

**FOR  
AGENDA**

SM/12/296

December 7, 2012

To: Members of the Executive Board

From: The Secretary

Subject: **France—Selected Issues**

This paper provides background information to the staff report on the 2012 Article IV consultation discussions with France (SM/12/294, 12/7/12), which is tentatively scheduled for discussion on **Thursday, December 20, 2012**. Unless an objection from the authorities of France is received prior to the conclusion of the Board's consideration, the document will be published. Any requests for modifications for publication are expected to be received two days before the Board concludes its consideration.

Questions may be referred to Mr. Gardner (ext. 35394) and Mr. Hallaert (ext. 39969) in EUR.

Unless the Documents Section (ext. 36760) is otherwise notified, the document will be transmitted, in accordance with the procedures approved by the Executive Board and with the appropriate deletions, to the European Central Bank forthwith; to the WTO Secretariat on Monday, December 17, 2012; and to the European Commission, the Food and Agriculture Organization, the Organisation for Economic Cooperation and Development, and the World Food Programme, following its consideration by the Executive Board.

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# FRANCE

## SELECTED ISSUES

December 6, 2012

Approved By  
**The European  
Department**

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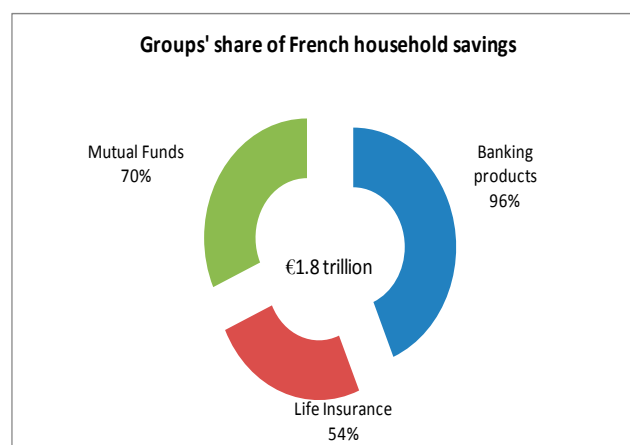
# FRENCH BANKS: BUSINESS MODEL AND FINANCIAL STABILITY<sup>1</sup>

*This note (i) provides an overview of the domestic context of the French banking sector; (ii) reviews developments leading to the 2007 to 2008 financial crisis; (iii) discusses challenges to French banks' business model during the Eurozone crisis; and (iv) discusses its adaptation with a view to assess vulnerabilities and risks to financial stability.*

## A. The Domestic Context

1. **French households allocate most of their savings in life insurance and banking products.** Life insurance and banking products, mainly deposits, accounted for about 43 and 53 percent, respectively, of the €2.5 trillion in financial assets held by household at end-2011, with the balance invested in mutual funds (Table 1). Tax exemptions for life insurance and regulated deposits help explain the composition of households' financial assets.

2. **A few financial "supermarkets" intermediate about 75 percent of the domestic savings.** At end-2011, six large bank-insurance groups (BNP Paribas, (BNP), Société Générale, BPCE, Banque Postale, Crédit Agricole, and Crédit Mutuel) collected about 96 percent of French households' deposits and other banking products, 54 percent of their life insurance products, and 70 percent of their placements in mutual funds (Table 1). The bancassurance groups typically have full ownership of insurance companies and use their banking arms' distribution channels to earn fee income from the selling of insurance products. Banks also earn fee income through their ownership of mutual funds (OPCVM).



<sup>1</sup> Prepared by Amadou N. R. Sy (MCM).

Table 1. France: Household Financial Savings

| (End-2011)<br>Amount outstanding, EUR billions | Banking products | Life Insurance | Mutual Funds | Total Household<br>Savings |
|--|------------------|----------------|--------------|----------------------------|
| Bancassurance groups 1/                        | 1018.8           | 712.4          | 81.5         | 1812.7                     |
| Other insurance companies                      |                  | 603.7          |              | 603.7                      |
| Other banks                                    | 43.5             |                |              | 43.5                       |
| Other  |                  |                | 35.1         | 35.1                       |
| Total  | 1062.3           | 1316.1         | 116.6        | 2495                       |

Source: Banque de France

1/ BNP Paribas, Societe Generale, Credit Agricole, BPCE, Banque Postale, Credit Mutuel

3. **Within the bancassurance industry, cooperative banks rely more on retail deposits than the other banks.** The three largest cooperative banks, Crédit Agricole Group, Crédit Mutuel, and BPCE, collect 56 percent of total retail deposits through their larger branch networks. Regulated bank deposits (mostly Livret A et Bleu), which account for about 9 percent of households' financial savings, are mainly deposited in cooperative banks.<sup>2</sup> At end- 2010, Banque Postale, Caisse d'Épargne and Crédit Mutuel held 80 percent of such products. Until 2009, regulation allowed only these groups to collect Livret A deposits, the most popular type of regulated savings. Since then, all banks can offer such deposits. Cooperative banks also have a dominant share of the domestic loan market (59 percent of total in 2009), especially mortgages (72 percent of the total). Except for Crédit Agricole, the cooperative banks have not expanded their operations internationally. In addition, corporate and investment banking (CIB) operations in cooperative banks are as not as important as in BNP and Société Générale.

4. **Two of the largest French banks have large CIB operations, especially in fixed income currency and commodities (FICC) and equity derivatives.** The CIB split shows a reliance on FICC (32 and 26 percent of investment banking (IB) revenues for Société Générale and BNP) but also a strong presence in equity derivatives business which accounts for 32 and 18 percent of Société Générale and BNP IB revenues, respectively. The two banks are ranked first and second globally in several equity over-the-counter (OTC) derivatives products. These two banks are members of the

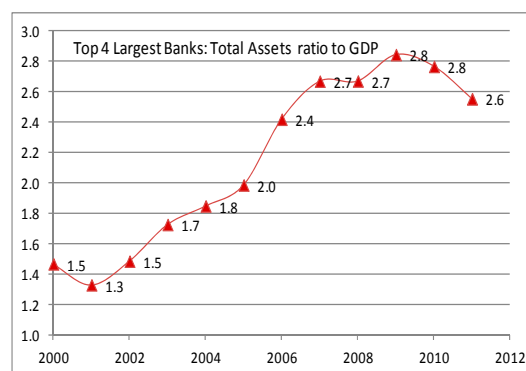
<sup>2</sup> The remuneration rate of the Livret A is set to the maximum of the average of the three-month Euribor and Eonia, or the inflation rate plus 25 basis points. About one thirdpercent of the Livret A raised by banks are passed to the publicly owned Caisse des Dépôts et Consignations (CDC) to finance social housing.

largest 14 derivatives dealers group (G14) and as such are among the most globally interconnected banks. They are important players in other types of derivatives products, including interest rate and exotic equity (variance and volatility swaps). The CIB split also shows a reliance on euro-denominated debt and capital markets segment as well as financing especially relationships with corporate such as syndicated loans.

## B. A Global Expansion Halted by the 2007 to 2008 Crisis

### 5. The French banking sector grew rapidly in the pre-crisis period in line with those in the US and other European countries.

Total banking assets of the four largest banks grew rapidly to about 2.7x GDP just before the financial crisis from 1.5x in 2000. French banks have much larger balance sheets than most European peers and are among the largest in the world. Assets of the largest bank, BNP (BNP), were comparable to France's GDP at about €2 trillion at end-2010.



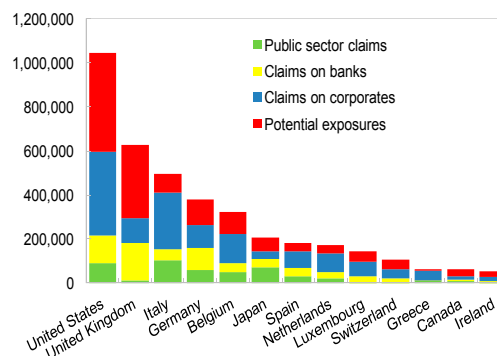
6. **Financial innovation was the main driver of asset growth.** Most of the asset growth was driven by banks' holdings of marketable securities and other short-term investments and financed mainly by short-term wholesale borrowings. As a sign of greater engagement in securities markets, Natixis was created through the merger of the investment banking units of two cooperative banks, which traditionally focused on the French retail market. Off-balance sheet assets also grew rapidly during the pre-crisis period, in part owing to the expansion of French banks' derivatives business. Asset growth was halted by the financial crisis in mid-2007 and subsequently reversed. Gross data from the BIS show that by 2007, French banks had increased their net foreign positions (assets minus liabilities) aggressively to about €800 billion, more than UK banks but less than German banks<sup>3</sup>.

<sup>3</sup> See McGuire and von Peter (2009). Data are for large internationally active banks headquartered in France, which include branches and subsidiaries.

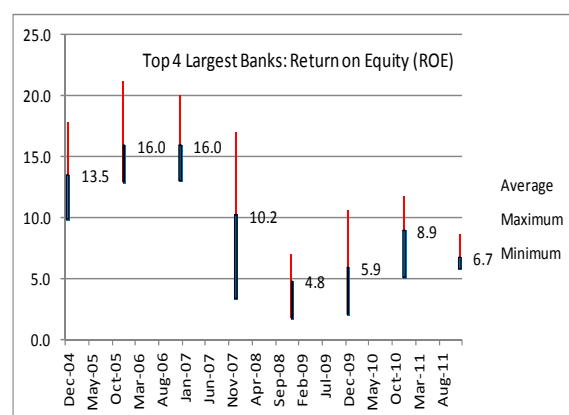


7. **A few pre-crisis large international bank acquisitions also increased the size of French banks' assets.** In particular, in 2006, Crédit Agricole Group acquired its Greek subsidiary (Emporiki) and BNP acquired its Italian subsidiary (Banca Nazionale del Lavoro). The international retail mix of French banks shows a large presence in Europe, and Italy in particular. In 2010, retail operations in Italy accounted for about half and 30 percent of total international retail business for Crédit Agricole and BNP, respectively; Greece accounted for about a quarter of Crédit Agricole's international operations; while retail operations in Belgium, Luxembourg, and the US reached 31 and 22 percent, respectively, for BNP. Société Générale's operations in the Czech Republic alone account for 23 percent of its international footprint, followed by Russia which accounts for 18 percent of international business.

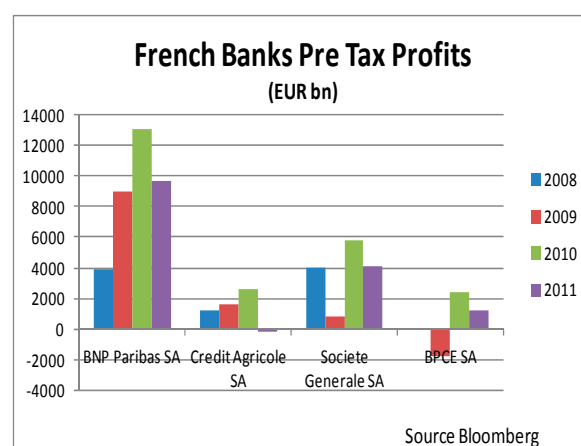
Consolidated Claims of French Banks on Rest of the World  
(In million of USD)



Source: BIS Table 9E, Consolidated Foreign Claims & other Potential Exposure on an Ultimate Risk Basis, March 2011



8. **French banks' rapid global expansion was comparable to other European banks.** As other European global banks, French banks funded themselves in the US through the wholesale market to invest in the US through the shadow banking system.<sup>4</sup> Three factors may explain the expansion of European and French banks. The first is that banks used securitization to circumvent the risk weights required under Basel I (Basel II was implemented in Europe only starting in January 2007). It is noteworthy that the magnitude of the increase in assets did not translate into a similar rise in risk-weighted assets for banks, and as



<sup>4</sup> See Shin (2012).

a consequence banks were able to expand without having to increase their capital as rapidly. The second argument is that the advent of the Euro was a catalyst for increased cross-border banking (within the euro zone). Finally, the prevailing low interest rate environment gave incentives for banks to engage in a search for yield.

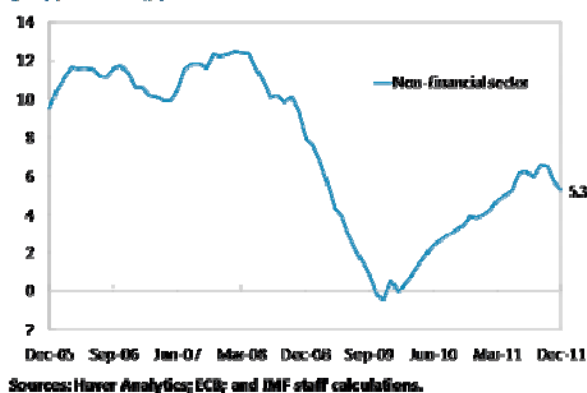
9. **Asset growth generated higher but more volatile profitability.** Banks' return on equity (ROE) reached double-digit levels fueled by trading profits. ROEs were the highest for the French banks with higher exposures to capital markets. Median ROE increased to 16.0 percent in 2006 with Société Générale and BNP earning returns on equity (ROEs) of 20 and 17.5 percent, respectively compared to 13 percent for the cooperative and mutual banks, (Crédit Agricole and BPCE).

10. **The French financial system was resilient to the 2007 to 2008 crisis.** Despite large losses, most banks were able to maintain positive net profits, thanks to solid earnings from traditional domestic retail banking and asset gathering, which offset losses in other business lines.

11. **Public support to the banking system was significantly less than in the UK and the US.**

Public support included (i) setting up the Société de Financement de l'Économie Française (SFEF) with government-guaranteed bonds equivalent to €77 billion (about 4 percent of GDP), which were on-lend to banks in proportion to market shares; (ii) setting up the Société de Prise de Participations de l'État (SPPE) for bank recapitalization purposes which injected about €20 billion into the six largest French banks in the form of subordinated debt securities and preferred shares; and (iii) supporting the creation of the BPCE group from the merger of Groupe Caisse d'Épargne and Groupe Banque Populaire, with a €5 billion capital injection by SPPE.<sup>5</sup> The French governments also participated (with the governments of Belgium and Luxembourg) in a €6.4 billion recapitalization of the Dexia Group.

**Credit to Non-Financial Private Sector**  
(% y percent change)



<sup>5</sup> All banks, except Dexia, have since repaid the state.

12. **In the aftermath of the crisis, French banks started a gradual process of balance sheet adjustment while preserving credit supply.** After sharp losses during the crisis, most banks started managing legacy assets as a run-off business to reduce their total exposures.<sup>6</sup> Credit growth remained resilient and has rebounded from a sharp drop in 2009.

### C. The Eurozone Crisis: An Increasingly Challenging Operating Environment

13. **French banks face a more challenging operating environment.** Key changes in their operating environment include: (i) intense market stress, especially since summer 2011 in a volatile euro area environment; (ii) new banking regulations to improve the quantity and quality of capital and liquidity following the 2008 crisis; (iii) new policy measures targeted to globally systemically important financial institutions (G-SIFIs), and more recently (iv) a banking reform proposed by the government.

#### Increased Market Stress Since August 2011

14. **French banks raise large amounts of short-term wholesale funding to complement their customer deposits.** At end-2011, deposits from customers stood at about 32 percent of total liabilities for the largest banks as they relied heavily on wholesale funding, including interbank funding and US money market funds. French mutual funds are also a source of funding for banks, and a channel through which corporate treasury savings are invested in bank securities. As a result of their reliance on wholesale funding, banks' loan-to-deposit ratios are high and averaged 129 percent at end-2011.

15. **In August 2011, difficulties in rolling over US dollar funding from US money market mutual funds signaled key changes in French banks operating environment.** French banks which borrowed short-term US dollar funds from US prime money market funds (MMFs) had to suddenly roll over US\$240 billion in very difficult market conditions as US MMFs sharply reduced both the size and maturity of their exposures. Funding costs increased, and share prices fell sharply (Table 2). Banks faced a more challenging operating environment as:

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<sup>6</sup> Legacy assets include toxic assets (monolines, CDO subprime, and U.S. RMBS and CMBS), ABS/CDOs, and LBOs. Cumulative losses through 2012 for the five largest French banks reached €34 billion.

- Wholesale funding risk increased significantly following the near closure of the US dollar funding market;
- The operating environment for earnings generation became more challenging with reduced profitability of CIB activities and increased market pressure to cover the cost of capital of such business lines;
- Market concerns also covered French banks' lower relative capital adequacy and liquidity positions as compared to peer banks and at the same time the cost of raising equity capital rose sharply;
- The euro zone crisis led to higher and, at times, indiscriminate risk aversion for banks that were most heavily exposed to Greece and the other GIIPS, notably French banks;
- At the same time, domestic macroeconomic growth slowed down, reducing prospects for higher loan growth.

Table 2. France: Daily Movements of Selected Financial Indicators

| Table 2: France: Daily Movements of Selected Financial Indicators |                                     |               |            |          |           |        |            |        |
|---|-------------------------------------|---------------|------------|----------|-----------|--------|------------|--------|
|   | Latest<br>observation:<br>12/5/2012 | Change since: |            |          |           |        |            |        |
|   |                                     | Last Closing  | 7 days ago | 7/1/2011 | 2010-2011 |        | Since 2000 |        |
|   |                                     |               |            |          | Trough    | Peak   | Trough     | Peak   |
| (Percent)   |                                     |               |            |          |           |        |            |        |
| CAC 40 Index  | 3590.5                              | 0.3           | 2.5        | -10.4    | 29.1      | -13.6  | 49.4       | -48.1  |
| BNP Paribas Equity  | 43.4                                | 0.6           | 3.0        | -20.5    | 88.1      | -27.2  | 108.8      | -52.6  |
| Crédit Agricole Equity  | 6.0                                 | 0.3           | 6.1        | -44.0    | 109.9     | -55.8  | 109.9      | -81.5  |
| Société Générale Equity   | 28.2                                | -1.1          | 4.3        | -33.6    | 88.0      | -46.0  | 88.0       | -79.9  |
| (Basis points)  |                                     |               |            |          |           |        |            |        |
| 3M Basis Swap Spread  | -24.1                               | 1.1           | 4.2        | 3.4      | 133.4     | -16.4  | 185.9      | -21.6  |
| Euribor-OIS 3M Spread   | 12.4                                | -0.3          | 0.9        | -9.2     | 2.0       | -88.3  | 21.1       | -194.6 |
| Sovereign 10Y Yield Spread  | 65.2                                | 1.3           | -3.2       | 27.4     | 46.5      | -124.9 | 66.6       | -124.9 |
| Sovereign 5Y CDS Spread   | 79.7                                | 0.6           | -4.6       | 0.3      | 50.0      | -170.0 | 78.2       | -170.0 |
| BNP Paribas 5Y CDS Spread   | 143.7                               | -3.5          | -18.8      | 30.7     | 93.6      | -215.9 | 138.3      | -215.9 |
| Crédit Agricole 5Y CDS Spread                                     | 159.5                               | -0.9          | -13.8      | 26.2     | 97.4      | -244.3 | 153.7      | -244.3 |
| Société Générale 5Y CDS Spread                                    | 174.3                               | -2.8          | -17.1      | 42.3     | 112.7     | -265.9 | 168.4      | -265.9 |

Sources: Bloomberg; and staff calculations.

## Basel III Regulatory Changes

16. **The 2007 to 2008 financial crisis revealed shortcomings in the quality and quantity of bank capital and liquidity globally, leading to new rules.**<sup>7</sup> The Basel III framework includes changes to the definition of capital that result from the new capital standard, referred to as common equity Tier 1 (CET1), including new rules on capital deductions, and changes to the eligibility criteria for Tier 1 and total capital; changes in calculating risk-weighted assets (RWA) resulting from changes to the definition of capital, securitization, trading book and counterparty credit risk requirements; the capital conservation buffer; the leverage ratio; and two liquidity standards (liquidity coverage ratio-LCR-and net stable funding ratio-NSFR). In addition, Basel 2.5 regulations require banks to hold greater capital against the market risks they run in their trading operations.

17. **French banks have made significant progress in meeting the new capital requirements.** Market pressure has put the bar at a level higher than the minimum solvency ratio required by regulators. Reports from bank analysts suggest that market participants require a higher Basel 3 CET1 ratio of 9-10 percent for the largest French banks. French banks intend to meet CET1 target of 9 percent or more by end-2013 through retained earnings and deleveraging in CIB and non-core businesses.<sup>8</sup>

18. **Market participants' attention is now turning to liquidity rules, which are yet to be finalized.** French banks have significantly reduced their US dollar funding needs since 2011 and have diversified their funding base further. At mid-year, their 2012 funding program was 121 percent completed and liquid assets covered 109 percent of short-term wholesale funding needs. However, there is little public information available regarding their LCR and NSFR. Some market participants indicate they use the existing LCR formula, in spite of significant uncertainty regarding the final methodology to calculate regulatory ratios. Such market estimates indicate that French banks' LCR are below the European average. Options to improve liquidity ratios include increasing the share of liquid assets and eligible collateral in the balance sheet while structural

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<sup>7</sup> For more on the impact of Basel III capital rules on French banks and growth, see Sy (2011).

<sup>8</sup> Estimates of 2012 Basel III fully loaded CET1 ratios are 10.5 and 9.2 percent for Crédit Agricole and BNP, respectively, and 8.3 percent for Société Générale. Non-core businesses include aircraft, shipping, trade and project finance.

funding can be improved by shifting towards more stable sources of funding such as retail deposits and more long-term wholesale funding, as well as reducing assets.

### Policy Framework for G-SIFIs

19. **The four largest French banks are globally systemically important banks according to the FSB framework for G-SIFIs.** The G-SIFI list compiled by the FSB includes BPCE, BNP Paribas, CA Group, and Société Générale (see FSB, 2011). The assessment methodology for G-SIBs seeks to measure the impact that a failure of a bank can have on the global financial system and wider economy, and is based on a set of indicators. The five (equally weighted) indicators reflect (i) the size of banks; (ii) their interconnectedness; (iii) the lack of readily available substitutes for the services they provide; (iv) their global cross-jurisdictional activity; and (v) their complexity (see BIS, 2011).

20. **The largest French banks will have to meet requirements of the policy framework for G-SIB.** These include having recovery and resolution plans (RRPs) by end-2012 and additional capital requirements. The additional loss absorbency requirements will begin to apply from 2016 (initially to those banks identified in November 2014 as globally systemically important).

### Banking Reform

21. **Ongoing reforms include a number of measures with potential impact on banks' business models.**<sup>9</sup> The measures include:

- i. Doubling the ceiling on the Livret A and guarantee a remuneration rate above inflation: the government increased the ceiling by 25 percent in August 2012 to €19,125 and an additional increase of 25 percent is envisaged by end-2012.
- ii. Establishing a state bank (Banque Publique d'Investissement) to finance small and medium enterprises (SMEs) and innovation;
- iii. A financial transaction tax of 0.2 percent on purchases of equity shares of large companies and "naked" CDS contracts came in force on August 1, 2012;
- iv. A 15 percent surtax on banks' corporate tax;

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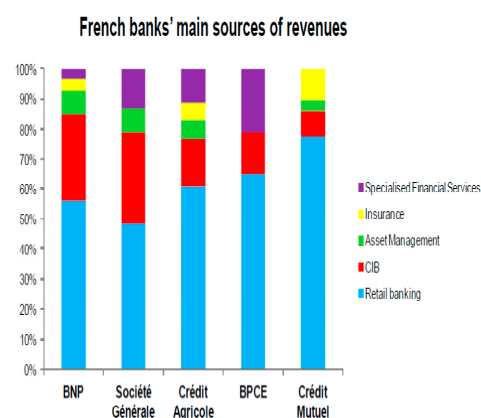
<sup>9</sup> Some market estimates that the cost of the new measures could reduce French banks' earnings per share by 13-34 percent, with the separation of retail and "speculative" lines having a 4-20 percent impact depending on its form.

