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France: Selected Issues

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FRANCE

Selected Issues

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Approved by the European Department

July 14, 2009

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A. Introduction

1. **The ongoing global financial crisis has posed great challenges to financial systems and governments around the globe, including in France.** The unprecedented nature of the crisis and government bailouts highlights the importance of having a sound system and an appropriate policy response. It also points to the value of having a good grasp of financial sector performance and government support measures of systemic importance.

2. **This chapter attempts to analyze the performance of French banks and the financial support measures taken by the French government.** France has a large and sophisticated financial system, which accounts for ten percent of the global banking system and five percent of the global capital markets. Besides, it hosts the second largest mutual fund industry. The impact of the crisis on the French financial system, especially the banks, and the policies adopted matter for the global economy and financial stability.

3. **The rest of the chapter is organized as follows.** Section B presents an overview of French banking and supervision structure. Section C conducts comparative analyses of profitability, asset quality, capital adequacy, leverage, quality of capital, funding profile, and liquidity of banks. Section D analyzes business lines, potential spillovers, writedowns and losses, new capital raised, and market perceptions of risk. Section E performs analyses of the government support plan of banks and carries out an event study of the market impact of the measures. Section F concludes.

B. Banking and Supervisory Structure

4. **The French banking system features a small number of large universal banks spanning a wide range of business functions.** The banks are largely organized along commercial, mutual, and cooperative lines. Private commercial banks dominate the system with an asset value of about five times that of mutual and cooperative banks. The close ties among banks, life insurance companies, and asset management companies, sometimes underpinned by cross-shareholding, tend to blur divisions among different types of institutions.

5. **The French banking sector is an integral part of the European and international banking system.** Home banks' external claims well exceed host banks' external claims. Foreign banks have made few inroads into French mainstream banking, except for HSBC. Although domestic banks dominate retail banking, foreign banks are free to compete and

[1] Prepared by Yingbin Xiao.

have gained a strong market presence in wholesale banking and securities trading. However, cross border mergers and acquisitions may blur the line between domestic and foreign banks as leading French banks become foreign owned, as in the case of the Belgian government's ownership of BNP Paribas after its recent acquisition of Fortis bank.

6. **French banking is highly consolidated.** The nine largest banks account for 75 percent of total banking assets. The top five banks represent half of total deposits and more than a half of total lending. Banking concentration has largely stabilized over the last three years, but will rise with the merger between *Groupe Caisse d'Épargne* (GCE) and *Groupe Banque Populaire* (GBP) this year.

7. **The financial supervision structure is based on a functional approach with some twin peaks elements.** The oversight of financial services was reformed in 2003 with a view to enhancing regulatory efficiency. Hence, the financial supervisory framework was reorganized and substantially simplified. The Monetary and Financial Code does not distinguish between commercial banks and investment banks. The prudential supervision of both banks and investment firms falls under the *Commission Bancaire* (CB), which ensures consistent coverage of all credit institutions. The proximity between the *Banque de France* (BdF) and CB facilitates timely information sharing as the Governor of the BdF serves as the chairman of the CB and BdF provides budget, human resources, and other support to the CB. The board of financial sector authorities offers a domestic coordination framework.

C. International Comparative Analyses

8. **The analyses employ select soundness indicators of French banks and comparators during 2006-08.** The period covers the pre-crisis period, the beginning, and the middle of the global financial crisis. Given the financial integration and the global nature of banking business, a bank-based, rather than country-based, comparison group is constructed. It consists of 48 large banks in advanced Europe. To ensure comparability, only banks adopting International Financial Reporting System (IFRS) are included. Bank data come from Bankscope and Thomson Financial. Composite indicators weighted by size for the comparison group and nine major French banks are constructed to facilitate aggregate comparisons.

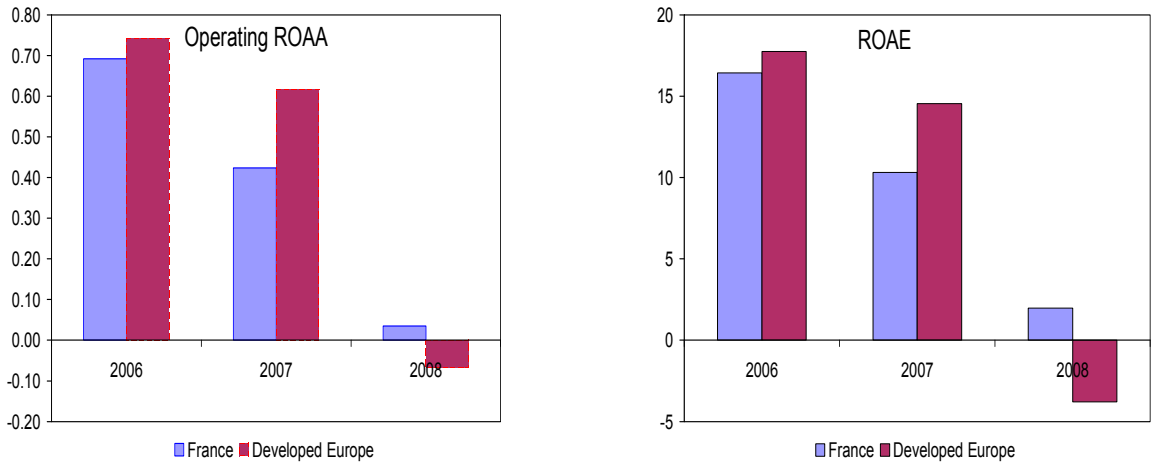
9. **Select soundness indicators focus on bank profitability, asset quality, capital adequacy, leverage, capital quality, funding profile, and liquidity.** Profitability is measured by operating income on average assets (ROAA) and return on average equity (ROAE), gauging both the operating performance and the bottom line. Asset quality is measured by the NPL ratio and coverage ratio, gauging the magnitude of non-performing loans and the sufficiency of provisions, respectively. Capital adequacy is measured by Tier I ratio, a widely used regulatory indicator. Leverage is defined as assets over shareholders' equity. Capital quality is measured by the share of Tier II capital in total capital and the core

Tier 1 ratio given investors' recent focus. The banks' funding profile is measured by the share of wholesale funding in total funding and the share of short-term wholesale funding in short-term funding, gauging the banks' dependence on capital market funding. Liquidity is measured by the deposit-to-loan ratio and liquid ratio defined by liquid assets over liquid liabilities, examining liquidity from an asset-liability management (ALM) perspective.

Profitability

10. **French banks were less profitable than their European peers before the crisis, but were pounded less hard by the crisis.** The operating ROAA and ROAE were below those of peers in 2006, reflecting narrower interest margins and less exposure to profitable, but risky non-traditional banking activities. With the intense competition among banks, the net interest margin of French banks eroded to a level lower than peers. Both French banks and their European peers registered plummeting operating performance and net income in 2008, with the profitability of European banks turning negative while that of French banks overall remained slightly positive. This is largely due to the fact that the majority of French banks still earned modest profits in 2008.

Figure I-1. Profitability



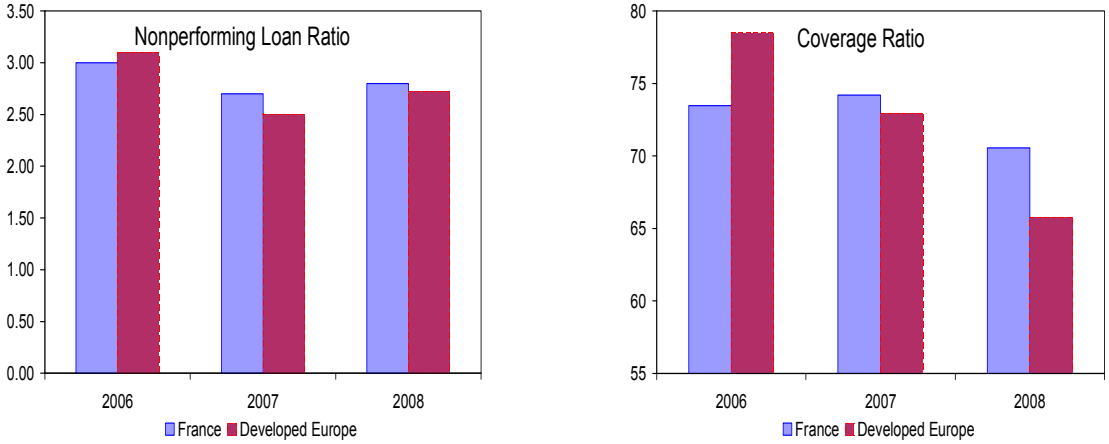
Sources: Bankscope, Thomson Financial, and Fund staff estimates.

Asset quality

11. **The quality of French banks' loan portfolios was almost on par with that of their European peers, but the fall of provisions was less pronounced during the crisis.** Both French banks and their European peers saw a declining NPL ratio in 2007, but a reversal in 2008, reflecting the turn of the economic and credit cycle, as well as the ensuing rise in defaults. The coverage ratio of both French banks and European peers dropped appreciably in

2008, suggesting less provision to cover more problem loans. French banks had less coverage than European peers initially, but with a less marked deterioration ended up with a higher coverage ratio than their peers.

Figure I-2. Asset Quality

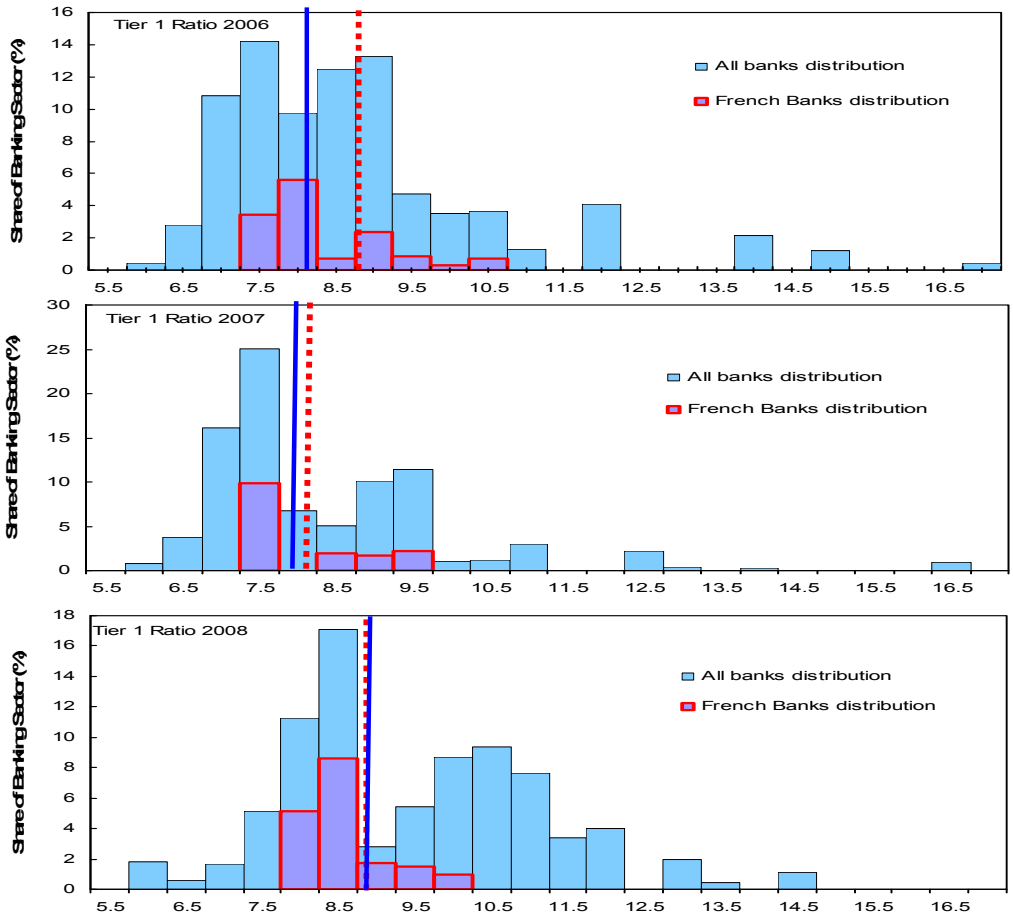


Sources: Bankscope, Thomson Financial, and Fund staff estimates.

Capital adequacy

12. **Regulatory capital adequacy of French banks was stronger than that of their European peers before the crisis, but gradually lost its relative strength.** In 2006, the Tier I ratio of French banks was about 100 basis points above that of their peers. The outbreak of the crisis in 2007 eroded the buffers for both French banks and their European peers. With massive government recapitalization efforts in some countries in 2008, the edge of the capital positions of the French banks shrank and converged with the others.

Figure I-3. Capital Adequacy

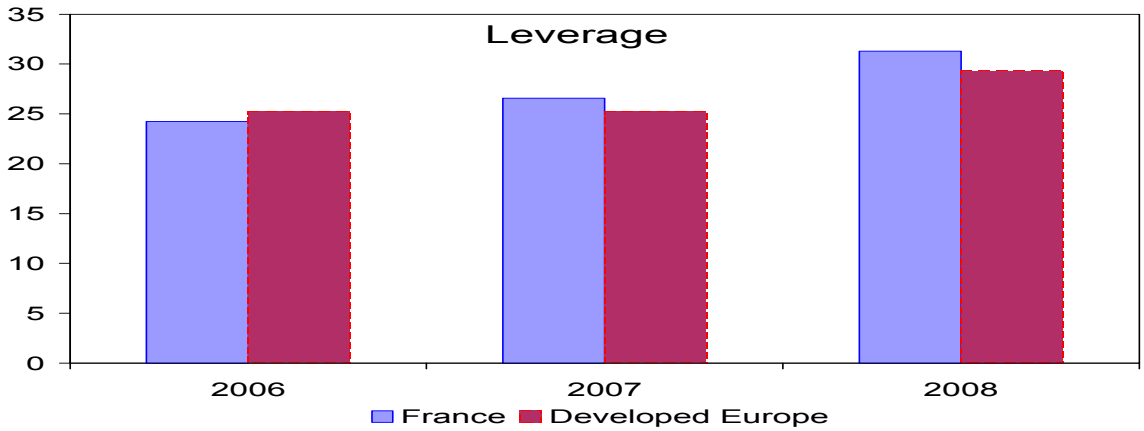


Sources: Bankscope, Thomson Financial, and Fund staff estimates.

