuers would not be parting with their assets without making some kind of return or gain on sale. This depends on the spread payable to investors as well as the asset yield and the size of the risk retention.

24. **Measures that would facilitate development of the SME securitization include:**[19]

- *The regulatory regime should appropriately differentiate between high- and low-quality securitization transactions.* The proposed revisions to the definition of risk-weighted assets (RWAs) by the Basel Committee and assigned capital charges for long-term investment under the implementation guidance under Solvency II will lead to a significant increase in capital requirements for "regulated" institutional investors in senior tranches of securitization transactions. Reducing the capital intensity of structures that qualify as HQS could encourage the supply of transactions that provide genuine risk transfer (rather being used for funding purposes only).[20]

    - SME securitization—as an asset class *per se*—is generally considered HQS in current policy proposals and monetary frameworks, but does not benefit from more favorable regulatory treatment (see Annex 1). HQS would place greater focus on structural characteristics that allow for better risk sharing between originators and investors that can assess the impact of changing economic conditions on the performance of securitization transactions.
    - Demonstrable compliance with these characteristics should result in a regulatory treatment that is commensurate with this proposition in contrast to the currently proposed catch-all regulatory treatment of securitization transactions.
    - Greater disclosure of underlying loan quality and performance monitoring would aid compliance efforts. The operational implementation of HQS would be largely informed by central bank repo eligibility with a focus on transactions with simple structures and transparent underlying asset pools and predictable performance (see Annex 2).

- *Demand for SME securitization is also influenced by proposed regulatory standards for liquidity risk.* The definition of the liquidity coverage ratio (LCR) mostly excludes securitization instruments from the measure of liquid assets, apart from some limited types of RMBS. Moreover, the pending liquidity coverage ratio under the Capital Requirements Regulation (CRR) will include only highly-rated RMBS, but will allow the inclusion of highly-rated covered bonds up to 70 percent of the liquidity buffer.[21] Broadening the pool of eligible assets to also include HQS in the stock of high quality, liquid asset (HQLA) will increase investor appetite for a wider range of securitization structures of sufficient credit quality.

[19] In May 2014, the Bank of England and ECB (2014a,b) published a comprehensive review of existing obstacles to a better functioning of the securitization market in the European Union, which includes some arguments that are also reflected in these recommendations.

[20] HQS can in principle also help meet the increasing demand for high-quality collateral, providing a compliment to government debt.

[21] However, there is discussion about the potential inclusion of a wider (than RMBS) range of highly-rated (AA-" or higher) securitization exposures, namely auto ABS, SME CLO, consumer ABS, as Level 2B (which are capped at 15 percent of HQLA) with a 25 percent valuation haircut.

- *Capital markets for securitized SME loans could be developed further by revising the investment restrictions for institutional investors* (e.g., pension funds)—once the supervision and regulatory framework is strengthened—to encourage alternative investments that benefit SME financing, such as venture capital.

- *Structural improvements could further facilitate market development.* SME securitization instruments face particular challenges related to the heterogeneity of SME loan portfolios across countries. The complexity of information and different reporting requirements makes it difficult for investors to assess credit risk and creates a home bias.

    - National insolvency frameworks should continue to be strengthened, with a view to cleaning up banks' balance sheets and boosting the quality and transparency of collateral. This would include policy measures that facilitate out-of-court settlements, reduce impediments to efficient debt restructuring, and introduce guidance on tax incentives and resolution procedures in line with international best practices. Greater harmonization of SME lending standards, loan reporting requirements (through the SSM), and credit registries across countries would facilitate the establishment of a truly single market.[22] Consideration could be given to broadening the coverage of credit registries through a centralized database. The harmonization of reporting requirements would not only enhance cross-border investor demand but create scope for developing securitization instruments that pool SME loans on an EU-wide basis. The SSM can help in this respect.

    - Direct capital market access for SMEs should be improved via the creation of a mutual issuance platform. This would allow sufficient aggregation for mini-bond and/or structured finance issuance and could build on efforts to achieve greater harmonization of SME funding in line with recent recommendations by European Commission's High Level Expert Group on SME and Infrastructure Financing (2013b). Also, forms of non-bank intermediated securitization (such as trade receivables) and equity finance should be explored in areas where structural impediments to asset securitization are too high and cannot be overcome in the near term (European Commission, 2014).

- *Official sector involvement would be essential in areas of SME finance where information constraints and insufficient economies limit the effectiveness of market-based solutions.* Supply-side impediments to a wider range of non-bank SME funding options are often found in the cost associated with higher standardization of both information disclosure and performance reporting. For SME securitization, existing public sector programs could be augmented and potentially supplemented by additional efforts:

[22] In particular, the lack of long time series data on the default frequency of SMEs, the heterogeneity of SME portfolios which differ from each other in terms of size, corporate form, business activity, geographic location, and insufficient volumes of long-term loans (which complicate the estimation of the cash flows pattern of SME portfolios) continue to hamper SME securitization.

- The various euro area institutions could initially act as guarantors or strategic investors in cost-efficient funding structures with genuine risk transfer to market investors, while guarding against long-term distortionary effects by making any risk-sharing time-limited. For instance, the EIB/EIF could initially provide guarantees to lower tranches of fully marketable transactions, which would reduce the credit risk of strategic asset purchases of senior tranches by the Eurosystem. Such efforts could be combined with the EC-EIB SME initiative in order to create operational synergies and sufficient critical mass to address the funding needs of SMEs in stressed economies.

- Incorporating a more nuanced treatment of HQS in the Eurosystem collateral framework could benefit SME securitization by incentivizing issuers to develop transactions irrespective of whether or not parts of it are retained for ECB repo funding.[23]

H. Conclusion

25. **The further development of securitization represents is an important step towards a more integrated capital market in Europe.** Given the lack of diversified funding markets, with only the largest firms able to directly access capital markets, credit supply to the corporate sector is heavily influenced by the lending behavior of banks. Securitization of intermediated credit could help overcome the adverse effects of financial fragmentation, improve the allocation of liquidity, and support cross-border investment within the euro area. Restarting securitization can help mitigate structural constraints on credit supply as many banks, especially those in stressed economies, continue facing considerable funding needs while unsecured funding remains impaired, especially at longer maturities—even though concerns over sovereign risks in the euro area have dissipated. An expansion of the SME securitization market would move firmly in this direction, while drawing upon a large existing pool of assets and providing a key non-bank funding channel.

26. **However, structural and regulatory conditions are stacked against SME securitization.** Unfavorable economic terms and adverse cyclical factors reduce the incentives for issuance. Moreover, pending regulatory changes—Basel III for banks and Solvency II for insurance companies—weaken the investor base by increasing the capital intensity of holding highly-rated securitization transactions and limiting their eligibility for liquidity purposes. Progress towards incubating a larger SME securitization market would require greater regulatory differentiation of HQS, cross-country harmonization of asset structures, and official sector support as a catalyst to greater activity.

[23] Throughout the crisis, the ECB has widened the pool of eligible assets. Raw loans are already eligible for repo at the ECB if they are rated "BBB" or above. Assets rated "BB" can be repoed provided the national central bank underwrites the credit. The ECB last reviewed its haircuts on eligible assets in July 2013.

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Annex 1. Public Sector Support for SME Securitization

1. **The most significant programs in Europe are the Asset Securitization Funds for SMEs (*Fondos de Titulización de Activos para Pymes* or FTPYME) in Spain and *Kreditanstalt für Wiederaufbau*'s (KfW) PROMISE (Programme for *Mittelstand*-loan Securitisation) platform**, which provide cost-efficient funding support to bank-originated loans to SMEs. In the KfW program, the issuing bank sells credit protection (supported by third-party guarantees) to create partially funded and leveraged investments in SME exposures (without removing them from its balance sheet). Similarly, in FTPYMEs, banks receive guarantees that support the off-loading of SME loans. While both programs have attracted repeat issuers and involve a considerable cost reduction for issuers, they tend to be very customized and focused on larger banks, with limited or no diversification effects across different SME loan portfolios/banks. Similar products (securitization of lease receivables) have been developed in Italy by arrangers and originators in order to achieve better funding costs. Given the high dependence of SMEs on bank lending, both programs aim at providing capital market access for smaller banks and reducing both the regulatory and economic cost of new lending. By helping financial institutions to achieve regulatory capital relief for securitized SME lending, these programs have created more scope for future SME loan origination.

2. **In the United States, SME loan securitization began in 1985 when the Small Business Administration (SBA), a U.S. government agency, launched its loan guarantee program.** The SBA does not lend money directly to SMEs but offers government guarantees of up to US$5 million on loans made by commercial lenders to SME borrowers that face challenges obtaining financing. The guarantee covers a portion of an SME loan originated by a local bank, credit union, or a specialized lender, ranging from 50 to 85 percent, depending on the program, limiting the lender's risk and exposure. The lender then provides the actual loan to the borrower and securitizes the "SBA-backed loan". During the fiscal year 2012, lending volumes exceeded US$14 billion.

3. **In Japan, in addition to the public guarantees, the Bank of Japan (BoJ) introduced measures to support for SME financing and securitization during late 1990s and early 2000s, also aiming at repairing the monetary transmission mechanism.** Given the importance of SMEs in Japanese economic activity, improving their access to credit was seen essential to restore the monetary transmission mechanism.

4. **In 1999, the BoJ started accepting eligible ABS as collateral for banks' maintenance requirement.** In 2003, the BoJ introduced a program to purchase ABS and ABCP backed by SME loans.[1] The objective was to strengthen the transmission mechanism by circumventing around the banking sector, while avoiding market distortions and limiting the risk to the BoJ.[2] Accordingly, the BoJ started purchasing ABS with a broad range of underlying assets, including

[1] The SMEs accounted 80 total employment (now around 70 percent) and over half of manufacturing value-added in Japan.
[2] The program was ended in March 2006 together with the exit from the QE.

SME loans, receivables, and leases.[3] However, other policy measures have distorted a healthy development of the SME sector. Various credit support policies helped shelter existing firms from tighter credit conditions and limited the number of bankruptcies but also kept nonviable SMEs afloat. The measures comprised public credit guarantees, safety net lending by government-affiliated financial institutions (GFIs), and temporary relaxation of provisioning requirements for SME loans (Lam and Shin, 2012).

[3] The BOJ set the maximum amount outstanding of purchases at one trillion yen (3/4 percent of the BoJ assets). The total size of outstanding securitized bonds in Japan was 44.5 trillion in 2007 (33 trillion yen in 2013). About half of this amount is trust beneficiary rights. The outstanding ABCP is small and declined from 4.4 trillion in 2007 to 1.8 trillion in 2013. The outstanding ABBs remained broadly the same at around 13 trillion yen.

Annex 2. Defining High-quality Securitization (HQS)

1. **There have been five attempts at defining HQS within the broad securitization market:** (i) the ECB with its collateral eligibility criteria, (ii) EIOPA with its "Type A" standard for long-term investment of insurers in securitization transactions, (iii) the Bank of England's eligibility criteria for repo collateral, which closely (but not fully) matches the eligible asset classes and eligibility requirements of the prime collateralized securities (PCS) standard related to sufficient portfolio diversity, no subordinated exposure of loans, risk retention, information about underwriting criteria, and servicer continuity; (iv) the second ECB-BoE joint paper on reviving the European securitization market; and (v) market-led initiatives, such as the prime collateral securities (PCS) certification and the German securitization standard. Together with residential mortgages and consumer loans, leases, and credit card debt, SME loans are commonly found as reference assets for HQS. Complex structures (i.e., re-securitization, synthetic securitization, and single tranche securitization) are unanimously excluded from all lists. Typically, the qualification as HQS should involve additional criteria: (i) restriction to true sale structures (i.e., synthetic transactions are excluded); (ii) minimum rating threshold (least "BBB-" (or equivalent) by two rating agencies at any time since launch[1]; (iii) exclusion of non-performing loans and loans to self-certifying borrowers or credit-impaired borrowers at the time of loan origination; (iv) underlying portfolio must be homogeneous (i.e., securitization of mixed pools are excluded); and (v) loan-by-loan level data needs to be available at launch and on a regular basis.

2. **The identification of HQS would help distinguish simple and prudently structured transactions from transactions with more complex, opaque structures based on transparent characteristics.** Some of these characteristics reflect the reasons for the relatively stable performance of European securitization markets during the financial crisis: (i) a strong funding relation to real economic activity, (ii) traditionally conservative loan origination standards, with high equity participation by the originator under the same credit law as non-securitized loans ("skin in the game"), (iii) servicing being retained by the originator ("servicer continuity") together with issuer due diligence, and (iv) adequate post-issuance performance monitoring. Moreover, the conceptual treatment of securitization as part of ongoing balance sheet operations (with seasoned loans only) further reduces incentive problems (Jobst and Kiff, 2011). In general, the concept of HQS should be applicable to all asset classes that support lending to the real economy (and especially SMEs), and is not limited to investment in senior tranches.[2]

[1] Note that by limiting eligibility to tranches with a very high rating only would exclude senior most tranches of very high quality by issuers in stressed economies, whose rating is capped by the sovereign ceiling of the respective country, which would contradict the intent of de-linking the regulatory treatment of HQS from sovereign risk.

[2] It is also important to support more junior tranches of safe and robust structures especially via improvement of data and analytics eventually allowing a broad investor base and risk transfer between bank and non-bank sectors.

Annex 3. Selected Official Sector Support for Securitization in Europe

Country	Name of Program	Amount	Period	Description
European Union	EIB Group ABS Initiative for SMEs	~€10 bln	since 2013	EIB Group provides facilities (funded and unfunded) to bank-sponsored securitization transactions via guarantees on mezzanine/senior tranches with minimum rating requirement (EIF), and acts as "structuring" investor in senior tranches (EIB). The initiative aims to restart the SME securitization market, by facilitating deal execution through increased underwriting capacity and provision of credit enhancement to third party investors. The ABS Initiative is expected to be combined with the SME Initiative.
European Union	EIF-CIP Securitisation Window under the SME Guarantee Facility	€17 bln in SME finance for all CIP windows (about €0.5 bln in guarantees)	2007-2013	EIF provided unconditional and irrevocable guarantees on securitization tranches with little credit enhancement in order to facilitate access to capital markets for unrated or low-rated issuers, such as smaller banks. The aim was to generate additional funding for SMEs, hence it combined guarantees on existing loan portfolios with a separate undertaking to build up a new portfolio of SME loans (under a separate "additional portfolio agreement"). The required size and composition of this portfolio depended on the size and the seniority of the guaranteed tranche. The CIP Securitization Window was provided under the EU 2007-2013 Multiannual Financial Framework.
European Union	COSME Securitization Window	€1.4 bln	2014-2020	The COSME program includes a capped guarantee and a securitization instrument, which largely continues the activities of the CIP Securitization Window under the EU 2014-2020 Multiannual Financial Framework. It is complimentary to the SME Initiative. It envisages securitization of SME debt finance portfolios, to mobilize additional debt financing for SMEs under risk-sharing arrangements with the targeted financial institution. Support for the transactions is conditional upon an undertaking by the financial intermediary to use a significant part of the resulting liquidity or mobilised capital for new SME lending in a reasonable period of time.
European Union	EC-EIB SME Loan Inititiative	up to €58 bln (€8.5 billion from structural funds, €0.036 billion from COSME/Horizon 2020, and €36-49 billion from the EIB-EIF)	from end-2014	The SME Initiative is a joint initiative between the European Commission and the EIB Group and combines budgetary contributions from Structural Funds (ESIF) and other EU programs (COSME/Horizon 2020) with EIB Group's own resources to support intermediated SME lending. There are two joint instruments envisaged: (1) a "guarantee facility" for new SME loans/leases, and (2) a "joint securitization instrument", allowing for the securitization of existing and new SME loans/leases. Participation in the SME Initiative is voluntary. At present, only Spain, Malta, and Portugal participate in the program.
Germany	PROMISE Program	€47.6 bln (until 2008)	since 2000	Securitization program created by national development bank *Kreditanstalt fuer Wiederaufbau* (KfW) to provide capital relief to SME loan portfolios of sponsoring banks using a synthetic transaction structure; EIF has acted as a swap counterparty for the junior tranche (first loss piece) and the mezzanine tranche in many transactions.
Spain	FTPYME Program	€3 bln	since 2000	Spanish Ministry of Economy established a budgetary endowment for FTPYME guarantees from the Kingdom of Spain; provides guarantees for SME securitization if the originator commits to reinvest the liquidity in new SME financing. The guarantee is limited in size and contingent on rating of tranches: up to the 80% for tranches rated "AA" and higher, up to 50% of tranches rated at least "A". The asset portfolio transferred to the securitized fund must comply with the following requirements: (1) portfolio structure (only loans to domestic, non-financial firms; 80% of portfolio should be SMEs according to EC definition; initial maturity of loans greater than 1 year); (2) use of funding support (net funds obtained from securitization must be re-invested – 50% within 6 months and remainder within one year); (3) placement (all guaranteed bonds must be listed).
United Kingdom	Special Liquidity Scheme (SLS)	No limit; £185 bln at peak	April 2008-January 2012	The scheme allowed banks and building societies to swap their high quality mortgage-backed and other securities for UK Treasury Bills for up to three years. Although the drawdown period for the SLS closed on 30 January 2009, the scheme remained in place for a further three years.
United Kingdom	Asset-backed Securities Guarantee Scheme (ABSGS)	No limit	April 2009-December 2009	Under the scheme, the HM Treasury can provide two types of guarantee to be attached to eligible "AAA"-rated asset-backed securities (ABS), initially in respect of residential mortgages, issued under the sponsorship of UK banks and building societies. The ABSGS offered a credit guarantee and a liquidity guarantee, though an eligible instrument may only benefit from one, not both of these. The credit guarantee was issued as unconditional and irrevocable guarantee of the timely payment of all interest and principal due from an issuer and payable in respect of the eligible instruments. The liquidity guarantee covered the issuer's obligation to redeem or repurchase securities pursuant to an issuer's call option or a noteholder's put option under the terms of the eligible securities.