- v. The separation of retail and “speculative” business lines;
- vi. The banning of “toxic” financial products and stock options; and
- vii. Prohibition of bank operations in offshore tax havens.

22. **The envisaged separation of retail and “speculative” will not lead to an overhaul of French banks’ business model.** The authorities have indicated that banks will be required, by July 2015, to create subsidiaries to ring-fence businesses from “market activities that are not directly dedicated to the financing of the economy,” including proprietary trading, investment in hedge funds, and private equity funds. However, under the draft proposal, French bank will continue their market making businesses. The French reform is scheduled to be implemented in advance of the envisaged European Commission process related to the Liikanen Group proposals. The key difference between the two proposals is the treatment of market making. While the Liikanen report mandates this business to be conducted by the trading subsidiary outside the retail ring-fence, the French proposal would bring it back inside.

#### D. Adapting to the New Environment

23. **French banks are universal banks earning a diversified mix of revenues.** Net interest income accounts for about half of total revenues for the four largest groups. Through asset liability management strategies, French banks have been able to benefit from the long-term stability of low paying domestic retail deposits. In addition, banks earn a quarter of their revenues through fees and commissions. These relatively stable sources of income complement the more volatile revenues from trading and other income.



24. **French banks have adapted their business model in response to challenges they have faced.** The 2007 to 2008 and euro zone financial crises have shown the limits of their global expansion. As a result, French banks have reduced some segments such as specialized financial services and CIB that are more expensive in capital or funding and have become less profitable. Banks have avoided selling “non-core” assets at fire sales price and used retained earnings to improve their solvency. They have also withdrawn from their international retail activities in Greece. Key questions going forward are (i) how capital intensive are the remaining business lines? (ii) how expensive are business lines in terms of funding? and (iii) how profitable are business lines?

25. **Current strategies are on the right direction.** French banks are actively implementing a strategy which includes:

- Increasing liquidity and reducing their dependence on short-term wholesale funding, including through deposit raising, diversifying funding sources, and deleveraging;
- Raising solvency ratios mainly by plowing back some or even all of retained earnings;
- Maintaining profitability in French retail and asset gathering activities and reorienting their business model to reduce activities that are relatively more expensive in terms of capital and funding or less profitable;
- Provisioning against GIIPS exposure and reducing exposures including through sales.

26. **Deleveraging plans are well advanced for French banks.** Both Crédit Agricole and Société Générale sold their Greek subsidiaries (Emporiki and Geniki, respectively) in October 2012.

Reduction of capital intensive CIB activities has allowed banks to reduce their risk weighted assets (RWA). As of June 2012, BNP completed 90 percent of its €79 billion RWA reduction target and Crédit Agricole reached 97 percent of its €35 billion target. In addition, Société Générale achieved about 57 percent of its €30 billion CIB reduction target. BPCE and Crédit Agricole announced that they met about 75 percent of their funding needs target of €25-35 billion and 50 billion, respectively. Data for the three largest banks show that liquidity and funding buffers cover 100 percent or more of funding needs. Nonetheless, banks' assumptions are less stringent than the Basel III liquidity coverage ratio (LCR) and net stable funding ratio (NSFR).

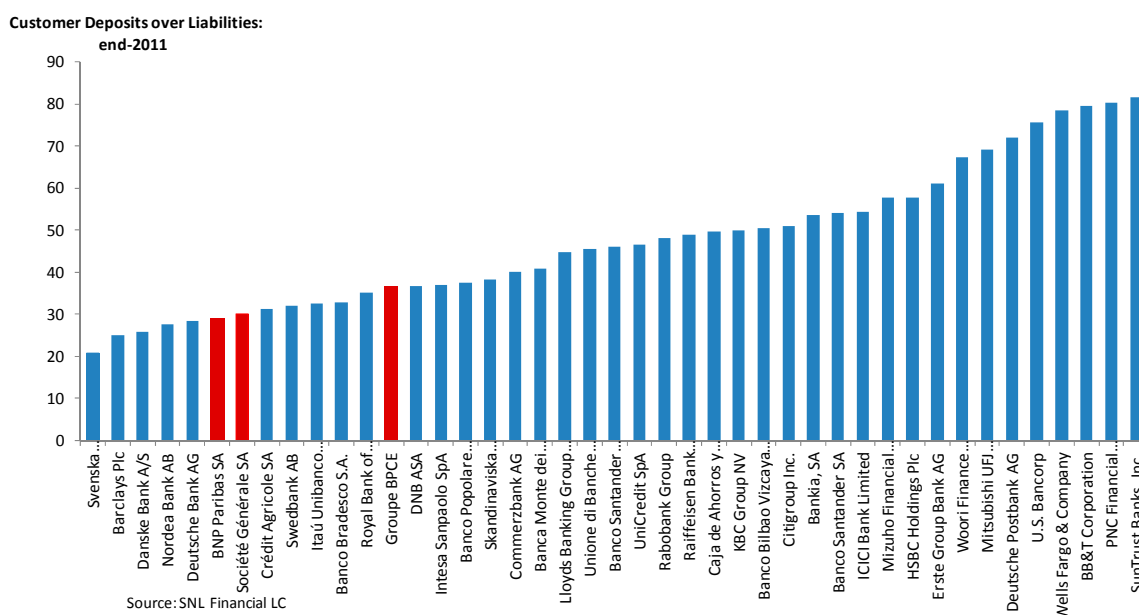
27. **The adaptation of the business plan has not so far had a significant impact on the financing of the domestic economy.** Credit growth to nonfinancial corporate slowed down to 1.9 percent (yoy) in October 2012 from 4.6 percent in January 2012 driven mainly by short-term unsecured loans for cash flow management (crédits de trésorerie). Mortgage financing remains healthy at 3.6 percent in October (6.8 percent in January 2012). From a longer term perspective, credit growth which was briefly negative at end-2009 has recovered since then albeit to about half its pre-2008 crisis level.

28. **Lending surveys confirm banks' willingness to lend domestically.** Results from the October bank survey indicate that (i) corporate lending standards remained unchanged and (ii) corporate demand slowed down. In the case of consumer credit and mortgages, lending criteria for consumer credit remain relatively unchanged. Demand for housing decreased while demand for consumer credit remained stable.



## Looking Forward, a Number of Vulnerabilities and Risks Remain:

29. **In the short-term, the main system risks are:** (i) a sustained closure of the wholesale funding markets including secured markets (covered bonds markets) and privately placed debt; (ii) market concerns about regulatory liquidity targets. These risks could materialize should there be spillovers from the euro zone crisis to France. French banks are also becoming more dependent on the French retail and asset gathering segments which generate more stable cash flows generation



and provide a buffer against other lines' volatility. A sharp slowdown of economic activity would increase banks' cost of risk but from a low base.

30. **In the medium term, banks face structural vulnerabilities including from** (i) structurally low customer deposits over liabilities; (ii) higher leverage positions compared to their peers; (iii) large size, complexity, and interconnectedness (G-SIFIs). While French households' financial savings are high, French banks rely heavily on wholesale funding as a number of tax incentives redirect retail savings to life insurance and mutual funds. Some deposits from regulated saving schemes also escape banks. About 43 percent of the €2.5 trillion of households' savings find their way directly on banks' balance sheets as French savers prefer tax-exempt life insurance products. Given their size, complexity, and interconnectedness, the Financial Sector Assessment Program (FSAP) recommendations relevant to the G-SIFI framework are particularly important. These include

observance with the Basel Core Principles (BCPs) for supervision and the crisis management and bank resolution framework.<sup>10</sup>

31. **Finally, a number of trends and developments may have an impact on the future financial sector landscape:** The authorities are assessing the net economic benefits of tax incentives on long-term deposits which could redirect long term savings to the banking sector. In addition: (i) French banks have relatively higher operating costs than peer banks, mainly for domestic retail operations. So far, the rationalization observed in a number of countries has not yet taken place in France but could take place in the form of a reduction of branches and downsizing; (ii) banks are testing the originate-to-distribute model and co-financing loans to mid-sized corporates with insurance companies; (iii) the issuance of corporate bonds has increased for large corporations indicating some disintermediation.

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<sup>10</sup>For instance, BCP assessments of CP6 on bank insurance cross-holdings and mutual groups, CP7 on risk management, CP12 on country and transfer risks, and CP14 on liquidity risks.

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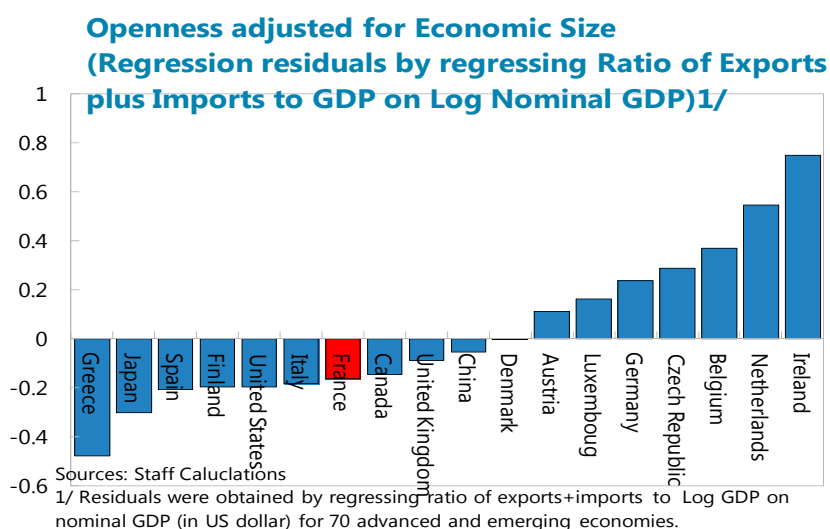
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# GROWTH AND FISCAL SPILLOVERS OF FRANCE <sup>1</sup>

## A. Introduction

1. **This note assesses both potential inward spillovers to France and its outward spillovers to other countries.** While France was relatively resilient to the 2008 to 2009 global economic crisis, at the current juncture of synchronized economic slowdown and fiscal consolidation in advanced economies, external shocks could still have a significant impact on the French economy. Conversely, given its important economic weight in the global economy, particularly in the euro area, France could have sizable outward spillovers on its neighbors. This note provides estimates of potential growth and fiscal spillovers, both inward and outward. In addition, the note quantifies long-run and dynamic contributions to growth, and uses them to forecast the potential loss to French GDP from a growth slowdown in other regions in 2013.

2. **France is less open than many of its neighbors and its trading partners are concentrated in Europe.** With a combined export and import to GDP ratio of just slightly above 50 percent of GDP, France is less open than many of its neighbors in the EU—including Belgium, Germany, Netherlands, and United Kingdom, although adjusted for economic size, it is more open than Spain and Italy. Its main trading partners are members of the European Union (EU), led by Germany, Italy, Spain, Belgium, and United Kingdom. Outside Europe, the United States is a major recipient of French

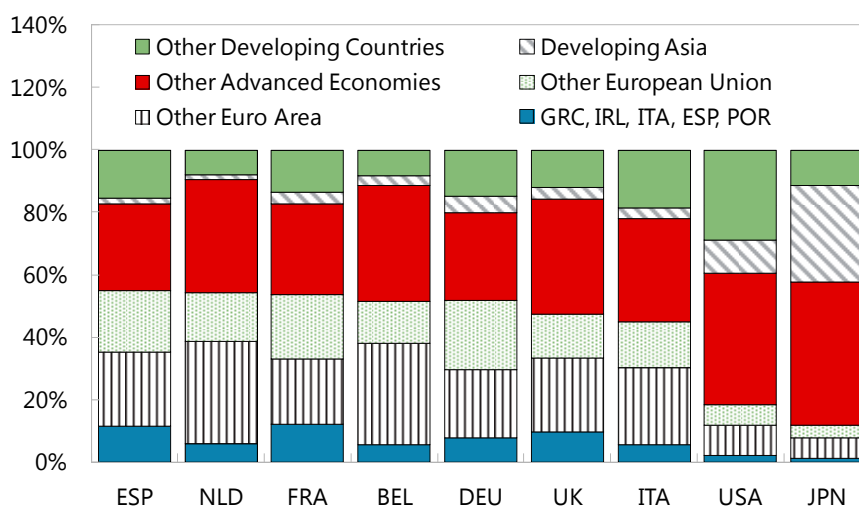


exports. Developing countries and emerging markets account for a relatively smaller share of exports, but exports to Asia have been growing in recent years.

<sup>1</sup> This note was prepared by Kevin C. Cheng and Sebastian Weber.

### Comparison - Main Export Destinations

(2011, percent of total merchandise exports)



Sources: IMF DOTS

## B. Fiscal Spillovers

3. **Both France and its main trading partners are expected to undertake major fiscal consolidation efforts.** With about two-thirds of exports destined for its European peers, France is likely to face headwind from outright contraction in Europe. Specifically, France's main trading partners—such as Italy, Spain, and Belgium—are expected to tighten their structural balance by 0.8-1.8 percent of potential GDP in 2013 relative to the previous year, and by up to 0.9 percent in 2014. At the same time, France is expected to tighten its structural balance by around

|                              | Fiscal Balance (percentage changes from the previous year) |            |            |                       |            |            |
|------------------------------|--|------------|------------|-----------------------|------------|------------|
|                              | Overall Balance 1/   |            |            | Structural Balance 2/ |            |            |
|                              | 2012   | 2013       | 2014       | 2012                  | 2013       | 2014       |
| <b>France</b>                | <b>0.4</b>   | <b>1.3</b> | <b>0.7</b> | <b>0.7</b>            | <b>1.4</b> | <b>0.4</b> |
| Belgium                      | 1.0  | 0.9        | 0.6        | 1.5                   | 0.8        | 0.5        |
| Germany                      | 0.4  | 0.0        | 0.1        | 0.4                   | 0.2        | 0.1        |
| Italy                        | 1.2  | 0.9        | 0.1        | 2.8                   | 1.2        | -0.2       |
| Netherlands                  | 1.0  | 0.5        | -0.4       | 1.8                   | 1.1        | -0.7       |
| Spain                        | 2.5  | 1.6        | 1.1        | 3.0                   | 1.8        | 0.9        |
| United States                | 1.4  | 1.4        | 1.7        | 1.1                   | 1.3        | 1.3        |
| United Kingdom               | 0.4  | 1.1        | 1.5        | 1.3                   | 1.4        | 1.1        |
| 1/ In percent of GDP         |  |            |            |                       |            |            |
| 2/ In terms of potential GDP |  |            |            |                       |            |            |

½-1½ percent of potential GDP during the same period, thereby likely exerting negative outward spillovers on its neighbors.

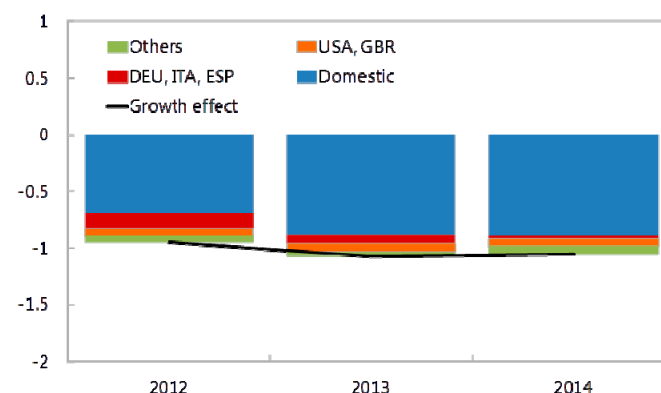
4. **A model based on the national account framework is used to gauge the impact of domestic and foreign fiscal consolidation on growth in France and its trading partners through trade linkages.** The model simulations cover the period of 2012 to 2014, allowing for carry-over effects from fiscal changes in the previous period to current GDP growth.<sup>2</sup> Estimates are based on the cyclically adjusted revenue and expenditure changes of 20 countries which cover about 70 percent of world GDP and about 78 percent of French merchandise exports.

| Impact on Growth of Fiscal Consolidation<br>(In percentage points)  |                     |                 |                  |                     |                 |                  |                     |                 |                  |
|---|---------------------|-----------------|------------------|---------------------|-----------------|------------------|---------------------|-----------------|------------------|
| Baseline  |                     |                 |                  |                     |                 |                  |                     |                 |                  |
|   | 2012                |                 |                  | 2013                |                 |                  | 2014                |                 |                  |
|   | Total growth impact | Of which:       |                  | Total growth impact | Of which:       |                  | Total growth impact | Of which:       |                  |
|   |                     | domestic effect | spillover effect |                     | domestic effect | spillover effect |                     | domestic effect | spillover effect |
| <b>France</b>   | <b>-0.7</b>         | <b>-0.5</b>     | <b>-0.2</b>      | <b>-0.8</b>         | <b>-0.7</b>     | <b>-0.1</b>      | <b>-0.8</b>         | <b>-0.7</b>     | <b>-0.1</b>      |
| of which:   |                     |                 |                  |                     |                 |                  |                     |                 |                  |
| - current year  | -0.4                | -0.3            | -0.1             | -0.7                | -0.6            | -0.1             | -0.5                | -0.4            | -0.1             |
| - carry over prev. year   | -0.3                | -0.2            | -0.1             | -0.1                | -0.1            | -0.1             | -0.3                | -0.3            | 0.0              |
| PPP weighted average  |                     |                 |                  |                     |                 |                  |                     |                 |                  |
| - Total sample  | -0.5                | -0.4            | -0.1             | -0.5                | -0.4            | -0.1             | -0.5                | -0.5            | -0.1             |
| - Euro area   | -1.0                | -0.8            | -0.2             | -0.7                | -0.5            | -0.2             | -0.5                | -0.3            | -0.2             |
| - Non euro area   | -0.4                | -0.4            | -0.1             | -0.4                | -0.4            | -0.1             | -0.6                | -0.5            | -0.1             |
| Simple average  |                     |                 |                  |                     |                 |                  |                     |                 |                  |
| - Total sample  | -0.8                | -0.6            | -0.2             | -0.7                | -0.5            | -0.1             | -0.7                | -0.6            | -0.1             |
| - Euro area   | -1.0                | -0.8            | -0.2             | -0.7                | -0.5            | -0.2             | -0.5                | -0.3            | -0.2             |
| - Non euro area   | -0.4                | -0.4            | -0.1             | -0.4                | -0.4            | -0.1             | -0.6                | -0.5            | -0.1             |
| Alternative Scenario with a higher fiscal multiplier  |                     |                 |                  |                     |                 |                  |                     |                 |                  |
|   | 2012                |                 |                  | 2013                |                 |                  | 2014                |                 |                  |
|   | Total growth impact | Of which:       |                  | Total growth impact | Of which:       |                  | Total growth impact | Of which:       |                  |
|   |                     | domestic effect | spillover effect |                     | domestic effect | spillover effect |                     | domestic effect | spillover effect |
| <b>France</b>   | <b>-0.9</b>         | <b>-0.7</b>     | <b>-0.3</b>      | <b>-1.1</b>         | <b>-0.9</b>     | <b>-0.2</b>      | <b>-1.1</b>         | <b>-0.9</b>     | <b>-0.2</b>      |
| of which:   |                     |                 |                  |                     |                 |                  |                     |                 |                  |
| - current year  | -0.5                | -0.3            | -0.1             | -0.9                | -0.8            | -0.1             | -0.6                | -0.5            | -0.1             |
| - carry over prev. year   | -0.5                | -0.3            | -0.1             | -0.2                | -0.1            | -0.1             | -0.4                | -0.4            | -0.1             |
| PPP weighted average  |                     |                 |                  |                     |                 |                  |                     |                 |                  |
| - Total sample  | -0.8                | -0.6            | -0.2             | -0.7                | -0.5            | -0.1             | -0.7                | -0.6            | -0.1             |
| - Euro area   | -1.4                | -1.0            | -0.3             | -1.0                | -0.7            | -0.3             | -0.6                | -0.4            | -0.3             |
| - Non euro area   | -0.6                | -0.5            | -0.1             | -0.6                | -0.5            | -0.1             | -0.8                | -0.6            | -0.1             |
| Simple average  |                     |                 |                  |                     |                 |                  |                     |                 |                  |
| - Total sample  | -1.1                | -0.8            | -0.3             | -0.9                | -0.7            | -0.2             | -0.9                | -0.7            | -0.2             |
| - Euro area   | -1.4                | -1.0            | -0.3             | -1.0                | -0.7            | -0.3             | -0.6                | -0.4            | -0.3             |
| - Non euro area   | -0.6                | -0.5            | -0.1             | -0.6                | -0.5            | -0.1             | -0.8                | -0.6            | -0.1             |
| Source: IMF staff estimates.  |                     |                 |                  |                     |                 |                  |                     |                 |                  |
| 1/ Financial sector support recorded above-the-line was excluded for the calculation of the growth impact for Ireland (5.3 percent of GDP in 2010) and the US (0.4 percent of GDP in 2010, and 0.1 percent of GDP in 2011 and 2012). Financial sector support is not expected to have a significant impact on demand. For Russia only non-oil revenues are assumed to have an impact on growth. Values need not add exactly up because of rounding. |                     |                 |                  |                     |                 |                  |                     |                 |                  |

<sup>2</sup> The model was developed by Ivanova and Weber (2011). For details, see the Appendix.

5. **Simulation results indicate that fiscal consolidation envisaged globally would have a significant impact on French growth, dominated by the domestic effect, with inward spillover effects also playing an important role.** We find that *overall* growth could be lower by up to  $\frac{3}{4}$  of a percentage point in the baseline scenario (with a moderate fiscal multiplier incorporated in the macroeconomic framework) and up to 1 percentage point in a

**Contribution to growth from global fiscal consolidation**  
(percentage points)

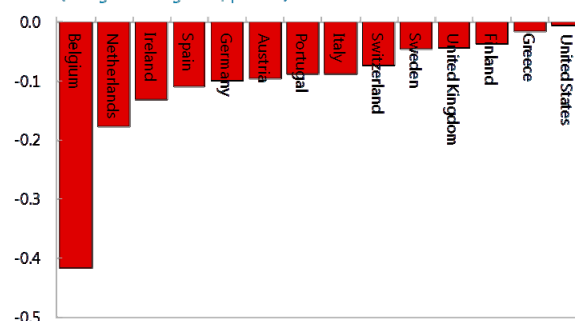


Sources: IMF staff estimates

baseline scenario (with a higher fiscal multiplier) annually from 2012 to 2014. Negative growth spillovers from global fiscal consolidation are estimated at around 0.2 percentage points annually. The negative growth effect from *global* fiscal consolidation could cumulate to about  $\frac{1}{2}$  of a percentage point in the case of France over the next three years. Close to a  $\frac{1}{4}$  of percentage points are from Germany, Italy and Spain. The US and the UK account for  $\frac{1}{8}$  and the remainder  $\frac{1}{8}$  is accounted for by other countries.