Leverage

13. **The level and evolution of the leverage of French banks mirrored those of their European peers.** Both groups showed no signs of deleveraging from their pre-crisis levels, an interesting phenomenon that contradicts the conventional perception that banks would be forced or inclined to reduce leverage because of the crisis. The CB's 2008 annual report noted that the banks continued to expand their intermediation business, although at a slower pace. The report examined leverage as measured by the ratio of loan volume over equity and loan volume weighted by asset quality over equity. It concluded that leverage stabilized and French banks did not appear to choose an aggressive strategy of reducing outstanding loans or restricting the distribution of riskier loans.

Figure I-4. Leverage



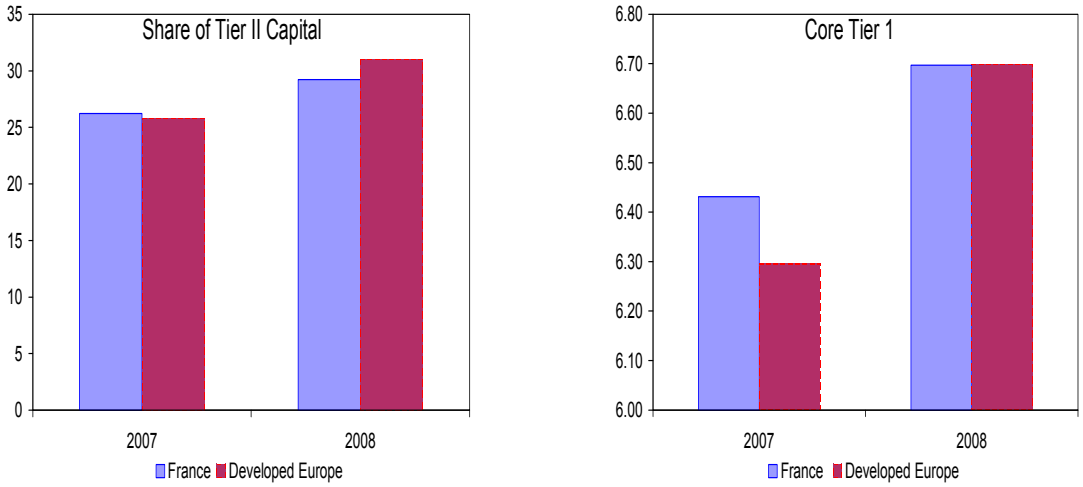
Sources: Bankscope, Thomson Financial, and Fund staff estimates.

Quality of capital

14. **The crisis has sparked intense discussions about the quality of capital, the significance of which is highlighted in supervisory guidelines.** For example, Basel Committee Banking Supervision (BCBS) Guidelines noted that core Tier 1 should be a predominant part of Tier 1. The Turner Review pointed out that "The FSA therefore believes that required capital ratios for such banks should be expressed entirely in terms of high quality capital—broadly speaking the current Core Tier 1 and Tier 1 definitions—and should not count dated subordinated debt as providing relevant support. This is in line with the direction of Basel Committee deliberations." The US Supervisory Capital Assessment Program (SCAP) argued that "Supervisors have long indicated that common equity should be the dominant component of Tier 1 capital….".

15. **French banks had a higher capital quality initially, but their lead was eroded following the raft of global recapitalizations across the industry.** Both French banks and their European peers increased the share of Tier II capital in the capital structure in 2008, although the increase was somewhat smaller for French banks. With investors putting less emphasis on Tier II capital, several European banks, including some French banks, have considered or conducted liability management operations to buy back their lower Tier II capital to improve the quantity and quality of capital. The core Tier I ratio of French banks was about 15 basis points above that of others in 2007, and stood on par with their peers after the wave of government recapitalizations in 2008.

Figure I-5. Capital Quality

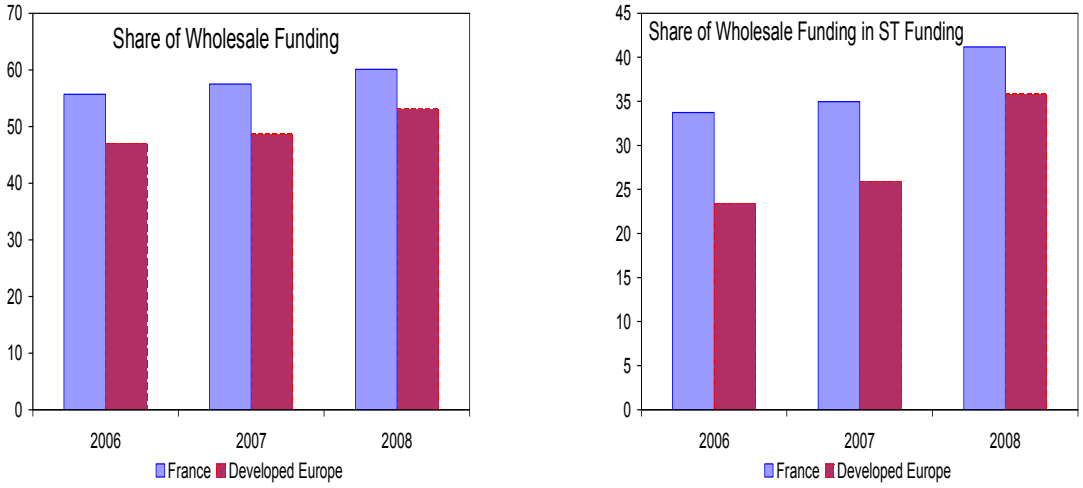


Sources: Bankscope, Thomson Financial, and Fund staff estimates.

Funding

16. **French banks appear to have a rising and higher-than-average reliance on wholesale funding.** A bank's funding strategy at different maturities tends to affect the banks' fragility and its sensitivity to a liquidity dry-up. Deposit funding and wholesale funding may carry different risks in causing a potential liquidity crisis and bringing about changes in funding costs. French banks have increased their recourse to wholesale funding with the rapid expansion of their activities and a shift to high fee generating products for funding. An examination of European banks' average funding profile during 2006-08 reveals that wholesale funding represents 58 percent of total funding and ST wholesale funding accounts for about 35 percent of ST funding in the case of French banks, but 47 percent and 28 percent, respectively, in the case of their peers. Though at first appearance it seems at odds with the high savings ratio of France, this reflects the role of the money market funds and life insurance products in diversified bank funding.

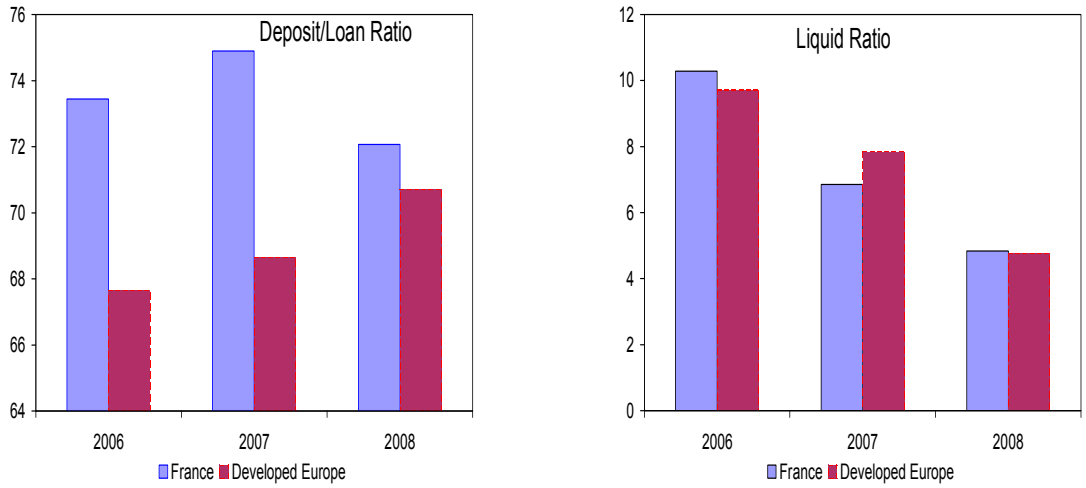
Figure I-6. Funding



Sources: Bankscope, Thomson Financial, and Fund staff estimates.

17. **The liquidity profile of French banks from the ALM perspective appears to be slightly more favorable than that of their European peers, although less so over time.** While the funding profile focuses on the liability side, the ALM perspective focuses on liquidity matching from both assets and liabilities. The deposit- to- loan ratio shows the extent to which domestic credit is funded by banks' deposit liabilities. Any shortfall, as reflected in a ratio of less than 100 percent, has to be funded by bank borrowing from the non-bank private sector or from overseas, both of which have become constrained in the crisis. Banks with a high coverage ratio of customer loans by deposits are less vulnerable and more resilient in the face of increased tension in liquidity markets. The deposit-to-loan ratio of French banks rose to 75 percent in 2007, but slid in 2008, although still remained above the level of European peers. The liquid ratio of French banks declined by half to reach the similar level of their peers in 2008. However, the liquidity profiles of French banks may improve with the generalization of Livret A and Livret Bleu (special saving accounts in France) at the beginning of 2009, which has encouraged banks to attract more deposits.

Figure I-7. Liquidity



Sources: Bankscope, Thomson Financial, and Fund staff estimates.

D. Analyses of Business and Exposures

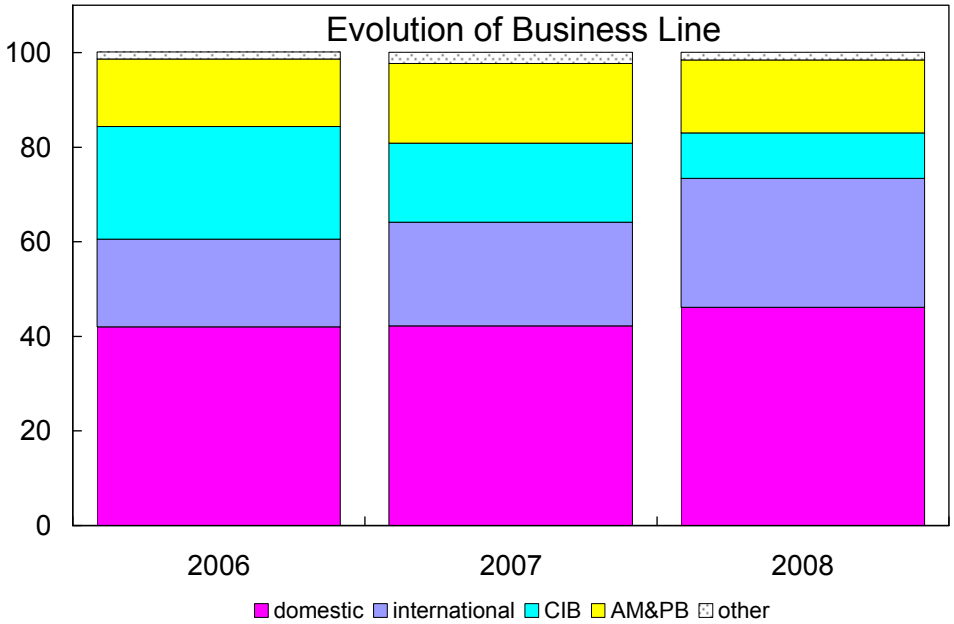
18. **The analyses of business and exposures supplement the prior soundness check to gain more insights about the relative performance of French banks.** Specifically, this section analyzes business lines, international exposures, writedowns and losses, new capital raised, and market perceptions of risk. Financial data come from Bloomberg, BIS, Datastream, Thomson Financial, and financial statements of banks.

19. **Domestic and international retail banking activities contributed to the financial results of French banks.** French banks adopt a domestic retail dominated universal banking model. An analysis of business lines shows that retail banking activities, especially international banking, continued their brisk growth throughout the crisis. The share of

domestic business climbed modestly to 46 percent, reflecting the low risk and high saturation of domestic markets. The contribution of international banking rose significantly from 18 percent in 2006 to 27 percent in 2008, reflecting banks' geographic diversification and brisk expansion to fast-growing countries.

20. **However, corporate and investment banking (CIB) and asset management detracted from the financial strength of French banks.** CIB business, the key profit driver in the past, was hit hardest by the crisis. Its contribution to operating income fell from the pre-crisis level of 24 percent to 10 percent in 2008, reflecting plummeting revenue and even sizable losses for some banks. They suffered from impairment charges and fair value losses from toxic assets including sub-prime related residential mortgage-backed securities (RMBS), collaterized debt obligations (CDO), asset-backed securities (ABS), and exposures to monoline and CDPC. Increased risk aversion shunned investors away from complex CIB products and services, which materially compressed CIB revenues and depressed its profitability. The economic downturn and markets volatility also weighed on other structured products such as commercial mortgage-backed securities (CMBS), leveraged buy-out (LBO), collaterized loan obligations (CLO) as well as trading and advisory services. Significant outflows arising from volatility, a loss of confidence associated with a "breaking of the buck" in the U.S. money-market funds, problems with the "dynamic" money market funds, and poor performances of hedge funds dealt a blow to profits from asset management, although to a lesser degree than for CIB activities. With the partly offsetting income from private banking, the contribution from combined asset management and private banking fell back to its pre-crisis level.