Sources: HM Treasury, AOFM, KfW, ICO, Italian Ministry of Finance and Economic Affairs, EIF, EIB, European Commission.

Annex 4. Selected Official Sector Support for SME Finance in Europe

Country	Name of Program	Amount	Period	Description
Germany	KfW SME Program	> €3 bln	since 1971	Credit facility for German banks for SME loans with maturities up to 20 years; refinanced exclusively using capital market funds, which enables KfW to offer SMEs long-term investment loans while maintaining the principle of subsidiarity and on-
Italy	SMEs Lending Facility (Fondo Centrale di Garanzia)	€17 bln of issued guarantees activating €32 bln of new loans (end-2011)	since 2000	The institution provides guarantees up to 80% of bank-originated credit facilities to SMEs.
Ireland	Strategic Banking Corporate of Ireland (SBCI)	€4 bln (until 2018)	since 2014	Initial funding of €500 mln (to rise to €4 bln until 2018) provided by the Ireland Strategic Investment Fund (ISIF) together with KfW and the EIF to support on-lending (through commercial banks and other loan originators) to SMEs, aiming to reduce cost and pmprove flexibility of SME funding.
Spain	ICO SME financing facility	Annual limits ranging between €2 bln and €7 bln	since 1993	Credit facility for Spanish banks originating SME loans with maturities up to 10 years (possibility of grace period); for new and productive fixed assets only.
United Kingdom	Funding for Lending Scheme (FLS)	No limit; 5% of stock = £80 bln at launch	July 2012-January 2015	The scheme provides funding to banks and building societies for an extended period, with both the price and quantity of funding provided linked to their lending performance. The FLS allows participants to borrow UK Treasury Bills in exchange for eligible collateral, which consists of all collateral eligible in the Bank's Discount Window Facility. The Bank and HM Treasury announced an extension to the FLS on 24 April 2013, with incentives to boost lending skewed towards SMEs.

Sources: HM Treasury, AOFM, KfW, ICO, Italian Ministry of Finance and Economic Affairs, EIF, EIB, European Commission.

EXTERNAL REBALANCING IN THE EURO AREA: DEVELOPMENTS AND POLICIES[1]

Since the crisis, the euro area current account has moved from rough balance into a clear surplus. The rebalancing underlying this shift has been highly asymmetric, with some debtor economies (Cyprus, Greece, Ireland, Italy, Latvia, Portugal, and Spain) seeing large improvements in their current accounts (sometimes into surplus), while many creditor economies (Austria, Belgium, Finland, Germany, Luxembourg, and the Netherlands) have largely maintained their surpluses. In this context, the paper examines current account developments from the perspective of these economies' financing needs by considering the evolution of saving and investment. Creditor economies appear to exhibit persistent over-saving and under-investment relative to model predictions. The under-saving and over-investment characterizing debtor economies prior to the crisis has improved, but there is still some way to go. Finally, scenario analyses suggest that the external rebalancing arising from proactive policy adjustments and structural reforms could also yield substantial growth dividends.

A. Introduction

1. **The euro area has shifted into strong surplus since 2011.** Prior to 2008, the euro area as a whole had a small current account surplus. But this surplus masked a growing divergence in current accounts across euro area members, with some moving into large deficits, like Greece and Spain, and others into large surplus, such as Germany and the Netherlands. With the crisis though, many debtor economies saw their current accounts begin to improve, narrowing the gap with other economies in the euro area. The external rebalancing though has been highly asymmetric, as creditor economies have seen little reduction in their surpluses. Together, these changes underpin the shift towards a strong euro area current account surplus.

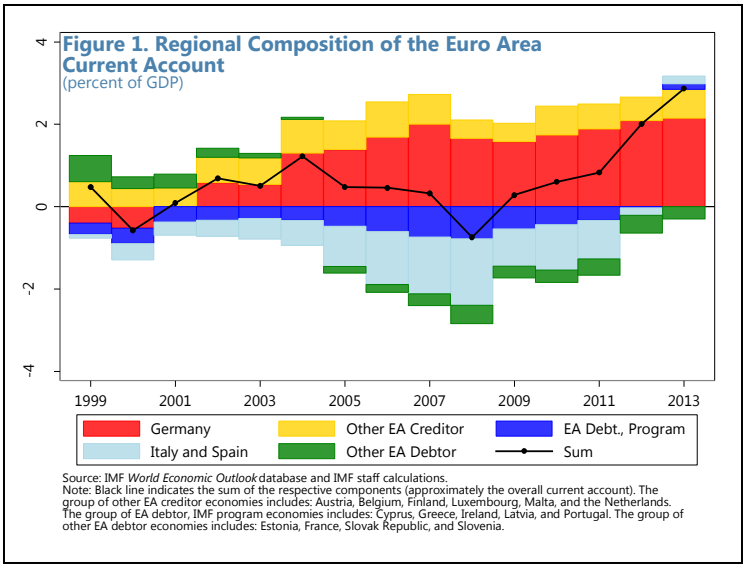
2. **In this note, we investigate the behavior of current accounts in the euro area through the lens of saving and investment, looking at the economy's financing needs.** To accomplish this, we examine the patterns of saving and investment in the euro area, both at the aggregate level and from a sectoral perspective. We also consider how net capital flows (the financing counterpart to the current account) and related net foreign asset positions have evolved since the start of the euro area. This then leads into a statistical analysis of saving and investment, following an approach to assess possible under- or over-saving and investment by economy, similar to the IMF's external balance assessment (EBA) approach which focuses solely on the current account. Finally, to gain additional insight into the potential role of policies in narrowing the divergence of current accounts, we use the IMF's EUROMOD simulation model to generate scenarios that contrast the external rebalancing that could occur by following IMF policy advice with rebalancing due to adverse shocks and delays in adjustment.

[1] Prepared by John C. Bluedorn, Shengzu Wang, and Tao Wu (EUR).

B. Financing Needs and the Current Account

Geography of the Euro Area Current Account

3. **The euro area current account saw a strong shift towards surplus from 2011** (Figure 1). This largely reflects improvements in the current accounts of members with current account deficits, but a component is also due to further strengthening of surpluses in Germany and other creditor economies (Chen, Milesi-Ferretti, and Tressel, 2013; Tressel and others, 2014).[2]



4. **From the inauguration of the euro area in 1999 to 2012, two key groups had persistent current account deficits: the group of IMF program economies[3] (Cyprus, Greece, Ireland, Latvia, and Portugal), and the aggregate of large stressed economies (Italy and Spain).** Their negative contribution to the euro area current account grew over time, peaking in 2008. Since then, these current account deficits have shrunk, particularly for the group of IMF program economies, which experienced a "sudden stop" of private inflows with the global financial crisis (Merler and Pisani-Ferry, 2012; Catão and Milesi-Ferretti, 2013). In 2013, these economy groups moved into current account surplus. Although both large and stressed economies, Italy and Spain do differ significantly in the magnitude of their net foreign liabilities, with Italy at around 30 percent of GDP while Spain is at over 90 percent of GDP. The aggregate of other debtor economies (which is largely France by economic mass, but also includes Estonia, Slovakia, and Slovenia) remains in a small deficit.

5. **At the same time, the group of creditor economies (Austria, Belgium, Finland, Germany, Luxembourg, Malta, and the Netherlands) has seen its surplus increase since 2009**. Germany's current account moved into surplus in 2002, peaking in 2013 (as a contributor to the euro area current account), and staying in surplus ever since (see European Commission, 2012 for assessments of current account surpluses in the European Union). The group of other creditor economies has been in surplus since the start of the euro. The recent strengthening may be partly due to the approximately 15 percent depreciation of the euro area real effective

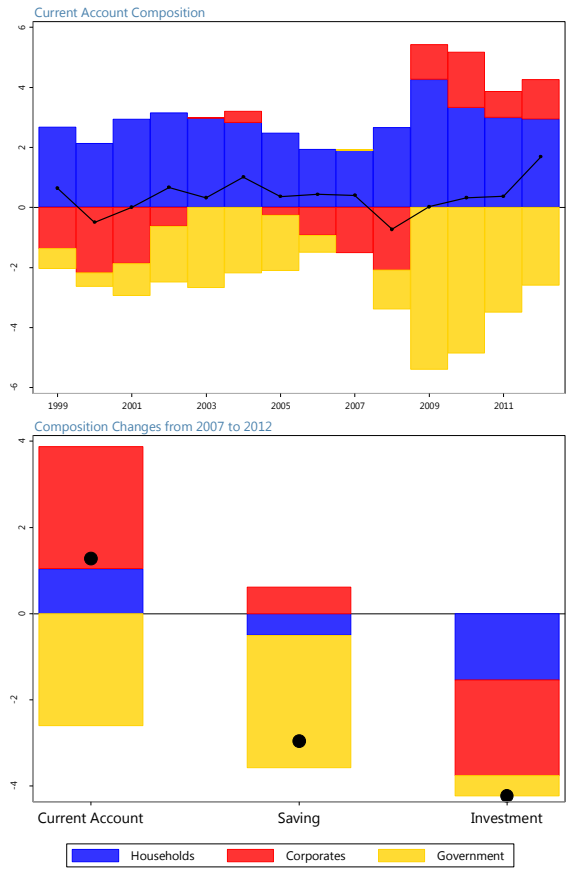
[2] Based on the Net Foreign Asset (NFA) positions as of 2013, each euro area economy is assigned to one of two bins: creditor or debtor. See Table 1 for the full listing of assignments. Throughout this note, the euro area aggregate is based on the euro area membership as of January 2014 (the EA-18).
[3] The group of IMF program economies includes countries that have or recently had an IMF program.

exchange rate versus its trading partners observed from 2009 to 2012, coincident with the aftermath of the global financial crisis and the onset of the European sovereign debt crisis.

Sectoral Composition of Current Accounts in the Euro Area

6. **At the euro area level, the post-crisis shift towards surplus has been largely driven by corporate and household behavior and more recently, by a decline in government deficits** (Figure 2).[4] Household saving has actually declined slightly, while corporate saving has risen since 2009. Automatic stabilizers resulted in government dissaving in the wake of the crisis, but this has recently vanished, leaving government saving at basically zero, but below the levels prior to the crisis. After a long run-up before the crisis, both household and corporate investment fell, and precipitously in the case of corporate investment. Government investment rose slightly with the crisis, reflecting some stimulus, but has since receded to slightly below pre-crisis levels. Overall investment is about 4 percentage points of GDP below where it was prior to the crisis, and it is this depressed investment that is the primary contributor to the current account surplus and its recent improvement. In fact, as seen in the lower panel of Figure 2, the recent strength of the euro area current account compared to pre-crisis is mostly due to a large shift of the corporate sectoral current account info surplus from deficit. This looks like a classic investment driven boom bust, accompanied by a rise in saving as corporate attempt to deleverage.

Figure 2. The Sectoral Composition of the Euro Area Current Account
(percent of GDP)



Source: Eurostat *Balance of Payments* database and IMF staff calculations.
Note: Black line or dot indicates the sum of the sectoral components by variable. The sectoral current account is defined to be the difference between saving and (fixed) investment for the respective sector. The total current account is the sum of the sectoral current accounts.
Euro area saving and investment rates peaked in 2007.

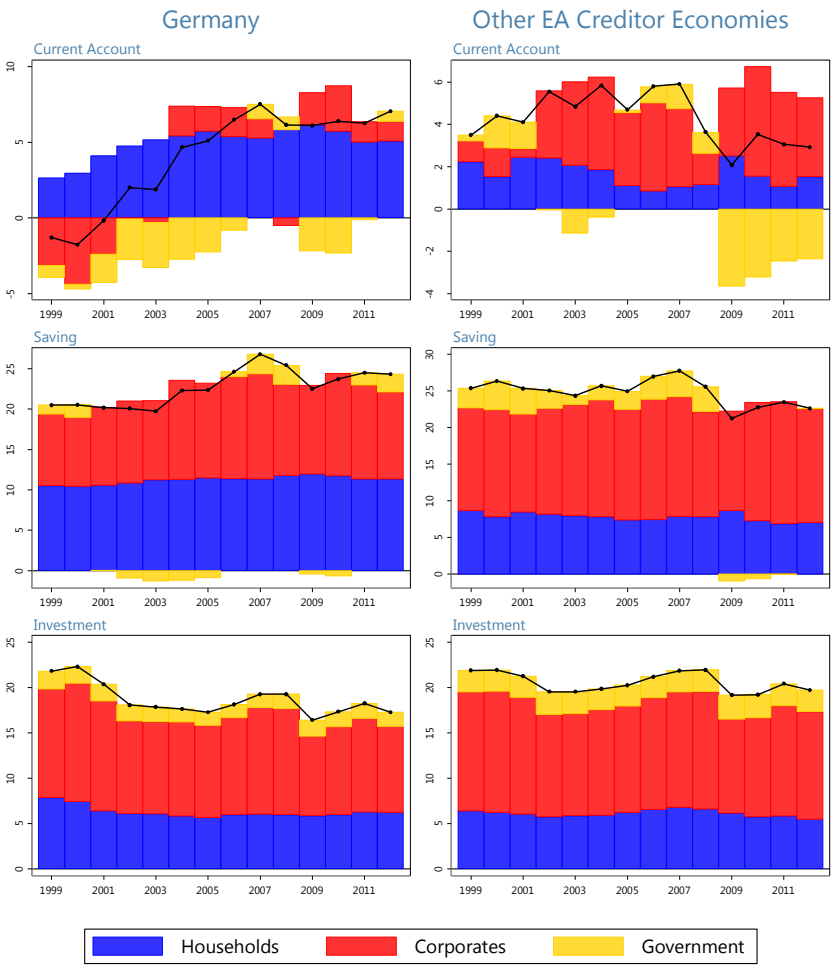
[4] Due to data constraints, only fixed investment is available at the sectoral level; this is what is shown in Figures 2 to 5. Hence, there may be a difference between the current account calculated from the underlying sectoral saving and investment data and the current account from the balance of payments or calculated using overall investment (which includes inventory investment).

7. **Zooming into different country/groupings, we see:**

- **For Germany, the household sector is the largest contributor to the current account surplus, with a secondary role played by the corporate sector** (Figure 3, left column). The component of the surplus due to the household sectoral current account (household saving minus fixed, residential investment) roughly doubled in the early part of the 2000s, going from about 2 and a half percentage points of GDP to just over 5 percentage points in 2007-2008. Since then, it has been relatively stable. Apart from a brief, small dip negative in 2008, the corporate sectoral component has also contributed positively to the current account, becoming a net lender since the early 2000s.

- **The German current account strengthening reflects both rising saving rates and falling investment rates, across the household and corporate sectors.** The German investment rate has fallen from about 23 to about 17 percent of GDP since the early 2000s, with the larger component of this fall due to declining corporate investment. Household investment has been relatively stable as a share since 2005; after falling between 1999 and 2005 Government investment's contribution has been remarkably stable since 1999, showing only small perturbations. At the same time,

Figure 3. The Sectoral Composition of the Current Account in Creditor Economies
(percent of GDP)



Source: Eurostat *Balance of Payments* database and IMF staff calculations.
Note: Black line indicates the sum of the sectoral components by variable. The sectoral current account is defined to be the difference between saving and (fixed) investment for the respective sector. The total current account is the sum of the sectoral current accounts.

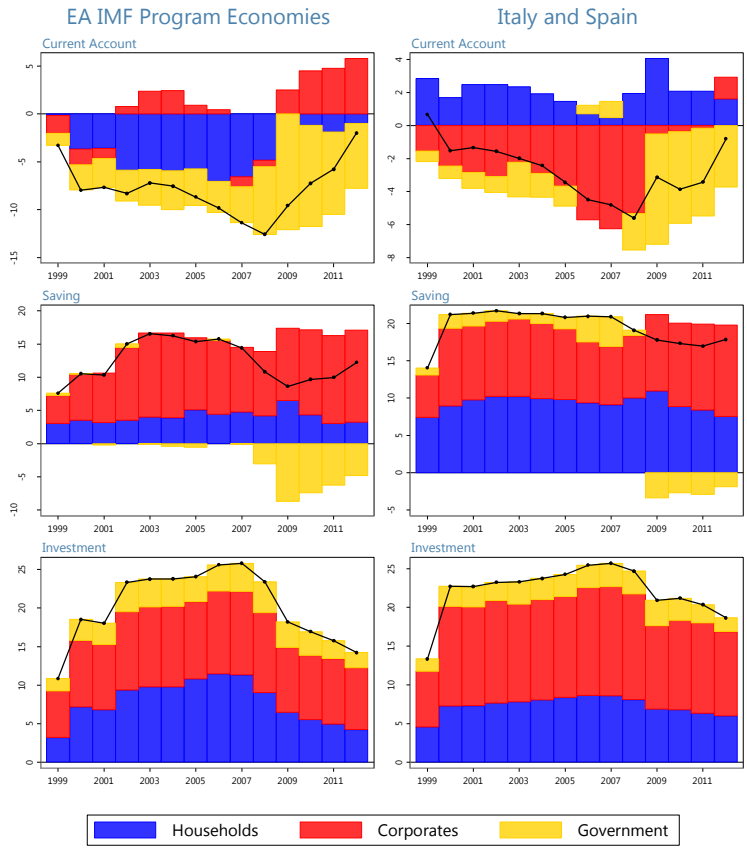
household and corporate savings have risen, although in the case of household saving, this rise has been more marginal.[1]

- **Unlike Germany, both saving and investment rates have fallen in the other euro area creditor economies, while still maintaining an overall current account surplus.** The fall in saving is largely due to a gradual ecline in saving by the household sector over the past 15 years. Corporate saving has actually risen slightly over the same period. After earlier saving, the government began to dissave in 2009, but this dissaving has shrunk over time, such that the contribution of government saving has been negligible over the past couple years. The decline in investment has not been as large as the saving fall, but remains important; if investment had not fallen simultaneously, the aggregate of these economies would have shifted into current account deficit. On a sectoral basis, both household and corporate investment have fallen, although the contribution of corporate investment to the overall fall is more important.