6. **France's fiscal consolidation would have considerable outward spillover effects on its trading partners.** The magnitude of the negative spillover impact is largest for small open economies in the euro area, such as Belgium and the Netherlands, with the cumulative spillover on the growth rate during 2012 to 2014 reaching up to 0.4 percentage points for Belgium. The impact for larger economies—such as Spain and Germany—is more moderate.

**France - Cumulative Outward Spillovers 2012-14**  
(change in GDP growth, percent)



Sources: IMF WEO and staff estimates based on Ivanova and Weber (2011)

## C. Growth Spillovers

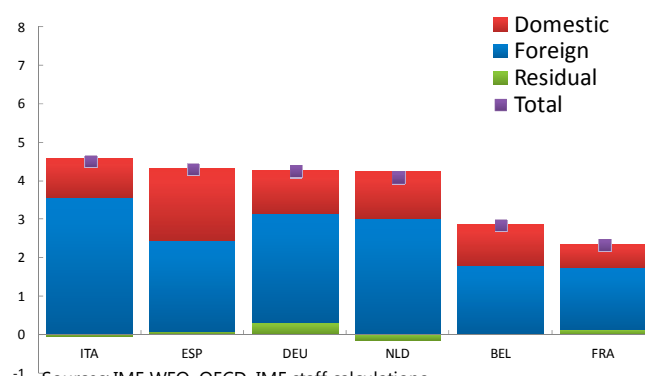
7. **A multi-country VAR analysis is used to assess the risk to GDP growth in France from a decline in domestic demand in high spread euro area countries and non-euro area countries.** The assumption underlying the first risk scenario is a  $\frac{1}{2}$  standard deviation reduction in the growth rate of the domestic growth component of high-spread economies—Italy, Spain, Greece, Ireland and Portugal—for each quarter in 2013 compared to the implied growth rates under the

September 2012 WEO projections. In the second risk scenario, all non-euro area members'<sup>3</sup> dynamic domestic growth component is lowered by  $\frac{1}{2}$  a standard deviation.<sup>4</sup> The decomposition and forecasts under these scenarios are constructed using the VAR approach described in Poirson and Weber (2011), which allows decomposing the growth rate into a long-run, a dynamic domestic and a dynamic foreign component. After decomposing growth into the three components, the domestic components for the countries which are the source of the shock are adjusted and the new growth rates for all 17 countries in the sample are computed, holding all other domestic components unchanged (thus results underestimate the impact). The approach has the advantage that it takes third country effects—e.g. the impact of the fall in the Italian domestic demand channeled via Germany on France—into account, and is thus estimating the impact consistently across the 17 countries in the sample.

**8. Both, the domestic and the foreign dynamic component account for the relatively low volatility of French GDP growth.**

Compared to Germany, Belgium, Italy, Spain, and the Netherlands, France has a lower degree of output volatility, likely reflecting the larger role played by automatic stabilizers in the French economy. Consequently, in absolute terms, inward spillover effects have contributed to a smaller impact on output variance in France than in Germany and the Netherlands. However, in relative terms,

**Output variance decomposition<sup>1)</sup>**



Sources: IMF WEO, OECD, IMF staff calculations

<sup>1)</sup> Residual refers to the covariance of foreign and domestic dynamic component, which is only non-zero due to the summing across multiple foreign countries' shocks and three dummy variables.

<sup>3</sup> The international component also includes three exogenous shocks: a dummy for the oil shock in 1979, a dummy for the oil shock in 1990, and a dummy for the recent financial crisis. The sample extends from 1975Q1 to 2012Q2. The country sample includes: Austria, Belgium, Canada, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States.

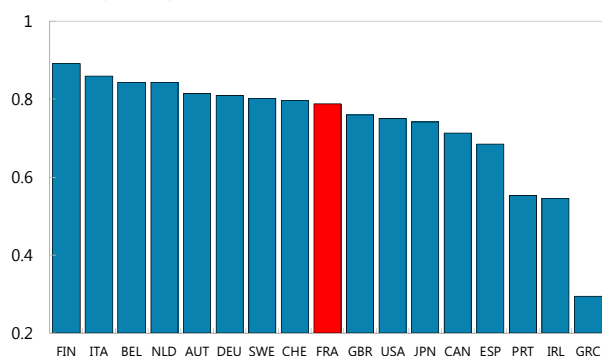
<sup>4</sup> Give that output volatility differs for each country, the size of the shock ( $\frac{1}{2}$  standard deviation) varies as well. For the high-spread euro economies (first shock),  $\frac{1}{2}$  standard deviation equals a decline in growth rate ranging from  $\frac{1}{4}$  to  $\frac{3}{4}$  percentage point for each quarter during 2013. For the non-euro advanced economies (second shock),  $\frac{1}{2}$  standard deviation equals a decline in growth rate of around 0.2-0.3 percentage point for each quarter during 2013.



foreign shocks have contributed to French output volatility to similar degree as in France's neighbors.

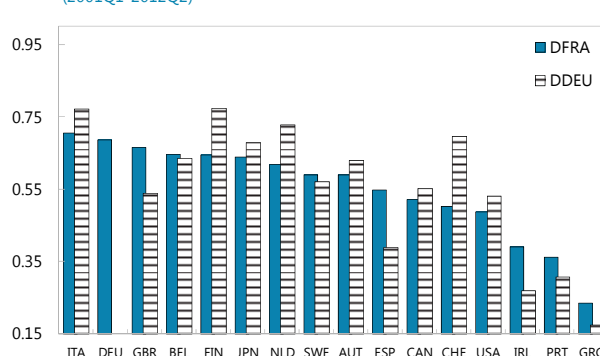
9. **French output co-moves considerably with countries in the EU, but less so with non-euro area countries.** French output co-moves fairly significantly with a global output shock—measured by the first principal components of the growth rates of the 17 countries in the sample, but the magnitude of its co-movement is smaller than many of its euro peers, including Finland, Italy, Belgium, Netherlands, and Germany. In terms of pair-wise correlation, French output co-moves most with Italy, followed by Germany and Belgium. Output co-movement with euro-area countries is generally high for France and for a number of euro countries—notably Greece, Portugal, and Spain—pair-wise co-movement with French output is higher than that with German output. In contrast, French output co-moves less significantly with the rest of the world than does German output, reflecting the significance of trades with non-euro countries in the German economy.

**Pairwise correlation: first principal component**  
(2001Q1-2012Q2)



Sources: OECD, IMF WEO and IMF staff calculations

**Pairwise correlation: quarterly output growth**  
(2001Q1-2012Q2)



Sources: OECD, IMF WEO and IMF staff calculations

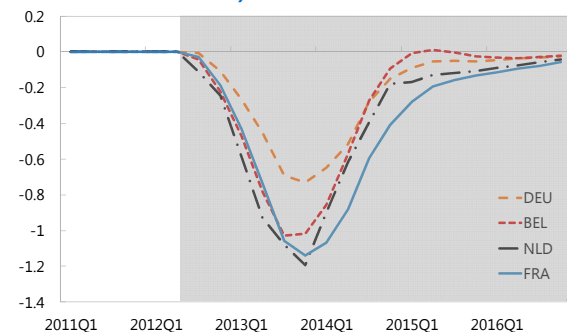
10. **Simulation exercises suggest that France could face a relatively significant spillover effect from a shock originating from high-spread euro countries—consisting of Greece, Ireland, Italy, Portugal, and Spain.** The shock to the domestic demand in the high spread euro countries could cause an output contraction in France by 0.8-1 percentage point in 2013 and by about 1- 1.2 percentage points in 2014. The impact in France is greater than the impact in Belgium, Germany, and the Netherlands.

11. **Simulation exercises suggest that France could face a relatively significant spillover effect from a shock originating from high-spread euro countries—consisting of Greece, Ireland, Italy, Portugal, and Spain.** The shock to the domestic demand in the high spread euro

countries could cause an output contraction in France by 0.8-1 percentage point in 2013 and by about 1- 1.2 percentage points in 2014. The impact in France is greater than the impact in Belgium, Germany, and the Netherlands.

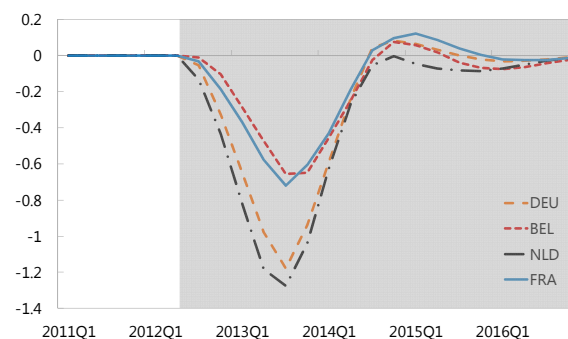
12. **Interestingly, the impact of a non-euro shock would be much lower for France compared to high-spread euro countries shock.** By contrast, the non-euro shock would have a far greater growth impact in Germany, and the Netherlands than in France. This is likely to reflect that Germany and the Netherlands are far more open and more integrated into the global economy than is France.

**Output growth comparison - (High-Spread euro countries shock in 2013)**



Sources: IMF WEO, OECD, Poirson and Weber (2011)

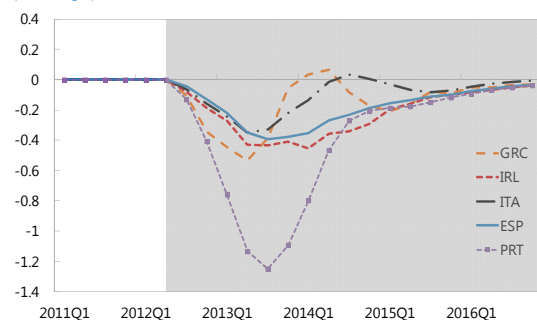
**Output growth comparison - Non-Euro shock in 2013**  
(percentage point deviation from baseline WEO)



Sources: IMF WEO, OECD, Poirson and Weber (2011)

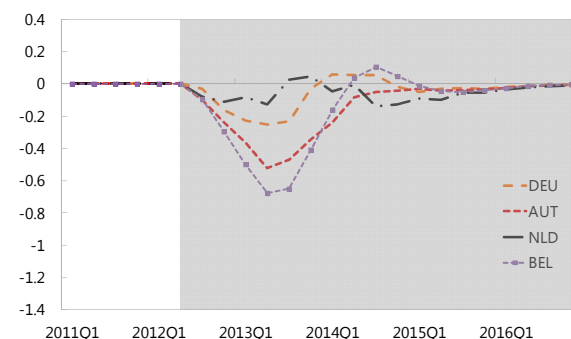
13. **France could have significant outward growth spillovers to its neighbors, particularly small open economies in the euro area.** Assuming a 1 standard deviation reduction in the French growth rate during 2013, output of Austria, Belgium, Ireland, Greece, and Portugal could be lowered by ½ to 1 percentage point relative to the WEO baseline during 2013 to 2014. The impact on larger economies—such as Italy and Spain—is smaller but still discernable.

**Output growth comparison France 2012/13 shock**  
(percentage point deviation from WEO forecast)



Sources: IMF WEO, OECD, Poirson and Weber (2011)

**Output growth comparison - France 2012/13 shock**  
(percentage point deviation from WEO forecast)



Sources: IMF WEO, OECD, Poirson and Weber (2011)

## D. Conclusion

14. **France is likely to face moderate inward spillovers from ongoing fiscal consolidation in partner countries.** It is subject to important and localized inward growth spillovers, particularly from Italy and Spain. Based on prevailing estimates of fiscal multipliers, fiscal consolidation is likely to take a heavy toll on the French economy in the period ahead, but the domestic effect is likely to dominate the spillover effect.
15. **France is particularly vulnerable to shocks from GIIPS.** While the relatively lower degree of trade linkages with non-euro countries has helped France to weather the 2008 to 2009 financial crisis—originated in the United States—better than its peers, trade linkages and proximity to several high spread countries—particularly Italy and Spain—imply France’s high vulnerability to shocks in these countries.
16. **France has important outward spillovers to its neighbors, particularly small open economies in the euro area.** In particular, France’s fiscal consolidation plan in 2013 to 2014 is likely to have a significant adverse impact on Belgium and the Netherlands. A negative demand shock in France will also affect significantly a number of small euro-area countries.

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## Appendix 1. A Measure of the Effect of Global Consolidation on Growth

1. The representation of the national accounts and behavioral assumptions for government spending, taxes, consumption, investment, exports and imports can be used to simulate the effect of global consolidation on growth. Starting point is the national accounting identity:

$$Y_{t,j} = C_{t,j} + I_{t,j} + G_{t,j} + X_{t,j} - M_{t,j} \quad (1.1)$$

2. where  $Y_{t,j}$  is the real output,  $I_{t,j}$  is real investment,  $G_{t,j}$  is the real government spending,  $X_{t,j}$  is real exports and  $M_{t,j}$  are real imports of country  $j$  in time  $t$  denominated in a common currency. The individual components of output are respectively given by:

$$\begin{aligned} C_{t,j} &= C_0 + c_1(Y_{t,j} - T_{t,j}) & G_{t,j} &= G_0^0 + g_1 Y_{t,j} \\ I_{t,j} &= I_0 + d_1 Y_{t,j} - d_2 r_{t,j} & T_{t,j} &= T_0^0 + t_1 Y_{t,j} \end{aligned} \quad \begin{aligned} M_{t,j} &= \mu_j Y_{t,j} \\ X_{t,j} &= \sum_{\substack{i \neq j \\ i=1}}^I \omega_{ij} \mu_i Y_{t,i} \end{aligned} \quad (1.2)$$

3. where  $\mu_i$  is the marginal propensity to import of a trading partner  $i$ ,  $Y_i$  is the output of a trading partner  $i$ , and  $\omega_{ij}$  is the weight of imports from country  $j$  in total imports of country  $i$ .

Government expenditures and revenues have a cyclical part and a discretionary element. Substituting the definitions (1.2) in (1.1) yields

$$Y_{t,j} = ex_{t,j} + m_j G_{t,j}^0 + \rho_G m_j G_{t-1,j}^0 - m_j c_1 T_{t,j}^0 - \rho_T m_j c_1 T_{t-1,j}^0 + m_j \sum_{\substack{i \neq j \\ i=1}}^I \omega_{ij} \mu_i Y_{t,i} \quad (1.3)$$

4. Where  $ex_{t,j} = C_0 + I_0 - d_2 r_{t,j}$  and  $m_j = (1 - c_1 - d_1 - g_1 + t_1 + \mu_j)^{-1}$  is the expenditure multiplier.

Taking the first difference and dividing by real output in  $t-1$  yields the growth rate:

$$\frac{\Delta Y_{t,j}}{Y_{t-1,j}} = m_j \left( \frac{\Delta G_{t,j}^0}{Y_{t-1,j}} + \rho_G \frac{\Delta G_{t-1,j}^0}{Y_{t-1,j}} \right) - m_j c_1 \left( \frac{\Delta T_{t,j}^0}{Y_{t-1,j}} - \rho_T \frac{\Delta T_{t-1,j}^0}{Y_{t-1,j}} \right) + m_j \sum_{\substack{i \neq j \\ i=1}}^I \omega_{ij} \mu_i \frac{\Delta Y_i}{Y_{t-1,i}} \frac{Y_{t-1,i}}{Y_{t-1,j}} \quad (1.4)$$

5. Equation (1.4) is a system of  $I$  linear equations that can be written in matrix notation:

$$\tilde{Y}_t = W [A_1 \bar{G}_t - A_2 \bar{T}_t] \quad (1.5)$$

6. Here  $W = (I - B)^{-1}$  is a  $l$ -by- $l$  identity matrix,  $B$  is a  $l$ -by- $l$  matrix,  $\tilde{Y}$  is  $l$ -by-1 vector of real GDP growth rates,  $A_1$  and  $A_2$  are diagonal  $l$ -by- $l$  matrices and  $\bar{G}_t$  and  $\bar{T}$  are  $l$ -by-1 vectors. It is possible to derive country  $i$ 's contribution to country  $j$ 's GDP growth by evaluating:

$$\tilde{y}_{t,ji} = w^{ji} \left[ a_1^{ji} \bar{g}_t^i - a_2^{ji} \bar{t}_t^i \right] \quad (1.6)$$

7. The sample of countries includes: Austria, Belgium, China, Finland, France, Germany, Greece, India, Ireland, Italy, Japan, Korea, Netherlands, Portugal, Russia, Spain, Sweden, Switzerland, United Kingdom, and United States. This sample of countries accounts for more than 80 percent of French exports. The fiscal impulse is measured by the change in the cyclical adjusted revenues and expenditures relative to GDP. Details on the other assumptions are provided in Ivanova and Weber (2011).

## Appendix 2. Data

| Baseline   |                    |               |                        |               |                   |
|--|--------------------|---------------|------------------------|---------------|-------------------|
| Country  | Revenue multiplier |               | Expenditure multiplier |               | import elasticity |
|  | Current year       | Previous year | Current year           | Previous year |                   |
| Austria  | 0.20               | 0.40          | 0.70                   | 0.40          | 1.08              |
| Belgium  | 0.22               | 0.18          | 0.35                   | 0.27          | 1.05              |
| Finland  | 0.26               | 0.27          | 0.42                   | 0.31          | 1.12              |
| France   | 0.40               | 0.10          | 0.55                   | 0.30          | 1.14              |
| Germany  | 0.35               | 0.38          | 0.40                   | 0.41          | 1.14              |
| Greece   | 0.22               | 0.20          | 0.56                   | 0.26          | 1.12              |
| Ireland  | 0.20               | 0.20          | 0.40                   | 0.41          | 1.07              |
| Italy  | 0.16               | 0.16          | 0.58                   | 0.38          | 1.14              |
| India  | 0.22               | 0.20          | 0.56                   | 0.26          | 1.33              |
| Netherlands  | 0.10               | 0.18          | 0.34                   | 0.42          | 1.07              |
| Portugal   | 0.23               | 0.26          | 0.45                   | 0.39          | 1.09              |
| Spain  | 0.23               | 0.22          | 0.60                   | 0.40          | 1.14              |
| Korea, Republic of                                 | 0.22               | 0.20          | 0.56                   | 0.26          | 1.10              |
| Russian Federation                                 | 0.22               | 0.20          | 0.56                   | 0.26          | 1.12              |
| Sweden   | 0.18               | 0.30          | 0.35                   | 0.39          | 1.11              |
| Switzerland  | 0.18               | 0.30          | 0.35                   | 0.39          | 1.10              |
| China,P.R.: Mainland                               | 0.22               | 0.20          | 0.56                   | 0.26          | 1.13              |
| Japan  | 0.35               | 0.38          | 0.40                   | 0.41          | 1.37              |
| United Kingdom                                     | 0.25               | 0.15          | 0.40                   | 0.25          | 1.13              |
| United States                                      | 0.20               | 0.10          | 0.40                   | 0.20          | 1.30              |
| Alternative Scenario with higher fiscal multiplier |                    |               |                        |               |                   |
| Country  | Revenue multiplier |               | Expenditure multiplier |               | import elasticity |
|  | Current year       | Previous year | Current year           | Previous year |                   |
| Austria  | 0.27               | 0.48          | 0.81                   | 0.47          | 1.08              |
| Belgium  | 0.29               | 0.26          | 0.46                   | 0.34          | 1.05              |
| Finland  | 0.33               | 0.36          | 0.52                   | 0.38          | 1.12              |
| France   | 0.47               | 0.19          | 0.66                   | 0.37          | 1.14              |
| Germany  | 0.42               | 0.47          | 0.50                   | 0.48          | 1.14              |
| Greece   | 0.29               | 0.29          | 0.66                   | 0.33          | 1.12              |
| Ireland  | 0.27               | 0.29          | 0.50                   | 0.48          | 1.07              |
| Italy  | 0.23               | 0.25          | 0.68                   | 0.46          | 1.14              |
| India  | 0.29               | 0.29          | 0.66                   | 0.33          | 1.33              |
| Netherlands  | 0.17               | 0.27          | 0.45                   | 0.49          | 1.07              |
| Portugal   | 0.30               | 0.34          | 0.56                   | 0.46          | 1.09              |
| Spain  | 0.30               | 0.31          | 0.71                   | 0.47          | 1.14              |
| Korea, Republic of                                 | 0.29               | 0.29          | 0.66                   | 0.33          | 1.10              |
| Russian Federation                                 | 0.29               | 0.29          | 0.66                   | 0.33          | 1.12              |
| Sweden   | 0.25               | 0.38          | 0.46                   | 0.46          | 1.11              |
| Switzerland  | 0.25               | 0.38          | 0.46                   | 0.46          | 1.10              |
| China,P.R.: Mainland                               | 0.29               | 0.29          | 0.66                   | 0.33          | 1.13              |
| Japan  | 0.42               | 0.47          | 0.50                   | 0.48          | 1.37              |
| United Kingdom                                     | 0.32               | 0.24          | 0.51                   | 0.32          | 1.13              |
| United States                                      | 0.27               | 0.19          | 0.51                   | 0.27          | 1.30              |

## FRANCE: FINANCIAL SPILLOVERS<sup>1</sup>

*After expanding fourfold over 2000 to 2007, external assets and liabilities of France's banking sector have been retrenching. Notwithstanding the substantial reduction in external positions in recent years, "downstream" exposure remained significant at end-2011, especially to countries in the euro zone, the USA, and the United Kingdom. An illustrative scenario of banking sector spillovers from sovereign distress in the euro periphery, based on the situation as of 2011, suggests that bank losses and deleveraging would be manageable for France, though the impact would be worse if distress spread geographically or extended to private-sector credit. Meanwhile, a strategy of bank deleveraging via external retrenchment has proceeded as planned and should reduce external exposure. Staff analysis conducted for the 2012 Spillover Report found that movements in sovereign risk premia in the euro zone have a strong common component.*

### A. Banking Deleveraging Spillovers

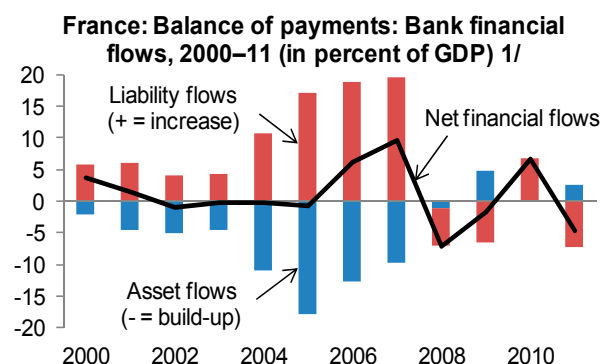
#### Banks' International Exposure—Stylized Facts

1. **Background.** External assets and liabilities of France's banking sector expanded fourfold over 2000 to 2007, exceeding US\$2.7 trillion by the end of 2007 (more than 100 percent of GDP). However, the global financial crisis and subsequent events in Europe broke this trend and set in motion a process of deleveraging. Based on balance-of-payment statistics, the retrenchment in external assets and liabilities was US\$162 billion and US\$364 billion, respectively, over 2008 to 2011 (6.3 percent and 14.1 percent in terms of 2007 GDP). The reduction in 2011 of external assets and liabilities of French banks was large compared to peers and, in percentage terms, exceeded only by a few crisis-hit European countries.