Figure I-8. Business Lines

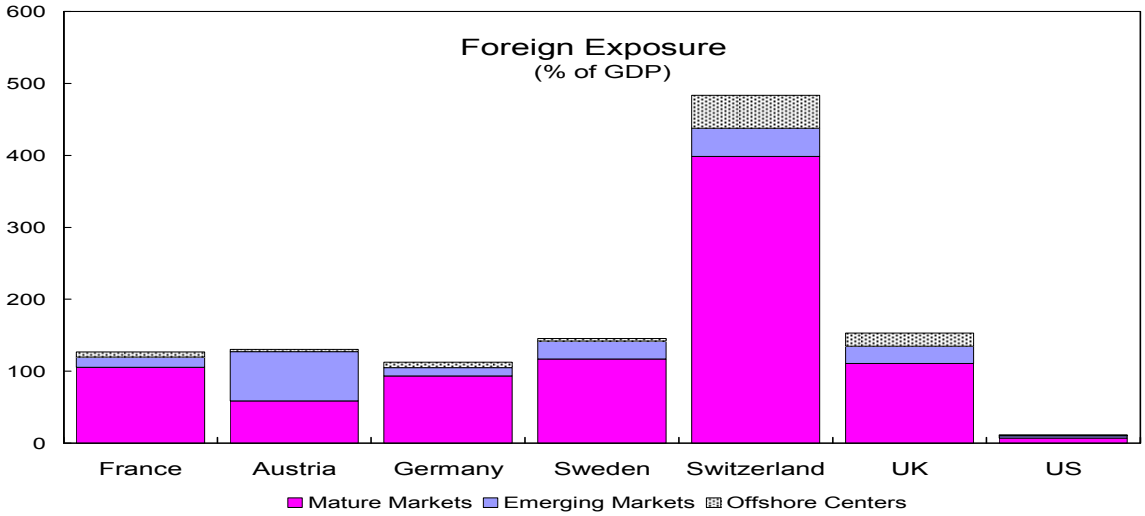


Sources: Financial statements of banks and Fund staff estimates.

21. **French banks' exposure to foreign markets is not excessive and tilts towards mature markets.** Foreign claims on an immediate borrower basis represented 34 percent of bank assets and 128 percent of GDP at the end of 2008 while foreign claims on an ultimate risk basis were slightly lower. The exposure in terms of the size of the national economy aligns with countries such as Austria, Germany, Sweden, and the U.K. and lies between the very low level of the U.S. and the very high level of Switzerland. Banks' exposure to mature market dominates, representing 86 percent of total foreign claims. Exposure to the U.S., Italy, the U.K., and Germany accounts for more than half of the total exposure to mature markets. The mature market bias suggests that potential spillovers from these markets may have a material impact on French banks.

22. **French banks' exposure to offshore financial centers and emerging markets is limited.** Exposure to emerging markets on either an immediate borrower basis or an ultimate risk basis represented about four percent of bank assets and 14 percent of GDP at the end of 2008, only higher than the U.S. and U.K. Exposure to offshore financial centers is even smaller.

Figure I-9. Foreign Exposure

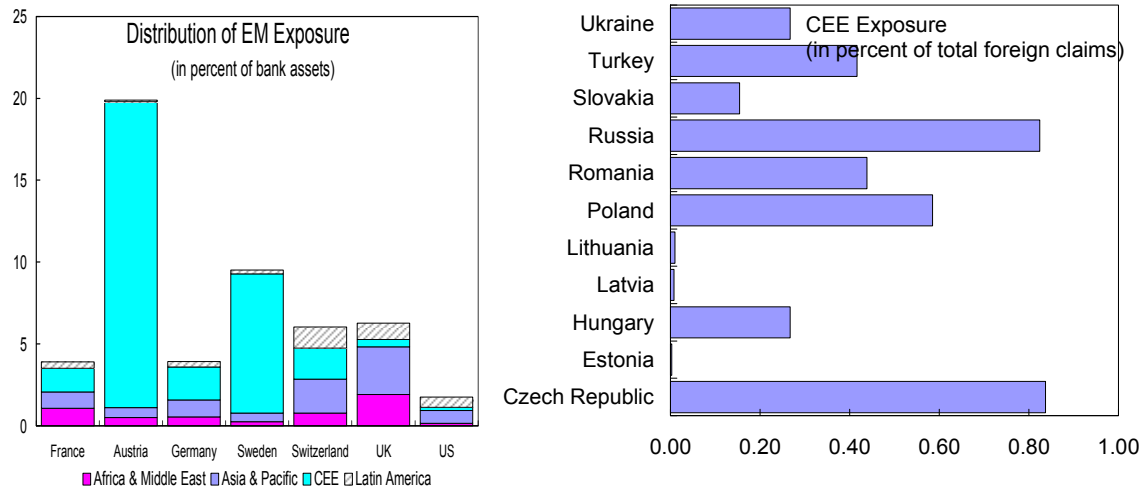


Sources: BIS, IFS, WEO, and Fund staff estimates.

23. **The exposure to emerging markets is geographically diversified.** Exposure to Central and Eastern Europe (CEE) made up about 36 percent of the total exposure to emerging markets, followed by Africa and the Middle East (28 percent), and Asia and the Pacific (24 percent) at the end of 2008. Among the exposure to CEE, exposure to the Czech Republic, Russia, and Poland accounts for half of the total exposure. Among the three major French banks having exposure to CEE, only one bank has a sizable exposure. Although

pressure on French banks could be mounting with a worsening of the financial situation in the CEE region or emerging markets in general, the overall risks may be manageable.

Figure I-10. Emerging Market Exposure



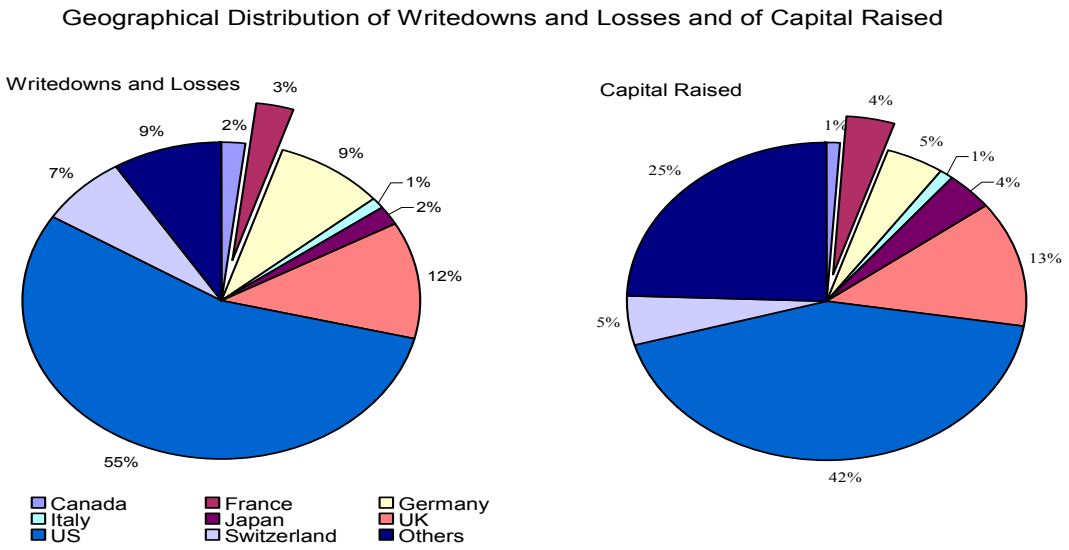
Sources: BIS, IFS, WEO, and Fund staff estimates.

24. **Losses and writedowns of French banks have been significant, but comparatively less than in the hardest-hit countries.** French banks have written down a large proportion of assets relative to their initial value. Their total losses and write-downs since the onset of the crisis account for about 3 percent of losses and write-downs around the globe, considerably less than those of banks in the U.S. (55 percent), the U.K. (12 percent), Germany (9 percent), and Switzerland (7 percent), and also less than the share of French banks in the global banking system. The international comparison of the CB on the direct cost of the crisis for large international banks shows that the direct cost of the French banks was about 18 percent of Tier 1 capital, lower than that of Germany (about 33 percent), the U.K. (about 37 percent), the U.S. (about 86 percent), and Switzerland (about 87 percent).[2]

25. **Recapitalization has been able to cover losses and writedowns already incurred.** French banks have made progress in shoring up their balance sheets by attracting capital from financial markets and accepting government capital injections. State capital injections represent about one-third of new capital and play an increasing important role over time. Total capital raised by French banks accounts for about 4 percent of aggregate capital raised around the globe, roughly equal to their share of losses and writedowns.

[2] For details, see Rapport de la Commission bancaire pour l'année 2008.

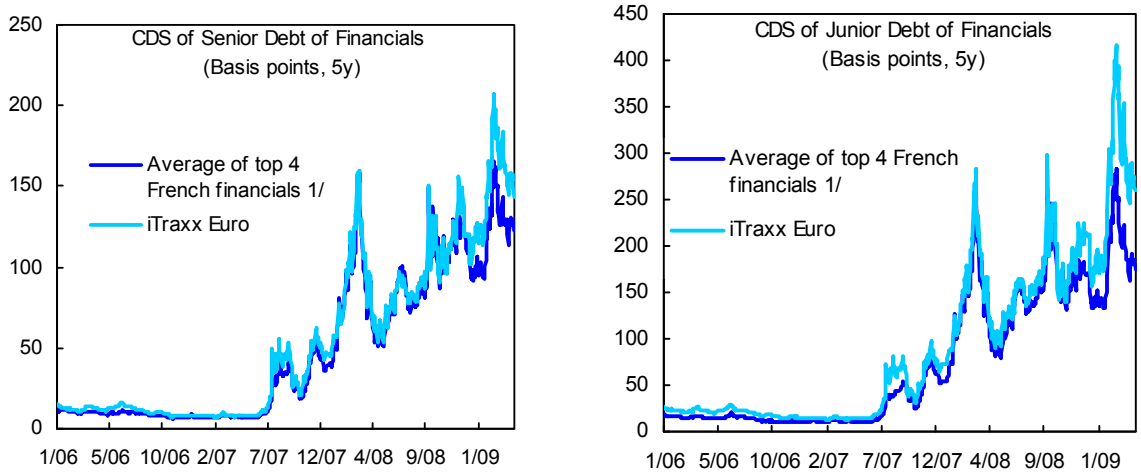
Figure I-11. Writedowns, Losses, and Capital Raised



Sources: Bloomberg, Thomson Financial, and Fund staff estimates.

26. **The market perception of credit risk of French banks seems to be more favorable than their European peers, especially for the lower class of debt.** Reflecting rising credit risk, CDS spreads of French banks and other European banks have increased considerably. In the case of senior CDS spreads of French banks, spreads have shot up from less than 10 basis points before the crisis to more than 100 basis points recently. Throughout most of the crisis period, senior CDS spreads of French banks have been lower than those of peers, as measured by the iTraxx Euro Senior CDS index. In the case of junior CDS spreads of French banks, spreads have surged from less than 30 basis points before the crisis to more than 150 basis points recently. As in the case of senior CDS spreads, throughout most of the crisis period, junior CDS spreads of French banks have been lower than those of peers measured by the iTraxx Euro Junior CDS index. Moreover, the difference is more striking. For example, junior CDS spreads of French banks were 36 percent below those of iTraxx Euro Junior CDS index at the peak of the crisis in March 2009 and 24 percent lower in June. Senior CDS spreads of French banks were 17 percent and 8 percent below those of the iTraxx Euro Senior CDS index in March and June 2009, respectively. The market perception of French banks as being less risky than their peers, even for the lower class of debt, may indicate that markets put a premium on national champions.

Figure I-12. CDS Spreads



Sources: Bloomberg, Datastream, Thomson Financial, and Fund staff estimates.

E. An Event Study of the French Bank Support

27. **Before the deepening of the crisis in September 2008, French government focused on increasing the efficiency and competitiveness of the financial sector domestically and advocated regulatory and supervisory reforms internationally.** In particular, to liberalize and reform the financial sector, the government rolled out a flurry of measures under the *Paris-Place Financière* initiative and the *Loi de Modernisation de l'Économie* (LME). In the aftermath of the trading fraud at SG, the government took actions to enhance internal control and operation risk management. During the 2008 French Presidency of the EU, it proposed thirty recommendations for Europe to combat the crisis.

28. **The bankruptcy of Lehman Brothers intensified the crisis and fuelled the worst bout of financial contagion since WWII.** Concerns about exposures to Lehman sparked massive turmoil in global financial markets with the freezing up of interbank, senior unsecured, covered bond and securitization markets. The financial shock in the U.S. reverberated internationally, fuelled the global "flight-to-quality," and resulted in surging spreads, collapsing equity prices, and spiking volatility.

29. **The deepening of the crisis prompted wide-scale sovereign interventions.** Governments around the world took unprecedented support measures to recapitalize banks and unfreeze credit. Global government measures include recapitalization, guarantees, deposit insurance, asset swaps, asset purchases, as well as direct lending and crisis liquidity facilities. Measures in some countries came with strings attached such as conditions on dividends, salary restrictions, lending rules, code of ethics, and government appointed Board members.