- **In other creditor economies, the current account surplus is mostly due to the corporate sector, with a smaller contribution by the household sector** (Figure 3, right column). Since 2009, the government deficit has been and remains a substantial drag on the current account surplus in these economies, albeit not enough to offset the corporate and household sectoral surpluses.

- **The recent improvements in the current accounts of debtor economies mostly reflect a large fall in investment across sectors** (Figure 4). There were large rises in household and

Figure 4. The Sectoral Composition of the Current Account in Debtor Economies
(percent of GDP)



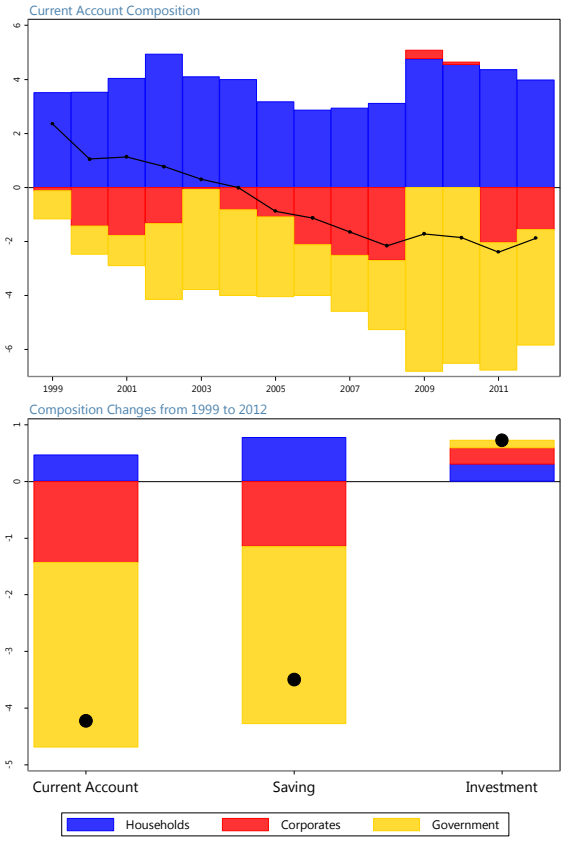
Source: Eurostat *Balance of Payments* database and IMF staff calculations.
Note: Black line indicates the sum of the sectoral components by variable. The sectoral current account is defined to be the difference between saving and (fixed) investment for the respective sector. The total current account is the sum of the sectoral current accounts.

[1] Please see Chapter 1 of Germany's 2014 Article IV Consultation Selected Issues Papers for further details on saving and investment trends in the different sectors of the German economy.

corporate investment prior to the crisis, but these have now reversed, with the overall investment rate below the levels seen in the early 2000s. The investment rate has fallen from over 25 percent of GDP in 2007 to below 15 percent in 2012, for the aggregate of the IMF program economies. The fall in investment for the aggregate of Italy and Spain is slightly smaller, from around 25 percent of GDP in 2007 to around 18 percent percent (for Italy, it goes from 22 to 18 percent, while for Spain, it goes from 31 to 20 percent). Across most of these debtor economies, the hump-shaped investment patterns echo the dynamics of a classic boom-bust business cycle.

Figure 5. The Sectoral Composition of the Current Account in Other Debtor Economies

(percent of GDP)



Source: Eurostat *Balance of Payments* database and IMF staff calculations.
Note: Black line or dot indicates the sum of the sectoral components by variable. The sectoral current account is defined to be the difference between saving and (fixed) investment for the respective sector. The total current account is the sum of the sectoral current accounts. The current account for the group of other debtor economies was at a high in 1999.

- **From 2009 onwards, almost the entire current account deficit in debtor economies is due to government deficits** (Figures 4 and 5)**.** Government deficits have been shrinking over time, reflecting the fiscal consolidation policies undertaken in these economies. For others in this group, the government is the largest contributor to the current account deficit, with the corporate sector deficit playing a secondary role.

- **Overall, the greatest contributors to improvements in euro area current account surpluses over recent years appear to be falls in investment (both corporate and household) and fiscal consolidation.** As mentioned earlier, this bears the hallmarks of a classic investment driven boom-bust, with an aftermath of heavy indebtedness that leads to greater saving. The potentially worrying implication is that the current account improvements may vanish as the euro area regains its footing and recovers. There are some differences across economy groups, with the aggregate of other debtor economies showing little fall in investment.[2] Unlike the clear upturn and downturn visible in debtor economies' investment, like Italy and Spain, Germany's investment fall is more puzzling, since it appears to be on a persistent downward trend rather than a cycle over the past 15 years.

[2] In fact, as seen in Figure 5, relative to 1999, investment is slightly higher in these economies.

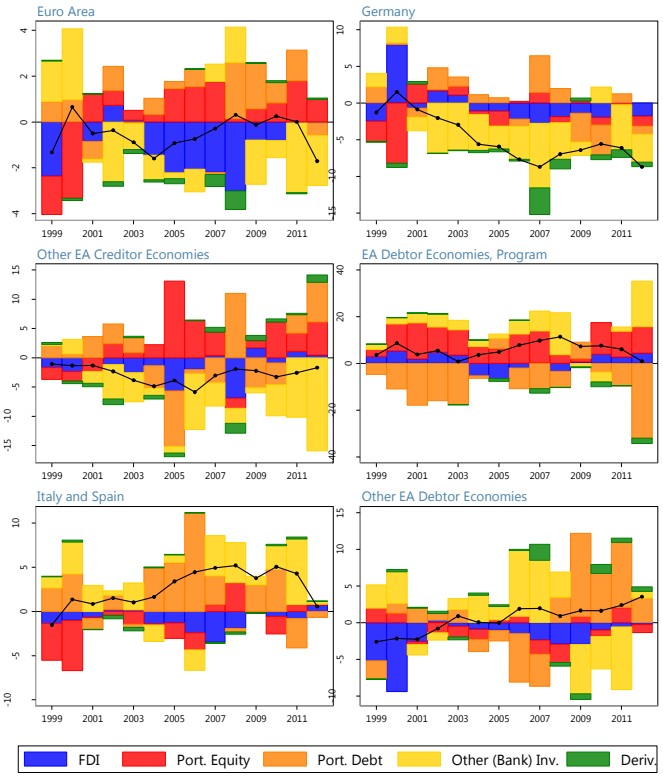
Net Capital Inflows and Financing Sources

8. **Mirroring the current account surplus, the euro area has seen a move towards net capital outflows, dominated by other (bank) investment flows to the rest-of-the-world** (Figure 6, upper left panel).[3] The composition of net financing flows for the euro area has also changed, shifting away from a large foreign direct investment (FDI) outflow towards predominantly other (bank) investment and portfolio debt outflows. The FDI component has largely vanished in recent years, possibly reflecting a pull-back from equity investing (whether FDI or portfolio equity) outside of the euro area and a shift towards debt investing (whether bank-related or portfolio debt). The rise in net debt outflows makes sense in the context of the euro area sovereign debt crisis, when many investors shifted out of the euro area. Debt flows tend to be more volatile than FDI flows, so this change may presage more variability in net flows for the euro area (Bluedorn and others, 2013). Zooming in to the economy or economy group levels, we see:

- **Germany's net financing abroad has been mostly via other (bank) investment** (Figure 6, upper right panel). German banks remain heavily engaged in lending abroad, although as we shall see, there are signs that previous bank flows from Germany to other euro area economies has fallen. FDI elsewhere has played a smaller role. In 2012, all the financing components of Germany's net capital inflows switched to become outflows, for the first time since the introduction of the euro.

- **Net capital outflows from the group of other creditor economies are also in the form of other (bank) investment over the past few years** (Figure 6, middle left panel). Prior to the crisis, other instruments played a larger role contributing to net

Figure 6. The Composition of Net Capital Inflows by Euro Area Economy Group
(percent of GDP)



Source: IMF *Financial Flows Analytics* database and IMF staff calculations.
Note: Black line indicates the sum of the respective components; overall net capital inflows.

[3] Note that net capital inflows may not equal the current account from the balance of payments due to statistical discrepancies. Moreover, the underlying data for net capital inflows and its components are expressed in current USD, and then divided by nominal GDP in USD (aggregated for whichever group of economies is relevant). This means that exchange rate fluctuations within year may account for some of the differences between the underlying current account data (recorded in local currency terms) and net capital inflows.

outflows (in particular FDI and portfolio debt), but these have lately switched to become net inflows. Portfolio equity investments from elsewhere have remained a source of net inflows, although at a lower level than seen in the mid-2000s.

- **For the group of IMF program economies, net financing prior to the crisis was overwhelmingly portfolio equity or other (bank) investment flows** (Figure 6, middle right panel). These flows are still important financing sources, but they have been more than offset recently by large net outflows into portfolio debt. These debt flows could reflect safe haven flows into euro area creditor economies. Net official financing flows are reflected in other (bank) investment. These peaked in 2012, when a number of these economies were simultaneously under IMF programs. Prior to 2009, other (bank) investment flows were largely private.

- **Italy and Spain were most dependent on net inflows for portfolio debt and other (bank) investment prior to the crisis, but these inflows dried up in 2011** (Figure 6, lower left panel). In fact, the aggregate of Italy and Spain saw net outflows of portfolio debt in 2011 and 2012 (residents were increasing net foreign portfolio debt holdings more than non-residents were increasing net domestic portfolio debt holdings). Note that portfolio debt includes government bonds. In 2012, the sovereign debt crisis hit these two economies hard, with investors shifting away from their large government bond markets, although this trend has been reversed recently. Italy and Spain have positive net inflows of portfolio debt in 2013.

- **Other debtor economies remained largely reliant on net portfolio debt inflows for financing** (Figure 6, lower right panel). Large net portfolio debt inflows, particularly post 2008, may reflect a desire to hold more core euro area government debt, with the rise in concerns about the viability of the euro. Prior to 2008, the largest component of net inflows was other (bank) investment, but these vanished with the crisis (chiefly due to France's experience). FDI has been a small, but persistent, net outflow.

9. **Taken together, a picture of creditor economies supplying bank-related and other investment financing to the non-euro area, rest-of-the-world in recent years emerges.** At the same time, debtor economies have dramatically reduced their financing via bank-related and other investment inflows (apart from the group of IMF program economies, although this is mostly net official financing). Hence, if creditor economies are increasing their holdings of other (bank) investment assets abroad, it is *not* vis-à-vis other euro area economies. Along with these developments, the volume of gross flows (inflows and outflows) dropped dramatically post-crisis and across the board. Moreover, they have remained low for the euro area, indicating that there may have been some loss of depth in euro area-related international financial markets.

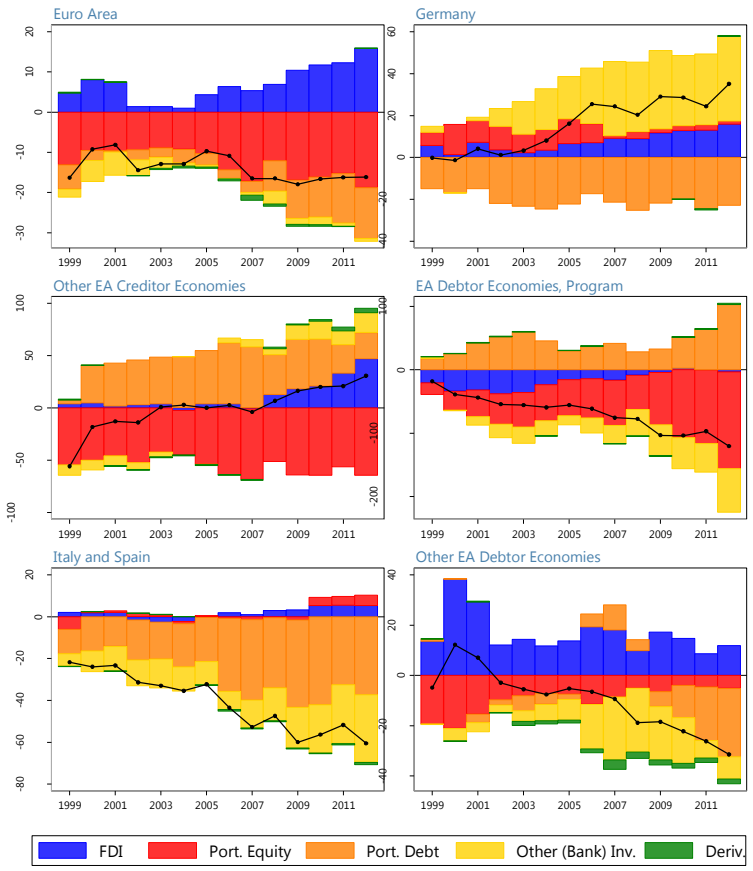
A View from Net Foreign Asset Positions

10. **Although the current account has moved into surplus, the euro area as a whole remains a net debtor to the rest-of-the-world** (Figure 7, upper left panel). This is largely through its net portfolio equity and debt offerings to the rest-of-the-world. The euro area holds a large stock of FDI vis-à-vis the rest of the world, which offsets its large negative net foreign asset position (NFA) in portfolio assets to some extent. Zooming in to the economy or economy group levels, we see:

- **Germany's net foreign assets are on an upward trend, at above 30 percent of GDP in 2012** (Figure 7, upper right panel). Its net foreign assets are overwhelmingly in the form of other (bank) investment assets, with a secondary role played by FDI assets. At the same time it remains a major net supplier of portfolio debt abroad. That being said, its rise in net foreign assets remains less than the accumulation of its current accounts over the same period. This indicates that there may have been some negative valuation effects that offset some of the surpluses.

- **The group of other creditor economies switched from net debtor to creditor in 2008** (Figure 7, middle left panel). Their net foreign asset position has continued to rise, with the group seeing their net foreign asset position as a share of own GDP at almost the same size as that of Germany. These net foreign assets mostly take the form of FDI and portfolio debt holdings, although the share of portfolio debt has shrunk in recent years while the share of other (bank) investments has risen. They are large net suppliers of portfolio equity elsewhere.

Figure 7. The Composition of Net Foreign Assets by Euro Area Economy Group
(percent of GDP)



Source: *External Wealth of Nations, Mark II revised* database and IMF staff calculations.
Note: Black line indicates the sum of the respective components; the overall net foreign asset position.

- **Net foreign asset positions in the debtor economies are all negative, but differ widely in their underlying instrument composition** (Figure 7, left middle and lower panels). For the group of IMF program economies, their net debtor status is larger, exceeding 100 percent of GDP. As highlighted by Catão and Milesi-Ferretti (2013), such large net foreign liabilities have historically been associated with a greater chance of a financial crisis. This may partly reflect the greater vulnerability of such economies to a number of forms of mismatch of assets and liabilities, combined with a greater exposure to valuation effects (Obstfeld, 2012). Net claims against the group are in the form of portfolio equity and other (bank) investment, while the group holds a net positive foreign position in portfolio debt. By contrast, the aggregate of Italy and Spain has large net negative foreign positions in portfolio debt and other (bank) investment. In portfolio equity and FDI holdings elsewhere, they are net creditors. For the

group of other debtor economies, their negative net foreign asset positions are also largely portfolio debt and other (bank) investment assets.

11. **Combined with the information on net capital inflows, net foreign asset positions indicate that most of the other (bank) investment asset exposures held by euro area economies is still largely versus other euro area economies, but this has been changing.** Euro area economies' other (bank) investment exposures to extra-euro area economies have been rising, replacing some of the earlier intra-euro area exposures. Table 2 shows how realized returns on net foreign asset positions over the past 15 years may be one motivation for these developments.[4] On average, many creditor economies saw negative real return differences between their foreign assets and liabilities, acting as a drag on their net foreign asset positions and also suggesting possible gains from portfolio rebalancing, either by shifting away from foreign towards domestic assets, or by changing the composition of their foreign assets and liabilities, away from euro area debtor economies. At the same time, many debtor economies had large negative real return differences on average, reinforcing their large net foreign liability positions and making adjustment more of an uphill climb.