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<sup>1</sup> Prepared by Chris Geiregat (SPR). Special thanks goes to Eugenio Cerutti (Research Department) for running the RES/MFU bank spillover module and to Silvia Sgherri (Strategy, Policy, and Review Department) for sharing the findings for France of the yield spillovers exercise prepared for the 2012 Spillover Report.

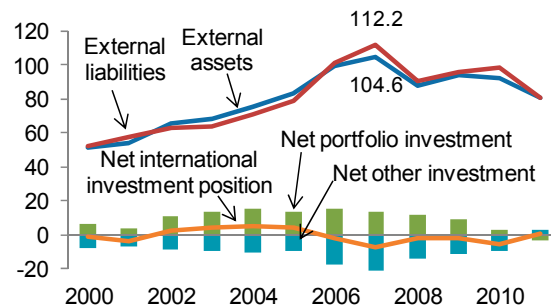




Source: IMF.

1/ Excludes direct investment of banks.

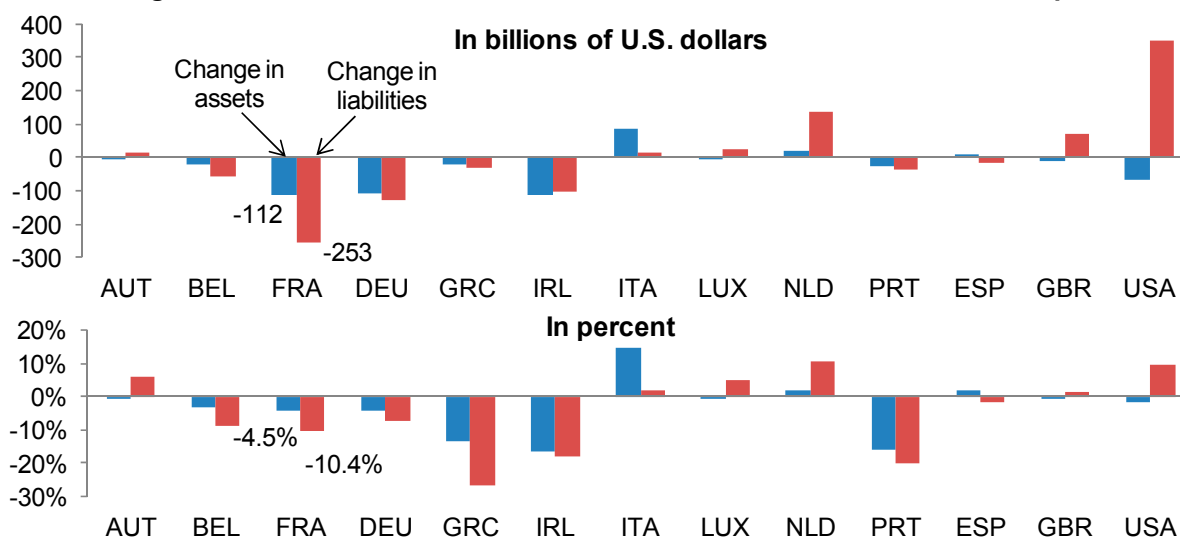
**France: Net international investment position of banks, 2000–11 (in percent of GDP) 1/**



Source:

1/ Excludes direct investments of banks.

**Change in external assets and liabilities of banks in 2011: international comparison 1/**



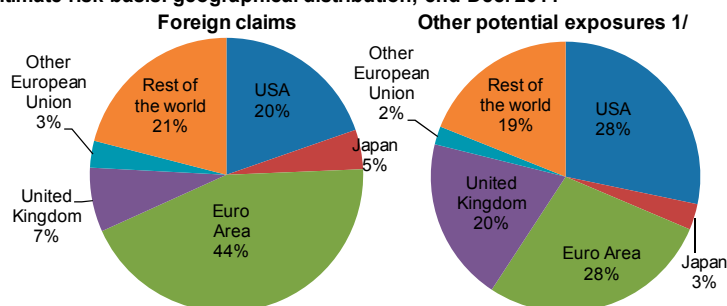
Source: Bank for International Settlements.

1/ Changes adjusted for estimated exchange rate changes.

2. **French banks' asset exposure as of end-2011.** Notwithstanding the substantial reduction in external positions in recent years, French banks' "downstream" exposure to foreign claims remained high at 98 percent of France's GDP at end-2011, as measured by data on ultimate risk basis from the Bank of International Settlement (BIS). This amount excludes other potential external exposures—derivatives, guarantees, and other credit commitments—with outstanding amounts of 56 percent of GDP at end-2011 (see Box 1 for a typology of BIS banking data used in this paper). The bulk of these claims were to countries belonging to the euro zone, to the USA, and the United Kingdom. The USA and the United Kingdom were also the two largest single-country exposures,

followed by Italy, Germany, and Belgium, while exposure to crisis-hit Greece was relatively small. Cutting across sectors, nearly two thirds of foreign claims were on the non-bank private sector, while the public and banking sectors each accounted for less than 20 percent.<sup>2</sup>

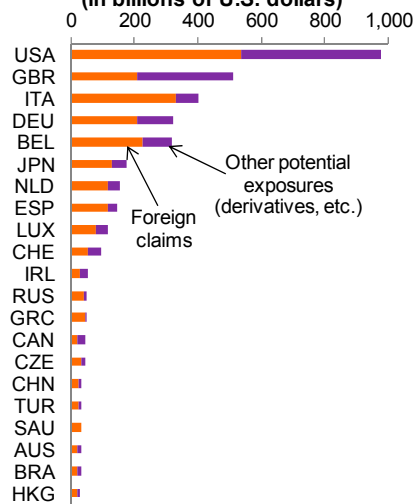
**France: Consolidated foreign bank claims and other potential exposures, on ultimate risk basis: geographical distribution, end-Dec. 2011**



Source: Bank for International Settlements.

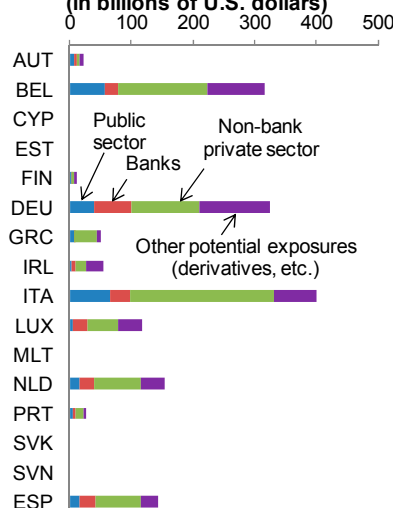
1/ Other potential exposures include derivatives, guarantees, and credit commitments.

**France: Top 20 consolidated foreign claims and other potential exposures, on ultimate risk basis, end-Dec. 2011 (in billions of U.S. dollars)**



Source: Bank for International Settlements.

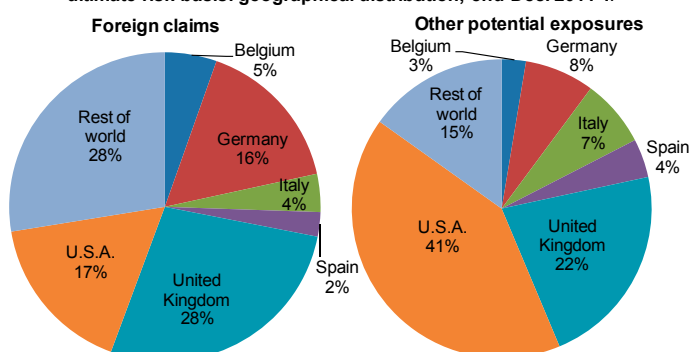
**France: Consolidated claims of reporting banks on Euro Area, on ultimate risk basis, end-Dec. 2011 (in billions of U.S. dollars)**



<sup>2</sup> Using the BIS data may overestimate the true exposure to countries in the case of subsidiaries where, in contrast to branches, the exposure is limited to the capital and other parent-bank lending to the subsidiary. For a discussion, see Cerutti et al. (2007).

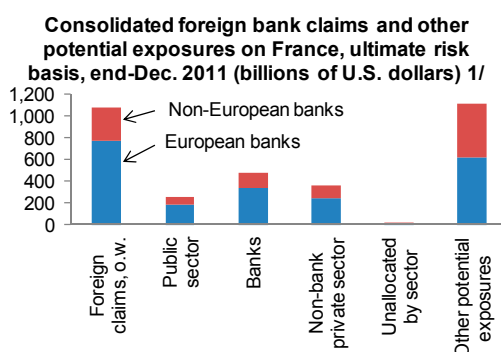
3. **International bank claims on France (end-2011).** As of end-2011, claims of foreign banks on France ("upstream" exposure) amounted to nearly 80 percent of GDP, nearly evenly split between foreign claims and other potential exposures, using BIS data available for 24 reporting countries. Claims on France were concentrated in the U.S.A., United Kingdom, and Germany, which together accounted for two thirds of all claims.<sup>3</sup> Among the foreign claims, 44 percent were on banks; 33 percent on the non-bank private sector; and the rest on the public sector.<sup>4</sup> Slightly over half of international claims on France had a maturity of at most one year.

**Consolidated foreign bank claims and other potential exposures on France, ultimate risk basis: geographical distribution, end-Dec. 2011 1/**



Source: Bank for International Settlements.

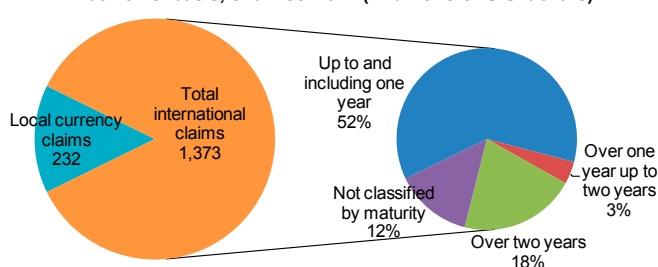
1/ Based on data for 24 reporting countries. Other potential exposures include derivatives, guarantees, and credit commitments.



Source: Bank for International Settlements.

1/ Based on data for 24 reporting countries.

**Consolidated foreign claims of reporting banks on France, immediate borrower basis, end-Dec. 2011 (in billions of U.S. dollars)**



Source: Bank for International Settlements.

<sup>3</sup> This is based on BIS data which covers 24 reporting countries.

<sup>4</sup> Using the BIS classification based on *immediate* borrower basis, nearly two thirds of end-2011 consolidated foreign claims of reporting banks on France were on banks, nearly one quarter on the non-bank private sector, and the rest on the public sector.

## Illustrative Deleveraging Simulation—Methodology

4. **The IMF's *bank contagion module* was developed by the Research Department (RES) as a tool to analyze spillover effects from internationally interconnected banking systems.** The module uses BIS data on cross-border and off-balance sheet claims, along with bank-level data, to measure upstream and downstream exposure, and conducts scenario analysis for the analysis of cross-border propagation of shocks to banking systems.

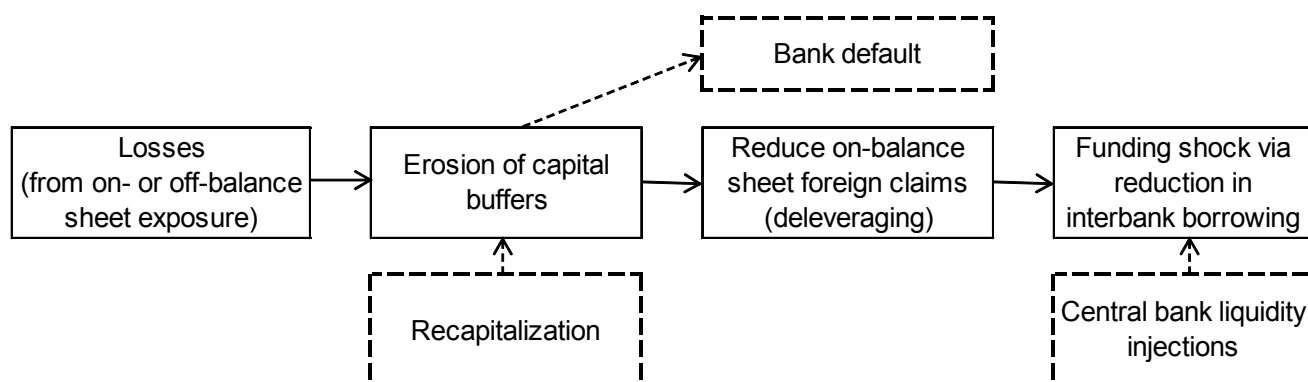
5. **Downstream and upstream vulnerabilities.** Downstream vulnerability arises from exposure of a country's banking operations to credit risk in a country. This exposure can occur directly, via direct cross-border activities and connections through foreign affiliates (subsidiaries and branches), or indirectly, through off-balance sheet claims. The module uses BIS data, but considers that exposure through subsidiaries is limited to the capital of the subsidiary and other lending from the parent bank. Conversely, upstream exposure arises when funding from abroad may not be rolled over (for example, because the banking system in the creditor country faces a credit crunch and calls in loans). The module takes into account that lending by foreign subsidiaries and branches may be financed in part by local deposits, and that this would likely reduce the impact of cutbacks in rollovers (this is proxied by adjusting data on local claims by a fraction based on the deposit-to-loan ratio).

6. **Propagation methodology.**<sup>5</sup> The propagation methodology is built on the premise that losses from an adverse shock to bank assets may erode bank capital, which could set in motion a deleveraging chain of asset sales (possibly at a discount) to restore a desired or required capital-asset ratio. The module sets the desired capital adequacy ratio at 10 percent (which marks up the EBA target of 9 percent of *core* Tier I capital). If banks in other countries are affected by the initial shock or subsequent waves of deleveraging, a concurrent desire to reduce claims may reverberate through the interbank market, thereby affecting the funding side also. In reality, deleveraging through asset sales could be mitigated by recapitalization, and bank funding pressure reduced through central bank financing, but the simulation abstracts from these possible responses.

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<sup>5</sup> See Tressel (2010) and Cerutti et al. (2011) for details.

### Propagation methodology: Bank losses and deleveraging



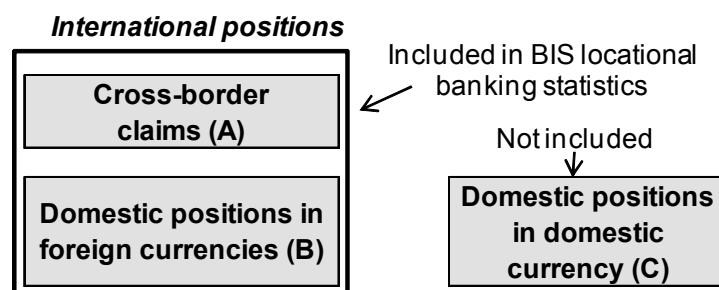
7. **Shock scenarios.** An illustrative scenario simulates the impact on banking systems of sovereign distress originating in the euro area periphery. It is calibrated on the premise of a 70 percent drop in the value of sovereign claims on Greece, and 20 percent of sovereign claims on Ireland, Italy, Portugal, and Spain (IIPS). To get a sense of the sensitivity of losses to additional stress, two additional scenarios are constructed: in one case, by adding another 10 percent in losses of sovereign claims on other European countries and in the second case, by allowing additional losses in claims on the private-sector, set at 15 percent for Greece and 20 percent for IIPS.

### Box 1. Understanding International Banking Statistics of the BIS.<sup>1/</sup>

This paper uses BIS *locational* and *consolidated* international banking statistics.

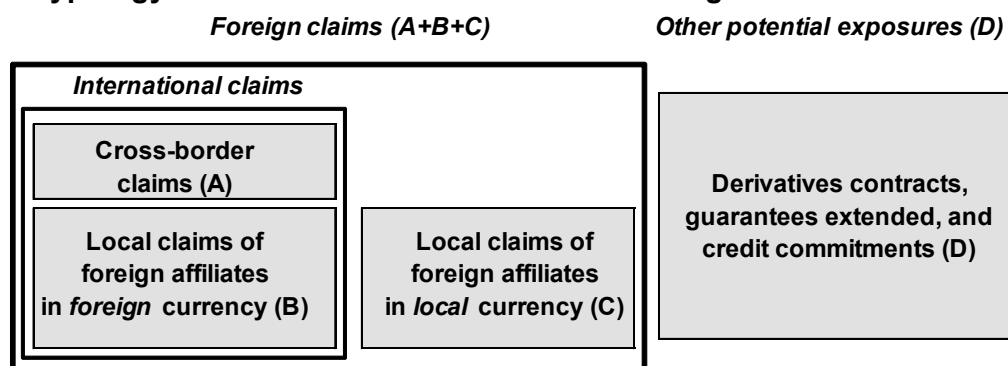
- *Locational banking statistics* (LBS) report international claims and liabilities based on the residency of banks (i.e., regardless of whether those banks are domestic or foreign), so are conceptually similar to balance-of-payments data.
- *Consolidated banking statistics* (CBS) aim to capture consolidated cross-border claims of domestic banking groups: domestic banks that have their head office in the reporting country and their foreign affiliates (branches and subsidiaries). Foreign claims consist of cross-border claims and local claims of foreign affiliates (in foreign and local currency). Other potential exposures comprise derivatives, guarantees, and credit commitments. The CBS can be reported on immediate borrower basis and on ultimate risk basis, the latter being the country of the ultimate guarantor of the claim.

#### Typology for the locational banking statistics



Source: BIS (2009).

#### Typology of claims for the consolidated banking statistics



<sup>1/</sup> Based on BIS (2009). "Guide to the international financial statistics."

## Illustrative Deleveraging Simulation—Findings

8. **Results.** The model simulations suggest that a shock to the sovereign claims of GIIPS of the magnitude described above would create losses in French banks equal to about 21 billion euros, which corresponds to some 8.2 percent of Tier I capital and about 1 percent of GDP. The scenario implies a small deleveraging of 1.2 percent of GDP. The simulations also suggest that the impact on the French banking system would be relatively more severe (other than Greece and IIPS) compared with other countries such as the United Kingdom and Germany, although the Belgium banking sector would lose relatively more in terms of Core I capital.

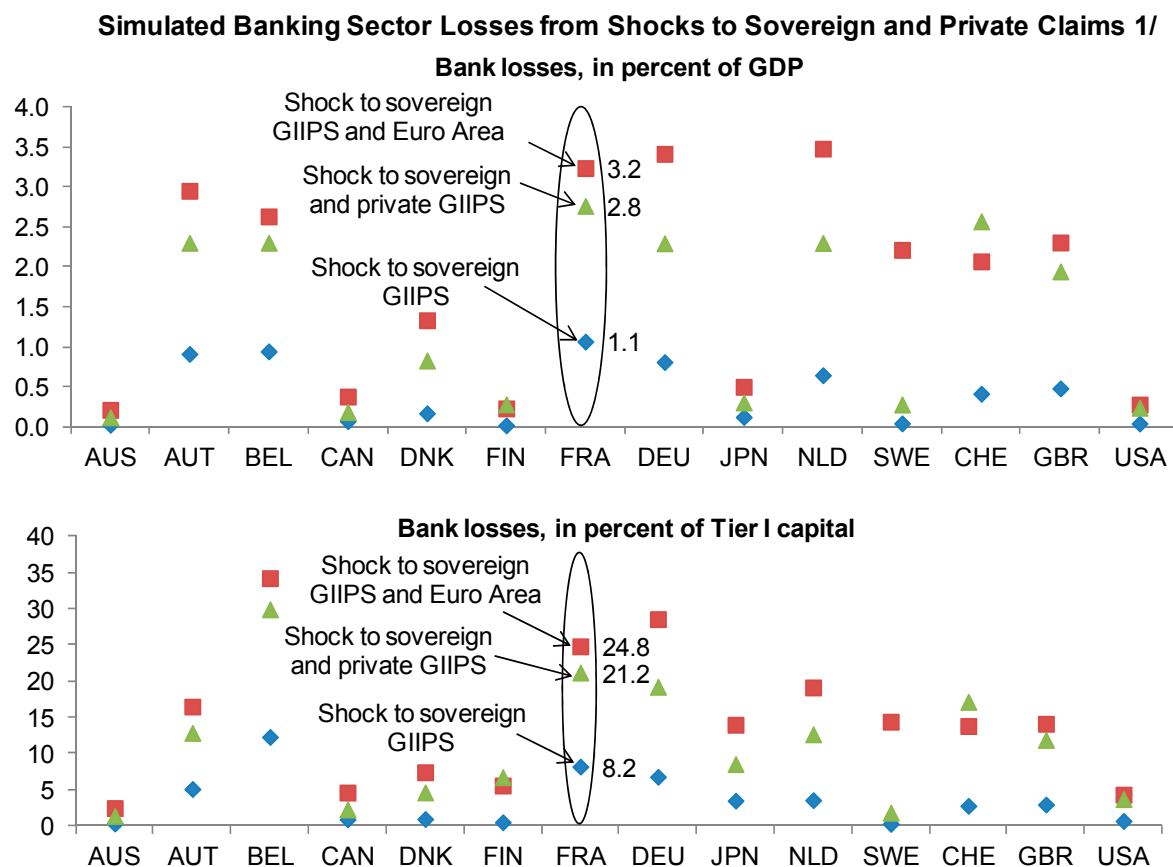
**Table. Bank Losses from Shock to Sovereign Claims 1/**

| Country        | In billions of Euros | In percent of GDP | In percent of Tier I capital |
|----------------|----------------------|-------------------|------------------------------|
| Australia      | 0.3                  | 0.0               | 0.3                          |
| Austria        | 2.7                  | 0.9               | 5.1                          |
| Belgium        | 3.5                  | 0.9               | 12.3                         |
| Canada         | 1.0                  | 0.1               | 0.9                          |
| Denmark        | 0.4                  | 0.2               | 1.0                          |
| Finland        | 0.0                  | 0.0               | 0.5                          |
| France         | 21.8                 | 1.1               | 8.2                          |
| Germany        | 21.2                 | 0.8               | 6.8                          |
| Japan          | 5.4                  | 0.1               | 3.5                          |
| Netherlands    | 4.0                  | 0.6               | 3.6                          |
| Sweden         | 0.2                  | 0.0               | 0.3                          |
| Switzerland    | 1.8                  | 0.4               | 2.8                          |
| United Kingdom | 8.9                  | 0.5               | 3.0                          |
| United States  | 5.1                  | 0.0               | 0.7                          |

Source: BIS, Central Banks, Bankscope, and staff estimations.

1/ Based on BIS Consolidated Banking Statistics (as of Sept. 2011). Assumes losses in the value of sovereign claims on Greece (70 percent) and IIPS (20 percent).