30. **As part of the global actions, the French government created two separate agencies to recapitalize banks and provide government guarantees for bank refinancing.** Recapitalization falls under the *Société de Prises de Participations de l'État* (SPPE), a fully state-owned agency. Refinancing falls under the *Société de Financement de l'Economie Française* (SFEF), owned jointly by the French state (34 percent) and seven leading French banks (66 percent).

31. **SPPE has provided solvency support through the availability of Tier 1 capital instruments.** It earmarked €40bn of funds. In addition to the injection to Dexia along with other governments, €10.5bn of the first tranche in the form of deeply subordinated debt securities were injected into six banks, boosting their Tier 1 ratios by about 50 bps. It also supported the merger between GCE and GBP with an additional €3bn. The second tranche in the same amount to the same banks was announced, but has not been taken by all the banks yet.

32. **There are several improvements of the new recapitalization scheme over the original one.** For example, banks are given the option of issuing preference shares. Preference shares are new core Tier 1 instruments by the French law. They have the following characteristics: non-cumulative dividend, no voting rights, non-convertible, preferential but capped remuneration, limited dilution, and loss-absorbing capacity. The new scheme also offers incentives for banks to buy back securities as the redemption amount would increase over time.

33. **SFEF has provided liquidity support through the provision of government-guaranteed refinancing.** It can raise market financing by issuing state-guaranteed bonds, which are then used to on-lend to banks in proportion to the market share of each bank in terms of customer loans and assets for a period of one to five years. SFEF can issue up to €265bn of guaranteed term debt (maximum maturity five years), which enjoys 'AAA' rating as the French government. Debt must be issued before the end of 2009. Before the creation of the SFEF, the government also issued guarantees on Dexia's obligations (a maximum €55bn) along with the rescue package arranged for the bank with other governments.

34. **SFEF has proved to be popular with investors** as reflected in the very tight spreads of its bonds. Its issuance, second only to the U.S. and about one third denominated in U.S. dollars, represents 20 percent of the global issuance of government guaranteed bonds. Its ability to attract a wide range of investors from various market segments may result from its skillful set-up. By pooling liquidity, the agency has enhanced the visibility and reduced the liquidity premium of its bonds. In addition, by construction, investors are not exposed to bank risks. The guarantor, the French government, is perceived to be capable of standing behind its promises. With the recent market improvement, French banks have tapped markets by issuing bonds without government guarantees.

35. **There have been several theoretical studies of best government support schemes, but very few empirical studies.** The crisis provides good natural experiments of various government support schemes, but there seems to be only one empirical study by Veronesi & Zingles (2008) to examine the impact of the U.S. plan. To bridge the literature gap, this chapter uses a similar method to analyze the French plan. The event window is between October 10 and October 14 in 2008, one day before and after the announcement of the French schemes on October 13, which was also the day when the U.S. government announced its revised Paulson plan and the U.K. government announced its own schemes.

36. **The study aims to explore the impact of the French financial sector support plan by combining both balance sheet and market information.** Specifically, it intends to: (i) gauge the market impact on debt using senior and subordinated CDS and linking these to the maturity structure of the bank debt; (ii) gauge the market impact on equity using CAPM; (iii) take into account other events happening at the same time by measuring the relative impact besides the gross impact; and (iv) reverse engineer the Black-Scholes-Merton model, as in Xiao (2008), to measure the proportion of equity injection transferred to debt.

37. Following Veronesi & Zingles (2008), the impact on debt is calculated as follows:

(i) The default probability from the CDS (RR is recovery rate) is backed out.

$$DP = \frac{CDS/10000}{1-RR}$$

(ii) Gross impact on debt is equal to the difference between the present value of debt before the plan and after the plan (rf is the risk-free rate, a&b indicates before and after).

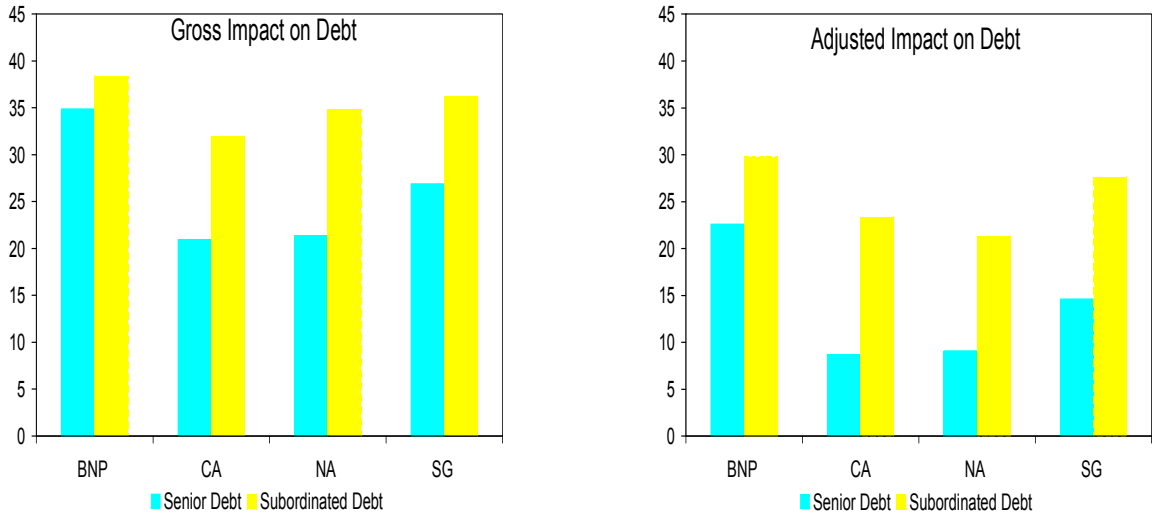
$$\Delta PV = \sum_{t=0}^{T} \frac{(1-DP_b)^t \frac{CDS_b}{10000} * D_t}{(1+rf)^t} - \sum_{t=0}^{T} \frac{(1-DP_a)^t \frac{CDS_a}{10000} * D_t}{(1+rf)^t}$$

(iii) To control for other things happening at the same time, an adjusted impact is measured by subtracting debt changes in *Scor* Group, a reinsurance firm not receiving government money but experiencing narrowing spreads.

$$Adjusted\Delta PV = \Delta PV - PV_b \times \frac{\Delta PV^{sc}}{PV_b^{sc}}$$

38. **The results show that the French support plan drove down banks' credit risk significantly.** The debt value of banks appreciated across the board after the announcement of the plan, with the gross appreciation ranging from 21 percent to 38 percent. As expected, taking into account other events happening at the same time lowered the impact, but the positive effects of a value increase of at least 9 percent were still pronounced. In addition, subordinated debt benefited more than senior debt. On average, the value of the banks' subordinated debt went up by 35 percent on gross terms and by 25 percent on adjusted terms, while the value of the banks' senior debt went up by 26 percent and 14 percent respectively.

Figure I-13. Impact on Debt

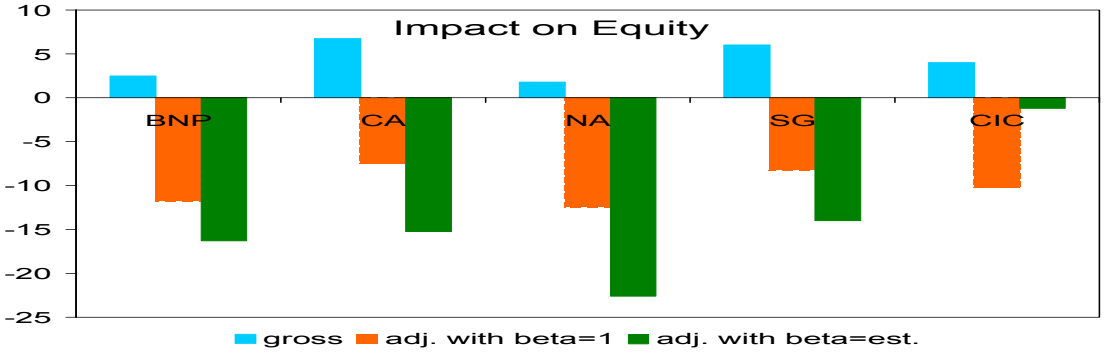


Sources: Bloomberg, Datastream, Thomson Financial, and Fund staff estimates.

39. **The impact on stocks is calculated as follows.** The gross impact is measured by raw stock returns and the adjusted impact is measured by using abnormal returns from the CAPM. Beta is estimated from daily stock prices during the period 1/1/07-10/09/08. Both market benchmarks, CAC40 and SBF250, are used. Adjustments are done with beta equal to one and the estimated betas.

40. **The results show that the plan had a mixed impact on equity.** The gross impact was positive, with the equity value of the banks experiencing a modest increase of 2-7 percent. However, the adjusted impact was negative across the board, regardless of the benchmarks and beta estimation methods used. The loss of the equity value of the banks ranged from one to 23 percent. With the exception of one bank, the estimated betas produced larger equity value reduction than assuming betas equal to one. The different impact on debt and equity suggests the possibility of equity injections being transferred to debt, as analyzed in Myers (1977).

Figure I-14. Impact on Equity



Sources: Bloomberg, Datastream, Thomson Financial, and Fund staff estimates.

41. **To measure the proportion of equity injections into debt, the Black-Scholes-Merton model is reverse engineered.**[3] In the Black-Scholes-Merton model**,** asset value follows a geometric Brownian motion:

$dA/A=\mu_A dt+\sigma_A dw$

Equity is a call option and debt is a put option on bank assets. Specifically,

$$E = \max(A - DB, 0) = \int_{DB}^{\infty} e^{-rT} E(A - DB) f(A) dA$$

$$D = DB - \max(DB - A, 0) = \int_{DB}^{\infty} e^{-rT} D(A - DB) f(A) dA$$

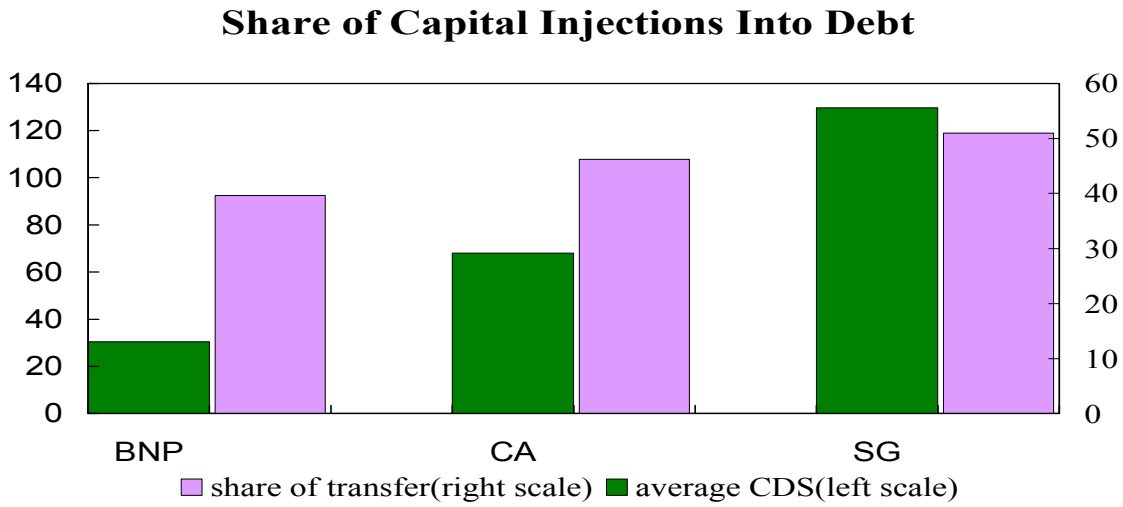
where
E is the market value of equity,
A is bank assets,
D is the market value of debt,
DB is the distress barrier,
μ_A is the expected rate of return of assets,
T is the time to maturity on debt in years,
σ_A is the standard deviation of assets,
dw is the Weiner process,
f(A) is the asset distribution function.

42. **To obtain the share of equity injections into debt, the following procedure is followed**: (i) calibrating the Black-Scholes-Merton model to market data of bank equity and volatility; (ii) backing out the implied value and volatility of bank assets; (iii) calculating ex-ante the market value of bank bonds and equities after the announcement of the plan; and (iv) determining the share of equity injection into debt by the value difference between the pre- and post-plan market values relative to capital injections.

43. **The results demonstrate that the share of transfer varies with the riskiness of banks.** For the three largest French banks, the proportion of the transfer ranges from 13 to 56 percent. Moreover, the transfer dovetails with the credit risk of banks measured by the average of the CDS spreads of the banks' senior and subordinated debt. The riskier the debt, the higher the share of capital injections into debt. It indicates that capital injections may benefit debt holders at the expense of shareholders, arguing for the necessity of injections by the government.

[3] For details, see Xiao (2008).

Figure I-15. Share of Capital Injections Transferred into Debt



Sources: Bloomberg, Datastream, Thomson Financial, and Fund staff estimates.

F. Conclusions

44. **French banks have demonstrated relative resilience to the global financial crisis so far.** The crisis has put the banks to an unprecedented test and they are not immune to the severe fallout of the crisis. However, the banking model featuring diversification in business, funding, and geography has helped to contain risk to a manageable level. In addition, benefiting from the comprehensive supervision, proactive regulation, and timely information sharing among regulatory authorities, the banks enjoyed better initial conditions and have withstood the crisis thus far relatively well.