12. **In the next section, we conduct a statistical analysis of saving and investment by euro area economies, assessing whether or not there is evidence of under- or over-saving or investment that has contributed to the large net foreign asset or liability positions observed in the euro area.**

C. Model-based Saving and Investment Imbalances in the Euro Area

13. **A cross-country regression analysis reveals how aggregate saving and investment deviations from model-based predictions for the euro area economies are linked to substantial and persistent current account imbalances in recent years.** To assess the relative importance of these two channels, we separately investigated the behavior of national saving and investment in a panel of major EU economies at an annual frequency over the period 1986-2013. Building on common models of the determinants of long-term saving and investment, we estimated predicted (equilibrium) values for saving and investment and then quantified the deviations of observed saving and investment from the model-predicted levels for each economy in each year (see Box 1 for full details on the model specification and estimation approach).

14. **The exercise to identify saving and investment imbalances described here differs from, but complements, the current account assessments in the IMF's External Sector Report (ESR).** The ESR incorporates regression-based analyses of current accounts, net foreign asset positions, and real exchange rates, with the judgment of IMF country teams in its assessments of current account and real exchange rate imbalances. By contrast, the saving and investment deviations presented here are solely model-based. Furthermore, by having separate regression models for saving and investment with slightly constructed as the difference between

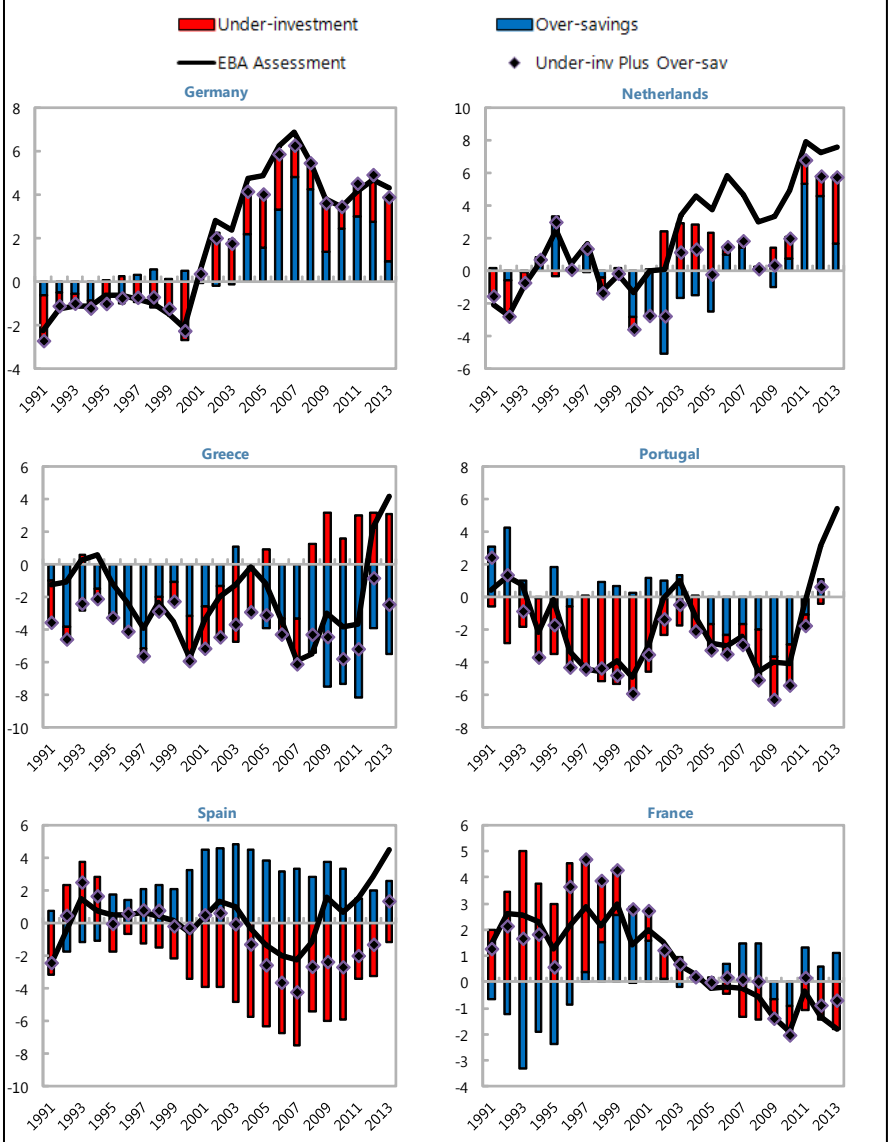
[4] Returns and return differences are calculated in the manner described in Lane and Milesi-Ferretti (2007) and Habib (2010).

the model-based saving and investment deviations—may diverge from the ESR's identified current account imbalance.

But interestingly, the implied current account deviations from our analysis are strikingly consistent with the IMF's External Balance Assessment (EBA) estimated current account imbalances.[5]

15. **The quantitative analysis suggests that in recent years, creditor economies have had investment persistently below the model-based prediction.** For instance, investment in Germany has been consistently lower than what the model suggests since 2002, by an average of 2.0 percent of GDP each year (Figure 8). The Netherlands has experienced a similar degree of under-investment over the past ten years, at a yearly average of 1.8 percent of GDP. Moreover, recent outturns do not indicate any reduction of these deviations and indeed suggest a possible increase. For instance, in 2013, estimated investment was 3.0 percent of GDP in Germany and 4.2 percent in Netherlands higher than the actual outturn.

Figure 8. Model-Implied Investment and Saving Residuals and the EBA Assessment of Current Account Imbalances
(percent of GDP)



Source: IMF Staff calculations.
Note: See appendix table for underlying data sources and estimation sample.

[5] Due to differences in methods and data, the results here cannot be identical to those from the EBA. However, as shown in Table 3 and 4, the qualitative and quantitative implications from these two studies are very similar.

16. **A tendency for higher saving in creditor economies since the mid-2000s has also contributed to the large current account imbalance.** As shown in Figure 8, the analysis suggests that Germany has had saving higher than its estimated value since 2004, as its saving rate has been persistently above the model estimate, by an average of 2.7 percentage points each year for the last ten years. Aggregate savings in the Netherlands has also been consistently higher than what the model predicts, by an average of 1.7 percentage points since 2005. Importantly, the deviation has become even more substantial since the onset of financial crisis, with the saving in these two countries standing at 2.5 and 4.6 percentage points of GDP above the model prediction in 2012, respectively. This is about twice as large as the typical imbalance in the sample, as measured by the standard error of the regression.

17. **The analysis also indicates that the current accounts in debtor economies primarily reflected a persistent and substantial over-investment prior to the financial crisis.** During 2003-2007, Spain ran an average positive investment deviation of 6.2 percent of GDP each year, much higher than the positive saving deviation, and thus generating a large negative current account deviation. Greece and Portugal saw a similar degree of positive investment deviation during the same period, at 2.0 percent and 1.5 percent of their GDP, respectively. On the other hand, a negative saving deviation also contributed significantly to current account deficits in Greece and Portugal since the mid-2000s, on average 5.4 percent and 1.5 percent of GDP since 2005, but less so in Spain and France.

18. **Current account balance improvements in debtor economies since the crisis have largely been achieved through investment shedding, and to a lesser extent increases in saving, driven partly by much tighter external financing conditions.** Aggregate investment has declined drastically in several stressed economies, leading to substantial reductions in the magnitude of positive investment deviations in Spain and Portugal, and even a substantial negative investment deviation in Greece since 2008. The negative saving deviations have also been corrected rapidly, in particular in Portugal and Greece. Much of the investment drop that has helped to reduce current account deficits can be attributed to the large and negative output gaps that now exist in many of these economies. As these gaps close over time and investment and consumption gradually rebound, there is the risk that these deficits will re-emerge, unless recovery is accompanied by structural reforms to raise potential output. Moreover, there is considerable uncertainty regarding estimates of potential output, which means that the assessment given here that over-investment has largely been corrected in debtor economies must be approached cautiously.

19. **Since the financial crisis, adjustments in both saving and investment by debtor economies reflect substantial "internal rebalancing" via rapid domestic demand shedding, but corrections in creditor economies have yet to occur.** As Figure 8 reveals, saving and investment deviations in creditor economies have widened since 2010, leading to a further strengthening of their current account surpluses. This generates further upward pressures on the common currency and downward price pressures across the euro area in an already very low inflation environment. This also reduces the pace of relative price adjustments and short-term effectiveness of structural reforms in improving competitiveness in debtor economies, slowing down the recovery for the euro area as a whole. Finally, the analysis suggests that it is in the interest of creditor economies to undertake policies to stimulate investment and reduce saving, in addition to being in the interest of the euro area as a whole.

Box 1. A Model-based Analysis of National Saving and Investment Behavior

We develop two linear regression models to separately examine the determination of national saving and investment, with the goals of quantifying deviations from their equilibria as well as the relative importance of these two channels in determining the observed current account deviations at the economy-level. The backbone of the analysis is a fixed effects linear regression model, based on the following equations:

$$I_{i,t} = X'_{I,i,t}\beta_I + \eta_{i,t} \quad (1)$$
$$S_{i,t} = X'_{S,i,t}\beta_S + \varepsilon_{i,t} \quad (2)$$

where i indexes the cross-section and t indexes time (years), I is the ratio of gross (fixed) investment to GDP, and S is the ratio of the current account (CA) plus gross (fixed) investment to GDP. X_I and X_S denote different vectors of regressors that determine I and S respectively, with β_I and β_S the coefficients to be estimated. η and ε are mean zero error terms. The choice of regressors is guided by economic theory, leading to specifications similar to those of earlier empirical studies. In particular, regressors in the investment equation, X_I are:

- *Financial conditions*, as captured by the real short-term deposit rate and long-term government bond yields;
- *Risk and uncertainty measures*, which include the risks associated with the institutional and political environment, as well as global capital market conditions. The former is proxied by Safer Institutional/Political Environment Index, and the latter by VIX/VXO index interacted with the degree of capital account openness of each country;
- *Cyclical conditions*, as captured by the output gap in each country (relative to the world average) and the expected 5-year ahead real GDP growth rate from WEO projections;
- *Aggregate Tobin's Q,* measured by the median of individual firms' readings in each country.

The specifications of the aggregate saving regression also follow the previous literature closely. In particular, regressors X_S in the savings equation (2) are:

- *Non-policy fundamentals*, including 1) GDP per capita (PPP GDP divided by the size of the working age population) relative to the U.S., Japan, and Germany, as a proxy measure of the distance of the country's productivity to the frontier of highest productivity around the world; 2) Demographic factors, including the country's aging speed, population growth, and dependency ratio; 3) Lagged Net Foreign Assets (NFA)/GDP ratio, as well as an interaction term which allows a different slope when NFA is below negative 60 percent of GDP;
- *Risk and uncertainty measures*, which include Safer Institutional/Political Environment Index, and the VIX/VXO index interacted with the degree of capital account openness of each country;
- *Cyclical conditions*, as captured by the output gap in each country (relative to the world average), the expected 5-year ahead real GDP growth rate from WEO projections, and the cyclical component of the commodity terms of trade, interacted with the trade openness of each country;
- *Policy-related factors,* which include a country's fiscal policy stance as measured by the cyclically adjusted fiscal balance (CAPB), which is instrumented with respect to a set of macroeconomic variables, and public health expenditure as percentage of nominal GDP, as well as the real short-term deposit rate.

Empirical estimation is conducted based on an annual sample of 19 major EU countries, for the period of 1986–2013. Different specifications, or a larger sample which also includes the non-EU OECD countries, generate similar results.

Box 1. A Model-based Analysis of National Saving and Investment Behavior (Continued)

As displayed in Table 3 and 4, most coefficient estimates have the expected signs, and nearly all are statistically significant. The investment rate rises in response to an increase in Tobin's Q, as well as a decline in real short-term interest rates. A safer institutional environment promotes investment, whereas heightened uncertainties on financial markets tend to discourage investment. Higher output gap or stronger growth prospect encourages investment, and the coefficients are statistically significant at the 1 percent level.

The saving rate in a country tends to be associated with higher productivity and faster aging speed. Faster population growth and a higher dependency ratio each tend to reduce the saving rate, reflecting the higher consumption that characterizes such countries. Larger net foreign asset positions are associated with higher saving rates, but such correlations are lower in high foreign debt countries. A safer institutional environment tends to reduce saving, possibly by mitigating the precautionary motive. However, heightened financial risks appear to weaken the saving rate. Finally, an increase in the terms-of-trade will raise the saving rate, and better social security (as proxied by public health expenditures) seems to reduce saving, again, possibly by mitigating the precautionary motive.

D. Good and Bad Ways to Achieve External Rebalancing

20. **From a normative perspective, the underlying drivers of external rebalancing matter, for both debtor and creditor economies.** A general equilibrium framework is required to make a proper assessment of policies simultaneously implemented across debtor and creditor economies in the euro area. As discussed in the ESR, adjustments in the euro area call for further efforts by both debtor and creditor economies, with higher investment and lower saving in some creditor economies, complemented by product market and service reforms, and labor and product market reforms by many debtor economies. We use the IMF's general equilibrium model EUROMOD to estimate the consequences of such a joint policy push.[6] The model also allows for endogenous productivity growth and the international diffusion of productivity shocks across economies.

21. **Under a "desired" rebalancing scenario with further progress on structural reforms and higher investment in large creditor economies, external imbalances narrow across the board.** The scenario assumes substantial progress is made in reforming product and labor market institutions in all countries, accompanied by measures to stimulate investment in Germany (via both fiscally expansive public investment and private investment incentives), and a small fiscal expansion in the Netherlands, in line with current IMF policy advice.[7] Under this

[6] The model is a multi-economy, general equilibrium, overlapping generation model combining both micro-founded and reduced-form formulations of various economic sectors with non-Ricardian agents. It is part of the IMF's Flexible System of Global Models (FSGM).

[7] More specifically, structural reforms, as proxied by the OECD's indices of structural economic characteristics, are presumed to close 10 to 20 percent of the gaps between each economy's structural characteristics (such as product and labor market institutions) and the OECD's best practice. The German public investment increase is assumed to be 1 percent of GDP, spaced over 2014 and 2015 (for an overall fiscal expansion of slightly below ½ percent of GDP per year), accompanied by measures to increase private investment by about 1 percent of GDP, spaced over the same horizon. The fiscal stimulus in the Netherlands is ½ percent of GDP, similarly spaced over two years.

scenario, growth dividends in Germany and other large euro area economies could be substantial, ranging from 2–6 percent of GDP cumulatively over the medium term, as compared to the WEO baseline forecast. In addition to the direct impact of these policies on output, public investments are assumed to have a catalytic role in the economy, by raising the return on private capital and thereby increasing private investment through an additional channel. The current account surpluses in Germany and Netherlands would narrow by between 1–2 percent of GDP on the back of higher investments and imports, with positive spillovers to the rest of the euro area (Table 5).

22. **For the euro area as a whole, the desired rebalancing scenario could also bring remarkable benefits.** Real GDP is 3 ½ percent higher by 2019 compared to the baseline, implying that annual growth is higher by about ¾ percentage points on average. Inflation is also higher under this scenario, by about ½ percentage points higher in 2014 and rising to ¾ percentage points over the medium term. Higher investment growth means that the euro area current account surplus is expected to decline by just under ¼ percent of GDP by 2019 (Table 5). It implies that the reform dividends could be large with continued efforts to push structural reforms in both creditor and debtor economies across the euro area. Moreover, as described in the IMF's 2013 Pilot External Sector Report (ESR), cross-economy spillovers from simultaneous implementation of these policies help boost their overall effectiveness. Germany's rise in consumption and investment reduce its current account and increase growth, while structural reforms raise productivity growth in all economies.

23. **But narrowing current account gaps could also arise from adverse shocks and policy delays.** In the case of a "bad" external rebalancing scenario, structural reforms are stalled, debtor economies see a rise in their risk premia (due to an intensification of concerns about the pace of debt deleveraging), and creditor economies keep their fiscal stance unchanged relative to the baseline. Under this scenario, all economies would experience rising current account surpluses, but largely coming from falling demand and slower growth (Table 6). In particular, debtor economies see a persistent shift towards surplus from more depressed domestic demand, while creditor economies see their exports decline due to deteriorating international cost competitiveness, but more than offset by the compression of imports. These results stress the need to avoid policy mistakes and reform delays.

E. Concluding Remarks

24. **External rebalancing in the wake of the financial crisis has been highly asymmetric.** Debtor economies in the euro area have seen substantial improvements in their current accounts, primarily through drastic declines in investment across sectors and reductions in government deficits. Creditor economies (such as Germany and the Netherlands) have mostly maintained or even further strengthened their surpluses, with declining household and corporate investment rates and rising corporate and government saving.

25. **Mirroring the current account surplus, the euro area has seen a move towards net capital outflows, dominated by net other (bank) investment flows from creditor economies to the rest-of-the-world.** Combined with evidence on net foreign asset positions, most of the other (bank) investment asset exposures held by euro area economies is still largely versus other

euro area economies, but this has been changing, with a rise in other (bank) investment exposures extra-euro area.

26. **A regression analysis of aggregate saving and investment by the euro area economies highlights how deviations from predicted valuesin saving and investment have contributed to current account imbalances in recent years.** Relative to the model-estimated equilibrium levels, creditor economies (such as Germany and the Netherlands) have seen large and persistent negative investment and positive saving deviations, since the mid-2000s, generating large current account surpluses. On the other hand, debtor economies (like Greece, Portugal, and Spain) experienced positive investment deviations and, in some cases, negative saving deviations prior to the financial crisis, leading to their large and persistent current account deficits in the run-up to the crisis. Investment and saving deviations in debtor economies have been reduced in the wake of the crisis, primarily through rapid investment shedding, and to a lesser extent by increases in saving. However, corrections in the opposite directions by the creditor economies have not been realized. In fact, the positive saving and negative investment deviations in these economies have increased since 2010, leading to further strengthening of their current account surpluses.