9. **Additional scenarios.** While such banking sector losses appear manageable, additional losses could pile up if private-sector claims were also affected by broader Euro Area sovereign stress or if shocks to claims on Greece and IIPS extended to private-sector claims. The results of the two



Source: Bank for International Settlements (BIS), Central Banks, Bankscope, and staff estimations.

1/ Results based on the bank contagion module developed in the IMF's Research Department with BIS banking data statistics for 2011Q3 and scenarios with the following premise on the severity of shocks: (a) Shock to sovereign GIIPS: 70% reduction in value of sovereign claims on Greece, 20% on IIPS; (b) Shock to sovereign GIIPS and Euro Area: 70% reduction in value of sovereign claims on Greece, 20% on IIPS; 10% on other Euro Area; (c) Shock to sovereign and private GIIPS: 70% reduction in value of sovereign claims on Greece, 20% on sovereign claims on IIPS; and a corresponding reduction in value of private claims of 15% and 20%, respectively.

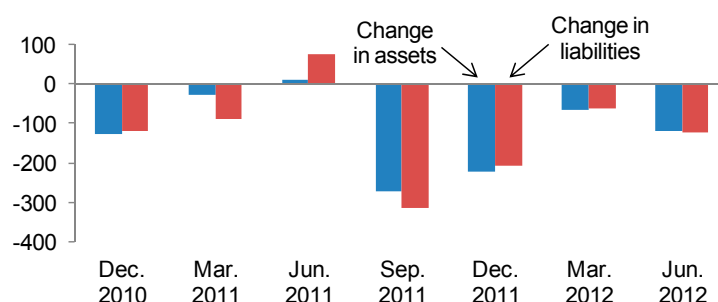
alternative scenarios suggest that total losses for French banks could be in the order of 55 to 65 billion euros, which is about 21–25 percent of Tier I capital and 2.8–3.2 percent of GDP, should one of those materialize. Deleveraging would also be more severe in those cases, at around 14 percent of GDP if losses from private-sector claims on Greece and IIPS were included and around 17.5 percent of GDP if reductions in sovereign claims were extended to the broader Euro Area.



## Bank Deleveraging So Far

10. **The large internationally active French banks are implementing a strategy of orderly deleveraging with a focus on retrenchment of external activities.** Among other things, this strategy consists of reducing dependence on international short-term wholesale funding and of GIIPS exposure through planned sales.<sup>6</sup> The execution phase of these plans is now well underway, and BIS data suggests that the retrenchment in international assets and liabilities of French banks has continued in the first half of 2012, while the divestment of the Greek subsidiaries Emporiki and Geniki in October 2012 are examples of more recent actions.

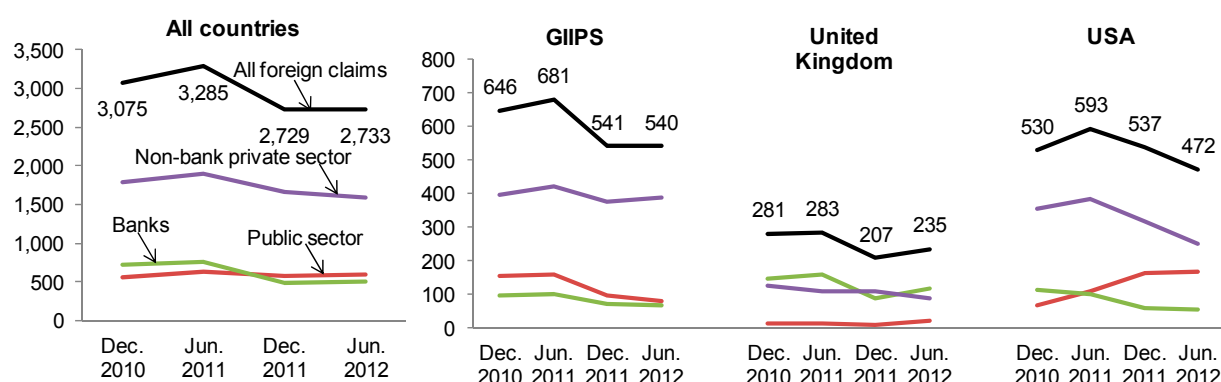
**France: Change in international positions of French banks, Dec. 2010–Jun. 2012 (in billions of U.S. dollars) 1/**



Source: Bank for International Settlements.

1/ Changes adjusted for estimated exchange rate changes.

**France: Consolidated foreign claims of French banks on ultimate risk basis, Dec. 2010–Jun. 2012 (in billions of U.S. dollars)**

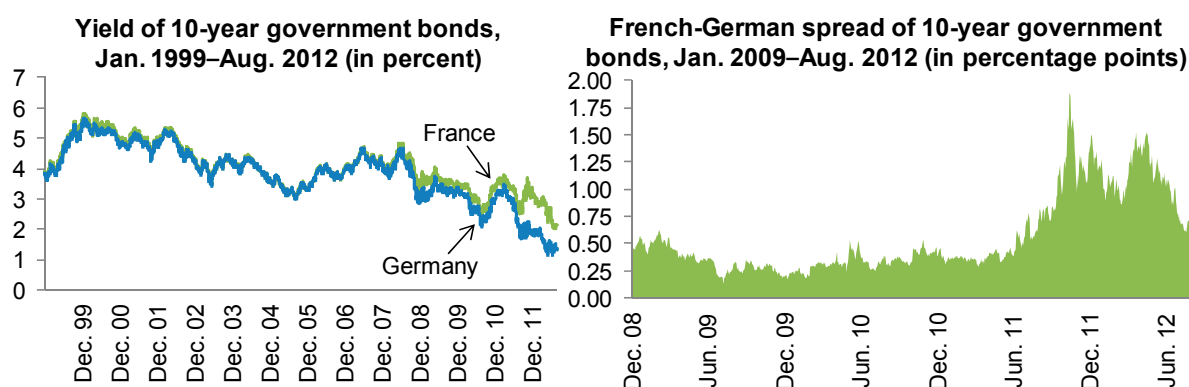


Source: Bank for International Settlements.

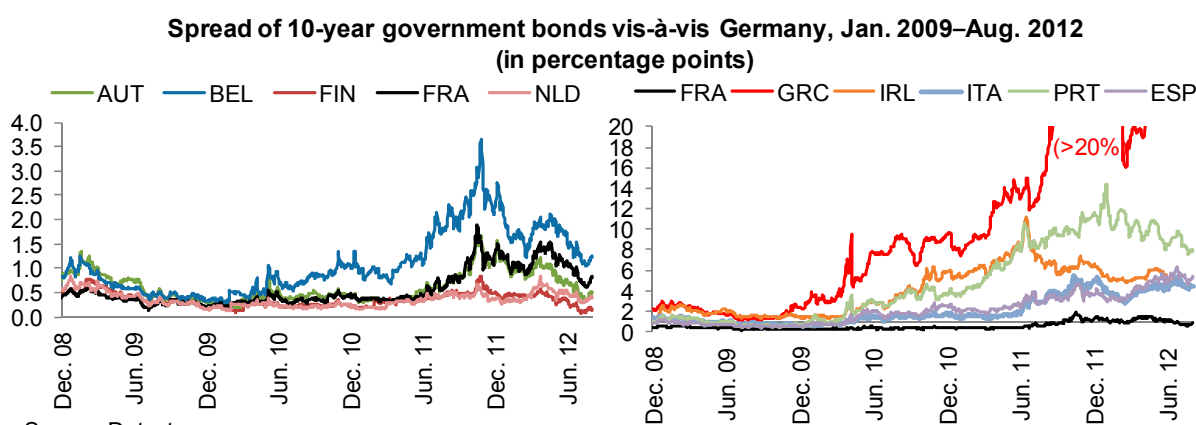
<sup>6</sup> See the Selected Issues Paper "French Banks: Business Model and Financial Stability" for a fuller discussion of the banks' strategy.

## B. Sovereign Interest Rate Spillovers

11. **Background.** Yield differentials of 10-year sovereign bonds with German bonds have risen since the start of the global financial crisis. Spreads between the French and German sovereign bonds were minimal for much of the decade following the adoption of the euro—below 0.2 percentage points in several years. The yield differential has been higher since 2009, breaching 0.5 and 1.0 percentage point in January 2009 and October 2011, respectively. Sovereign spreads of other euro area countries against the German benchmark, which also had been small for much of the previous decade, have risen too, though to varying degrees. These spreads have remained small for Finland and the Netherlands, followed by France and Austria, then Belgium.



Source: Datastream.



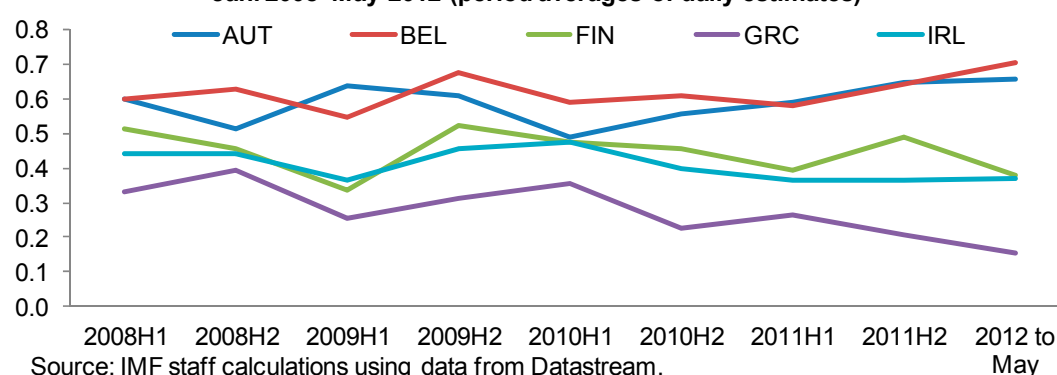
Source: Datastream.

**Table. Maximum spread of 10-year sovereign bond yield over German bond yield, Jan. 1999–Aug. 2012**

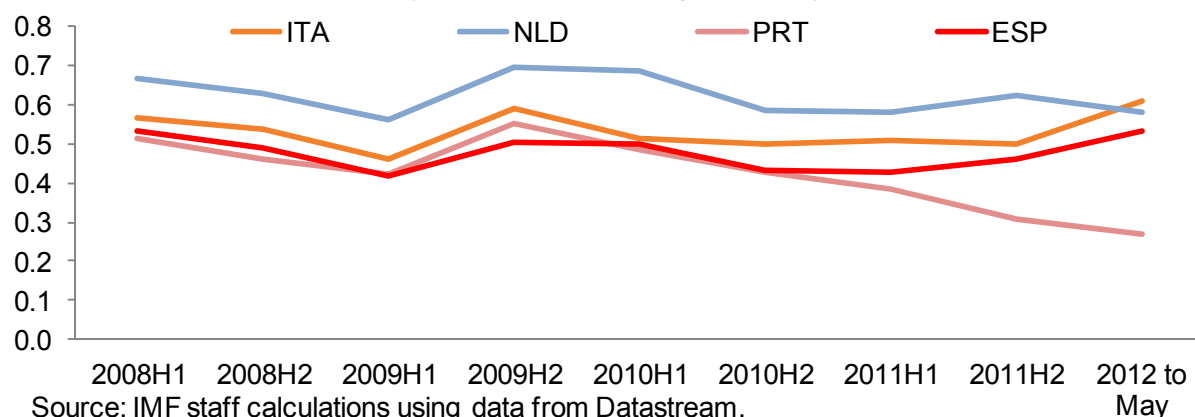
|                        | AUT  | BEL  | FIN   | FRA  | GRC   | IRL   | ITA  | NLD  | PRT   | ESP  |
|------------------------|------|------|-------|------|-------|-------|------|------|-------|------|
| (In percentage points) |      |      |       |      |       |       |      |      |       |      |
| 1999                   | 0.26 | 0.40 | 0.32  | 0.25 | 2.09  | 0.33  | 0.33 | 0.30 | 0.50  | 0.32 |
| 2000                   | 0.38 | 0.46 | 0.28  | 0.29 | 1.07  | 0.36  | 0.45 | 0.24 | 0.45  | 0.33 |
| 2001                   | 0.33 | 0.39 | 0.26  | 0.16 | 0.64  | 0.22  | 0.49 | 0.20 | 0.45  | 0.38 |
| 2002                   | 0.22 | 0.27 | 0.23  | 0.21 | 0.41  | 0.22  | 0.32 | 0.17 | 0.32  | 0.24 |
| 2003                   | 0.11 | 0.13 | 0.10  | 0.07 | 0.23  | 0.07  | 0.23 | 0.11 | 0.16  | 0.09 |
| 2004                   | 0.05 | 0.14 | -0.01 | 0.07 | 0.20  | -0.07 | 0.23 | 0.10 | 0.15  | 0.03 |
| 2005                   | 0.04 | 0.12 | 0.02  | 0.07 | 0.24  | 0.05  | 0.21 | 0.04 | 0.14  | 0.11 |
| 2006                   | 0.07 | 0.09 | 0.00  | 0.11 | 0.35  | 0.01  | 0.35 | 0.04 | 0.19  | 0.09 |
| 2007                   | 0.15 | 0.22 | 0.14  | 0.13 | 0.37  | 0.21  | 0.33 | 0.13 | 0.30  | 0.19 |
| 2008                   | 0.77 | 0.85 | 0.55  | 0.44 | 2.30  | 1.28  | 1.44 | 0.70 | 1.03  | 0.88 |
| 2009                   | 1.34 | 1.24 | 0.79  | 0.63 | 2.99  | 2.62  | 1.56 | 0.82 | 1.62  | 1.23 |
| 2010                   | 0.84 | 1.36 | 0.36  | 0.54 | 9.54  | 6.38  | 1.98 | 0.38 | 4.68  | 2.91 |
| 2011                   | 1.83 | 3.66 | 0.83  | 1.89 | 36.99 | 11.25 | 5.50 | 0.66 | 11.65 | 4.69 |
| 2012 (end-Aug)         | 1.58 | 2.74 | 0.58  | 1.53 | 46.80 | 6.46  | 5.34 | 0.84 | 14.41 | 6.35 |

Source: Datastream.

12. **Co-movement in sovereign spreads.** Sovereign spreads in the euro area display substantial co-movement. To estimate time-varying correlation across sovereign spreads, Engle's (2002) two-step method of estimating *dynamic conditional correlations* using a multivariate GARCH model is applied on a sample of daily yield spreads over the German yield of 10-year sovereign bonds for ten countries, covering Jan. 1999 through end-May 2012. As expected, the results confirm that France's sovereign spread is positively correlated with those of the other countries in the sample, and the average conditional correlation over the entire sample varies from about 0.25 (with Greece) to nearly 0.6 (with Belgium and the Netherlands). Interestingly, these averages may mask substantial intertemporal changes in correlation. For example, the correlation between the French sovereign spread and Greece's has broadly been falling since 2011, while increasing with Belgium's and Spain's.

**Conditional correlation coefficients of 10-year sovereign bond spreads vis-à-vis France, Jan. 2008–May 2012 (period averages of daily estimates)**

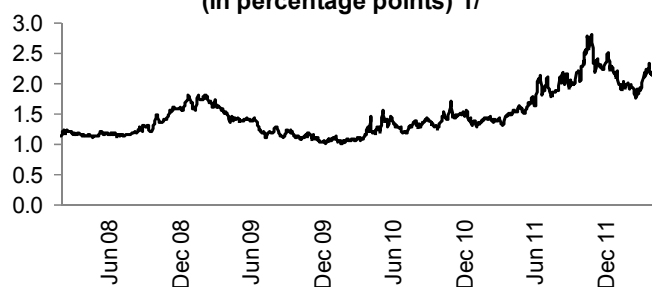
**Conditional correlation coefficients of 10-year sovereign bond spreads vis-à-vis France, Jan. 2008–May 2012 (period averages of daily estimates)**



13. **Common factor.** Analysis suggests that much of the co-movement in euro-area sovereign bond spreads reflects movements in a common risk premium. The 2012 Spillover Report discusses a method to estimate a euro-area risk premium (over German yields) by extracting the principal component from a panel of 10 euro-area country sovereign yield spreads, using daily data from January 2001 through May 2012. According to this method, the estimated common risk premium rose steadily through November of 2011, peaking at 2.79 percentage points, and hovered in a range of 2.0–2.25 percentage points afterwards.

The empirical evidence suggests that the broad increase in euro area sovereign risk spreads was due in part to a euro area risk repricing.<sup>7</sup> The impact of the upward repricing of common euro area risk on French bond yields was largely offset by the gradual reduction in (benchmark) German bond yields over the period.

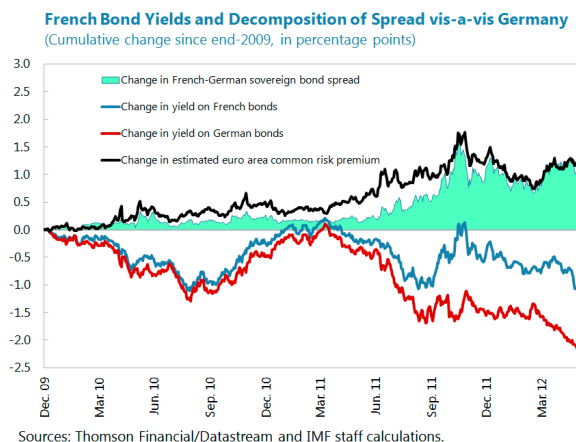
**Estimated euro area risk premium, Mar. 2008–May 2012 (in percentage points) 1/**



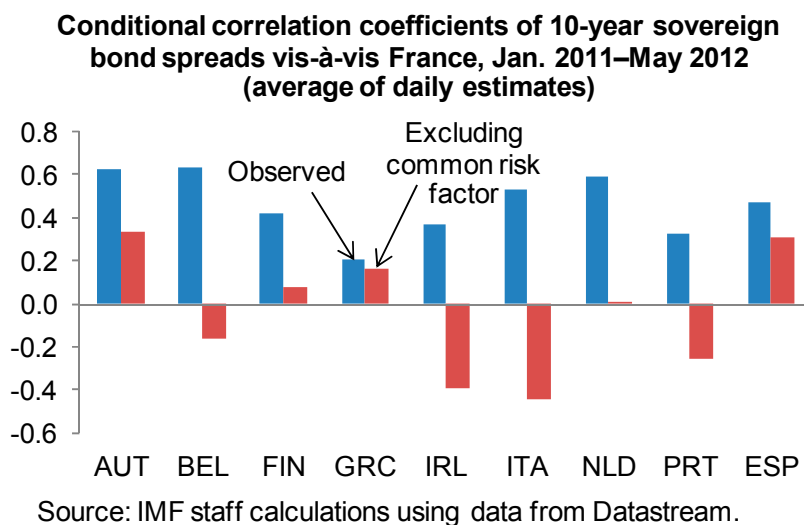
Source: IMF staff calculations.

1/ Principal component extracted from the difference between 10-year sovereign rate of euro area countries with German rate.

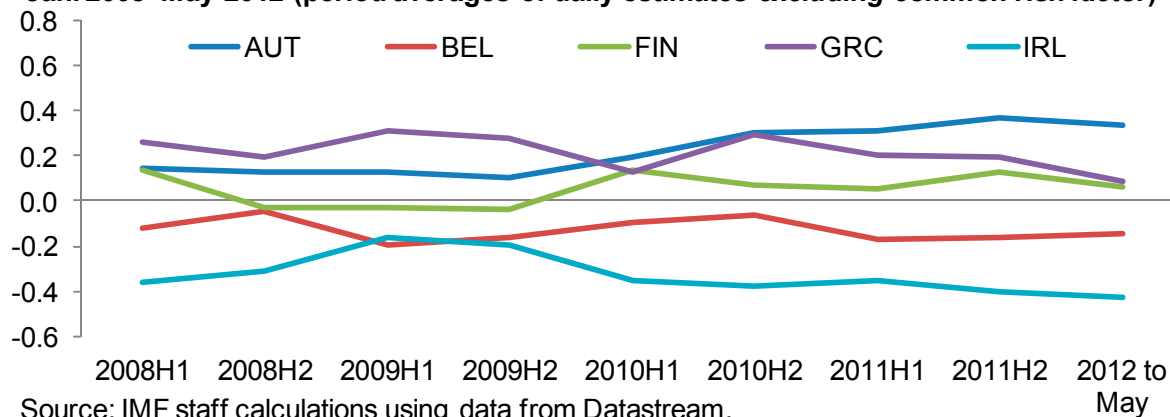
<sup>7</sup> The 2012 Spillover Report also analyzed the importance of country-specific factors (using proxies to capture the fiscal, macro, liquidity, funding, financial system solvency, and inertia dimensions) in explaining the change in sovereign spreads over Apr. 2010–Nov. 2011 and Nov. 2011–May 2012. The results suggest that, while the contribution of these factors is still small for most countries (in the order of 10 percent), their significance has risen for a number of euro area member countries. See IMF (2012) for details.



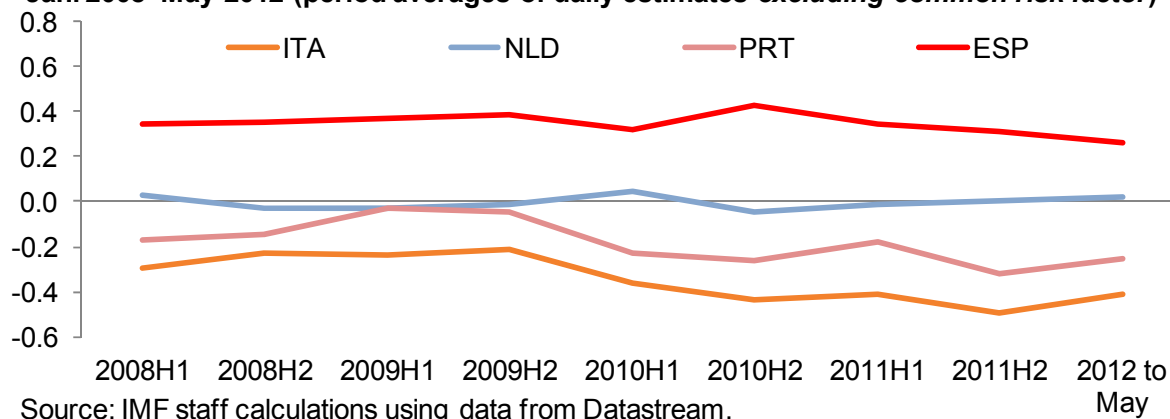
14. **Co-movements excluding the common factor.** Once the influence of the common risk premium is stripped out from sovereign risk spreads, the co-movement remaining between French yield spreads with other member countries is smaller, and turns negative vis-à-vis a few countries. For example, and focusing on the results since the start of 2011, positive co-movement remains between French yield spreads and those of Austria and Spain, and to some degree also with Greece. These are lower than the “raw” correlations which included the common factor. The co-movement all but disappears in the stripped-down yield spreads with the Netherlands, Finland, and Belgium. Most interestingly, however, is the stripped-down co-movement in French yield spreads with Italy, Ireland, and Portugal, which is *negative*. This could reflect a relative “safe haven” status of French bonds relative to increased risk in these periphery countries.