45. **Government measures are necessary and beneficial, but challenges still lie ahead.** Recapitalization and refinancing measures have helped stabilize the system by reducing the risk and decreasing the financing cost considerably. Going forward, banks' earnings and profitability may continue to be under pressure with subdued CIB activities, potential losses and writedowns from risky assets, the still low interest margins, as well as the rising counterparty risk and the cost of risk. With the global crisis still unfolding and the international debate on capital adequacy still evolving, the impact of the banks' lack of comparative advantage in capital buffers remains to be seen. Rising to the challenge would call for continued vigilance and enhanced risk management.

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II. Countercyclical Stimulus and Long-Term Sustainability: Insights from a Fiscal SVAR for France[4]

A. Introduction

46. **At this time when fiscal policy instruments are called into action, it is useful to take stock of their effectiveness**. This chapter presents new estimates of fiscal multipliers for France, while comparing those with earlier estimates obtained for France and comparator countries. Estimates of fiscal multipliers can help shed some light on two pressing policy questions: what is the output impact of countercyclical fiscal policy? And when the recovery is underway, how best to implement the necessary fiscal consolidation?

47. **This chapter uses a Structural Vector Auto Regression (SVAR) model to estimate fiscal multipliers and derive policy recommendations for countercyclical policy and for preserving long-term sustainability**. In a seminal paper, Blanchard and Perotti (2002) propose a methodology to identify fiscal policy shocks which allows to derive stylized facts about their effectiveness. The framework has since been extended by Perotti (2002) and Favero and Giavazzi (2007). In particular, the latter paper explicitly integrates a debt feedback rule into the model. I apply this recent methodology to French data over the past thirty years. As the VAR methodology is essentially backward-looking, giving an average response of the economy to a fiscal shock, conditional of the specific environment prevailing during the sample period, I also discuss whether fiscal multipliers might have changed and to what extend historical estimates of multipliers could be modified in the current environment.

48. **The chapter is organized as follows**. Section B presents the methodology and the data used. Section C presents estimates of fiscal multipliers in a model with or without debt feedback. Section D discusses the results, and section E concludes.

B. Methodology and Data

Theoretical setup

49. **Two broad set of methodologies have been used to assess the impact of fiscal policy shocks**. One relies on structural macroeconomic models, the other on econometric estimations. Both have specific advantages and drawbacks, one often the mirror image of the other. Structural macroeconomic models are founded on a well-specified theoretical framework and, depending on the level of detail of the model, allow to capture the impact of very specific shocks (e.g. decrease of social security contribution on wages) and to follow the propagation of the shock throughout the variables of interest included in the model. However,

[4] Prepared by Brieuc Monfort.

despite efforts at calibrating accurately the models, they may rely on theoretical assumptions that are too strong and not validated by the data. While the broad results of structural macroeconomic models are similar, a comparison of the results of models used in different international organizations show occasionally some significant differences (see IMF, 2008; and Laxton, 2009).[5]

50. **Econometric models allow to capture the average historical response to the impact of specific shocks**. In contrast to macroeconometric models, econometric methods, such as VAR, do no rely so strongly on theoretical assumptions but allegedly let the data "speak for itself." One main difficulty is the correct identification of the shocks. Here also, two main approaches can be distinguished. The first relies on event studies, which aim at capturing pure exogenous shocks, either for expenditure (such as war build-ups, as in Ramey and Shapiro, 1998) or for revenue (regulatory changes of tax policy, as in Romer and Romer, 2007). This may require constructing a very detailed and time-intensive information set on the chronology and the size of the shocks, but does not completely avoid the issue of exogeneity. The second approach consists in deriving the policy shocks as the residuals of a VAR model, and imposes a structural interpretation to the residuals to avoid their autocorrelation. Building on earlier models applied to monetary policy, Blanchard and Perotti (2002) have pioneered the extension of the SVAR methodology to fiscal policy. Whether this method truly captures reduced-form shocks is the object of a lively debate between the proponents of the two approaches. Both econometric methods have the main drawback of being backward-looking, namely reflecting the average economic conditions over the period of estimation.

51. **The originality of the Blanchard-Perotti SVAR model is to use institutional information to impose a structural interpretation on the residuals**. They estimate a VAR with only three variables (government revenues, government expenditures, output). Standard residuals of the VAR are correlated, because of the effect of output on revenues—the "automatic stabilizer" effect—and the opposite impact of revenues on output—the multiplier impact that the model attempts to measure. Using institutional information on the spontaneous reaction of revenues to an output shock and under the assumption of no reaction of expenditures to an output shock within the same quarter (reflecting institutional delays in deciding or implementing a policy response) allows to construct reduced-form uncorrelated residuals.

52. **The basic specification is the following**. Let Y_t be the three-variable VAR (with revenues t_t, expenditures g_t, and output x_t - with all variables in logarithms), and k the

[5] The third chapter of this Selected Issues Papers presents an illustration of the insights derived from one such model, the GIMF model used at the IMF (Yakadina and Yontcheva, 2009).

number of lags in the VAR:

$$Y_t = \sum_{i=1}^{k} C_i Y_{t-i} + U_t \qquad \text{with} \qquad Y_t = \begin{pmatrix} t_t \\ g_t \\ x_t \end{pmatrix} \tag{1}$$

where U_t is the vector of standard residuals of the VAR. The methodology consists in finding two matrices, A and B, such that:

$$A\,U_t = B\,E_t \tag{2}$$

in which E_t is a vector of uncorrelated structural residuals.

53. **The construction of the structural residuals relies on a combination of institutional information and assumptions.** Specifically, it relies on the construction or estimation of a number of parameters such that:

$$\begin{pmatrix} 1 & 0 & \eta_{TY} \\ 0 & 1 & \eta_{GY} \\ \hat{c}_1 & \hat{c}_2 & 1 \end{pmatrix} U_t = \begin{pmatrix} 1 & \beta_{GT} & 0 \\ \beta_{TG} & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} E_t \tag{3}$$

For example, the spontaneous response of revenues to output η_{TY} uses information on the elasticity within the same quarter of each tax base to output shock, η_{BiY}, and of the tax revenue itself to the tax base, η_{TBi}. The response of the aggregate revenues to an output shock is then constructed as a weighted average: $\eta_{TY} = \sum w_i \eta_{TBi} \eta_{BiY}$. The assumption of no contemporaneous response of expenditures to output within the same quarter (η_{GY}=0) reflects the delays needed to respond to output shocks; for example, in some countries, different layers of government or procurement rules can delay the implementation of a countercyclical investment stimulus well beyond a year. The reduced form output shock is then constructed by instrumental variables, using the cyclically adjusted shocks. Finally, obtaining an identification of the reduced-form residuals requires another assumption on whether expenditure shocks are determined before or after revenue shocks (β_{GT} = 0 or β_{TG} = 0); results could be presented using the two different assumptions.

54. **Successive SVAR models applied to the analysis of fiscal policy have allowed to gradually broaden the original model**. Perotti (2002) extends the original methodology to encompass price and interest rate feedbacks. He uses similarly institutional information to estimate reduced form residuals for the two additional variables. For example, the contemporaneous response of social benefits in real terms to price is assumed to be -1, since social benefits are usually not indexed to inflation within the same quarter.

55. **One criticism of standard fiscal SVAR models is that they fail to account for debt dynamics.** Blanchard and Perotti acknowledge that it is one of the two "crimes" committed in their paper (the second being ignoring the Lucas critique). Favero and Giavazzi (2007) argue that traditional SVAR fail to keep track of the consequent debt developments and overlook the possibility that fiscal variables might respond to the debt variable, as the debt ratio evolves over time. As a consequence, the error terms captured by the SVAR include not only the exogenous fiscal shocks but also the responses of taxes, spending, and long-term interest rates to a debt shock. In the empirical part of their paper, they find that introducing debt dynamics tends to reduce the size of multipliers.[6]

56. **In practice, the Favero-Giavazzi method relies on estimating feedback effects of debt while introducing a debt accumulation equation**. Debt variables are included in the VAR while an additional accounting equation is added to close the model and to derive impulse responses for the VAR. Specifically, equation (1) is modified as follows:

$$\begin{cases} Y_t = \sum_{i=1}^{k} C_i Y_{t-i} + \sum_{i=1}^{k} \gamma_i d_{t-i} + E_i \\ d_t = \dfrac{1+i_t}{(1+\Delta x_t)(1+\Delta p_t)} d_{t-1} + \dfrac{\exp(g'_t) - \exp(t_t)}{\exp(x_t)} \end{cases} \tag{4}$$

where d_t is the debt-to-GDP ratio and g'_t is the logarithm of primary expenditures. The impulse response function is computed differently than in a standard VAR. It requires first creating a baseline by solving the model dynamically forward without shock. Then, each specific variable of the VAR is subject to a shock, and the model is again solved dynamically forward. The impulse response is deduced from the difference between both scenarios. The dynamics in play here is non-linear as it depends on the initial level of debt.

57. **A broad set of results using traditional fiscal SVAR models is already available**. Most of the fiscal SVAR methodology has been developed and applied to data for the United States for the past forty-fifty years, which allows for a better comparability of the results (Blanchard-Perotti, 2002; Perotti, 2002; or Favero-Giavazzi, 2007). Perotti (2002) extends the methodology to five countries, including three European countries. Specific studies using the same methodologies have also been done for a number of other European countries. On France, Biau and Girard (2006) applies the SVAR methodology in a VAR with five variables as in Perotti (2002). Their paper presents, however, two marginal differences with the rest of the literature: due to data availability, the sample period is shorter, starting only at the end of

[6] Interestingly, the increment in debt, rather than the level itself, matters for the VAR, a result similar to the one obtained by Dai and Philippon (2005) in different setup with a yield curve added to the traditional fiscal VAR. They interpret this as meaning that today's deficit is the best proxy for tomorrow's debt.

the 1970s; and the main aggregates are differentiated, thus loosing some possible information from the level of the variables. In another VAR setup for France, Boissinot, L'Angevin, and Monfort (2004) introduce a debt feedback, but as the focus of their paper is more on the debt dynamics than on the measure of fiscal multipliers, a simpler Cholesky ordering is applied to the residuals rather than the more elaborate structural interpretation *à la* Blanchard-Perotti.

Data

58. **The sample period covers the past 30 years**. The data used are quarterly data spanning over 1978Q1-2007Q4. To the five original variables of Perotti (2002), i.e. real GDP, government expenditures, government revenues, inflation proxied by the change of the GDP deflator, and interest rate—is added a debt variable. National accounts data from INSEE is complemented by data from the quarterly database of the OECD. In particular, government expenditures on goods and services come from INSEE but the remaining fiscal data comes from the OECD. GDP and fiscal aggregates are deflated by the GDP deflator. The debt variable is the gross public debt consistent with the Maastricht definition. As quarterly debt data are not available before 1995, the chapter uses the methodology exposed in Boissinot, L'Angevin, and Monfort (2004) to construct a quarterly debt stock for the sample period. Annex Figure 1 presents the main variable of interest.

59. **The definition of the variables is tailored to the estimation strategy**. The definition of fiscal variables varies significantly across different papers. Most the SVAR literature on the impact of fiscal policy focuses on government expenditures on goods and services on one side, and on taxes net on transfers on the other (Blanchard-Perotti, 2001; or Biau-Girard, 2005). In Favero-Giavazzi (2007), by contrast, the definition of the fiscal variables is determined by their need to construct a debt accumulation equation. They thus focus on primary current expenditures and on net taxes. This consideration leads them also to focus on the implicit interest rate on government debt, rather than on the monetary policy rate.[7] I follow the same methodology as Favero-Giavazzi (2007). The robustness of the results to alternative definitions of the fiscal variables is also discussed.

[7] The interpretation of the interest rate in the Favero-Giavazzi setup is thus slightly different than in the Perotti setup: in the latter, the interest rate captures principally monetary policy shocks, as the variable of interest is a short-term interest rate; by contrast, in the former, the implicit interest rate on debt is a weighted average of short and long term interest rates, providing a less clear-cut interpretation. Dai and Phillipon (2005) provides another framework with debt feedback on fiscal variables, with an explicit discussion of the impact on the yield curve through the introduction in their estimation of both a short- and long-term interest rates.

Model specification

60. **As the variables of interest are non-stationary, a cointegrated VAR setup is considered**. The time series of the chapter are integrated of order one in levels, but stationary in differences (see Annex Table 1). Thus a cointegrated system seems the most appropriate approach to estimate the SVAR, without discarding valuable information present in the level of the variables. Blanchard and Perotti (2002) estimate their SVAR model either with a cointegration vector or after detrending the time series. Biau and Girard (2006) estimate a VAR in differences, as they argue that it is difficult to provide a meaningful economic interpretation to the cointegration vectors present in the econometric system. While there is strong suggestion that most other studies use a SVAR model in levels, the exact treatment applied to the non-stationarity of the variables is often unclear. For robustness and for comparability with the Biau-Girard paper, results from a SVAR model in differences are also discussed.

61. **The specification of the VAR is determined using traditional tests**. The lag structure of the VAR is determined by information criteria (AIC, BIC). In the preferred specification, four lags of the VAR are considered. The number of cointegration relations is determined by the trace and eigenvalue tests. The specification of the SVAR is not affected by the inclusion of the debt variable on the right hand side as in equation (4). In the preferred specification, four cointegrated relations are retained. No specific constraints are imposed on the form of the cointegration vector. The number of cointegration vectors seems large, since one could expect to find at least two stochastic trends, one for the drift of real GDP reflecting productivity and factor accumulation, and the other for the trend decline of the inflation rate over the period considered. Eyeballing the data suggests a number of candidates for the cointegration relations, notably the real interest rate, broadly constant over the period; the fiscal deficit or some weaker form of relationship between expenditures and revenues; and the broad stability of revenue or expenditure-to-GDP ratios over the period considered.