27. **Scenario analyses highlight that external rebalancing can arise positively, from structural reforms and improved policies, or negatively, from adverse shocks and policy delays.** Under a "desired" rebalancing scenario, with positive investment policies in creditor economies and more structural reform progress in debtor ones, external imbalances in all economies narrowed. More importantly, potential growth and productivity improve across the board, reflecting more efficient product and labor markets. The growth dividends for euro area economies can be substantial, ranging from a ½ to ¾ percentage point rise in growth annually over a five year horizon, accompanied by a faster closing of output gaps and higher inflation by around ½ percentage point.

28. **The overall message from the evidence and scenarios is that further progress on policies to narrow current accounts imbalances in the euro area is needed.** Policies to stimulate investment by creditor economies and the passage of structural reforms by debtor economies would narrow external imbalances across the board, while improving potential growth and productivity. A lack of policy adjustments may lead to a sustained deflation, and lower growth and productivity, even though the external imbalances would also shrink. External rebalancing alone is not sufficient—appropriate adjustment is about undertaking policies to achieve *both* internal and external balance.

Table 1. Net Foreign Assets and Current Accounts in the Euro Area Economies (percent of GDP)

Economy Group	*Economy*	Net Foreign Assets, 2013	Current Account, 1999-2013			
			Average	Standard Deviation	Minimum	Maximum
Creditor Economies	Austria	3	1.9	1.8	-1.7	4.9
	Belgium	44	1.8	2.8	-2.0	7.9
	Finland	16	3.6	3.4	-1.7	8.5
	Germany	48	4.3	3.3	-1.7	7.5
	Luxembourg	184	9.0	2.3	5.4	13.2
	Malta	25	-4.3	4.3	-12.1	2.4
	Netherlands	53	6.3	2.8	2.0	10.4
Debtor Economies	Cyprus*	-86	-6.3	4.1	-15.6	-1.5
	Estonia	-45	-6.3	6.3	-15.9	2.8
	France	-21	-0.2	1.6	-2.2	3.1
	Greece*	-119	-8.1	4.2	-14.9	0.7
	Ireland*	-105	-0.6	3.3	-5.6	6.6
	Italy	-30	-1.0	1.4	-3.5	1.0
	Latvia*	-65	-7.6	8.5	-22.6	8.7
	Portugal*	-119	-8.4	3.5	-12.6	0.5
	Slovak Republic	-65	-4.8	3.5	-8.5	2.4
	Slovenia	-38	-0.9	3.0	-5.4	6.5
	Spain	-98	-4.8	3.0	-10.0	0.7

Source: Eurostat *International Investment Position* database, IMF *World Economic Outlook* database, and IMF staff calculations.
Note: * indicates an economy that has or recently had an IMF program. The sample includes euro area economies as of January 2014 (EA18).

Table 2. Average Real Return Difference between Foreign Assets and Liabilities
Euro Area Economies, 1999-2012
(percentage points)

			Of Which:			
Economy Group	***Economy***	**Real Return Difference**	**Capital Gains on Assets**	**Yield on Assets**	**Capital Gains on Liabilities**	**Yield on Liabilities**
Creditor Economies	Austria	-0.4	-1.4	2.0	1.0	-2.0
	Belgium	-0.6	-1.9	1.2	1.5	-1.4
	Finland	4.6	-0.8	1.8	4.8	-1.1
	Germany	-1.1	-1.0	1.5	-0.3	-1.3
	Luxembourg	-0.1	-0.3	0.9	0.3	-1.0
	Malta	0.5	-0.4	3.8	1.9	-4.8
	Netherlands	-0.3	7.0	1.6	-7.6	-1.3
Debtor Economies, IMF Program	Cyprus	1.4	-1.8	1.0	4.0	-1.9
	Greece	-3.3	-2.2	0.2	-0.2	-1.0
	Ireland	-2.8	-2.7	1.2	1.6	-2.8
	Latvia	2.8	1.0	0.4	2.2	-0.7
	Portugal	0.2	1.2	1.3	-0.7	-1.6
Other Debtor Economies	Estonia	-1.3	-0.3	2.9	1.1	-5.0
	France	0.1	-1.2	0.9	0.9	-0.5
	Italy	-0.3	-2.5	1.2	2.4	-1.5
	Slovak Republic	-3.3	2.4	1.8	-1.3	-6.1
	Slovenia	-0.4	-0.4	0.1	1.6	-1.6
	Spain	-2.5	-4.3	1.4	1.8	-1.4

Source: IMF *Financial Flows Analytics* database, *External Wealth of Nations, Mark II revised* database, Eurostat *Balance of Payments* database, and IMF staff calculations.
Note: Averages over 1999-2012 are shown. Rates of return are in annualized percentage points. Returns on liabilities are shown with a negative sign, reflecting their contribution to the real return difference, defined as: $r_A - r_L = r_{cap,A} + r_{inc,A} - \left(r_{cap,L} + r_{inc,L}\right)$, where *A* indicates the foreign asset side, *L* indicates the foreign liability side, cap denotes the capital gains/losses, and inc denotes the yield or per unit investment income achieved.

Table 3. Regression Results for Investment Model

Explanatory Variable	**(1)**	**(2)**	**(3)**
Tobin's Q	0.006**	0.006*	0.002
	(0.003)	(0.003)	(0.003)
Real short-term deposit rate	-0.115**	-0.098**	-0.144***
	(0.050)	(0.043)	(0.046)
Long-term government bond yield	0.030		
	(0.044)		
Safer Institutional Environment Index	0.131***	0.123***	0.149***
	(0.025)	(0.022)	(0.024)
VIX/VXO index	-0.110***	-0.109***	-0.109***
	(0.017)	(0.017)	(0.018)
Output gap	0.415***	0.418***	
	(0.050)	(0.050)	
Expected 5-year ahead growth	2.018***	2.029***	1.973***
	(0.157)	(0.156)	(0.168)
Number of observations	437	437	437
Number of countries	19	19	19
R^2	0.189	0.193	0.140

Source: IMF staff calculations.
Note: The dependent variable is the investment rate (investment to GDP ratio). The estimated regression model includes fixed effects for each country. Standard errors are in parentheses underneath the coefficient estimates. *, **, and *** denote statistical significance of the coefficient at the 10, 5, and 1 percent levels respectively. See appendix table for underlying data sources and sample details.

Table 4. Regression Results for Saving Model

Explanatory Variables	**(1)**	**(2)**	**(3)**
GDP Per Capita	0.093***	0.097***	0.081***
	(0.018)	(0.017)	(0.017)
Real Short-Term Deposit Rate	-0.001**	-0.001**	-0.001**
	(0.000)	(0.000)	(0.000)
Output Gap	0.007		
	(0.056)		
Expected 5-year Ahead Growth	0.317		
	(0.203)		
Cyclically-Adjusted Primary Balance	0.402***	0.456***	
to GDP	(0.120)	(0.114)	
Public Health Expend. to GDP	-1.808***	-1.811***	-1.928***
	(0.185)	(0.181)	(0.181)
Net Foreign Assets to GDP	0.062***	0.061***	0.066***
	(0.006)	(0.006)	(0.006)
Interaction of NFA/GDP and Large	-0.034**	-0.028**	-0.034**
Debtor Indicator	(0.015)	(0.014)	(0.015)
Terms-of-Trade Gap	-0.046*	-0.051*	
	(0.029)	(0.028)	
Aging Speed	-0.074***	-0.073***	-0.068***
	(0.019)	(0.019)	(0.019)
Population Growth Rate	0.311***	0.311***	0.351***
	(0.075)	(0.075)	(0.075)
Dependency Ratio	0.133**	0.109**	0.144***
	(0.054)	(0.051)	(0.051)
Safer Institutional Environment Index	-1.499***	-1.648***	-1.480***
	(0.540)	(0.536)	(0.530)
VIX/VXO Index	-0.289***	-0.317***	-0.265***
	(0.072)	(0.066)	(0.065)
Number of observations	490	490	490
Number of countries	19	19	19
R^2	0.557	0.574	0.513

Source: IMF staff calculations.
Note: The dependent variable is the saving rate (saving to GDP ratio). Saving is calculated as the difference between the current account and fixed investment. Large debtor indicator takes the value 1 if net foreign assets to GDP are less than -60 percent; otherwise, it is equal to zero. The estimated regression model includes fixed effects for each country. Standard errors are in parentheses underneath the coefficient estimates. *, **, and *** denote statistical significance of the coefficient at the 10, 5, and 1 percent levels respectively. See appendix table for underlying data sources and sample details.

Table 5. A Desired Rebalancing Scenario [1/]

Economy	Real GDP	Inflation [2/]	Real Investment	Real Exports	Real Imports	Current Account[2/]	Real Competitiveness Index [3/]
Germany	6.4	0.9	15.9	5.0	5.8	-1.9	-1.7
France	1.7	0.5	-0.3	3.2	-2.4	0.7	-3.9
Italy	2.1	0.5	0.8	2.5	-2.2	0.6	-3.1
Spain	2.2	0.6	1.7	2.7	-2.4	0.9	-3.2
Greece	2.1	0.9	4.7	2.8	1.6	0.0	-0.6
Ireland	2.8	1.0	2.8	3.6	2.3	-1.2	-1.7
Netherlands	3.3	0.9	8.1	3.3	2.7	-0.7	-1.4
Portugal	1.9	0.7	3.1	2.0	1.3	-0.4	-2.0
Euro area	3.5	0.7	6.3	3.5	1.1	-0.2	-2.4
Memo:							
United States	0.1	0.0	0.2	0.6	0.9	0.0	1.2
United Kingdom	0.5	0.1	0.5	1.2	2.1	0.1	0.8
China	-0.1	0.0	-0.3	1.0	0.6	0.1	0.7

Sources: EUROMOD, IMF Research Department and OECD.
[1/] Percent deviation from the April 2014 WEO baseline for 2019, unless noted otherwise.
[2/] Percentage point deviation from the April 2014 WEO baseline for 2019.
[3/] Measured by percent changes in REER relative to the April 2014 WEO baseline for 2019, where negative indicates real depreciation.
Note: This scenario assumes that all economies advance structural reforms to close 10-20 percent of their gaps relative to the best practice of the latest OECD structural reform indices on product and labor market institutions. Structural reforms are assumed to be persistent. The scenario further assumes that public and private investment in Germany each increase by 1 percent of GDP, and the Netherlands loosens their fiscal stance by 1/2 percent of GDP. These additional impulses are assumed to be spread over two years (2014 and 2015). The model also allows for positive productivity spillovers from Germany to the rest of the euro area.

Table 6. A "Bad" Rebalancing Scenario [1/]

Economy	Real GDP	Inflation [2/]	Real Investment	Real Exports	Real Imports	Current Account[2/]	Real Competitiveness Index [3/]
Germany	-3.7	-2.2	-14.2	-4.2	-4.7	2.1	2.7
France	-3.1	-2.0	-10.8	-3.7	-5.0	0.9	1.8
Italy	-4.3	-1.5	-16.0	-2.8	-5.4	1.7	1.0
Spain	-4.3	-1.4	-13.2	-4.3	-3.4	0.9	1.7
Greece	-3.9	-1.1	-13.6	-2.8	-3.0	0.7	0.4
Ireland	-6.0	-2.3	-22.5	-8.2	-4.5	4.7	7.0
Netherlands	-3.6	-2.3	-13.0	-4.7	-4.2	1.7	2.6
Portugal	-4.2	-1.2	-13.3	-3.3	-4.0	1.0	0.9
Euro area	-3.8	-1.9	-13.4	-3.8	-4.6	1.5	1.9
Memo:							
United States	0.0	0.0	0.3	-0.6	-0.4	-0.1	-0.7
United Kingdom	0.3	-0.1	1.8	-1.6	-1.4	-0.8	-1.2
China	0.2	0.0	1.0	-0.9	0.1	-0.2	-0.3

Sources: EUROMOD, IMF Research Department and OECD.
[1/] Percent deviation from the April 2014 WEO baseline for 2019, unless noted otherwise.
[2/] Percentage point deviation from the April 2014 WEO baseline for 2019.
[3/] Measured by percent changes in REER relative to the April 2014 WEO baseline for 2019, where negative indicates real depreciation.
Note: This scenario assumes that structural reforms are stalled in all countries. It further assumes that there is a reintensification of market concerns about the pace of deleveraging leading to a risk premium rise of 100-300 basis points in debtor economies by 2015. The fiscal stance is assumed to be unchanged in creditor economies.

Table A1. Data Sources and Estimation Sample for the Saving and Investment Regressions

Variable	Data Source
Current Account to GDP ratio	IMF *World Economic Outlook*
Savings to GDP ratio (current account minus fixed investment, both to GDP)	IMF *World Economic Outlook*
Fixed Investment to GDP ratio	IMF *World Economic Outlook*
Tobin's Q (median of individual publicly listed corporations' Tobin's Q by economy)	Bloomberg and IMF staff calculations
Real short-term deposit rate (ex post)	IMF *World Economic Outlook*
Long-term government bond yield	IMF *World Economic Outlook*
Safer Institutional Environment Index	Political Risk Services ICRG and IMF staff calculation (IMF EBA)
VIX/VXO times (1- Capital Control Index), once-lagged	Bloomberg, Quinn (2011), and IMF staff calculations
Output gap	IMF *World Economic Outlook*
Expected 5-year ahead growth	IMF *World Economic Outlook*
Per capita GDP	IMF *International Financial Statistics*
Aging speed (expected change in the old-age dependency ratio over next 20 years)	United Nations *World Population Prospects*
Population growth	United Nations *World Population Prospects*
Old-age dependency ratio (relative to world average)	United Nations *World Population Prospects*
Net foreign assets to GDP	IMF *International Financial Statistics*
Net foreign assets to GDP times indicator for less than -60 percent of GDP	IMF *International Financial Statistics*
Commodity terms-of-trade gap times exports plus imports to GDP	IMF *International Financial Statistics* and *External Balance Assessment* database
Cyclically-adjusted Primary Fiscal Balance	IMF *World Economic Outlook*
Public health expenditures to GDP (relative to world average), once-lagged	IMF *Government Finance Statistics*

Sample Economies (1986-2013)	
Austria	Italy
Belgium	Netherlands
Czech Republic	Norway
Denmark	Poland
Finland	Portugal
France	Spain
Germany	Sweden
Greece	Switzerland
Hungary	United Kingdom
Ireland	

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FISCAL GOVERNANCE IN THE EURO AREA: PROGRESS AND CHALLENGES[1]

1. **The Stability and Growth Pact (SGP) is at the core of the European fiscal governance framework.** The SGP's origin dates back to the 1992 Maastricht Treaty, which launched the Economic and Monetary Union (EMU). Because of the unique structure of euro area integration—with a common monetary policy and decentralized fiscal policies—fiscal rules were introduced to prevent national fiscal policies from producing negative spillovers on other countries and on the conduct of monetary policy (EC, 2013a). These fiscal spillovers may take several forms, including unwanted monetary tightening to contain inflation fueled by fiscal expansion in a particular country; higher area-wide interest rates due to crowding out; contagion effects; and bailout costs.

2. **The euro area crisis has revealed gaps in the effectiveness of the fiscal governance framework and in the functioning of the monetary union**. In a context of a severe economic downturn and large private sector imbalances, fiscal institutions could not prevent a dramatic surge in public debt, which was, in part, due to national public support to the impaired financial sector. Fiscal rules were put to a test, in particular those that did not explicitly foresee how to deal with exceptional economic circumstances (IMF, 2013b). The crisis also showed that sovereigns could be priced out of the market or even lose market access altogether. It highlighted how contagion could set in, with deep recessions and fiscal stress in some member states spilling over to the rest of the membership.

3. **Yet, weak fiscal governance is not a recent development**. Most countries had built insufficient fiscal buffers in good times before the crisis hit. The windfall from lower interest and debt payments had not been saved in the early years of the EMU, and higher budget revenues generated by unsustainable domestic demand booms were wrongly deemed permanent (Allard and others, 2013). In the pre-crisis years, individual member states did not fully take into account the potential spillovers from their idiosyncratic policies on other countries. Moreover, the European fiscal governance framework was too loosely implemented to ensure the appropriate management of public finances over the cycle. Governance failures and political interferences became particularly apparent when the Council decided to hold in abeyance the Stability and Growth and Pact's procedures in 2003.

4. **This paper aims to contribute to the ongoing discussions on fiscal governance in Europe.** It takes stock of recent reforms, identifies areas for further progress, and presents a menu of policy options. The paper is structured as follows. Section I briefly reviews the

[1] Prepared by Luc Eyraud and Tao Wu. The authors would like to thank for their comments Celine Allard, Bergljot Barkbu, Craig Beaumont, Nicolas Carnot, Xavier Debrun, Rishi Goyal, Alvar Kangur, Christophe Kemps, Petya Koeva Brooks, Lucio Pench, Stephanie Riso, Gerd Schwarz, Ranjit Teja, and the participants of the seminars organized at the ECB and the EC in May 2014.

underlying drivers of the public debt increase in euro area countries during the crisis. Section II and III examine past reforms and the track record of the framework. Section IV identifies remaining gaps in the areas of rule design and implementation. Section V discusses options for future reforms. Section IV concludes with some considerations on reform priority and sequencing.