**Conditional correlation coefficients of 10-year sovereign bond spreads vis-à-vis France, Jan. 2008–May 2012 (period averages of daily estimates excluding common risk factor)**



**Conditional correlation coefficients of 10-year sovereign bond spreads vis-à-vis France, Jan. 2008–May 2012 (period averages of daily estimates excluding common risk factor)**



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## STRUCTURAL REFORMS AND EXPORT PERFORMANCE<sup>1</sup>

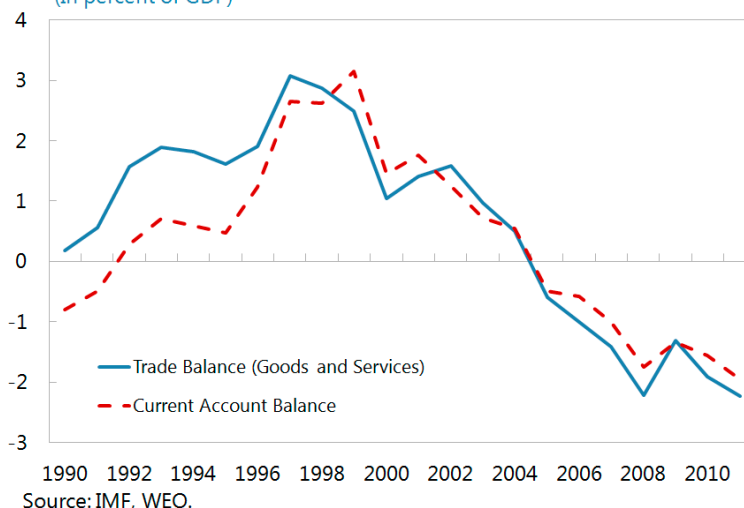
1. “In times of severe financial constraints, there is no other choice than to address the structural losses in competitiveness in an urgent and decisive manner.” With these words, Mario Draghi (2012), the President of the European Central Bank, emphasized the importance and the urgency of structural reforms to improve the euro area’s competitiveness.
2. **The purpose of this paper is to identify the structural reforms that would yield the largest competitiveness gains based on macro-empirical evidence.** This is a difficult task because the list of reforms that could foster competitiveness spans a broad range of policies.
3. **The first section briefly provides stylized facts on France’s competitiveness problem. The second section describes the methodology and data.** The third section discusses a basic specification showing the main determinants of exports performance. The fourth section identifies the structural reforms that could affect these determinants. The fifth section provides a quantification of the impact of these structural reforms for France.

### A. France Competitiveness Problem

**Driven by the trade balance, France’s current account balance improved in the 1990s but has steadily deteriorated in the 2000s (Figure 1).**

4. **As illustrated in Figure 2, the deterioration in the trade balance is attributable to a sharp deterioration in the balance of trade in goods since 1997, while the balance of trade in services appears much more stable**

**Figure 1: France - External Accounts**  
(In percent of GDP)



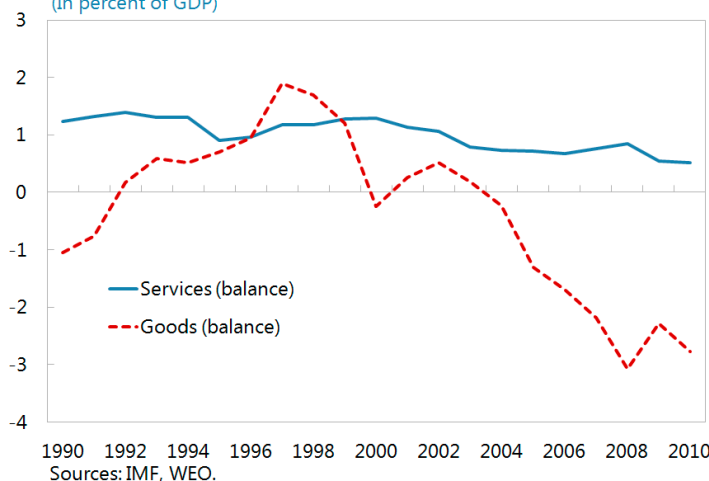
<sup>1</sup> Prepared by Jean-Jacques Hallaert. The author is grateful to Edward Gardner, the members of the European Department Working Group “Growth, Competitiveness, and Structural Reforms,” and participants to the seminar held as part of the 2012 Article IV Consultation at the French Ministry of Finance for their comments.



(though the surplus is shrinking).

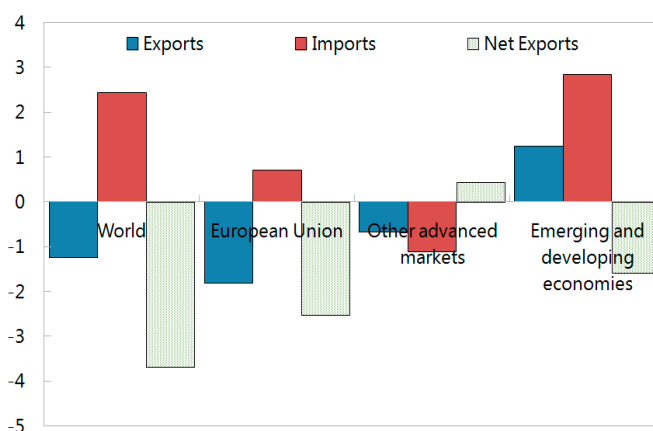
**Figure 2: France - Trade balance**

(In percent of GDP)



**Figure 3 - France: Trade in goods by region**

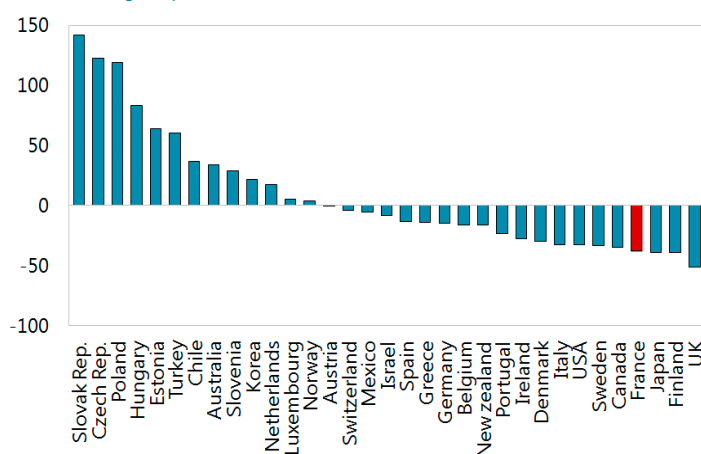
(2000-11, in percent of GDP)



5. **The deterioration in the trade balance is caused by a weak export performance.** During the 2000s, merchandise exports declined by 1.2 percent of GDP while imports increased by 2.4 percent of GDP. The decline in exports was driven by a sharp decline in exports to the European Union and to a lesser extent to other advanced countries (Figure 3). Pointing to a competitiveness problem, France's share in world exports (merchandise and services) declines. This decline is larger than in most other advanced countries (Figures 4 and 5).

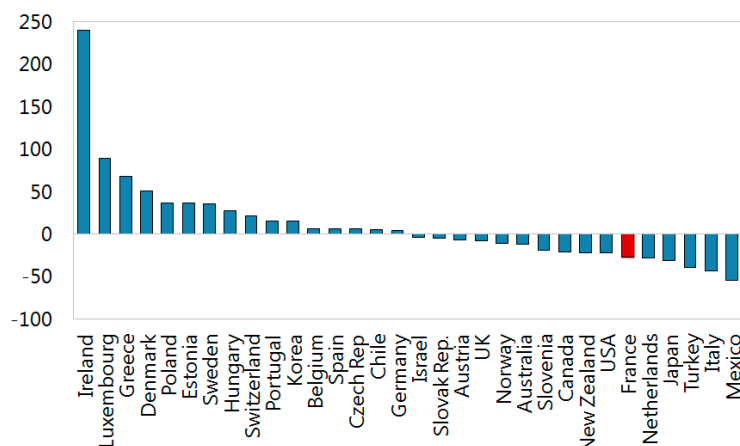
**Figure 4: Share in World Merchandise Exports**

(Change in percent, 1997-2011)



**Figure 5: Share in World Services Exports**

(Change in percent, 1997-2011)



## B. Methods and Data <sup>2</sup>

6. **This paper focuses on merchandise exports.** Competitiveness is measured as the change in a country's share in world exports during 1997-2011. The change is in percent in order to take into account the countries' different initial market shares. The period 1997-2011 is chosen due to data limitations: exports from Belgium and Luxembourg were reported jointly before 1997 in the IMF's "Direction of Trade Statistics" database (DOTS).

7. **Trade and macroeconomic indicators are from the IMF (DOTS, IFS, and WEO databases).** Structural indicators are from the STAN database, the Product Market Regulation (PMR) database, and the Indicators of Employment Protection database of the OECD (2009, 2011a, b).<sup>3</sup>

8. **Because several key indicators, notably those derived from the input/output tables, are not provided on a yearly basis but roughly every five years and are available only for a few countries, this paper relies on a cross-sectional analysis using the ordinary least square estimation rather on a panel analysis.** The sample consists of the 33 advanced countries listed in Figure 4.

## C. Basic Specification

9. **Changes in advanced countries' share in merchandise exports is well explained by the changes in real effective exchange rate (CPI based, REER\_CPI) and in unit labor costs (ULC) and by the "barriers to trade and investment" index (dBarriersT\_I) computed by the OECD** (Table 1). The good fit is remarkable given that this basic specification does not take into account important factors such as the nature of exports (some countries are commodity exporters, some are specialized in mature products while others are specialized in new products), the extent of export diversification, differences in the intensity of competition with emerging markets exports, or differences in export markets.

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<sup>2</sup> For brevity, only relevant specifications and variables are presented in this paper.

<sup>3</sup> Nicoletti et al. (2000) and Conway et al. (2005) describe the PMR indicators, Conway and Nicoletti (2006) the indicators for energy, transport, and communications and Venn (2009) the employment protection indicators.

**Table 1. Basic Specification**

|                     |                       |
|---------------------|-----------------------|
| REER_CPI            | 1.695 ***<br>(0.288)  |
| ULC                 | -0.515 **<br>(0.189)  |
| dBarriersT_I        | -20.986 **<br>(8.927) |
| R <sup>2</sup>      | 74.2                  |
| Adj. R <sup>2</sup> | 71.7                  |
| N                   | 24                    |

Standard errors in parenthesis, \*\*\* p<0.01, \*\* p<0.05.

Source: Author's calculation.

10. **The specification shows that in order to improve its export performance a country could affect its real effective exchange rate.** However, this is not the only possibility as structural reforms that reduce the unit labor cost and barriers to imports would also have an impact on competitiveness. The next section identifies such reforms.

#### **D. Identifying the Structural Reforms that Improve Export Performance**

11. **Four structural conditions are found to be statistically significant in explaining the differences in advanced countries' export performance: trade regime, labor taxation, labor market rigidities, and innovation.**

12. **The impact of other structural conditions has been tested but was not statistically significant.** They include foreign direct investment (as FDI can be a substitute or a complement to exports), education, transportation and telecommunication infrastructure, legal framework and governance, fiscal policies (including spending on labor market policies), product market regulations at an aggregate level as well as at the sectoral level, financial sector indicators (financial development, concentration, regulation, and access to credit), and investment.

13. **The impact of some of these structural conditions on export performance may not be appropriately captured in our aggregate econometric approach because of quantification issues or low variance.** However, that these conditions, which are important determinants of developing and emerging markets' exports performance (Hallaert *et al.*, 2011), do not explain

advanced countries' exports performance is not unusual in the literature. For example, Carlin and Mayer (2003) and Manning (2003) show that the strong relationship between financial development and growth highlighted in the literature initiated by Rajan and Zingales (1998) turns weak when the sample is restricted to high-income countries.

## Trade Reform

14. **The basic specification shows that barriers to trade and investment affect negatively exports performance.** In order to guide reforms, it is crucial to be more specific. The "barriers to trade and investment" index has two main components: "explicit barriers to trade and investment" (dExBarriersT\_I) and "regulatory barriers to trade" (dRegBarriers). Table 2 shows that they both affect negatively export performance but, looking into more details, among the three "explicit barriers to trade and investment" considered by the OECD (barriers to FDI, applied import tariff, and discriminatory procedures), only the change in applied tariff (dTariffs) has a statistically significant impact.<sup>4</sup>

15. **Restrictions to imports may affect exports in various ways.** First, because they reduce competition, barriers to imports can have a negative impact on innovation (see Section D) and productivity and, in turn, affect export performance. Second, barriers to imports also limit firms' access to foreign technology and to better, more diverse, and cheaper of inputs that would increase their productivity and provide exporters a competitive advantage. For the same reason, they also limit firms' capacity to take part in global supply chain.

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<sup>4</sup> This is consistent with the Lerner symmetry theorem (Lerner, 1936) which demonstrates that an *ad valorem* import tariff acts as a tax on a country's export sector.

**Table 2. Impact of a Trade Reform**

|                          | Explicit barriers to trade<br>and investment |                         | Regulatory<br>barriers | Import<br>content of<br>exports |
|--------------------------|--|-------------------------|------------------------|---------------------------------|
| REER_CPI                 | 1.802 ***<br>(0.273)                         | 1.419 ***<br>(0.273)    | 1.694 ***<br>(0.302)   | 1.583 ***<br>(0.338)            |
| ULC                      | -0.725 ***<br>(0.223)                        | -0.600 ***<br>(0.168)   | -0.400 **<br>(0.187)   | -0.352 *<br>(0.190)             |
| 1. <i>dExBarriersT_I</i> | -30.462 **<br>(12.098)                       |                         |                        |                                 |
| dTariffs                 |  | -40.178 ***<br>(10.882) |                        |                                 |
| 2. <i>dRegBarriers</i>   |  |                         | -12.506 *<br>(6.418)   |                                 |
| dmcontentxp_manuf        |  |                         |                        | 0.299 *<br>(0.169)              |
| R <sup>2</sup>           | 75.0   | 80.2                    | 72.4                   | 71.6                            |
| Adj. R <sup>2</sup>      | 72.6   | 78.3                    | 69.8                   | 68.9                            |
| N                        | 24   | 24                      | 24                     | 34                              |

Standard errors in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Source: Author's calculation.

16. **Table 2 shows the importance of the second channel.** Because they reduce the import content of exports (dmcontentxp\_manuf), restrictions to imports are found to stifle export performance.<sup>5</sup> This is consistent with empirical evidence that imported inputs through their impact on productivity contribute to economic growth and to export growth and diversification.<sup>6</sup> In the case of France, Bas and Strauss-Khan (2011), find that the increase in imported inputs during 1995-2005

<sup>5</sup> This result is robust to alternative specifications (Tables 3-5). Alternative channels (the import content of production and the share of imported input in total input consumption) have been tested but are not significant.

<sup>6</sup> For a review of evidence, see Hallaert *et al.* (2011). Literature also provides evidence that export diversification fosters economic growth (see Hallaert and Munro, 2009).

boosted average firm's total factor productivity (TFP) by 1.5 percent and that this increase in TFP was the main channel through which imported inputs contributed to export growth and export diversification. Fontagné and Toubal (2011) find that French exports are negatively affected by a low participation in the global supply chain and that the impact of imported input on competitiveness is more limited in France than in Germany.

17. **Policy implications are large.** A policy that seeks to limit outsourcing or relocate production of inputs in the home country with a tariff, a regulatory barriers or other measures, such as fiscal incentives, is likely to harm export performance and productivity growth.

### Labor Taxation Reform

18. **Costs and wages are central in determining the ability of firms to compete in international markets.** As labor taxation impacts unit labor costs, it may be an important policy variable to improve competitiveness.

**Table 3. Impact of a Reform in Labor Taxation**

|                     | (1)                   | (2)                   | (3)                   |
|---------------------|-----------------------|-----------------------|-----------------------|
| REER_CPI            | 1.606 ***<br>(0.235)  | 1.418 ***<br>(0.2393) | 1.514 ***<br>(0.248)  |
| Labor tax wedge     | -0.651 ***<br>(0.159) | -0.639 ***<br>(0.146) | -0.531 ***<br>(0.157) |
| dBarriersT_I        | -18.872 **<br>(7.560) |                       |                       |
| dTariffs            |                       | -19.374 **<br>(8.284) |                       |
| dRegBarriers        |                       | -8.636 *<br>(5.067)   |                       |
| dMcontentxp_manuf   |                       |                       | 0.363 **<br>(0.139)   |
| R <sup>2</sup>      | 76.5                  | 80.0                  | 74.7                  |
| Adj. R <sup>2</sup> | 74.5                  | 77.4                  | 72.6                  |
| N                   | 27                    | 27                    | 27                    |

Standard errors in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.102.

Source: Author's calculation.

19. **Results support this idea.** Tables 1 and 2 report that changes in unit labor costs are a major explanation of the relative export performance of advanced countries. Replacing in these specifications, ULC with the labor tax wedge (Table 3) increases the sample size from 24 to

27 countries. The impact of the labor tax wedge on export performance is highly significant and substantial: on average the change in a country export market share would be 0.53 to 0.65 percent better if the labor tax wedge was one percentage point lower

## Labor Market Reform

### 20. This section investigates the impact of labor market rigidities on export performance.

There is empirical evidence that labor market rigidities carry an efficiency cost which may affect export performance. For example, Caballero *et al.* (2006) find that in countries with strong rule of law, like the advanced countries considered in this paper, higher job security is associated with slower adjustment to shocks and lower productivity growth.

### 21. The OECD compiles an indicator of the restrictiveness of the labor legislation: the “Employment Protection Legislation” (EPL). Table 4 (columns 1 and 4) shows that strict employment legislation is negatively associated with export performance.

**Table 4. Impact of a Labor Market Reform**

|                     | (1)                    | (2)                   | (3)                   | (4)                  | (5)                   | (6)                   |
|---------------------|------------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|
| REER_CPI            | 1.341 ***<br>(0.231)   | 1.446 ***<br>(0.233)  | 1.318 ***<br>(0.227)  | 1.437 ***<br>(0.267) | 1.559 ***<br>(0.267)  | 1.448 ***<br>(0.252)  |
| EPL                 | -10.814 ***<br>(2.482) |                       |                       | -7.130 **<br>(2.880) |                       |                       |
| CollDismissal       |                        | -8.652 ***<br>(1.855) |                       |                      | -6.524 ***<br>(2.188) |                       |
| CollDismissal_1     |                        |                       | -5.664 ***<br>(1.214) |                      |                       | -4.229 ***<br>(1.391) |
| dTariffs            | -19.973 **<br>(8.333)  | -20.316 **<br>(8.073) | -22.159 **<br>(8.156) |                      |                       |                       |
| dRegbarriers        | -9.345 *<br>(5.109)    | -9.216 *<br>(4.937)   | -9.719 *<br>(4.957)   |                      |                       |                       |
| dMcontentxp_manuf   |                        |                       |                       | 0.316 *<br>(0.150)   | 0.305 **<br>(0.143)   | 00.352 **<br>(0.144)  |
| R <sup>2</sup>      | 79.9                   | 81.2                  | 81.2                  | 70.1                 | 72.7                  | 72.9                  |
| Adj. R <sup>2</sup> | 73.3                   | 78.7                  | 78.7                  | 67.7                 | 70.4                  | 70.7                  |
| N                   | 27                     | 27                    | 27                    | 27                   | 27                    | 27                    |

Standard errors in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Source: Author's calculation.

22. **Results also suggest that a labor market reform aiming at improving competitiveness should focus on procedures rather than on the financial cost of regulation.** The EPL measures the main aspects of employment protection legislation: (i) the procedures and costs involved in dismissing individuals or (ii) groups of workers, and (iii) the procedures involved in hiring workers on fixed-term or temporary work agency contracts. Each of these aspects is statistically significant but as the indicator capturing the strictness in the regulation of collective dismissal is the most significant (CollDismissal) and the most robust it is the only one reported in Table 4 (columns 2 and 5). Going into more details, CollDismissal can be decomposed in four components. Three captures the procedures (definition of collective dismissal, additional notification requirements for collective dismissals, and additional delays involved before notice can start for collective dismissals) and one its financial cost. An important finding for the design of reforms is that the measures capturing procedures are all statistically significant but the financial cost is not.

23. **Complex procedures can lead to “judicial uncertainty,” which may limit firms’ capacity to adjust to changing conditions and thus affect their export performance.** Some practitioners point that uncertainty related to the validity of the *motif économique* (the legal validity of the rationale for the collective dismissal) is an important problem with French labor legislation (Rodier, 2012). This aspect is best captured by the component on the restrictiveness of the “definition of collective dismissal” (CollDismissal\_1) which, according to the OECD, is in France the most restrictive of the three dimensions of procedures of collective dismissal.

24. **The results should be interpreted with caution.** The structural rigidities identified by the econometric work (the judicial uncertainty or more generally complex procedures) may be a constraint for export performance only because of the existence of other rigidities such as limited possibilities for flexible time arrangements or enterprise-by-enterprise bargaining.

## Innovation Policies

25. **Innovation matters for export performance** because it improves the production process and thus increases productivity and reduces unit labor cost or because it results in exports of new products.

26. **Econometric results show that what matters for export performance is not the amount of investment in Research and Development (R&D) but its outcome (i.e. the number of innovations).** The difference across countries in the intensity of Research and Development (R&D spending in share of value added) does not statistically explain differences in export performance.



This suggests that simply increasing spending may not improve export performance. In contrast, policies that increase the efficiency of R&D would have a significant impact. Various policies can do so such as a reform of the education system, improving partnership between universities and firms, tax incentives, etc.

27. **Efficiency of R&D is measured in this paper by the increase in triadic patents.**<sup>7</sup>

Augmenting previous specifications with the growth in triadic patents (dTriadic) improves substantially the fit of the regressions, while other variables are remarkably robust (Table 5). However, it should be noted that innovation is the least robust of all the variables discussed in this paper. Notably, it is not robust to the change in the time period.

**Table 5. Impact of Increasing Innovation**

|                     | (1a)                  | (1b)                  | (2a)                  | (2b)                  | (3a)                  | (3b)                  |
|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| REER_CPI            | 1.559 ***<br>(0.267)  | 1.578 ***<br>(0.254)  | 1.448 ***<br>(0.252)  | 1.462 ***<br>(0.240)  | 1.514 ***<br>(0.248)  | 1.537 ***<br>(0.232)  |
| CollDismissal       | -6.524 ***<br>(2.188) | -6.816 ***<br>(2.089) |                       |                       |                       |                       |
| CollDismissal_1     |                       |                       | -4.229 ***<br>(1.391) | -4.435 ***<br>(1.325) |                       |                       |
| Labor tax wedge     |                       |                       |                       |                       | -0.531 ***<br>(0.157) | -0.566 ***<br>(0.147) |
| dMcontentxp_manuf   | 0.305 **<br>(0.143)   | 0.305 **<br>(0.136)   | 0.352 **<br>(0.144)   | 0.355 **<br>(0.136)   | 0.363 **<br>(0.139)   | 0.367 ***<br>(0.130)  |
| dTriadic            |                       | 0.019 *<br>(0.010)    |                       | 0.019 *<br>(0.010)    |                       | 0.020 **<br>(0.009)   |
| R <sup>2</sup>      | 72.7                  | 76.2                  | 72.9                  | 76.6                  | 74.7                  | 78.9                  |
| Adj. R <sup>2</sup> | 70.4                  | 73.1                  | 70.7                  | 73.6                  | 72.6                  | 76.1                  |
| N                   | 27                    | 27                    | 27                    | 27                    | 27                    | 27                    |

Standard errors in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Source: Author's calculation.