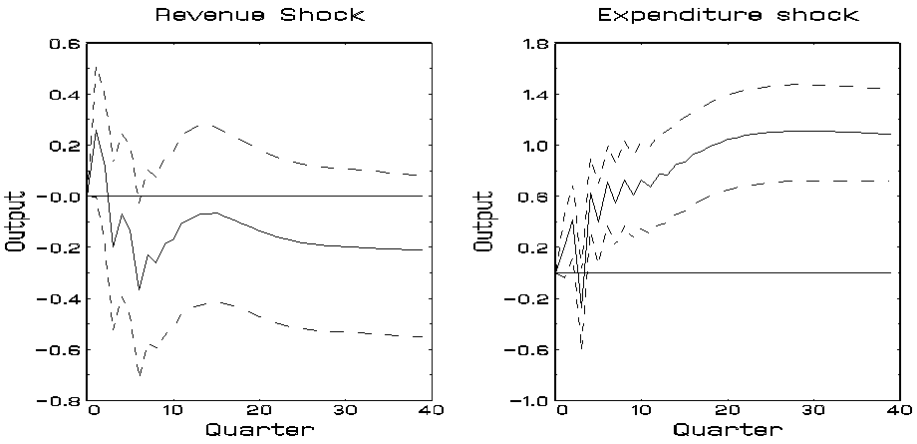
62. **Structural residuals seem to adequately capture the main fiscal policy changes over the sample period**. Annex Figure 2 presents the structural residuals of the SVAR and indicates notable fiscal policy changes using the chronology established by Biau-Girard. They show that the largest residuals generally capture policy changes. In addition, the structural residuals are broadly similar in the models with or without debt feedback.

C. Fiscal Multipliers in a Model With or Without Debt Feedback

Baseline fiscal multipliers

63. **Estimates in a model without debt feedback give a peak multiplier of 1.1 for expenditures and 0.3 for revenues.**[8] The expenditure multiplier rises gradually from 0.4 after a year to 0.6 after two years and to a peak value of 1.1 after six years before declining slightly. The revenue multiplier peaks after eight quarters around 0.3, then declines to a long-term value of 0.2. During the first year, the sign of the multiplier is positive, implying that a tax increase induces an *increase* in GDP. While the hierarchy between revenue and expenditure multipliers is somehow comparable to that obtained in other studies, other results are surprising, e.g. the extremely gradual rise of the expenditure multiplier, suggesting long delays for the negative feedbacks from interest rate and prices to kick-in; the non-standard value of the revenue multiplier during the first year; and the undulation of the revenue multiplier over time. Note also that the peak revenue multiplier is significantly different from zero at the 10 percent level only around eight quarters. By contrast, after six quarters, the expenditure multiplier is significantly different from zero at the 10 percent level.

Figure II-1. Impulse Response Functions to Fiscal Shocks in Baseline Model



Source: Fund staff estimates.

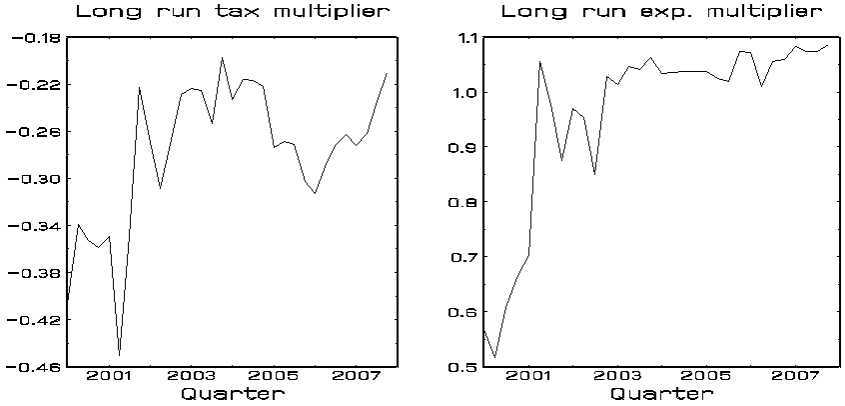
NB: Dotted lines represent the confidence intervals at 10 percent; the impulse responses present the impact of a temporary one unit shock of the fiscal variables on the level of output.

[8] For simplicity, the text and the in-text table refer to the multiplier impact for an *expansionary* fiscal shock (expenditure increase but tax *decrease*). The expected sign for the Keynesian multiplier is thus positive, while a negative multiplier indicates that possible Ricardian effects dominate. By contrast, all the charts show the impact of a one-off *positive* shock of each variable (increase of GDP by one percentage point, increase of fiscal revenues or expenditures by 1 percentage point, increase of inflation or interest rate by 100 basis points).

64. **The results are broadly robust under alternative assumptions**. Peak multipliers are broadly similar when using different assumptions, such as restricting the model to the same sample as Biau-Girard i.e. 1978-2003; when using the fiscal variables and GDP in growth rates instead of levels, again as Biau-Girard; or when using only a SVAR with three variables as in the Blanchard-Perotti paper, in which case the peak tax multiplier is slightly higher at 0.5.

65. **Recursive estimation also shows a broad stability of the multipliers over the past five years**. One preliminary way to estimate, within a traditional SVAR model, the impact of the debt level is to see whether the long-run multipliers are affected by the estimation period. The short sample available prevents from estimating the model over different sub-samples. One could, for example, expect the multiplier to decrease when more recent data (with the debt ratio hovering over 60 percent since the early 2000s) is included. However, recursive estimations (by gradually shrinking the sample period) show that model estimates are broadly similar whether the past five years are included or not. By contrast, estimates change drastically when the model is only estimated over 1978-2001, with the tax multiplier being higher but the expenditure multiplier being lower. Given the contrasting evolution of the tax and expenditure multipliers, we interpret this more as evidence of the poor statistical properties of the model over a reduced sample, than as a change of the estimates because of the higher debt level.

Figure II-2. Recursive Estimation of Long-Term Fiscal Multipliers

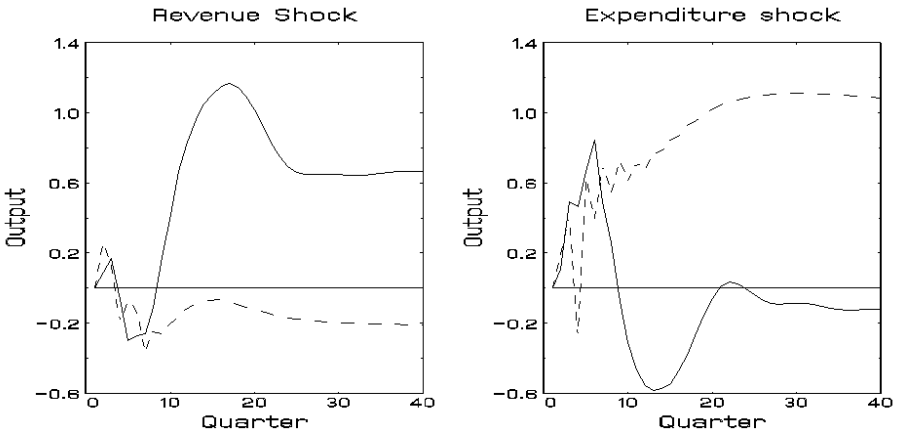


Source: Fund staff estimates.

Fiscal multipliers with debt feedback

66. **Introducing a debt feedback leads to broadly similar results in the short run but to strikingly different results in the long run**. In the short term, the results are similar to those obtained in the Perotti (2002) setup. Tax multipliers are lower than expenditure multiplier (0.2 vs. 0.8). By contrast, expenditure multipliers become negative, then null. Tax multipliers turn negative after eight quarters and remain negative in the long run (consistent with an interpretation in terms of expansionary fiscal consolidation).

Figure II-3. Multipliers in Baseline Model (dotted lines)
and Model with Debt Feedback (solid lines)



Source: Fund staff estimates.

67. **The results of the model with debt feedback need to be taken with caution for a number of reasons:**

- The contrast between the results of both models are sharper than the difference obtained for the United States by Favero-Giavazzi (2007), where the efficiency of fiscal instruments is only marginally reduced but not cancelled or reversed.

- The coefficients of debt in some of the equations of the SVAR display occasionally an unexpected sign; for example, it is possible that the negative sign of the debt variable in the interest rate equation may capture the historical combination of the decline of nominal interest rate while debt increases.

- The impulse response functions present a significant cyclicality which is difficult to explain and may reflect some misspecifications.

- In general, as illustrated in Table 1 below, SVAR results may vary significantly from one study to the next, depending on the time period or the variables considered.

68. **However, one result that stands out across models and specifications is the hierarchy between expenditure and revenue multipliers**. The long-term expenditure multiplier for France found here in the model without debt is on the high side compared to a sample of other G7 countries, but lower than the value found by Biau-Girard (2005). By contrast the long-term expenditure multipliers in the model with debt are comparable to results found by different authors for Italy, Spain or the U.K. The expenditure multiplier based on the Ramey and Shapiro (1998) event study for the U.S. tends to be higher in the short term but lower in the long term, but it is uncertain whether this result can be generalized given the specificity of the shocks studied (mostly military expenditures). In the baseline

model, the peak revenue multiplier is higher that in most other studies. One exception, are the results of Romer and Romer (2007), based not on a SVAR model, but on event study, and which found a much larger revenue multiplier.

Table II-1. Survey of Fiscal Multipliers 1/

Country	Author (s)		Period		Expenditure			Revenue		
					One year	Peak	Long term	One year	Peak	Long term
SVAR models										
France	This study	w/o debt	1978	2007	0.62	1.11	1.08	0.07	0.37	0.21
		with debt	1978	2007	0.40	0.80	-0.10	0.00	0.20	-0.80
France	Biau Girard, 2005		1978	2003	1.40	2.00	0.80	0.10	…	…
U.S.A.	Blanchard-Perotti, 2002		1947	1997	0.85	1.41	0.69	0.64	0.71	-0.11
U.S.A.	Perotti , 2002		1961	2000	0.29	1.05	0.96	0.66	0.75	0.53
U.S.A.	Favero-Giavazzi , 2007	w/o debt	1980	2006	0.16	0.80	1.43	0.00	0.17	0.27
		with debt	1980	2006	0.13	0.71	1.28	-0.01	0.28	0.65
Germany	Perotti , 2002		1961	1989	0.96	1.30	0.94	0.46	0.98	-0.05
Germany	Heppke-Falk et al., 2006		1974	2004	0.62	1.23	0.38	-0.08	-1.51	-1.51
UK	Perotti , 2002		1964	2001	-0.04	0.30	-0.06	-0.05	-0.21	-0.24
Italy 2/	Giordano et al., 2007		1982	2004	0.25	0.50	-0.25	0.08	0.16	0.05
Spain	Castro et al., 2007		1994	2004	0.10	0.20	-0.10	0.00	0.04	-0.10
Event studies										
U.S.	Romer-Romer, 2008							1.20	2.80	2.70
U.S. 3/	Ramey-Shapiro, 2002				1.50	…	-0.20			
Macroeconometric models										
France	Mesange , 2001				1.30	…	…	0.45	…	…
France	GIMF, 2009				1.06	…	…	0.38	…	…

Source: as indicated and Fund staff estimates.

1/ The table presents the impact of an expensionary fiscal shock of one unit (expenditure *increase* , revenue *decrease*).
2/ Impact on private GDP.
3/ Military spending only.

D. Discussion of the Results

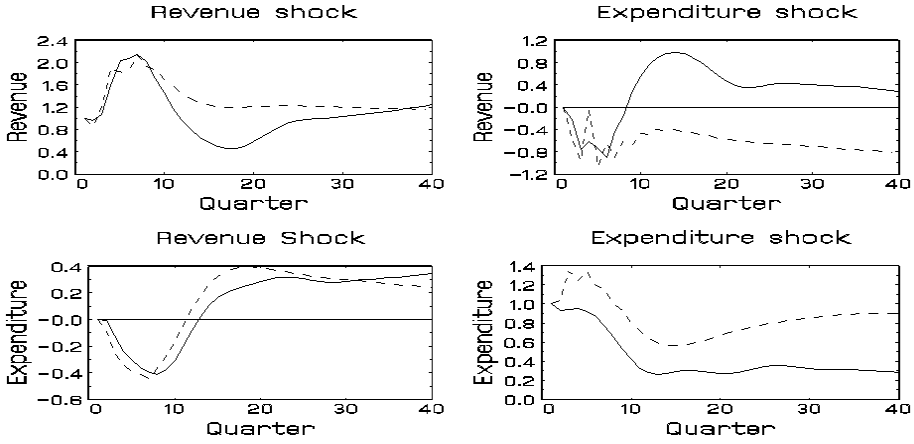
69. **The results suggest consistently that the most effective way to stimulate the economy is through expenditure increase rather than through a tax cut.** The higher "bang for the buck" in the short term of an expenditure increase suggests that this should be the preferred instrument to inject a countercyclical stimulus. This hierarchy is maintained also in the long run in both models. The model without debt suggests a lasting impact of an expenditure increase (1.08) against a smaller one for a tax cut (0.20). The model with debt suggests that an expenditure increase is almost neutral (-0.10) while a tax cut would have a significant negative output impact (-0.80), possibly because of Ricardian effects.