A. The Setting: Public Debt on an Upward Trend

5. **Public finances have deteriorated significantly since 2008.** Average public debt-GDP ratio soared to 95 percent in 2013, almost 30 percentage points above the pre-crisis level. The debt increase during the crisis was due to a combination of cyclical and discretionary factors. This is illustrated by a decomposition (Table 1) using the Debt Sustainability Analysis framework (IMF 2013c).

Table 1. Decomposition of Debt Changes in the Euro Area 2008–13 1/

	Total Changes	
	in pps	proportion
Increase in Debt/GDP Ratio	29.2	100%
of which:		
Stock-flow adjustment	9.9	34%
Overall fiscal deficit	19.4	66%
of which:		
Interest rate-growth differential	11.7	40%
of which:		
Nominal GDP growth	-4.9	-17%
Interest rate 2/	16.6	57%
Primary deficit	7.7	26%
of which:		
Cyclical component	5.4	19%
CAPB	2.3	8%
of which:		
One-offs	1.3	4%
Structural balance	1.0	3%

Source: IMF staff calculation
1/ The decomposition is applied to the EA18 aggregate data.
2/ Cumulative interest payments over the period.

6. **Stock-flow adjustment residuals accounted for about one-third of the total debt increase in the euro area during the crisis.** To a large extent, these reflected financial sector intervention and rescue packages in the early stages of the crisis, as well as the realization of contingent liabilities (Blanchard and others, 2013).

7. **Fiscal deficits in European countries were another important factor behind the rapid debt increase.** About two-thirds of the debt surge can be attributed to the accumulation of fiscal deficits. In particular, the interest bill was the largest contributor to the debt surge.

8. **The economic contraction during the crisis added to the debt problem.** In normal times, a continued economic expansion should offset the effect of interest payments and thus reduce the debt-to-GDP ratio over time (other factors being equal). However, the sharp decline in economic activity and the very sluggish recovery thereafter led to very minimal increases in nominal GDP over 2008-2013. As a result, the interest component dominated the changes in the interest rate-growth differential term, with a net contribution of 11.7 percentage points, or 40 percent of the total increases in debt-to-GDP ratio.

9. **One-fourth of the debt increase resulted from the accumulation of primary deficits over time, although the discretionary part was limited.** Of the 29.2 percentage point increase in the debt-to-GDP ratio since 2008, 7.7 percentage points can be accounted for by the cumulative primary deficits, more than half of which were due to changes in cyclical conditions (19 percent). The remainder reflected the accumulation of cyclically adjusted primary deficits

(CAPB). Further analysis reveals that a substantial part of the accumulated CAPB can be attributed to one-off items. The contribution from the accumulated structural balance to debt increases since 2008 was modest—about 1.0 percentage point for the euro area or slightly above 3 percent of the total debt increase.

10. **Countries should build sufficient fiscal buffers in good times to accommodate cyclical and exogenous shocks in bad times.** As shown above, most of the deterioration in public finances during the crisis was *not* due to discretionary fiscal stimulus. It was the effect of automatic stabilizers (as revenues fell and expenditures rose in the recession) and exogenous factors (like the bailout of the banking sector or the interest bill). In essence, countries did not enter the crisis with strong enough fiscal positions to withstand such large shocks. The 3 percent of GDP nominal deficit ceiling did not prevent countries from spending their revenue windfalls in the mid-2000s. Partly to address this issue, the European authorities have introduced several changes in the EU fiscal and economic governance framework since its inception.

B. Past Reforms of the Fiscal Framework

11. **The European fiscal governance system is established by a number of legal texts**. The main principles are defined in the two EU treaties (Treaty on European Union and Treaty on the Functioning of the European Union), which lay the ground for the surveillance and coordination of the member states' fiscal policy. The SGP refers to the secondary legislations that implement the Treaties' requirements.

12. **Since 1997, the secondary legislations governing the SGP have been reformed several times**. The first major revision, which dates back to 2005, introduced more flexibility in the procedures, while improving the economic underpinning of fiscal rules. In the context of the sovereign debt crisis, the SGP was further amended in 2011 with five new regulations and one directive ("six-pack") that brought numerous modifications to the framework, including new rules, new and earlier sanctions, and additional escape clauses. In 2013, fiscal governance was again strengthened. The Two Pack reinforced budgetary surveillance and coordination for euro area countries, reflecting the higher risk of spillovers within the single currency area. Additional commitments were taken by 25 Member States through the intergovernmental Treaty on Stability, Coordination and Governance (TSCG), whose fiscal provisions—referred to as "Fiscal Compact" (FC)—transpose elements of the SGP into national legislations.

13. **On the whole, successive revisions of the framework have pursued five primary objectives**:

- **Provide stronger economic underpinnings to the framework.** Fiscal rules have increasingly focused on fiscal actions rather than fiscal outcomes, the latter being affected by economic circumstances beyond the control of governments. The 2005 reform put the concepts of structural balance on the center stage under both the preventive and corrective arms. In 2011, the Commission improved the measurement of the structural effort with the introduction of the expenditure benchmark and the concept of "adjusted fiscal effort."

- **Better align fiscal targets with the final debt objective.** The idea, present in the initial version of the SGP, that focusing on the fiscal deficit would be sufficient to contain debt and that the debt criterion could be overlooked proved incorrect for two reasons. First, in the absence of correction mechanisms, past fiscal slippages on the deficit were not subsequently offset and piled up overtime. Second, a large portion of the debt increase resulted from "stock-flow adjustments" (such as bank recapitalization) that were not captured by the deficit target. These elements led to a renewed focus on public debt, with the 1/20th debt reduction benchmark becoming a possible trigger of the EDP in 2011.

- **Strengthen enforcement mechanisms.** Successive reforms have stepped up enforcement in several ways: (i) foster ownership of the supranational framework by transposing some rules at the national level and better integrating supranational surveillance within the national budget calendar to ensure that the Commission's recommendations could be incorporated into national budgets and policies; (ii) introduce earlier and stronger sanctions, as late sanctions were found to be non-credible and counter-productive; and (iii) entrust independent institutions such as fiscal councils in monitoring fiscal rules.

- **Implement fiscal rules with more flexibility.** Another lesson from past experience is that rules that are too rigid and do not foresee how to deal with exceptional economic circumstances are often disputed and quickly suspended. To mitigate this risk, some flexibility was brought to the initial framework by extending the scope of escape clauses and allowing deviations from targets in case structural reforms are adopted, provided that these entail short-term budgetary costs and long-term gains.

- **Bring more specificity in the definition of the rules**. Rules that are vague or ambiguous are difficult to implement. This was a major criticism of the initial debt criterion, which did not include any metric to assess whether debt was "sufficiently diminishing." Successive reforms improved the measurability and specificity of the rules, including the definition of medium-term objective (MTO), the quantification of annual fiscal effort, and the pace of debt reduction. Another important step was the recognition that some rules needed to be differentiated across member states to reflect diverse debt sustainability concerns. In 2005, the MTO became country-specific, with the formula taking into account the debt level and prospective ageing costs.

C. Track Record under the SGP

14. **While successive reforms have brought many positive elements to the framework, they have not been sufficient to prevent a steady deterioration in public accounts.** Under the SGP, noncompliance has been the rule rather than the exception. Currently, nearly all euro

area economies have breached at least one of the fiscal rules. Figure 1 compares fiscal outturns with SGP targets or ceilings since the adoption of the euro.[2]

15. **Compliance has been the highest with the 3 percent deficit ceiling.** Almost all countries have complied with this target more than half of the time since 1999 (and even more consistently prior to the crisis). Based on ex post data, Greece and Portugal have failed to keep their deficit below 3 percent of GDP every year since they joined the euro.

16. **About half of the countries have missed the 60 percent target more than half of the time**. At the individual member state level, compliance with the 60 percent rule has been uneven, with smaller countries being, on average, more compliant. At the level of the euro area as a whole (EA12 or EA18), public debt has been above 60 percent of GDP every year since 1999.

Figure 1. Non-compliance with European Fiscal Rules
(Frequency of missed targets over 1999–2013)

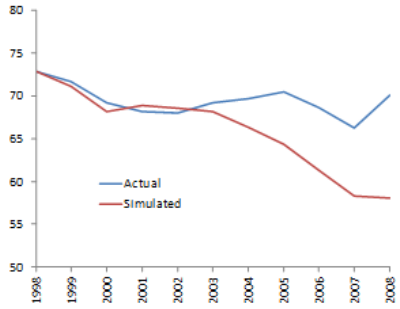
Source: AMECO database.
Note: Not all member states had to comply with the rules over the whole period, as some countries joined the EMU after 1999.
1/ Number of years with fiscal deficit above 3 percent divided by total number of years.
2/ Number of years with debt above 60 percent divided by total number of years.
3/ Number of years with structural deficit higher than 0.5 percent divided by total number of years.
4/ In the subset of years with structural deficit above 0.5 percent, share of number of years with annual fiscal effort below 0.5 percent of potential GDP. Fiscal effort is defined as the change in the structural balance.

17. **Structural deficits have been persistent, reflecting difficulties to build buffers in good times**. Compliance with the "close to balance position" has been extremely rare, except in Finland and Luxemburg. In the euro area-18 as a whole, there has not been a single year with a structural deficit below 1 percent of potential GDP. The preventive arm has failed to encourage the buildup of sufficient buffers in good times. While the output gap was positive or close to

[2] This simplified exercise should not be considered a formal test of compliance, as (i) it is based on ex post data; (ii) targets are assumed to be similar across countries and constant over time; and (iii) the comparison is carried out for all 18 euro area countries, including those that adopted the euro after 1999.

zero from 1999 to 2007, the structural balance recorded, on average, a deficit of 2.5 percent in the euro area. Beyond the absolute level, what is striking is the response of the structural position to the output gap (Figure 2). Over 1999–2013, the euro area as a whole had a tendency to tighten (resp. loosen) the structural stance by about 1 percentage point following a year with a negative (resp. positive) output gap.[3] At the individual country level, the correlation between the change in the structural balance and the initial output gap is also negative (except in Finland and Luxemburg), suggesting that the fiscal stance was pro-cyclical over the period.[4]

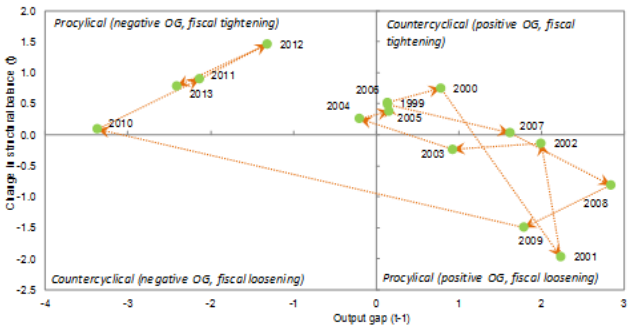
Figure 2. Public Debt
(Percent of GDP; 1999–2013)



Source: AMECO data; IMF staff calculation.
Note: Calculations based on ex-post output gap data.

18. **Had the euro zone pursued a more countercyclical fiscal stance in the first decade of the EMU, it would have entered the crisis in a far stronger position**. Figure 3 presents the results of a simulation assuming that the euro area follows a simple countercyclical rule from 1999 to 2008—with the structural position improving (resp. decreasing) by 0.5 percent of GDP when the previous year's output gap is positive (resp. negative).[5] The simulation is based on eurozone-18 aggregate data. A fiscal multiplier of 1 (declining to 0 in 5 years) is used to estimate the GDP effect of the implicit fiscal shock corresponding to the difference between the structural positions in the baseline and in the scenario. The main finding is that the euro area would have entered the crisis with a neutral (balanced) structural position and with a debt ratio of about 60 percent of GDP—about 10 percentage points below the actual 2008 level.[6]

Figure 3. Structural Balance and Output Gap 1/
(Euro area aggregate; ex post output gap data)



Source: AMECO database.
1/ The figure uses the *previous year* output gap to mitigate the feedback effect from the fiscal stance to the output gap. Using the *current* output gap, which is directly impacted by the fiscal actions taken in the same year, would complicate the results' interpretation.
Note: The 2009 data point relates the 2008 output gap to the change in the structural balance in 2009 relative to 2008.

[3] Years with a small output gap (between -1 and +1) are excluded from the average.
[4] The negative correlation is also observed with real-time output gap data (extracted from stability programs).
[5] The simulation assumes that the structural stance is unchanged when the output gap is small (between -1 and 1 percent).
[6] Using real-time output gap data would not fundamentally change this result. As discussed in Section V, the downward bias of the output gap concerns its *level* rather than its *first difference* (Balassone and Kumar, 2007). There is little reason to think that the annual structural effort would be reduced if countries based their fiscal decisions on real time (rather than ex post) output gap data.

D. Pending Issues and Areas for Further Progress

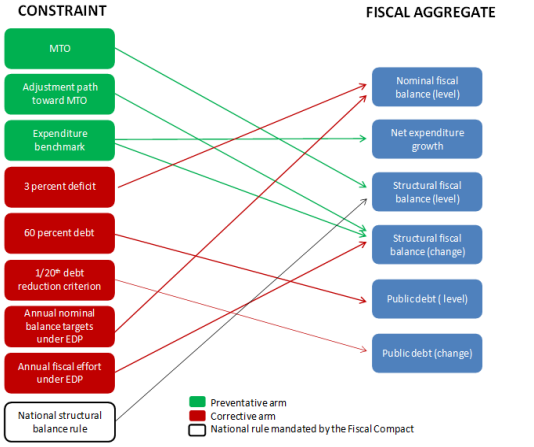
The Growing Complexity of the Framework

Successive legislative changes have made the SGP increasingly complex

19. **The growing complexity of the system is rooted in the history of the SGP**. The initial Pact only included three supranational rules, of which only one was really binding.[7] Later on, the fiscal crisis and the unsuccessful experience with a small set of constraints prompted the adoption of additional rules—some of them to address the shortcomings of previous ones (e.g., the structural balance supplementing the nominal deficit ceiling). More complex rules were also introduced as a way to ensure enforcement in a wide range of circumstances; for instance, the structural balance rule and expenditure benchmark were seen as effective tools to prevent lax policies in good times. Another explanation for the inflation of supranational rules is the relative paucity in self-imposed national rules, particularly in the initial years.[8] Finally, political factors also played a role, with the mutual lack of confidence leading member states to over-specify rules and procedures.

20. **Today, fiscal aggregates are tied by an intricate set of constraints, which makes the monitoring and communication of the rules more difficult.** Both the preventive and corrective arms impose constraints on member states' fiscal targets (Figure 4). Countries are required to converge towards the 60 percent of GDP debt target at a sufficient pace; prohibited from breaching the 3 percent of nominal GDP deficit threshold; and mandated to improve the structural deficit to GDP ratio at an average rate of 0.5 percent per year until they reach their MTO. In addition, government spending (net of new revenue measures) is constrained to grow in line with trend GDP. When countries are under EDP, they are also subject to specific nominal and structural balance targets. Finally, the Fiscal Compact, signed by 25 member states, requires contracting parties to ensure convergence towards their MTO by means of a national rule, whose specification and scope may be slightly different from the MTO's.

Figure 4. Supranational Constraints and Rules on Fiscal Aggregates



[7] The initial rules were the 60 percent debt cap, the 3 percent deficit ceiling, and the requirement that medium-term budget positions should be "close to balance or in surplus."

[8] In the mid-1990s, there was, on average, only one national rule per country in the European Community.

The high number of rules and sub-rules creates risks of overlap and inconsistency

21. **Compared to most federations, the EU imposes a larger set of constraints on subnational governments**. In a sample of 13 federations, Eyraud and Gomez (2014) find that the federal level imposes, on average, two constraints on sub-central governments (states and sub-state entities), compared to five in the euro area.[9] In Canada, the United States, and Switzerland, there is no federal restriction on subcentral fiscal targets. In addition, most European rules include restrictions on both the level and the first difference of fiscal targets, the second restriction being conditioned on the breach of the first one. Fiscal rules are, thus, implemented in stages. For instance, when countries do not comply with the 60 percent debt ceiling, a constraint on debt changes—the 1/20th rule—applies. Similarly, if a member state's structural deficit is higher than its MTO, it has to improve its fiscal position by 0.5 percent of GDP per year in structural terms. Corrective actions and sanctions are also progressive, becoming more stringent when the target in level is breached *and* efforts to correct the imbalance are deemed insufficient. This multi-step approach—probably motivated by the relative weakness of enforcement tools, and the desire to make peer pressure more effective—is non-existent in the federations reviewed by Eyraud and Gomez (2014). Overall, the large number of primary and secondary rules may result in redundancy and inconsistency.

22. **Specifically, the complexity of the framework creates a number of policy risks**:

- **Revisions to medium-term growth have weakened the link between deficit and debt ceilings**. While the 3 percent nominal deficit rule was initially set to stabilize and cap public debt at 60 percent of GDP (under the assumption of a 5 percent nominal growth), downward revisions to potential growth, which is currently estimated at about 3 percent in nominal terms in many euro area countries, suggest that debt would actually converge towards 100 percent of GDP.[10]

- **A second issue is the overlap and potential redundancy between structural and nominal targets.** Provided that it is measured accurately, the MTO, which is a structural balance target, is generally more binding than the other rules (abstracting from the distinction between preventive and corrective arms). It does not come as a surprise that the MTO dominates the 3 percent nominal deficit rule, as the output gap rarely deteriorates beyond 5 percent[11]—a situation that would, in any case, lead to a temporary suspension of the fiscal rule framework. Also, the MTO typically brings the fiscal balance

[9] Given the complexity of the European framework, the numbering of rules is a matter of judgment. In our view, the framework has four main supranational rules—the 3 percent deficit rule, the 60 percent debt rule, an expenditure benchmark, and medium-term budgetary objectives (MTO) defined in structural terms. It also requires countries to enshrine a structural balance rule in national legislation.