<sup>7</sup> Triadic patents are the sub-set of patents all filed together at the European Patent Office, at the Japanese Patent Office and granted by the US Patent and Trademark Office, protecting the same set of inventions. Data are from the OECD and available at <http://stats.oecd.org>.

## E. An Application to France

28. **Econometric results suggest that four structural reforms would yield the significant competitiveness gains.** This section provides insights of what would be the impact of each of these reforms on France's export performance and the external accounts. It estimates the impact of reducing the labor taxation and labor market rigidities and of increasing innovation to the average level of other advanced countries.<sup>8</sup> This exercise is done for illustrative purposes and should not be interpreted as a projection or estimates of the impact of the reforms as it is not a general equilibrium exercise but a counterfactual exercise (it estimates what would be France export performance in 2011 if policies had been different in the past).

### Labor Market Reform

29. **As discussed above, reducing the strictness of the "definition of collective dismissal" is a labor market reform that could yield the large gains for France's competitiveness.** If during 1997 to 2011, the "definition of collective dismissal" had been as strict in France as it was on average in the 26 other countries considered in the regression (an index value of 4.27 instead of 4.5), France share in world merchandise export would have been 3.36 percent in 2011 instead of 3.30 percent. This represents additional exports worth about 0.4 percent of GDP. The current account deficit would be about 1.8 percent of GDP in 2011 compared to an actual deficit of 2.2 percent of GDP (Table 6).<sup>9</sup>

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<sup>8</sup> The trade reform is not considered because trade policy is decided at the European level. Although some regulatory barriers are decided at the national level and could be changed, the OECD index used is not detailed enough to estimate the impact of such a reform.

<sup>9</sup> Results presented in Table 4 (column 3) of Table 4 are used. Estimates are similar when the results presented in column 2b of Table 5 are considered.

**Table 6. Impact of Structural Reforms on France's Exports and Current Account**

| Reforms              | World Export market share (2011) |        | Additional exports in 2011 |                   | Current account balance (in percent of GDP) |        |
|----------------------|----------------------------------|--------|----------------------------|-------------------|---|--------|
|                      | Projected                        | Actual | in bn US dollars           | In percent of GDP | Projected <sup>1/</sup>                     | Actual |
| Collective dismissal | 3.36                             | 3.30   | 12                         | 0.44              | -1.8  | -2.2   |
| Labor tax wedge      | 3.72                             | 3.30   | 75                         | 2.72              | 0.0   | -2.2   |
| Innovation           | 3.47                             | 3.30   | 32                         | 1.14              | -1.3  | -2.2   |
| All three reforms    | 3.97                             | 3.30   | 119                        | 4.30              | 1.3   | -2.2   |

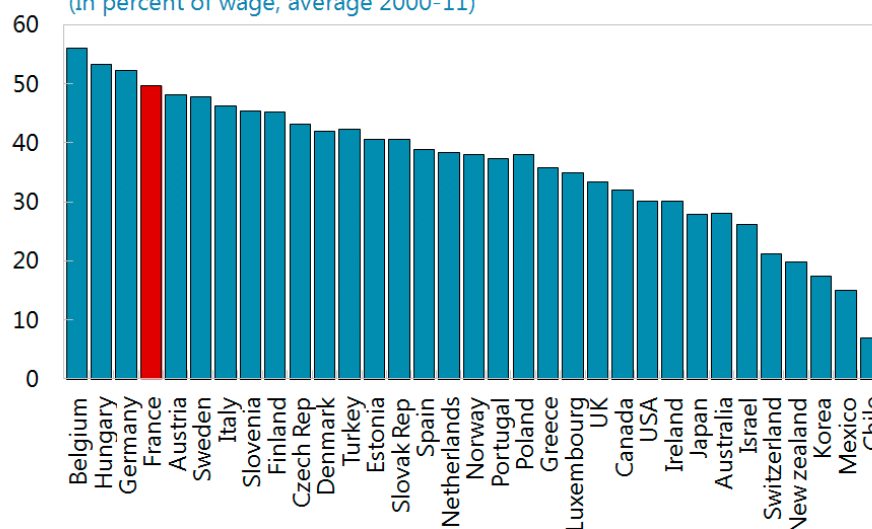
1/ Assuming the import content of export is equal to the last available data.

Source: Author's calculation.

## Labor Taxation Reform

30. **During the 2000s, France labor tax wedge was one of the highest of our sample of advanced countries** (Figure 6). Moreover, the labor tax wedge was in 2011 at the same level than in 2000, while it declined on average by 6 percent in the 32 other countries of the sample and by 3 percent in the 20 other EU members of the sample.

**Figure 6: Labor tax wedge at average wage<sup>1/</sup>**  
(In percent of wage, average 2000-11)



Sources: OECD and author's calculation.

1/ Average wage means the average annual gross wage earnings of adult, full-time manual and non manual workers in the industry (ISIC C to K).

31. **If, during the period 2000 to 2011, the labor tax wage had been at 31.7 percent (the average of the 26 countries considered in the regression) instead of 49.6 percent, France's**

share in world merchandise exports would have reached 3.72 percent in 2011 instead of 3.30 percent. This represents additional exports worth about 2.7 percent of GDP and a balanced current account compared to an actual deficit of 2.2 percent of GDP (Table 6).<sup>10</sup>

## Innovation Policy

32. **An increase in triadic patent similar to the average of other 26 OECD countries of the sample would have a large effect on France export performance because France increase in triadic patent over the period 1997 to 2009 is relatively low** (Figure 7).

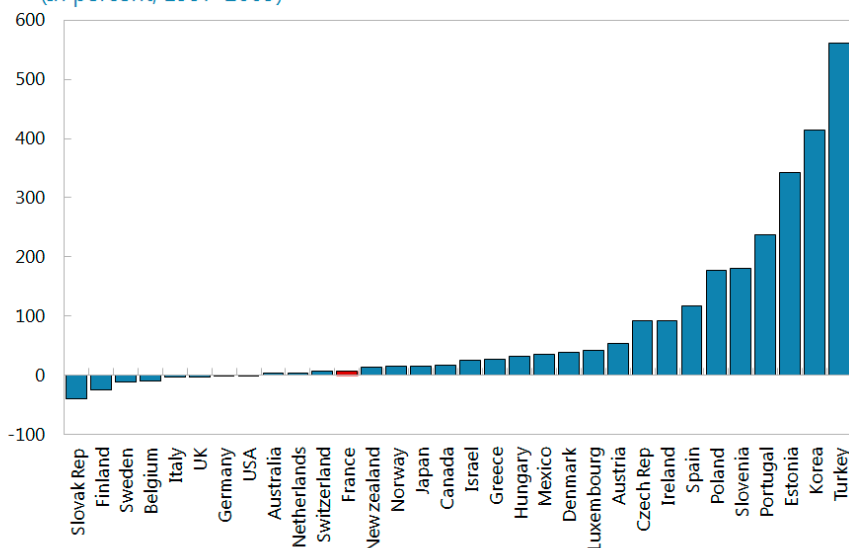
Using the results presented in column 3b of Table 5,

France's share in world

merchandise exports would be 3.47 percent in 2011 instead of 3.30 percent. This represents additional exports worth about 1.1 percent of GDP and current account deficit of 1.3 percent of GDP compared to an actual deficit of 2.2 percent of GDP (Table 6).

**Figure 7 - Growth in Triadic Patents**

(In percent, 1997-2009)



Sources: OECD and author's calculation.

<sup>10</sup> The specification of Table 4 (column 2) is used. It is preferred to the specification of Table 6 (column 3b) as it has a better fit for France. Using this alternative specification leads to a market share of 3.66 percent, additional exports worth 2.4 percent of GDP, and a current account deficit of 0.3 percent of GDP.

## F. Conclusion

33. **Econometric results suggest that four structural reforms have the potential to improve advanced countries competitiveness.**

34. **Reforming the trade regime.** Trade literature suggests many channels through which barriers to imports affect export performance. This study illustrates the importance of two of them. First, barriers to imports reduce the capacity of firms to access better, cheaper, and more diverse manufactured inputs that would increase their productivity and provide exporters with a competitive advantage. Second, barriers to imports reduce competition and thus incentives to be more productive and to innovate. This leads us to the second reform.

35. **Promoting innovation.** Results show that improving export performance is not simply a matter of increasing research and development spending but of increasing the efficiency of research and development (measured by the number of patents). Various reforms ranging from tax incentives to education and competition policies could promote achieve this result.

36. **Reducing the labor taxation.** Cutting the labor tax wedge would reduce the unit labor cost which is a key determinant of export competitiveness.

37. **Reducing labor market rigidities.** By limiting firms' capacity to adjust to a changing environment, labor market rigidities may affect export performance. Econometric results suggest that simplifying procedures would have a larger impact on competitiveness than reducing the financial cost of labor legislation.

38. **Bringing France's labor tax wedge, labor market rigidity, and innovation to the average level of the other advanced countries would improve significantly export performance.** The combined effect of these reforms could increase exports by more than 4 percent of GDP and improve the current account by about 3.5 percent of GDP. The larger impact would come from a reduction in labor taxation.

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# GAINS FROM SERVICES SECTOR DEREGULATION <sup>1</sup>

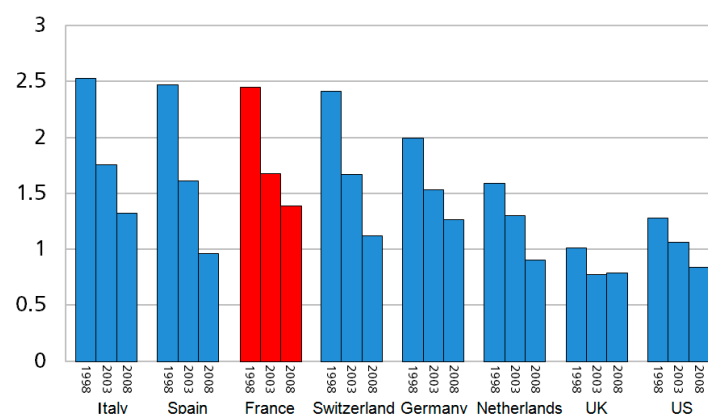
1. **The contribution of services to growth and competitiveness tends to be underestimated.** One reason is the perception that services are non-tradable and their potential for productivity growth is low. This may be true for some services but not for sectors like telecommunications that experience technological improvements. Another reason is that the role played by services as an input for the rest of the economy is largely overlooked. Services have become a crucial input for the rest of the economy and, as a result, the productivity and competitiveness of French firms is increasingly determined by access to low-cost and high-quality producer services.

2. **This paper reviews evidence of the potential gains from a deregulation of the services sector.** It starts by showing that, despite recent reforms, the services sector remains more regulated in France than in most OECD countries. Next, it investigates the impact of relaxing the regulation of some services on productivity growth by looking at the impact of past regulatory changes on the productivity of the deregulated sectors and by discussing the impact for the whole economy. Empirical literature suggests that this impact would be large for France leading to substantial macroeconomic gains in terms of productivity and export growth.

## A. A Highly Regulated Services Sector by OECD Standards <sup>2</sup>

3. **Despite recent reforms, the French economy remains more regulated than many other OECD countries.** In the late 1990's, the regulation was in France as restrictive as in Italy, Spain, or Switzerland, but much more than in other large

**Product Market Regulation**  
(Index) 1/



Source: OECD.  
1/ High index = strict regulation.

<sup>1</sup> Prepared by Jean-Jacques Hallaert. The author is grateful to Edward Gardner and the participants to the seminar held as part of the 2012 Article IV Consultation at the French Ministry of Finance for their comments and suggestions.

<sup>2</sup> The indices used in this section are from the OECD (2011). They range from 0 to 6 with 6 being the most restrictive regulation.



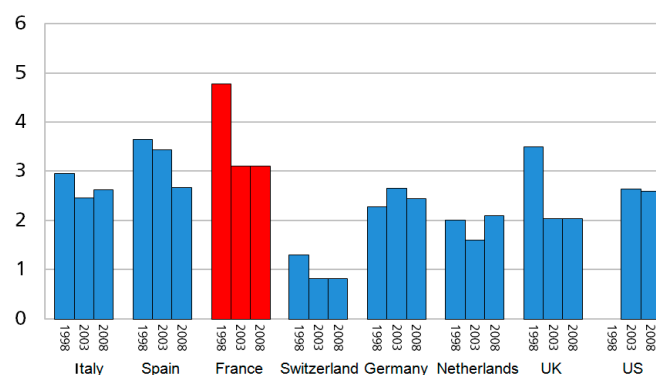
European countries and the United States. As other advanced countries, France experienced substantial deregulation in the 2000s but remains one of the most regulated in the OECD. According to the OECD's product market regulation index, France was the 22<sup>nd</sup> most regulated OECD economy (out of 28 countries) in both 1998 and 2008.<sup>3</sup>

4. **The deregulation of the various services sectors in the 2000s varies significantly but for most services the regulatory environment remains more restrictive than in most advanced economies.**

5. **On the one hand, France has deregulated substantially its retail distribution and network services.** However, retail distribution remains more regulated in France than in most OECD countries. The French regulation of retail was the 25<sup>th</sup> most restrictive out of 26 countries in 1998 and ranked 21<sup>st</sup> a decade later. Autorité de la concurrence provides evidence that contractual barriers add to regulatory barriers leading to significant barriers to entry and substantial protection of existing firms. As a result, the sector is highly concentrated. The market share of the four largest retail groups reaches 65.5 percent. Increase in competition is expected in the future as the sector is a priority for the competition authority (Autorité de la

### Retail Sector Regulation

(Index) 1/

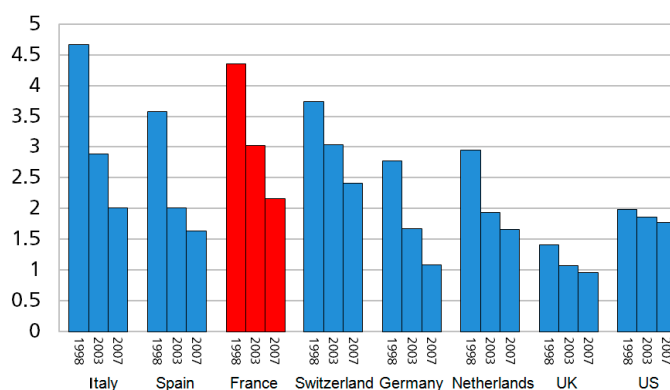


Source: OECD.

1/ High index = strict regulation.

### Network Industries Regulation

(Index) 1/



Source: OECD.

1/ High index = strict regulation.

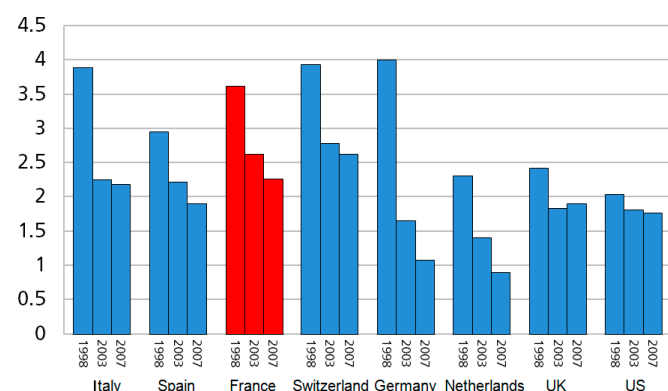
<sup>3</sup> Since 2008 the ranking may have evolved.

concurrence, 2010a and b) and, as part of the G20 Action Plan for Growth and Jobs, has been identified by the authorities as one of the services to reform in order to boost competition and productivity.

6. **France also deregulated substantially the network services (energy, transport, post and telecommunications), but regulation remains more restrictive than in most other OECD countries.** There are, however, large differences across industries. Deregulation was particularly large for the energy and telecommunications but more limited for postal services and transport.

### Post and Telecommunications Regulation

(Index) 1/

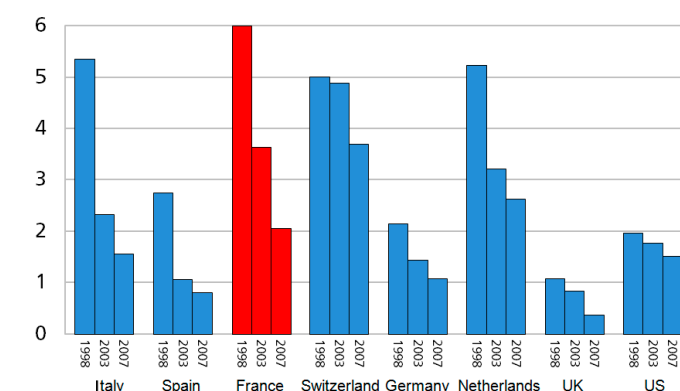


Source: OECD.

1/ High index = strict regulation.

### Electricity and Gas Sector Regulation

(Index) 1/



Source: OECD.

1/ High index = strict regulation.

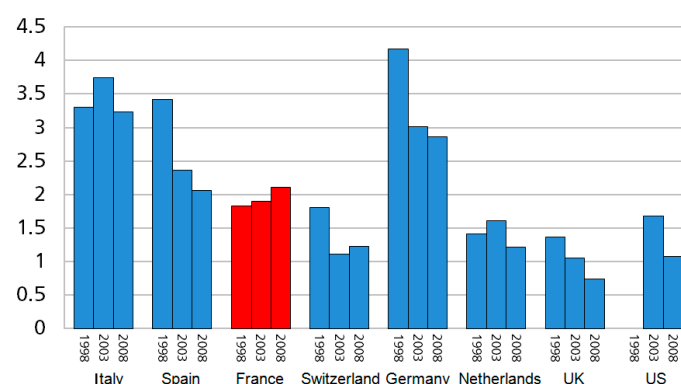
7. **Before deregulation, network services were publicly-owned or under public control and often benefited from monopoly power.** In such cases, the impact of deregulation on

competition depends on the effectiveness of regulators and competition authorities in curbing the power of the former state-owned monopoly. According to Høj and Wise (2006), there were deficiencies in France. They report state aid to the incumbent in form of special fiscal arrangements (electricity) and cross-subsidization of competitive activities from monopolistic market segments aimed at putting competitors at a

disadvantage (telecommunication). In the transport sector, the main issue appears to be the rail transport where deregulation started later than for road and air transport and the independent

### Professional Service Regulation 1/

(Index) 2/



Source: OECD.

1/ Accounting, architect, engineer, and legal services.

2/ High index = strict regulation.

regulator was established late in 2010, more than a decade after the liberalization started. Moreover, according to the Autorité de la concurrence, its areas of responsibilities are too narrow and the power of the historical operator remains in practice too large to promote effective competition.

8. **On the other hand, professional services have become more regulated.** In comparison to other services and other OECD countries, the regulation of professional services was not overly restrictive in France in the second half of the 1990s, but the sector (notably legal services and architect services) became more regulated in the 2000s. This evolution contrasts with a deregulation in other countries.

9. **In sum, despite wide differences in deregulation across sub-sectors, services remains more regulated in France than in most OECD countries.** The next sections will focus on the impact of this regulation.

## B. Regulation and Productivity Growth of the Services Sector

10. **A vast literature documents the impact of a change in regulation on the performance of the regulated sector.** In this section, we supplement this literature by looking at France recent experience with deregulation of some services sector.

11. **Productivity growth varies significantly across services sectors** (Figure 1). Three main groups can be identified:

- The first group includes sectors whose total factor productivity is lower at the end of the 2000s than it was at the end of the 1980s.
- A second group consists of services that experienced some productivity growth but this growth remains relatively weak and smaller than in the productivity growth in the manufacturing sector.
- The third group comprises “Post and telecommunications” and “electricity, gas, and water supply,” which stand out by their rapid productivity growth.

12. **This paper focuses on the link between regulation and productivity growth.** The fact that the two sectors that recorded the fastest productivity growth are also sectors that experienced a substantial deregulation would suggest a strong link between the two. However, productivity growth is driven by many other factors and one needs to go beyond anecdotal evidence. Indeed,

the sharp increase in the productivity of posts and telecommunications may be more related to the large technological changes in the telecommunications sector than in the change in regulation.<sup>4</sup>

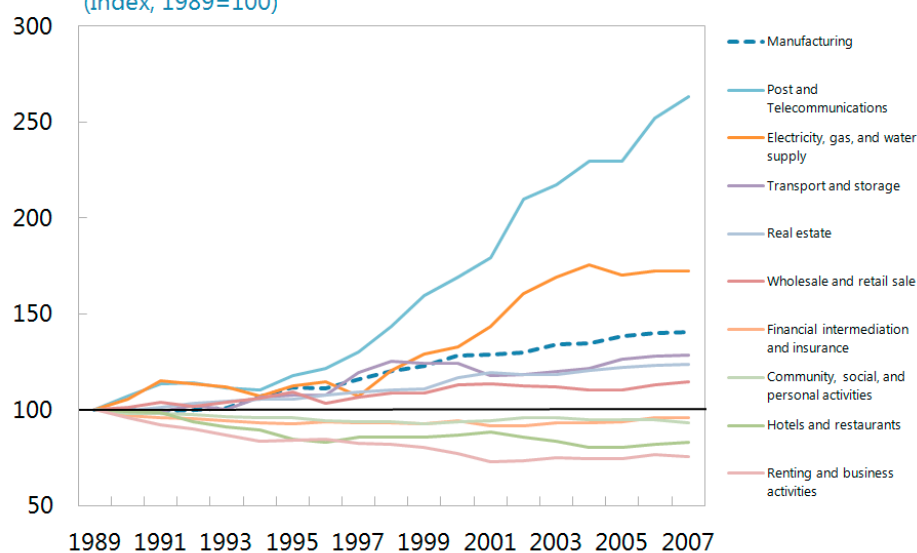
13. **Because of data limitations, only the impact of the change in French regulation on the productivity of the transportation sector and of the post and telecommunications sector is reported in this section.**<sup>5</sup>

14. **With all caveats associated with data limitations and despite the simplicity of the specifications,**<sup>6</sup>  
**econometric analysis suggests that**

**deregulation is associated with faster total factor productivity (TFP) growth of the deregulated services sector.** Thus the results provide support to the idea that by reducing entry restriction, price regulation, or licensing, deregulation fosters competition and productivity growth.

15. **Deregulation of the rail sector, although more limited than the deregulation of the air and road sectors, had a strong, immediate, and positive (and statistically significant) impact on the sector's productivity growth while, the positive (and also significant) impact of the deregulation of road transport is somewhat weaker and occurs with a one year lag.** In contrast,

**Figure 1 - Total Factor Productivity**  
(Index, 1989=100)



Sources: IMF staff and KLEMS.