70. **The model also illustrates some of the lessons derived by Kumar, Leigh, and Plekhanov (2007) from numerous experiences of fiscal consolidation across the world**. For example, they find that fiscal consolidations can be expansionary provided they do not rely on cutting productive public expenditures. The models here also suggest that expenditure

cuts could be harmful in the short run, while being mildly expansionary in the long run in the setup that fully integrates the impact of debt feedback. They also conclude that most consolidations were launched during economic downturns or the early stages of recovery. Provided the consolidation strategy rely on a low "bang for the buck," it would indeed avoid hurting the recovery while delivering high fiscal payoffs. For example, raising some taxes (which have a lower tax multiplier) would have little negative impact on growth. Prime candidates for consolidation seem France's large tax expenditures, which should be evaluated both from an economic efficiency and equity point of view. Beyond that, however, there is little scope for consolidation through tax hikes, given the already high tax ratio. In addition, historical experience shows that fiscal adjustments that rely on cuts in current expenditures tend to be more durable than revenue-based consolidations.[9]

71. **The impulse response of the VAR also suggests revenue and expenditure shocks are highly persistent, with revenue shocks possibly slightly more so.** In both models, a one-off increase in revenue by 1 percentage point of GDP leads to a long-term increase of 1.2 percentage point. By contrast, expenditure shocks seem to be less persistent but this depends on the model: in the model without debt, about 4/5 percent of a one-off expenditures shock remains in the long run, against only 1/5 percent in the model with debt feedback. The model with debt also suggests that any increase in expenditure tends to give rise to an offsetting increase of revenues, but while the additional expenditures are broadly matched in the medium run, in the long run only a third of the additional expenditures are covered by new revenues.

Figure II-4. Impulse Responses of Fiscal Shocks on Themselves in Baseline (dotted lines) and Extended Models (plain lines)



Source: Fund staff estimates.

[9] More specific recommendations on fiscal consolidation—on which the SVAR results could offer no insights—are also worth mentioning. For example, Kumar, Leigh, and Plekhanov (2007) also find that a number of episodes of consolidation were accompanied by policy coordination at different tiers of government; structural reforms, including the introduction of medium-term framework; and reforms of health and pension benefits.

72. **How valid are the multipliers estimated in this chapter for the current crisis?** There is a lively debate about whether historical fiscal multipliers as derived from econometric estimates are of any use to assess the impact of fiscal policy in the current crisis. Some expect multipliers to be larger because of the large unutilized capacity which would limit the subsequent crowding out of the private sector; because of the dysfunctionality of the credit market which constrains the availability of credit to households and thus raises their propensity to consume out of income; or because of a possible confidence effect of fiscal policy allowing the economy to jump from a low to a high confidence equilibrium. By contrast, multipliers could be lower if Ricardian effects dominate and doubts about the long-term sustainability of public debt raise household savings, while the poor state of household and corporate balance sheets would force them to consolidate. The results of the SVAR models suggest that these considerations are not necessarily mutually exclusive, since low or negative long-run multipliers may indicate Ricardian behavior, without cancelling out the positive short-term impact of countercyclical policy.

E. Conclusions

73. **This chapter finds that introducing a debt equation reduces significantly the size of multipliers.** In the baseline model without debt, spending multipliers are larger than tax multipliers, in line with comparator results. By contrast, when a debt equation is introduced, while short-term multipliers are not modified, long-term expenditure multipliers go to zero, and long-run tax multipliers turn negative. While the results with the debt equation need to be interpreted with caution, overall results suggest the following policy implications:

- In the short run, a stimulus based on increasing expenditures is more efficient than one based on tax cuts.

- Over the long run, however, and taking into account the debt feedback, a consolidation based on expenditures does not have a negative impact on activity. Negative long-run tax multipliers would suggest that considerations of fiscal sustainability may dominate the countercyclical impact of a tax cut.

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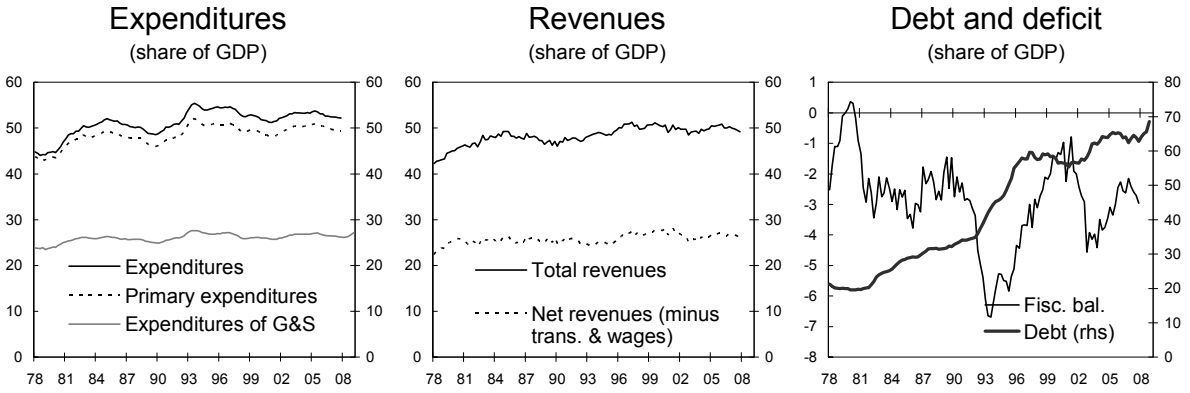
Annexes

Annex Table 1: Stationarity Tests and Order of Integration of the Variables

	ADF test			KPSS		
	Level	First diff.	Order integ.	Level	First diff.	Order integ.
Real fiscal expenditures	-1.92	-4.09	I(1)	0.26	0.06	I(1)
Real fiscal revenues	-1.73	-5.99	I(1)	0.10	0.06	I(0)
Real GDP	-0.12	-4.11	I(1)	0.08	0.05	I(0)
Inflation	-2.94	-7.87	I(0)	0.41	0.03	I(1)
Interest rate	-0.83	-5.08	I(1)	0.11	0.09	I(0)
Debt	-1.67	-4.48	I(1)	0.12	0.13	I(0)

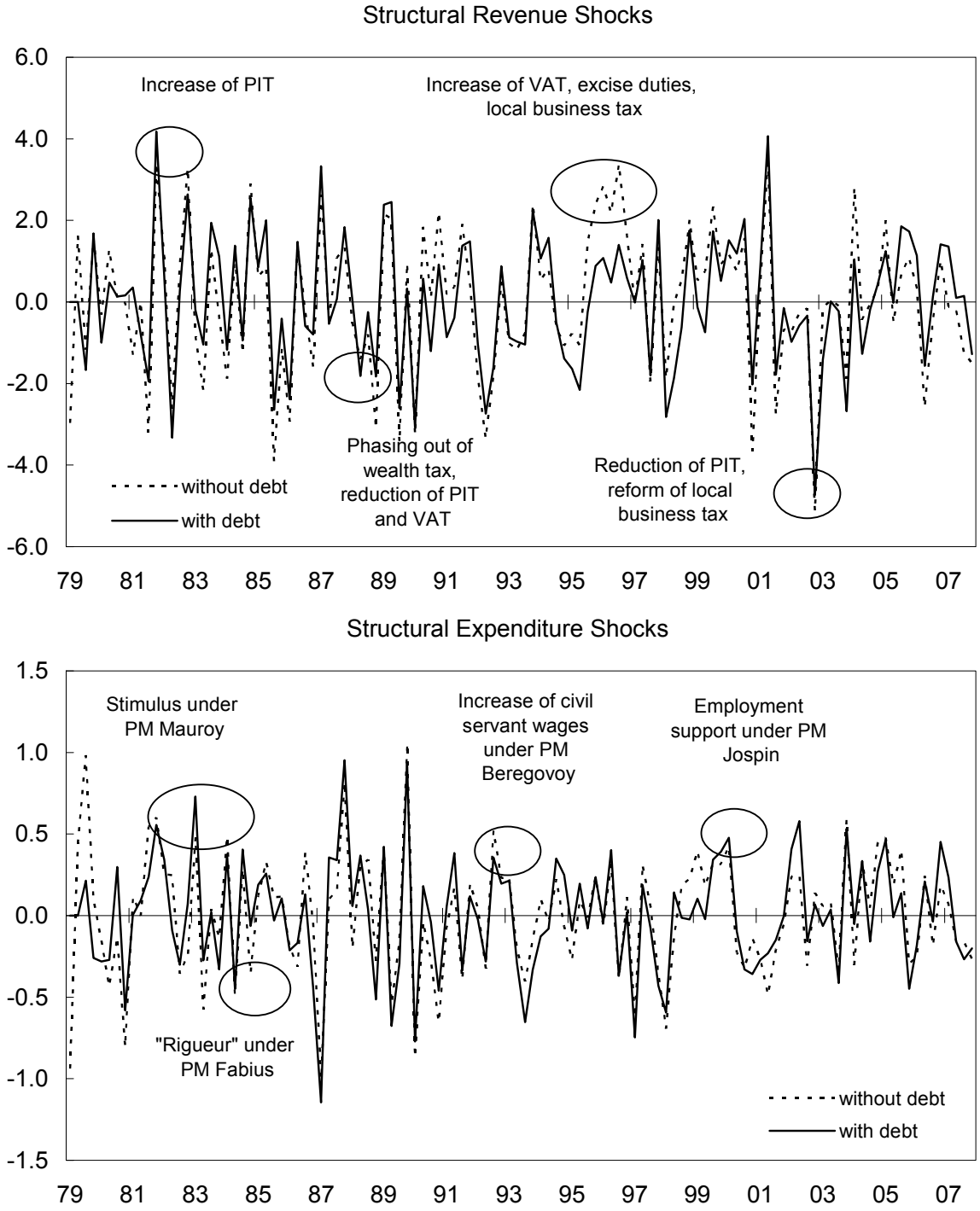
Source: Fund staff estimates.

Annex Figure 1. Variables of Interest



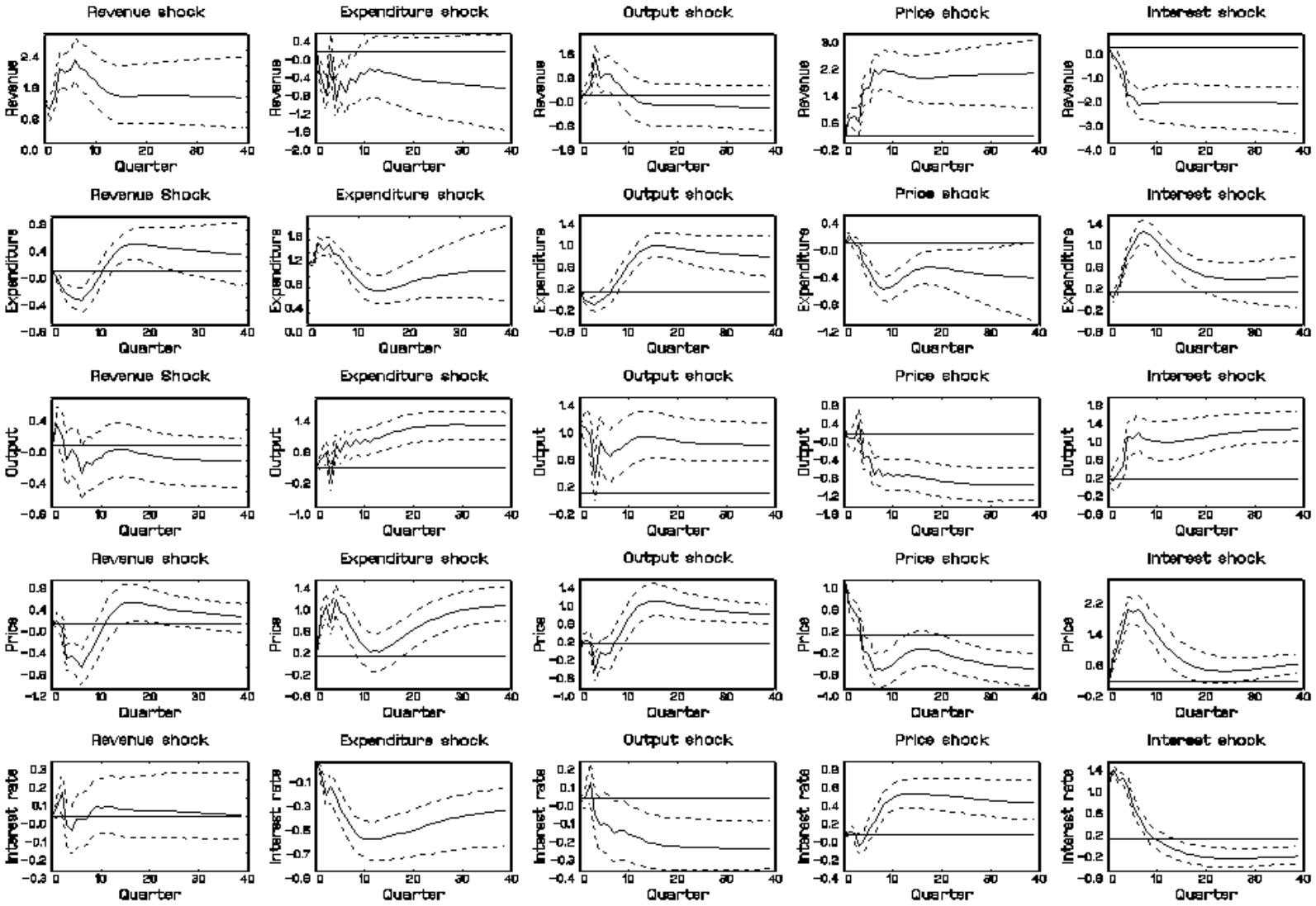
Source: Fund staff estimates.