[10] The debt-stabilizing overall balance is computed as $d*g/(1+g)$ where d denotes the debt-to-GDP ratio and g the potential growth in nominal terms (Escolano, 2010).

[11] With a budget semi-elasticity of 0.5 and a structural deficit of up to 0.5 percent of potential GDP, a 3 percent nominal deficit appears if the output gap deteriorates to 5 percent: $-0.5 \approx -3-0.5*(-5)$

above the debt-stabilizing level, resulting in a steady debt ratio reduction.[12] Simulations show that this pace of reduction is sufficient to either reduce public debt below 60 percent by the end of the forecast period or, if the debt is above 60 percent, comply with the 1/20th debt benchmark in its backward-looking version.[13]

- **Another form of inconsistency may arise between national and supranational rules**. The Fiscal Compact requires some supranational requirements—in particular the MTO—to be transposed into national legislation in order to strengthen compliance and ownership. This may create inconsistencies if a target or procedure is defined differently by the national and supranational legislations (although the latter can generally be amended). A similar issue may arise with the path towards the MTO, as the preventive arm requires a minimum annual effort of 0.5 percent of potential GDP, which may differ from the correction mechanism imposed by national rules. Deadlines to achieve the targets and escape clauses may also not match exactly.

The Difficult Migration from Nominal to Structural Balance Targets

23. **Nominal balance rules present serious shortcomings**. While the 3 perfect deficit ceiling leaves sufficient room for automatic stabilizers to operate under normal circumstances,[14] it does not prevent and may even encourage a pro-cyclical fiscal stance (see Section III). During the last decade, the deficit ceiling allowed for fiscal expansion during the pre-crisis boom (e.g., in Spain) and called for politically difficult tightening when the economy weakened in 2011–13. The drawbacks of the nominal deficit ceiling are particularly flagrant when the economy is booming, as it is compatible with very large structural deficits. For instance, when the current output is 4 percent above potential,[15] a 3 percent deficit would translate into a structural deficit of 5 percent, which would be seen as unsustainable in most countries. A second issue is that the deficit ceiling does not prevent a structural medium-term drift of public finances. As discussed above, a 3 percent deficit would bring public debt towards 100 percent of GDP (under the assumption of 3 percent nominal growth). Other shortcomings of the rule are that the ceiling is identical for all countries—unrelated to the debt level and growth potential; creates incentives for creative accounting/one-off measures; and does not capture stock flow adjustments, which accounted for about 30 percent of the euro area debt increase during the recent crisis (see Section I).

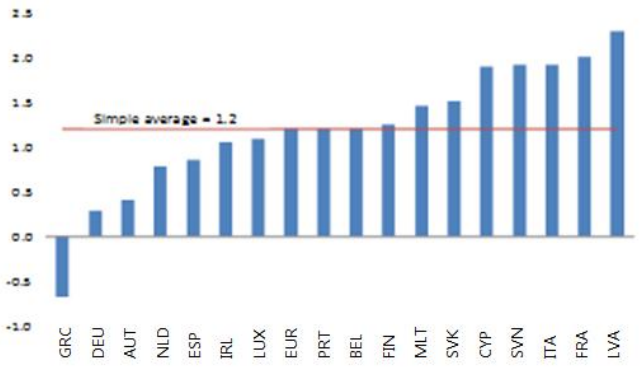
24. **The structural balance, which is central in the EU framework since the 2005 reform, addresses some of these issues.** Its computation entails decomposing the fiscal position in two

[12] With an initial debt of 95 percent of GDP (average of the euro area in 2013) and nominal growth of 3 percent, the debt-stabilizing nominal deficit is around 3 percent of GDP. As a structural deficit below 0.5 percent would generally translate into a nominal deficit below 3 percent, the debt ratio would decline.
[13] Simulations are not reported in the paper but are available from the authors upon request.
[14] Provided that the country's structural position is close to balance and the negative output gap is not excessively large.
[15] 4 percent corresponds to the average of the peak output gaps in euro area countries since 1995(excluding Estonia and Latvia, which are outliers).

parts: one representing the fiscal response to economic activity and other transitory factors, and another one measuring the policy stance. A first advantage of the structural balance is that this indicator constitutes a tractable fiscal target, which is more directly under the control of governments than the nominal balance. Its changes should, in principle, be mapped directly to discretionary fiscal measures. In addition, the structural balance helps policymakers take a more medium-term perspective rather than attempting to fine-tune fiscal policy: if a country pursues a predetermined structural position, it does not have to offset cyclical factors and can let automatic stabilizers operate. For this reason, the structural balance entails a more binding fiscal stance in good economic times (relative to the overall balance), while allowing some room for maneuver when the economy is weak. This feature is particularly important in Europe, where countries struggled to save revenue windfalls prior to the crisis (Lemmer and Stegarescu, 2009). A third advantage of the structural balance target (as defined in the European framework) is that the MTO is country-specific and takes into account debt levels and ageing costs. The formula for the MTO "reference value" is designed to ensure that member states are on course towards a sustainable debt position (EC, 2013b).

25. **However, computing structural budget balances is difficult and subject to significant errors.** Specifically, the structural balance is prone to ex post revisions due to the measurement bias of potential GDP. Even when it is measured on the production side, potential output calculations typically involve the use of statistical filters that give excessive weight to the most recent observations and result in frequent revisions—an issue described as the "end-point bias." In the euro area, real-time output gaps are found to be underestimated, on average, by about 1 percent compared to ex post data (Figure 5).[16] This suggests that structural balance is initially overestimated by half a percent of potential output—under the assumption of a budget semi-elasticity of 0.5. In other words, a structural balance rule relying on real-time estimates would tend to allow deficits exceeding ex post their targeted values by about 0.5 percentage point per year. Without a correction mechanism, this would produce a permanent drift of public finances. This problem affects all structural stance indicators of the European framework, including the expenditure benchmark.

Figure 5. Real-Time Estimation Error of the Output Gap
(Difference between ex-post and real-time data; 1999–2013)



Source: AMECO database (ex post data), and stability programs (real-time estimates).

26. **Another issue is the difficulty to extract the non-discretionary component of revenue**. The standard methodology filters out cyclical movements by using constant elasticities

[16] This result is consistent with Kempkes (2012), who finds that in the EU 15 sample, output gap was underestimated by 1 percent, compared to final estimates over 1996–2011.

of revenue to the output gap. However, this is not always sufficient to remove all cyclical factors. While the business cycle is the most prominent source of macroeconomic fluctuations, these can arise from other disturbances such as boom-and-bust cycles of asset or commodity prices, and changes in the composition of the output. To address this issue, the calculation of structural balance has evolved in two distinct directions. The first approach adjusts the structural balance formula beyond the output gap. New structural balance indicators have been developed to correct for a broader range of macroeconomic fluctuations but they add further complexity to the concept (Bornhorst and others, 2011). In this vein, the "adjusted fiscal effort" used in the corrective arm explicitly corrects for revenue windfalls or shortfalls unrelated to the economic cycle. The second approach, which is pursued with the expenditure benchmark[17], consists in measuring discretionary revenues through a bottom-up approach by using budget estimates of tax measures mandated by law. While this second approach is conceptually more appealing, the estimation faces practical difficulties, in particular in the definition of the unchanged policy scenario.

27. **Despite these issues, the focus on the structural balance remains appropriate.** While this indicator imperfectly filters out asset and commodity price cycles, it is still more "accurate" than the nominal balance, which does not extract these factors at all. In addition, the output measurement error is usually significantly lower than the "noise" created by the cyclical component of the nominal balance. An empirical analysis shows that, if the nominal balance is used to measure the underlying fiscal position, the error is about 25 percent higher than with the real-time structural balance. The gap is particularly large at the peaks/troughs of the cycle.

28. **Measurement issues point to the need to further improve the methodological underpinnings of the concept.** They may also explain the inflation of structural indicators in the European framework. Currently, the European Commission maintains four alternative measures of the structural stance (the structural balance and expenditure benchmark in the preventive arm; and the observed and adjusted fiscal efforts in the corrective arm) and has recently proposed a fifth one—the discretionary fiscal effort (EC, 2013c). All these indicators differ in their specification and purpose, reducing the transparency of the system and creating risks of conflicting messages and assessments.

Reconciling Fiscal Sustainability and Growth Objectives

29. **As its name suggests, the purpose of the SGP is also to foster growth**. In a difficult balancing exercise, the European framework tries to achieve two potentially conflicting goals: leaving sufficient space for member states to offset asymmetric shocks with fiscal instruments, while ensuring that they do not take advantage of the single currency to free ride on collective discipline and build unsustainable fiscal positions. In light of the lackluster growth performance of the euro area since the 1990s, some have argued that the balance has tilted towards sustainability over growth. For instance, the focus on fiscal sustainability may have fostered

[17] The expenditure benchmark, which is net of revenue measures, is conceptually equivalent to the structural balance (EC, 2013b).

adjustment strategies—such as cuts in public investment or tax hikes—that are detrimental to long-term growth.

30. **A first question is whether the SGP leaves sufficient room for macroeconomic stabilization**. Stabilization may take the form of automatic stabilizers or discretionary fiscal policy. Regarding the first type, it seems that the SGP provides adequate margins. With a budget semi-elasticity of 0.5 and a structural deficit of 0.5 percent, a deficit ceiling of 3 percent is compatible with full operation of automatic stabilizers in downturns up to a negative output gap of 5 percent. In other words, the SGP does not compel countries to offset cyclical variations in spending and revenue unless the crisis is exceptionally severe—in which case the escape clause would probably be triggered and fiscal rules held in abeyance. The second issue is more difficult and controversial, as not all agree that stabilization should involve discretionary fiscal policy. It is often argued that the SGP impairs the ability to conduct countercyclical policy, in particular in downturns. Admittedly, the lower limit of the MTO (-0.5 percent as a general rule, and -1 percent in low-debt countries) leaves little room for fiscal relaxation if the initial position is balanced. However, the preventive arm includes two economic downturn escape clauses, which authorize temporary deviations from the MTO or the path towards it.[18] A more relevant question is therefore whether the 3 percent deficit ceiling (rather than the MTO) constrains the scope for fiscal stimulus. In a "normal" downturn corresponding to an output gap of minus 2 percent, a 3 percent deficit would correspond to a structural deficit of 2 percent, leaving some room for discretionary actions if the initial position is close to balance.

31. **By focusing on annual/short-term constraints, the SGP may reduce incentives to introduce structural reforms and foster long-term growth**. The experience of past fiscal adjustments suggests that there may be a trade-off between fiscal adjustment and structural reforms (Box 1). The 2005 reform of the SGP explicitly recognized this trade-off, by allowing temporary deviations from the MTO in the preventive arm and flexibility in the EDP for countries introducing some reforms. However, in practice, the current framework only applies to pension reforms, whose short-term budgetary cost and long-term impact on public finances are well understood and estimated. Going beyond pension reforms is a matter of current debate. The literature on the budgetary impact of structural reforms does not provide much guidance. Empirical studies do not find significant effects of *broad* reforms on the cyclically-adjusted deficit, (Giorno and others 2005; Heinemann, 2005; Deroose and Turrini, 2006). Nonetheless, there is evidence that some *specific* reforms have large and measurable short-term costs. For example, the budgetary cost of active labor market policies, as estimated by the OECD, exceeds one per cent of GDP in some countries. In light of the mixed evidence, further research should be conducted, perhaps focusing on particular structural measures and trying to address measurement issues. Another issue is that many structural reforms remain little more than policy

[18] "In the case of an unusual event outside the control of the Member State concerned which has a major impact on the financial position of the general government or in periods of severe economic downturn for the euro area or the Union as a whole, Member States may be allowed temporarily to depart from the adjustment path towards the medium-term budgetary objective referred to in the third subparagraph, provided that this does not endanger fiscal sustainability in the medium term."

announcements. Any flexibility provided by the framework should therefore be tied to the implementation of reforms, going beyond the "promise stage."

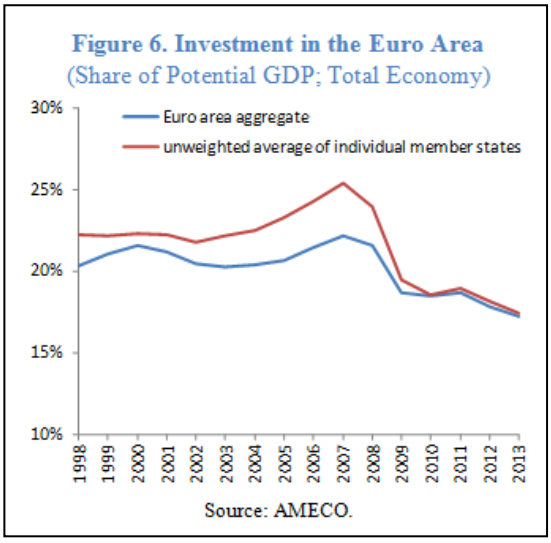
Box 1. The Trade-Off Between Fiscal Consolidation and Structural Reforms

Structural reforms are generally successfully implemented in countries with healthy initial fiscal positions or countries that implement fiscal stimulus (IMF 2004; Beetsma and Debrun, 2004; Høj and others, 2006). Conversely, fiscal consolidation tends to coexist with a slower pace of structural reforms.

Several explanations have been advanced to explain that consolidation and reforms rarely co-exist in practice:

- **Political capital is limited** and governments that are too ambitious in terms of reforms are not reelected.
- **Some structural reforms have large short-term budgetary costs**. These costs can be direct, such as funding a public R&D program. But there are also indirect costs—in particular the cost of compensating the losers. All these costs make it more difficult to simultaneously reform and consolidate.
- **Structural reforms tend to yield fewer benefits when the economy is weak**. For instance, when demand is depressed, relaxing employment protection may not stimulate job creation. Or increasing the retirement age may just raise the number of unemployed. For this reason, IMF (2012) has recommended that structural reforms be complemented by policies to boost aggregate demand.

32. **A related question is whether the MTO and, to a lesser extent, the 3 percent deficit cap may discourage public investment**. This is an old debate, but the question has come to the fore again in recent years, as the financial crisis prompted politically-easier cuts in government investment in many advanced economies, reinforcing a long-term declining trend (Figure 6). With private investment also falling in many countries, medium- and long-term growth prospects could be impacted. The public investment deceleration was particularly pronounced in the countries hit hard by the crisis, such as Greece, Ireland, and Portugal (IMF, 2014). Although this problem extends beyond the fiscal governance framework, the SGP should set the right incentives to avoid further depletion of capital.



33. **A fundamental question is whether the fiscal framework should exclude capital outlays from targeted fiscal balances (the "golden rule") on the grounds that such spending contributes to growth over the long run.** This type of rule has some intuitive appeal but raises concerns, as it weakens the link between fiscal targets and gross debt. In addition, capital expenditure is not necessarily productive, while other items such as expenditures on health and education may raise productivity and potential growth even more. Thus, the exclusion

of capital expenditure needs to be weighed against the risks of lower transparency, "creative accounting", and weaker link to sustainability.

34. **A better approach could be to boost the ability of the center to fund public infrastructure projects.** Such investments could include cross-border projects in transportation, communications, and energy networks. This could be done in the form of public-private partnerships, while keeping national budgets within the bounds of the fiscal framework. Such European-level projects raise the politically difficult question of how to finance them (Allard and others, 2013). But this option should not be lightly discarded, at least in a medium-term perspective, given that low public investment is a serious issue in the euro area, with implications for potential growth and debt sustainability.

Enforcement: the Limits of Peer Pressure

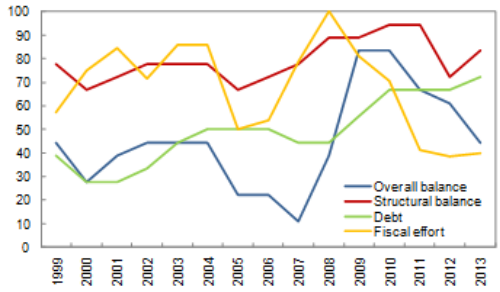
35. **Rule design problems and governance failures may have contributed to poor enforcement of the SGP.** Compliance may be at risk when SGP targets are too demanding or rigid, in particular in a low-growth environment. While recent reforms have strengthened the economic underpinnings of the framework, greater complexity is likely to create new loopholes. The second aspect pertains to the surveillance and coordination procedures within the EMU. The textbook model of supranational surveillance rests on a strict separation of powers between the monitoring entity of the rules and the executing entity to minimize the risk of moral hazard. In practice, this separation is incomplete in the European Union, as the Council has the final word on monitoring decisions, while the Commission, guardian of the Pact, only makes recommendations. In other words, the Commission has the right and duty to monitor the SGP implementation without having full power to take actions in case of non-compliance. As such, the system falls between the peer pressure model and full supranational control, reflecting the absence of a full-fledged political and fiscal union.