<sup>4</sup> It should be noted that technology changes and a regulation affect each other's impact on productivity. On the one hand new technologies may undermine the restrictiveness of a regulation and increase competition. On the other hand, the adoption of new technologies may be facilitated by an increase in competition due to deregulation.

<sup>5</sup> The OECD regulatory indexes are available on an annual basis only for network services. The OECD reports that deregulation of electricity started in 1999 and deregulation of gas in 2003. As data for productivity and regulation both end in 2007, the period is too short to run regressions for the energy sector.

<sup>6</sup> We only control for the impact of the change in the business cycle and the existence or effectiveness of institutions enforcing competition is not taken into account. Controlling for the effectiveness of the regulatory and competition institutions would probably increase the magnitude and the significance of the coefficients.

the deregulation of air transport does not appear to have contributed to the sectors' productivity growth (Table 1).

**Table 1. Transport Sector: Impact on the Change in Regulation on Total Factor Productivity Growth <sup>1/</sup>**

|                        |                     |
|------------------------|---------------------|
| Rail (Regulation)      | 0.745 **<br>(0.269) |
| Road (Regulation)      | 0.218<br>(0.214)    |
| Lag1_Road (Regulation) | 0.435 **<br>(0.188) |
| Airlines (Regulation)  | -0.027<br>(0.063)   |
| GDP real growth        | 0.629<br>(0.805)    |
| R <sup>2</sup>         | 53.41               |
| Period                 | 1993-2007           |

Standard errors in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

<sup>1/</sup> For brevity, the intercept is not reported. The dependent variable is the TFP growth of the "transport and storage" sector.

Source: Author's calculation.

16. **Deregulation of both postal services and telecommunications is positively and significantly associated with to have a positive impact on the sector's TFP growth.** The impact appears immediate for the postal sector but with a short lag for telecommunications (Table 2).

Table 2. Post and Telecommunications:  
Impact on the Change in Regulation on Total Factor Productivity Growth

|                            | (1)                 | (2)                  |
|----------------------------|---------------------|----------------------|
| Post (Regulation)          | 0.242 **<br>(0.090) | 0.229 **<br>(0.082)  |
| Lag1_ Post (Regulation)    | 0.044<br>(0.088)    |                      |
| Telecom (Regulation)       | 0.028<br>(0.074)    |                      |
| Lag1_ Telecom (Regulation) | 0.199 **<br>(0.77)  | 0.204 ***<br>(0.070) |
| GDP real growth            | 1.422 **<br>(0.590) | 1.384 **<br>(0.555)  |
| R <sup>2</sup>             | 61.0                | 60.2                 |
| Period                     | 1986-2007           | 1986-2007            |

Standard errors in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

For brevity, the intercept is not reported.

Source: Author's calculation.

17. **Econometric analysis provides support for the idea that, through entry restriction, price regulation, or licensing, a restrictive regulatory environment reduces competition and thus productivity growth.** A restrictive regulatory environment by limiting competition also creates rents. Because deregulation reduces prices and rents, it may, in the short run, reduce productivity level of the deregulated sector.<sup>7</sup> However, the elimination of the rent and the drop in prices will benefit both consumers and other industries that use the deregulated service as an input for their production. Therefore there is a need to have a broader view of the impact of the deregulation.

<sup>7</sup> This should be kept in mind in interpreting the econometric results presented in Table 1 and 2.

## C. Regulation and Productivity Growth: Spillover and Macroeconomic Impact

### Services as Inputs

18. **This section turns to the impact of services deregulation not on the deregulated sector but on the whole economy.** In order to understand how services sector deregulation can affect the rest of the economy, it is important to describe the role services play as an input for production.

19. **Table 3 shows that services are, by far the largest input, for production.** In the mid-2000s, services (including electricity, gas and water supply) accounted for 57 percent of economy's consumption of intermediates. This was significantly more than manufacturing inputs (34 percent). In other terms, almost 28 percent of the value of the France production was due to services input. That is about 11 percentage points more than the share of manufacturing inputs. Moreover the share of services as an input is growing rapidly: a decade before, services accounted for 50 percent of input consumption and 23 percent of the value of production.

**Table 3. Inputs as a Share of Gross Output (In percent, mid-2000s)**

|   | All Economy | Agriculture,<br>hunting, forestry<br>and fishing | Mining<br>and<br>quarrying | Industry    | Construction | Electricity,<br>gas, and<br>water supply | Services    |
|---|-------------|--|----------------------------|-------------|--------------|--|-------------|
| <b>All inputs</b>                                     | <b>48.8</b> | <b>54.8</b>                                      | <b>58.7</b>                | <b>73.1</b> | <b>56.0</b>  | <b>61.8</b>                              | <b>37.4</b> |
| Agriculture, hunting, forestry and fishing            | 1.7         | 18.0   | 0.0                        | 4.3         | 0.9          | 0.3                                      | 0.2         |
| Mining and quarrying                                  | 1.4         | 0.2  | 4.1                        | 4.0         | 0.9          | 11.7                                     | 0.0         |
| Manufacturing industry                                | 16.5        | 20.4   | 32.0                       | 40.0        | 21.6         | 8.7                                      | 6.5         |
| Construction  | 1.5         | 0.3  | 1.0                        | 0.3         | 12.0         | 4.1                                      | 0.9         |
| Electricity, gas, and water supply                    | 1.4         | 1.5  | 2.2                        | 1.4         | 0.3          | 20.3                                     | 0.7         |
| Services  | 26.3        | 14.4   | 19.4                       | 23.0        | 20.3         | 16.5                                     | 29.1        |
| Other Business Activities                             | 7.8         | 1.7  | 2.2                        | 6.5         | 7.8          | 4.5                                      | 8.7         |
| Wholesale and retail trade; repairs                   | 3.6         | 6.1  | 7.1                        | 6.4         | 4.7          | 1.0                                      | 2.3         |
| Finance and insurance                                 | 3.6         | 3.0  | 2.0                        | 1.6         | 3.0          | 1.9                                      | 4.5         |
| Transport and storage                                 | 2.9         | 1.4  | 3.4                        | 2.6         | 1.4          | 2.3                                      | 3.3         |
| Real estate activities                                | 1.9         | 0.0  | 0.3                        | 0.6         | 0.1          | 0.3                                      | 2.7         |
| Post and telecommunications                           | 1.4         | 0.0  | 0.4                        | 0.3         | 0.3          | 0.5                                      | 2.0         |
| Other community, social and personal services         | 1.1         | 0.1  | 0.7                        | 0.6         | 0.5          | 1.2                                      | 1.4         |
| Computer and related activities                       | 1.0         | 0.0  | 0.1                        | 0.7         | 0.5          | 1.1                                      | 1.3         |
| Research and development                              | 0.8         | 0.3  | 1.3                        | 2.1         | 0.1          | 0.5                                      | 0.3         |
| Renting of machinery and equipment                    | 0.7         | 0.9  | 0.8                        | 0.5         | 1.1          | 1.9                                      | 0.6         |
| Hotels and restaurants                                | 0.7         | 0.0  | 0.0                        | 0.3         | 0.1          | 0.2                                      | 0.9         |
| Education   | 0.4         | 0.2  | 0.7                        | 0.3         | 0.2          | 0.5                                      | 0.4         |
| Public admin. and defence; compulsory social security | 0.3         | 0.1  | 0.2                        | 0.2         | 0.3          | 0.5                                      | 0.4         |
| Health and social work                                | 0.3         | 0.3  | 0.1                        | 0.1         | 0.1          | 0.1                                      | 0.3         |
| Private households with employed persons              | 0.0         | 0.0  | 0.0                        | 0.0         | 0.0          | 0.0                                      | 0.0         |

Source: IMF Staff and OECD.

20. **A closer look at the importance of services as input reveals three important points for the impact of services deregulation on the whole economy.**

21. **First, most of the services used as intermediates are domestically produced** (Figure 2).

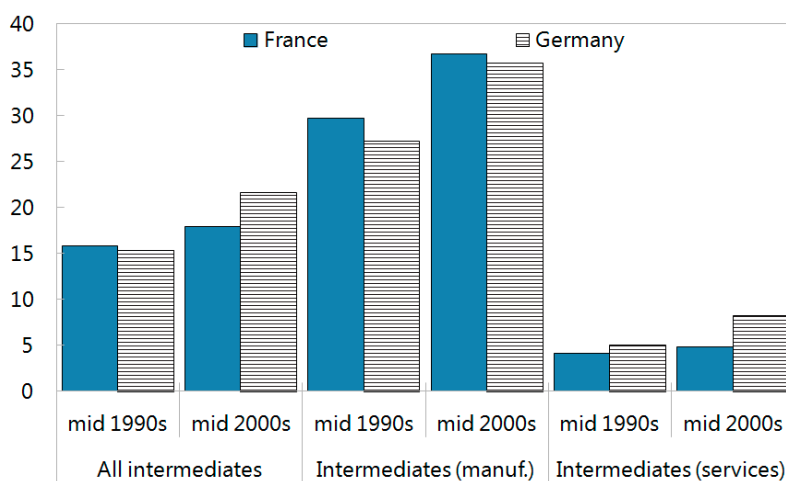
The importance of imported services inputs is much smaller in absolute and relative terms than imported manufacturing inputs. This does not reflect a French specificity but the fact that trade in services remains more limited than trade in goods. The main implication is that the services sector is less subject than the manufacturing sector to competition from imports. Therefore, a restrictive regulatory environment will affect more competition in the services sector than in the manufacturing sector.

22. **Second, services represent a high share in consumption of intermediates because of a high consumption of services by other services sector** (Table 3). Therefore, the deregulation of a particular services sector (such as a decrease in prices or an increase in the variety or quality of output) will have a direct impact that is relatively larger for the production of other services.

Nonetheless, the direct impact on non-services sectors will be also significant. For example, if the deregulation of business activities reduces the price of its output by 10 percent, the direct impact will be a reduction in the cost of

production of other services by about 0.9 percent and a reduction in the cost of production of manufactured goods by 0.65 percent.<sup>8</sup> The total reduction in the cost of production of manufactured goods will be larger as there is an indirect impact. If the 0.9 percent reduction in the cost of production of other services if passed on to their consumer

**Figure 2 - Share of imported intermediates in total consumption of intermediates**



Sources: Author's calculation based on OECD input-output tables.

<sup>8</sup> The direct impact is probably larger today than reported given the rapid growth in the importance of services as inputs since the mid-2000s.



(this depends largely on competition in these services and thus in part of regulation) this will reduce the price of these services. As they are also inputs for manufacturing industries they will reduce further their cost of production. The estimated total impact of these spillovers on productivity growth will be presented in the next section.

23. **It should be emphasized that the impact of the increased competition in the services sector is not limited to the reduction in prices.** It also allows triggers an increase in the variety and quality of their output and thus of inputs available for other sectors. This opens new production possibilities for other sectors and is a source of productivity and export growth. Literature suggests that their effect on productivity can be large.<sup>9</sup>

24. **Third, Table 3 shows that business activities are the largest providers of inputs:** they account for almost 8 percent of the value of production and 16 percent of the economy consumption in services. This sector includes many sectors that are still highly regulated (see previous section) and thus where the gains of liberalization are potentially very large.

### **Macroeconomic Impact of Services Regulation: A Review of Literature**

25. **While the literature on the impact of liberalization on the performance of the liberalized sector is large, the literature on the impact on the whole economy is fairly new and still limited** (an overview is provided in Appendix 1). It concludes is that a deregulation of the services sector yields substantial macro-economic gains through its impact on services sector's and non-services sector's productivity. As productivity growth is an engine of economic growth but also a major determinant of exports, the impact of a change in services sector regulation could help the French economy to take on the two challenges: boosting growth and improving competitiveness.

26. **Two studies focus on France.** The first study, by Forlani (2010), estimates the impact of an increase in competition in the services sector on 18 manufacturing industries total factor productivity during the period 1996 to 2004.

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<sup>9</sup> See Hallaert et al. (2011) for a review of evidence and Bas and Strauss-Khan (2011) for the case of France.

**Table 4. Impact of a 1 Percent Change in Services Competition on Average Manufacturing Firm's Total Factor Productivity.<sup>1/</sup>**

|       | All Services                              | Network services <sup>2/</sup>            |
|-------|---|---|
| PCM   | -1.271 ***<br>(0.310)                     | -1.533 ***<br>(0.545)                     |
| HHI   | -1.861 ***<br>(0.513)                     | -1.461 **<br>(0.581)                      |
| MES   | -0.031 ***<br>(0.009)                     | -0.040*<br>(0.022)                        |
| FDIPW | 0.057*** / 0.0071***<br>(0.020) / (0.023) | 0.066*** / 0.0069***<br>(0.020) / (0.021) |

Standard errors in parenthesis, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

1/ An increase in PCM, HHI or MES is a decrease in competition.

2/ Energy, land, water, and air transports, auxiliary transport activities, and telecommunication.

3/ Range depending on the specifications.

Source: Forlani (2010).

27. **Forlani relies on several measures of competition: (i) the price cost margin (PCM, an approximation of a firm's mark-up derived from its balance sheet); (ii) the concentration of the operating revenue of the sector measured by the Hirschman-Herfindahl index (HHI); and (iii) the minimum efficient scale (MES, an approximation for entry barriers and economies of scale).** It also includes FDI to control for the competitive pressure due to the presence of foreign firms.

28. **The main conclusions, summarized in Table 4, are:**

- There is a positive, robust, and statistically significant relation between the impact of competition in the services sector and manufacturing firm's productivity.
- The spillover effect of competition is larger for network services than for other services.
- FDI flows (measured per workers) shows that increasing external competition in the services sector has a positive spillover effect on manufacturing firms.

**Table 5. Average Annual Multifactor Productivity Growth Gains from Simulated Reforms Implemented in 2010 for the Period 2011-2015** (In percentage points per year)

|  | Manufacturing sectors<br>(15-37) | Non-manufacturing sectors<br>(40-74) | Business sectors*<br>(15-74) | Whole economy**<br>(01-99) |
|--|----------------------------------|--------------------------------------|------------------------------|----------------------------|
| Australia  | 1.04                             | 0.66                                 | 0.72                         | 0.51                       |
| Austria  | 2.49                             | 1.07                                 | 1.43                         | 1.10                       |
| Belgium  | 2.90                             | 1.27                                 | 1.64                         | 1.24                       |
| Canada   | 1.75                             | 1.00                                 | 1.16                         | 0.81                       |
| Switzerland  | 2.10                             | 0.98                                 | 1.26                         | 0.98                       |
| Czech Republic   | 1.36                             | 1.05                                 | 1.15                         | 0.90                       |
| Germany  | 1.90                             | 0.78                                 | 1.11                         | 0.85                       |
| Denmark  | 0.58                             | 0.27                                 | 0.33                         | 0.22                       |
| Spain  | 1.62                             | 0.92                                 | 1.07                         | 0.81                       |
| Finland  | 1.45                             | 0.59                                 | 0.85                         | 0.63                       |
| France   | 1.58                             | 0.62                                 | 0.80                         | 0.58                       |
| United Kingdom   | 1.38                             | 0.55                                 | 0.70                         | 0.51                       |
| Greece   | 1.63                             | 1.09                                 | 1.19                         | 0.84                       |
| Hungary  | 1.00                             | 0.84                                 | 0.89                         | 0.64                       |
| Italy  | 1.61                             | 1.16                                 | 1.27                         | 0.97                       |
| Japan  | 3.29                             | 1.58                                 | 2.02                         | 1.62                       |
| Korea  | 1.76                             | 0.76                                 | 1.13                         | 0.88                       |
| Mexico   | 1.51                             | 0.60                                 | 0.81                         | 0.61                       |
| Netherlands  | 0.83                             | 0.37                                 | 0.46                         | 0.33                       |
| Norway   | 1.78                             | 1.22                                 | 1.32                         | 0.69                       |
| Poland   | 3.86                             | 1.82                                 | 2.35                         | 1.73                       |
| Portugal   | 1.77                             | 1.33                                 | 1.43                         | 1.00                       |
| Sweden   | 0.63                             | 0.31                                 | 0.39                         | 0.29                       |
| United States  | 1.32                             | 0.52                                 | 0.66                         | 0.49                       |
| Industry ISIC Revision 3 in brackets.<br>* Excluding the farm sector and the mining and quarrying industries. This field corresponds to the sum of the two previous columns.<br>** The calculations for the whole economy assume that reforms to upstream sectors have no effect on the farm sector, the mining and quarrying industries and the non-business sectors. |                                  |                                      |                              |                            |

Source: Boursès et al. (2010b).

29. **They estimate that annual the TFP of the French economy would grow by 0.6 percentage point more per year in 2011 to 2015** if France was able to instantaneously reduce its regulatory burden in the year 2010 to the level of best practice anti-competitive regulation observed in services sectors in 2007.<sup>10</sup> The productivity of the manufacturing sector would grow by 1.6 point more and the productivity of the services sector (including energy and water supply) by 0.6 percent (Table 5).

<sup>10</sup> Best practice regulation is defined as the average of the three lowest values observed in 2007 of the anti-competitive regulation indicators in the services sector across the 24 OECD countries listed in Table 5.

30. **If deregulation of the services sector boosts a firm's productivity it should also increase its capacity to export.** In a seminal theoretical article, Melitz (2003) has argued that in order to export a firm should have a productivity level high enough to bear the fixed cost associated with entry in export markets. Empirical literature has provided substantial evidence supporting this idea. Again, as the impact of a service regulation affects the productivity of all sectors, it should increase exports of both services and goods.

31. **A few studies look at the impact of services deregulation on exports** (Appendix 1). In a study of 17 OECD countries Barone and Cingano (2011) find that exports by service-intensive manufacturing industries grow disproportionately more in countries with low levels of service regulation. They also find that the impact of service deregulation is driven by the energy and professional services. In the case of France, Forlani (2010) also finds some evidence that competition in the services sector affects manufacturing firms' propensity to exports: the effect of aggregate competition in services on export propensity is not statistically significant but the impact of competition in network services is significant. This is consistent with his finding that the spillover effect of services deregulation on productivity is larger for network services than for other services.

## D. Conclusion

32. **In the past, France often deregulated its services sector as part of a European-wide initiative.** France is transposing the EU services directive into national law, but the deregulation of many professional services remain regulated in ways that protect rents and discourage entry and competition. As part of the G20 "Action plan for Growth and Jobs," France committed to "reinforce competition in consumer services" by increasing "competition in the following sectors: retail, energy, telecommunications, and real estate." The adoption by the Parliament of the draft law was initially scheduled for end-2011 but has been delayed.

33. **This paper provides evidence that completing deregulation in the services sector would benefit the entire economy, by boosting productivity and exports.** Empirical studies suggest that the impact of liberalizing network services and professional services would have the largest effect for growth and exports.

34. **Hence, the services sector's deregulation may contribute to address the loss of competitiveness,** which predates the current crisis but risks becoming even more severe if the French economy does not adapt along with its major trading partners in Europe, notably Italy and

Spain, but also Portugal and Ireland, which are now engaged in deep reforms of their services sectors.

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### Appendix 3. Empirical Evidence of Spillovers from Services Sector Reform.

| Country                    | Period    | Service reform indicator  | Services / Manufacturing sectors  | Impact on manufacturing   |   | Source   |
|----------------------------|-----------|---|---|---|---|--|
|                            |           |   |   | Productivity  | Exports   |  |
| 17 OECD Countries          | 1996-2002 | Service Regulation (OECD)   | Services sector: Energy, Communication, Transport, and Professional services.<br><br>Industry level data. 15 manufacturing industries in 17 countries   | * Lower services regulation has a positive and statistically significant impact of value added, productivity and export growth of service intensive manufacturing sector.<br><br>* Impact is driven by energy and professional services.  |   | Barone and Cingano (2011)  |
| 15 OECD countries / France | 1984-2007 | Product Market Regulation (OECD)  | Services sector: Energy, transport, communication, retail distribution, and<br><br>Firm level data: 20 manufacturing industries.                        | * Anticompetitive services regulation curbs TFP of the manufacturing sector.<br><br>* TFP gains in downstream industry in 2007 by adopting in 2000 the best practice in services sector observed in 2007 range from 3 to 13 percent depending of the country ( <b>France</b> 7 percent).<br><br>* Reducing regulatory burden in 2010 to the level of best practice in services in 2007 would boost <b>France's</b> TFP growth in manufacturing by 1.58 percent per year over 2010-15 (0.58 percent per year for the whole economy). |   | Bourles, Cetté, Lopez, Mairesse and Nicolletti (2010a, NBER)<br><br>Bourles, Cetté, Lopez, Mairesse and Nicolletti (2010b, Cesifo DICE Report) |
| <b>France</b>              | 1996-2004 | Competition indicators: price cost margin, concentration, productivity, minimum efficient scale, and turbulence | Firm-level data: 13 services sectors and 18 manufacturing sectors   | Manufacturing TFP increases with competition in services:<br><br>* 1 percent increase in services price-cost margin reduces manufacturing TFP by 1.9 percent.<br>* 1 percent increase in services concentration reduces manufacturing TFP by 1.3 percent.<br>* 1 percent increase in FDI per workers in services increases manufacturing TFP by 0.04-0.07 percent.<br>* Results are driven by network industries.   | Competition in services is less relevant for manufacturing propensity to exports as it is for their productivity.<br><br>* Aggregate competition in services is negligible and not significant for exports of manufacturing sector.<br><br>* But some evidence that competition in network industries has a positive and significant impact on exports. | Forlani (2010)   |
| Chile                      | 1992-2004 | FDI stock / sector output   | Firm-level data: 4900 firms, 9 manufacturing sectors  | Statistically significant and positive:<br><br>* Service FDI penetration accounts for 7 percent of observed increase in manufacturing productivity  |   | Fernandes and Paunov (2011)  |
| Czech Republic             | 1998-2003 | Inward FDI; Services liberalization (EBRD); privatization; level of competition (industry concentration)        | Firm-level data: 21 manufacturing industries.   | Statistically significant and positive for each of three measures of service reform (exception is the level of competition) considered in isolation.<br><br>* Foreign entry is the key channel through which services liberalization contributes to manufacturing TFP growth.<br><br>* 1 standard deviation in foreign presence is associated with a 3.8 percent increase in TFP.   |   | Arnold, Javorcik and Mattoo (2006)   |
| India                      | 1993-2005 | Composite policy index  | Four services sector: banking, telecoms, transport, and insurance.<br><br>Firm-level data: 4,000 firms.   | Statistically significant and positive: 1 standard deviation in aggregate index of service liberalization<br><br>* 11.7 percent for domestic manufacturing firms<br>* 13.2 percent for foreign manufacturing enterprises  |   | Arnold, Javorcik, Lipscomb, and Mattoo (2012)  |
| Ukraine                    | 2001-07   | Services liberalization (EBRD) and Inward FDI.  | Firm level data: 11 manufacturing sectors (40,400 firms). Excludes banks and "budgetary organizations" (Public schools, public hospitals, museums, ...) | Statistically significant and positive:<br>* 1 standard deviation of services liberalization is associated with a 9 percent increase in TFP.<br><br>* 1 standard deviation in FDI penetration in services is associated with a 5.5 percent increase in TFP .  |   | Shepotylo and Vakhitov (2012)  |