36. **This incomplete separation of powers has long been seen as a weakness of the Pact.** Finance ministers make the ultimate judgment on whether or not excessive deficits exist and penalties should be imposed. In assessing the fiscal performance of other member states, Council members may have incentives to be lenient and avoid actions that are politically costly for other members, as they might be in a position of fiscal distress in the future. This makes collusion more likely than strict application of the sanctions and correction mechanisms. In addition, enforcement could be tainted by political considerations. Otmar Issing, former chief economist of the ECB, described the situation as one in which potential sinners pass judgment on actual sinners. As a result, the credibility of the EDP has been questioned as a tool to safeguard fiscal discipline. Recent reforms may have, nonetheless, mitigated this problem (see below).

37. **The crisis has further highlighted the limits of moral suasion.** Peer pressure is less effective when the number of fiscal delinquents rises, as observed during the crisis (Figure 7). This is because reputation costs decline; the "sinners judge sinners" incentive problem becomes more acute; and the difficulty to impose sanctions increases with the number of delinquent countries.

38. **Another issue is that the SGP enforcement mechanisms are not as strong as in other federations.** While the unique structure of the EMU and the relative "weakness" of the supranational level would call for strong enforcement tools, sanctions and corrective actions are, on the contrary, relatively mild in Europe. Sanctions usually consist in opportunity costs from financial deposits.[19] The conditions to convert these deposits into outright fines are very strict, and have, so far, never been applied. In addition, the EU framework does not provide for administrative sanctions, while they exist and are applied in other countries. In some federations, individual officials are held liable for the fiscal slippages. In addition, sanctions only apply to euro-area member states. For instance, countries under the EDP that are not part of the euro area are neither required to hold a deposit at the EU, nor liable to a fine in case of insufficient progress. By contrast, in federations, central constraints usually bear on *all* subnational governments in a nondiscriminatory way (Eyraud and Gomez, 2014). Finally, corrective actions required in case of noncompliance are also relatively weak, in part because the European authorities do not have the ability to impose direct controls on national budgets. For instance, borrowing restrictions imposed by the federal level do not exist in the European framework, while they exist in some federations.

Figure 7. Euro Area: Share of "Non-Compliers"
(1999–2013, EA18)



Sources: AMECO; and IMF.
Note: Fiscal effort compliance defined as those countries who failed to comply with the structural balance rule but had a change in structural balance larger than 0.5 percent of GDP.
[1] The "share of non-compliers" refers to the share of euro area countries who did not comply with fiscal rules.

39. **Recent reforms of the EU fiscal governance have strengthened enforcement.** The Fiscal Compact requires countries to introduce structural balance rules in national legislation (preferably in the constitution); these rules should be monitored by independent institutions and incorporate correction mechanisms in case of deviations. In addition, sanctions for euro-area countries have become more automatic, as they are now adopted by the "reverse qualified majority" procedure. This new voting system gives more power to the Commission by ensuring that its recommendation or proposal is approved by the Council unless a qualified majority of Member States votes against it. It is now more difficult for the Council to go against the Commission's advice.[20]

[19] If the Council adopts a decision on non-effective action under the preventive arm, the euro area member state in question can be asked to lodge an interest-bearing deposit, which can then be turned into a non-interesting deposit if an EDP is opened (EC, 2013b).
[20] Nonetheless, interferences are unlikely to disappear entirely, as commissioners are nominated by member states. Some political constraints may now be internalized by the Commission.

E. Issues for Discussion and Policy Options

Should the preventive and corrective arms be consolidated?

40. **In federations, fiscal targets are generally constrained by rules that follow a standardized design**. This design includes three main features. A rule delineates a *numerical target* for a fiscal variable (often the overall balance) over a long time period. A number of *provisions deal with non-compliance* when targets are breached. Subnational governments failing to abide by the rules may be subject to sanctions and/or corrective actions.[21] Finally, *escape clauses* allow for temporary suspensions of these provisions in case of predetermined events.

41. **The corrective arm of the SGP broadly fits into this standard model, while the preventive arm is more specific to the EU governance system.** Similarly to existing federations, the corrective arm defines numerical targets on certain fiscal variables (deficit and debt) and foresees procedures in case of non-compliance (EDP), as well as escape clauses. By contrast, the preventive arm has no clear equivalent outside Europe. Its surveillance and coordination procedures are meant to prevent the emergence of fiscal imbalances and ensure that member states reach a sound fiscal position in the medium-term.

42. **Successive reforms have blurred the distinction between the two arms of the Pact.** While the preventive arm was initially thought as a surveillance and peer pressure mechanism, reforms have added many features of the standard rule model, including a fiscal target (structural deficit below 0.5 percent), a convergence path towards this target in case of deviation, escape clauses, and, more recently, sanctions. The fact that the Fiscal Compact requires the transposition of the MTO into national law creates another bridge between the preventive and corrective concepts, as the MTO has become an annual target for fiscal policy rather than simply a "medium-term objective" used for the multilateral assessment of member states' fiscal plans.

43. **While maintaining the gradual approach of the SGP, there may be beneficial ways to integrate the two arms of the Pact**. The strengthening of the preventive arm is a welcome development (as early corrections and sanctions are more likely to be effective). However, the conceptual distinction between the two arms has weakened over time, creating potentially redundant and conflicting fiscal targets (see Section IV.A). The fact that the most elaborate set of corrective actions and sanctions—the EDP—is triggered by the 3 percent deficit rule which has weaker economic rationale than the structural balance rule of the preventive arm is somewhat problematic. It is very difficult to justify, on economic grounds, that a country at the MTO be placed under EDP if it breaches the 3 percent ceiling (this has happened in the past).

[21] Corrective actions can be defined as a set of measures intended to put local finances back on a sound footing, and which entail some temporary loss of autonomy for subnational entities. Sanctions are financial and administrative penalties imposed on the subnational government or its officials; contrary to corrective actions, they only have a disciplinary function and do not contribute to restore fiscal soundness (financial sanctions may in fact aggravate fiscal stress).

44. **There is a range of options to consolidate the two arms of the Pact**. A minimal approach could be to enhance the consistency of the two arms—in the same spirit as recent reforms set similar benchmarks for the annual fiscal effort. A more ambitious approach, which raises legal difficulties, would merge the two arms into a two-step procedure based on a common set of rules, possibly with the MTO as overarching target. Minor slippages would trigger mild corrective actions, while the EDP would be used exclusively in serious cases of noncompliance. Along these lines, IMF (2010) proposed to tie the EDP exit with the fulfillment of the MTO.

Should the current system of fiscal rules be simplified (and how)?

45. **The ultimate objective of preserving debt sustainability suggests a two-pillar approach to the design of the fiscal framework, with a fiscal anchor and an operational target.** By analogy with monetary policy, a fiscal rule framework should set targets on both intermediate and final objectives. As the final objective of the framework is to preserve fiscal sustainability, a natural anchor for expectations is the debt ratio, which creates an upper limit to repeated (cumulative) fiscal slippages. In addition to the anchor, the framework should also include an operational target, which would be under the direct control of governments, while also having a close link to debt dynamics.

46. **The choice of the operational target is more difficult and controversial**. Public debt cannot play this role, as factors other than policy decisions affect public debt changes, including below-the-line operations and valuation effects. Available options include a revenue rule, an expenditure rule, a nominal balance, a structural balance target—in level or in first difference—or a combination of them. Currently, the European framework includes too many operational targets (see Section IV.A). Reducing their number and focusing on the most economically relevant should be a priority. If consolidating indicators raises too many legal obstacles in the short-term, a first step could be to give more attention and prominence to the preferred target(s) in the fiscal analysis and advice of the Commission.

47. **From a policy standpoint, the most natural operational target is the "fiscal effort" variable**. Fiscal effort, defined as the change in the structural stance, is directly affected by tax and expenditure measures. As recognized in the SGP preventive arm, this indicator can be measured either as the change in the structural balance or through an expenditure benchmark (net of revenue measures) based on potential growth.[22] The second method is conceptually preferable, but raises several practical difficulties in the estimation of revenue measures.

48. **A more difficult question is whether a structural balance target *in level* should also be maintained in the framework**. Although the structural balance level is important to assess the underlying fiscal position and constitutes a natural medium-term target to anchor public debt, the concept creates greater measurement issues than its first-difference version. This is

[22] The equivalence of the two concepts relies on the idea that an improvement (resp. decline) in the structural balance is mathematically equivalent to keeping the growth rate of expenditure net of revenue measures below (resp. above) potential output growth (EC, 2013b).

mainly because ex post revisions of the output gap generally affect the series level rather than its slope (Balassone and Kumar, 2007). There is a wide range of options to address the shortcomings of the structural balance (Box 2). All these options have pros and cons. The methodology should be further improved until the risk of misjudging the fiscal stance and the resulting policy errors are sufficiently contained.

Box 2. How To Move Forward with the Structural Balance Indicator?

Methodological improvements can contribute to reduce measurement errors of the output gap. Recent research shows that multivariate filters, which extract information about the cycle from additional observable variables (such as capacity utilization) are less exposed to the end-point problem (see Benes and others, 2010; and IMF, 2013a). In 2010, the European Commission introduced a new method for computing the output gap (d'Auria and others, 2010), which uses capacity utilization data to help identify supply.

Another possibility could be to explicitly account for the bias ex ante. This could be done by including an ad hoc adjustment factor in the structural balance formula and/or conduct a study into whether there is anything predictable about revisions to the output gap. However, if the bias is not rooted in exogenous technical flaws but in strategic behavior of a political-economy nature, introducing an adjustment may result in a larger bias to compensate for the adjustment. Moreover, the bias is unlikely to affect all countries equally. Thus, the adjustment would have to be tailored to each member country and possibly readjusted over time.

The structural rule could include a notional account recording ex post deviations between real-time and mature estimates (in the vein of the Swiss debt brake). When cumulative deviations exceed a threshold, correction measures would have to be taken, for instance by cutting spending to realign it on the lower-than-initially estimated potential GDP.

Some have proposed to replace the structural balance with an indicator mimicking its properties without relying on output gap estimates. For instance, the "augmented growth-based balance rule" extracts cyclical effects from the nominal balance by using the difference between economic growth and trend (IMF, 2009). However, this indicator does not have strong theoretical underpinnings and may entail a procyclical stance.

More radical options suggest to abandon the structural balance altogether. For instance, Debrun and others (2008) propose to replace it with an expenditure rule including a correction mechanism associated with the debt level.

49. **Some of the existing rules do not fit well in this simple framework.** The 3 percent deficit rule has weak economic rationale and entails large costs when fostering a pro-cyclical fiscal stance. Dominated by the structural balance rule, the 1/20th debt reduction benchmark would become redundant if the structural balance was used to determine the existence of an EDP, as suggested in the previous section.[23]

[23] Nonetheless, measurement errors and uncertainties affecting the estimates of potential output and the structural budget balance could argue in favor of maintaining the 1/20th debt rule—as an objective and simple benchmark for consolidation progress.

How to further strengthen enforcement?

50. **Two main directions can be followed to improve compliance**.[24] The first approach reinforces the existing supranational framework by stepping up procedures, correction mechanisms, and sanctions, while making them more automatic. The second approach relies on alternative mechanisms to promote fiscal discipline, such as stronger market oversight or transfer of fiscal powers to the center.

51. **Existing enforcement mechanisms can be further strengthened.** More automaticity could be introduced in moving up steps after a rule is breached and the breach is acknowledged. In some cases, steps could be accelerated in well-defined circumstances—such as misreporting. The imposition of sanctions should nevertheless remain the result of a discretionary decision based on sound economic judgment.

52. **A broad set of sanctions could be envisaged**. Financial sanctions in bad times lack credibility, as they exacerbate the financial difficulties of distressed governments. Hence, these sanctions could be imposed only in good times (e.g. reduced access to structural funds and other EU subsidies[25]), while non-pecuniary sanctions could also be considered in bad times. Administrative sanctions (e.g., personal sanctions or constraints on new staff hire) exist in other federations. Political sanctions (e.g. limitation of voting rights) are another option.

53. **A key question is whether past deviations from supranational fiscal targets should be offset subsequently**.[26] Currently, countries breaching the 3 percent rule or the MTO are required to bring back the deficit below the ceiling. But the effect of past deviations on debt does not need to be corrected subsequently, creating a risk that debt ratchets up overtime until it reaches 60 percent of GDP.[27] The debt brake model addresses this issue by requiring compensation for past slippages. For instance, the Swiss debt-brake rule specifies a one-year ahead ex-ante ceiling on central government expenditure equal to predicted cyclically adjusted revenue, which effectively corresponds to maintaining a structural budget balance every year. Differences between budget targets and outcomes are recorded in a notional account. If the negative balance in the account exceeds a threshold, the authorities are required to take measures sufficient to reduce the balance below this level within three years. Debt brakes have been criticized for imposing unrealistic adjustments following large slippages, as the fiscal position should not only get back to the targeted level in the following year but also overshoot it

[24] National fiscal frameworks have a key role to play in strengthening the overall fiscal architecture. Reliance on national fiscal rules and fiscal councils is a central part of the efforts to foster compliance with supranational requirements. In essence, enforcement is likely to be more credible if it takes place at the level where fiscal sovereignty is exerted. This important issue, which goes beyond the scope of the paper, is not discussed here.

[25] Since January 2014, structural funds can be suspended if a country does not comply with the EDP recommendations under the corrective arm.

[26] Strictly speaking, correction mechanisms exist at the national level (they are mandated by the FC), but not at the supranational level.

[27] For countries with public debt above 60 percent of GDP, the 1/20th debt reduction criterion functions de facto as a debt-brake correction mechanism.

because of the correction. On the other hand, never offsetting past deviations is misguided, as debt eventually increases to a point when the debt ceiling becomes binding. A more balanced approach would be to target a gradual correction for countries with a debt below 60 percent of GDP. This could be achieved by proper calibration of the fiscal rule formulas (IMF, 2009).

54. **Better compliance with fiscal rules may also come from stronger market oversight and discipline**. Enforcement is stronger when financial markets penalize countries that breach fiscal rules. The provision enshrined in the Maastricht Treaty to ensure that member states do not assume other member state's fiscal commitments (Article 125 of the TFEU)—often referred to as the "no bailout" clause—was meant to give financial markets an incentive to discriminate among countries and price each member state's default risk. However, market discipline has not worked properly in the EMU. This is because the no-bailout provision has lacked credibility; the scale of the crisis has warranted some risk sharing through the European Stability Mechanism and other instruments; and the sovereign-bank link has distorted the pricing of risk by markets (Allard and others, 2013). Restoring market discipline and mitigating moral hazard is a long-term endeavor. Some conditions should be fulfilled, including clear rules for the involvement of private creditors in bailouts of sovereigns and banks. The transition to such a regime would have to be carefully managed and implemented in a gradual and coordinated fashion, so as to not trigger sharp readjustments in investors' portfolios and abrupt moves in bond prices.

55. **Another possibility would be to rely more extensively on central controls.** While restoring market discipline is an important element to foster compliance and fiscal discipline, this will take some time. Therefore, in the interim—and possibly as a long term solution too—enforcement will have to be imposed more directly by the center. This may have to come at the expense of a permanent loss of fiscal sovereignty for euro area members (for instance, if a veto power of the center on national budgets was introduced).

F. Conclusions

56. **Despite recent improvements, the European fiscal governance system faces a number of challenges.** The remaining gaps are most apparent in the complex design of fiscal rules and poor enforcement mechanisms. While public debt is approaching unsafe territory in several member states, the fiscal framework has a key role to play to put public finances back on a sound footing. Fiscal governance needs to be particularly strong ex ante, as preventing the emergence of fiscal imbalances is more effective and sometimes easier than correcting them ex post. In this regard, the preventive arm of the Pact has to become more effective in enforcing structural balance targets and limiting the ability of member states to spend revenue windfalls in good time—a challenge given the uneven track record of countries in sustaining healthy structural positions over long periods of time.

57. **Fiscal reforms have to be properly sequenced, while taking into account the trade-offs between priority and practicability**. The most important reforms—those tackling the complexity of the framework and its enforcement—are probably the most difficult to implement (in part because of the legal constraints) and constitute medium-term objectives. Simplifying the framework may require rethinking its overall structure, including by consolidating the preventive and corrective arms and eliminating some redundant or ill-designed rules. Enhancing

enforcement mechanisms is also complicated, as compliance failures are partly rooted in the unique governance structure of the European Union.

58. **Going beyond the fiscal framework, better economic governance can play an important role in reducing future imbalances**. The crisis showed that there is no clear-cut separation between private and public sector balance sheets (Moghadam, 2014). Private imbalances can eventually end up as public sector liabilities—either through a direct bailout of the banking system (e.g., Ireland) or the lost revenue and increased spending necessitated by deep and prolonged declines in output (e.g., Spain). Conversely, public imbalances can aggravate private imbalances. For instance, a weak sovereign may increase private sector stress if banks have large exposures to domestic public debt or if the government ability to honor financial safety net obligations is impaired (Goyal and others, 2013). Therefore, improvements in fiscal and economic governance should be pursued together to minimize the occurrence of internal imbalances (both private and public), as well as their scope for disruption to the economy. Some recent reforms constitute positive steps in this direction. The Macroeconomic Imbalance Procedure goes beyond fiscal metrics to look at private debt, external current accounts and net international investment positions. The banking union, especially the bail-in regime, better aligns incentives in the financial sector and should reduce taxpayer exposure to banking sector losses.

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