Annex Figure 2: Structural Revenue and Expenditure Shocks



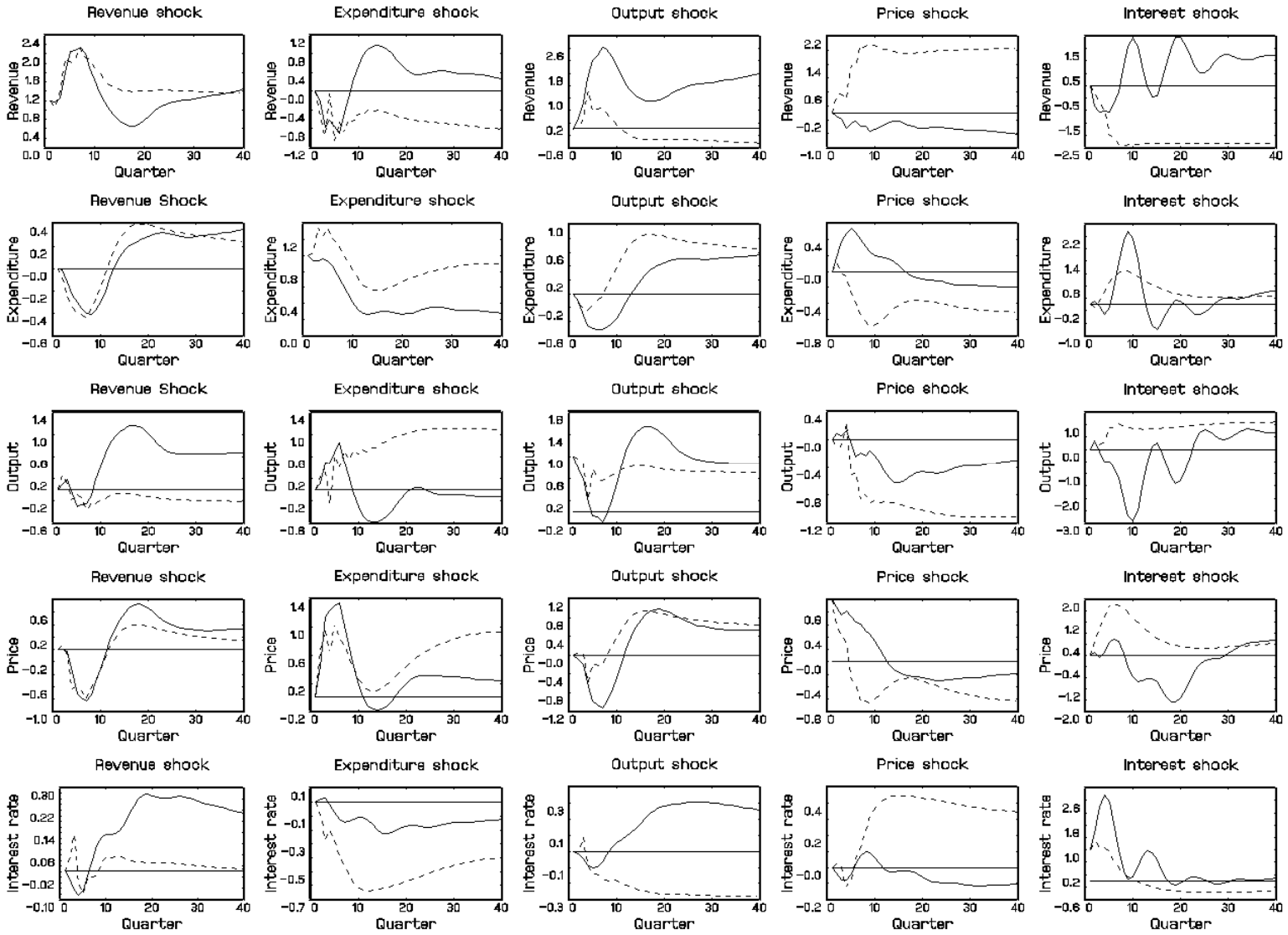
Source: Fund staff estimates ; historical fiscal changes based on Biau-Girard (2005).

Annex Figure 3. Impulse Response Functions in the Model Without Debt



Source: Fund staff estimates.

Annex Figure 4. Impulse Response Functions in the Model With Debt



Source: Fund staff estimates.

NB: Dotted lines represent the results in the baseline model, the solid line the results in the model with debt feedback.

III. Recession and Recovery: Automatic Stabilizers and Discretionary Fiscal Response in France[10]

A. Overview

74. **Along with most developed economies, France put in place fiscal policy measures to counter the adverse effects of the global financial crisis and the economic downturn on the real economy.** While France shows relative resilience to the crisis with a shallower downturn than the average European country, it still faces an unprecedented slowdown. Its GDP is expected to contract by about 3 percent in 2009 and recover only very gradually from 2010 onwards. Hence, the authorities put in place policies to sustain the economy and boost short-term demand.[11] Beyond letting automatic stabilizers operate fully, the government implemented discretionary stimulus measures and used public money to bolster the financial sector.

75. **The cost of those support measures matters for the success of the fiscal strategy.** In the current context of financial crisis and severe downturn, a fiscal stimulus should help prevent a drastic further deterioration in activity. However, fiscal priorities such as keeping the debt under control or promoting policy credibility may outweigh the benefits of fiscal easing. Future public deficits are expected to rise to high levels raising issues of sustainability, potentially generating a negative feedback loop on the economy and aggravating the pre-existing challenges related to population aging. French fiscal policy will have to reconcile the need for short-term stimulus measures with the constraints of medium-term fiscal consolidation objectives.[12] A successful fiscal strategy would entail maximizing the short-term effectiveness of the stimulus measures without endangering public solvency and/or damaging the government's fiscal credibility.

76. **This chapter considers short-term benefits and long-term costs of the current fiscal policy in France.** It assesses how effective alternative fiscal measures are in promoting macroeconomic stability and welfare. In addition, we take into account that—in an integrated world—the impact of fiscal policy depends not only on the chosen fiscal policy in France but also on the policy stance of its main partner countries. This chapter uses the IMF's Global Integrated Monetary and Fiscal Model (GIMF), calibrated to France and the euro area to

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[10] Prepared by Irina Yakadina and Boriana Yontcheva.

[11] If output falls below potential, fiscal policy can help mitigate the decline and bring output back to potential, with a goal of reducing the output gap in a reasonably short period.

[12] The trade-off lies between the costs of additional debt and the potential benefit of higher GDP growth, whether fiscal priorities such as keeping debt ratio under control or promoting policy credibility outweigh the benefits of fiscal easing.

compare the effects on output of different revenue-expenditure mixes and to assess the best ways to improve incentives to invest, work, and enhance fiscal credibility.

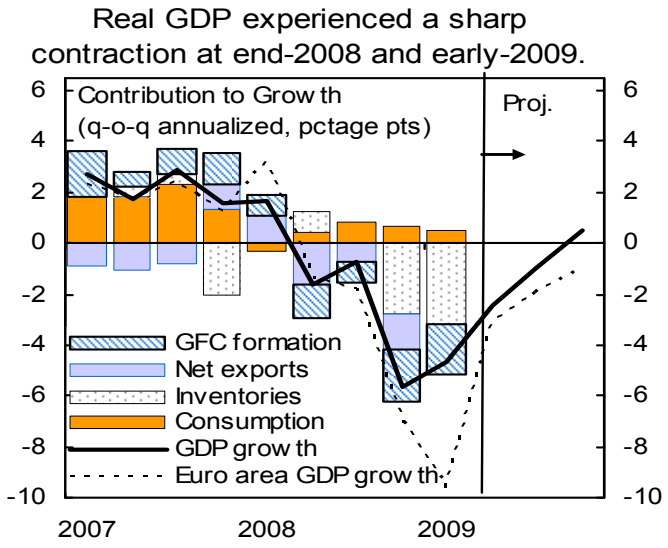
77. **We show that a pro-active fiscal policy can help soften the downturn, especially when accompanied by an accommodative monetary stance, but that measures safeguarding medium-term fiscal sustainability need to be taken without delay**. The most effective policy mix includes increasing productive government investment and targeted transfers. Public infrastructure spending is likely to have the largest impact on real GDP, as direct spending is less likely to trigger saving reactions from the private sector. In addition, it helps sustain the purchasing power of firms and prevents unemployment. As credit constraints tighten, household demand becomes more dependent on current income; hence, transfers targeting credit-constrained households are likely to be spent immediately, raising the bang-for-the-buck effect of fiscal policy. In addition, given the high integration of the euro area, a coordinated fiscal response boosts the impact of any discretionary fiscal stimulus measure at the national level. Finally, in this recessionary context, any fiscal discretionary policy should avoid generating additional uncertainties and damaging fiscal credibility to avoid Ricardian backlashes, costly increases in sovereign spreads or credit conditions for the private sector.

78. The remainder of the chapter is organized as follows. Section B reviews the current economic environment, Section C describes briefly the model, Section D assesses the impact of various fiscal measures, taken alone or in coordination with trade partners, and the role played by monetary policy. Section E looks into the effectiveness of stimulus measures during recession and contributes to the debate on the state-contingency of fiscal policy. Section F discusses the fiscal costs and the required adjustment to return to sustainability. Section G concludes and provides policy implication.

B. Economic and Fiscal Challenges

79. **France is confronting a severe recession.** While the French economy is somewhat shielded from the global downturn by its relatively low trade openness and large social safety net, output is nonetheless expected to contract by 3 percent this year followed by a tepid recovery in 2010.

Figure III-1. France: Contribution to Growth, 2001-2009



Source: Eurostat and Fund staff estimates.

80. **The authorities reacted to the downturn by addressing financial sector vulnerabilities and supporting aggregate demand.** The government supported the financial sector, including through recapitalization and a bank refinancing scheme, let automatic stabilizers operate fully, and implemented a relatively well diversified stimulus package (about 1.6 percent of GDP over 2009-10), front-loaded with investment measures.

81. **France entered the recession with relatively weak public finances and a limited fiscal credibility**. The fiscal stance had already eased in 2008 when the fiscal deficit exceeded the Maastricht ceiling. In addition, rising government expenditures related to the aging of the population put pressure on the public finances in the medium term. Historically, French fiscal policy has shown a deficit bias, responding asymmetrically to shocks by loosening during downturns but only modestly consolidating during expansions. Stimulus measures enacted during downturns have often become permanent, placing upward pressure on the public debt. Therefore, the benefits of the current fiscal stimulus must be balanced against its costs.

C. Methodology and Model Description

82. **The IMF's GIMF allows us to measure the effectiveness of fiscal policy in the current downturn while taking into account the global environment and the limited scope for monetary policy.** The model is a new large-scale macroeconomic model with microfoundations based on optimizing consumers and producers. It allows for real and nominal rigidities as well as imperfect competition, therefore capturing structural characteristics of the French and European economies. The economic agents in GIMF do not exhibit Ricardian behavior being either forward-looking but with a finite planning horizon or

hand-to-mouth consumers subject to cash constraints; this makes the model well equipped to measure the impact of fiscal policy because changes in fiscal instruments would not be neutral. We use a two-country model calibrated for France and the euro area, reflecting the context of a monetary union.[13]

83. **The model is calibrated using the standard procedure that combines several macroeconomic ratios that match historical averages over the last five years with structural parameters from the relevant literature.** National accounts and fiscal data were used to determine key ratios, such as, the size of the French economy compared to the rest of the euro area; public and private consumption and investment; relative importance of labor income, consumption, and capital taxes; government consumption; and other factors that affect the steady-state values. Structural parameters are largely adapted from the literature on France and the EU (OECD, 2009; De Bandt, Herrmann, and Parigi, 2006; Freedman and others, 2009). In particular, one of the key structural parameters of the model—the share of hand-to-mouth consumers—was set to 25 percent of the population for both France and the euro area in line with other studies.

84. **We focus on evaluating the short-term effectiveness and long-term costs of fiscal policy in the current recessionary context.** We first assess the effectiveness of alternative fiscal stimulus measures—public investment, targeted transfers, and tax cuts—by deriving the respective fiscal multipliers. We verify the additional impact of an accommodative monetary policy and of simultaneous European fiscal stimulus. Then, we simulate a recession scenario where the financial crisis triggers financing difficulties for the private sector, increasing firms' risk premia and leading to an output reduction. In this recessionary context, we simulate the impact of the available fiscal measures and measure the costs associated with the stimulus as well as the consolidation strategy required to come back to the Maastricht public debt sustainability target (60 percent of GDP).

D. Impact of a Discretionary Fiscal Stimulus

85. **This section analyzes the effects of a discretionary fiscal package consisting of public investment, targeted transfers, and general tax cuts at the steady state.** Estimating a fiscal multiplier provides a measure of the effectiveness of fiscal policy, i.e. the impact of the discretionary fiscal impulse on output. The type of fiscal instrument used will affect the results, as will the size and duration of the stimulus, the response of monetary policy, trade openness, and other characteristics of the economy. In line with other recent studies addressing the fiscal stimulus impact, we normalize the fiscal expansion to increase discretionary spending by 1 percent of GDP in the first year and by 0.5 percent in the second year. This broadly reflects the size of the announced stimulus plan of the French authorities

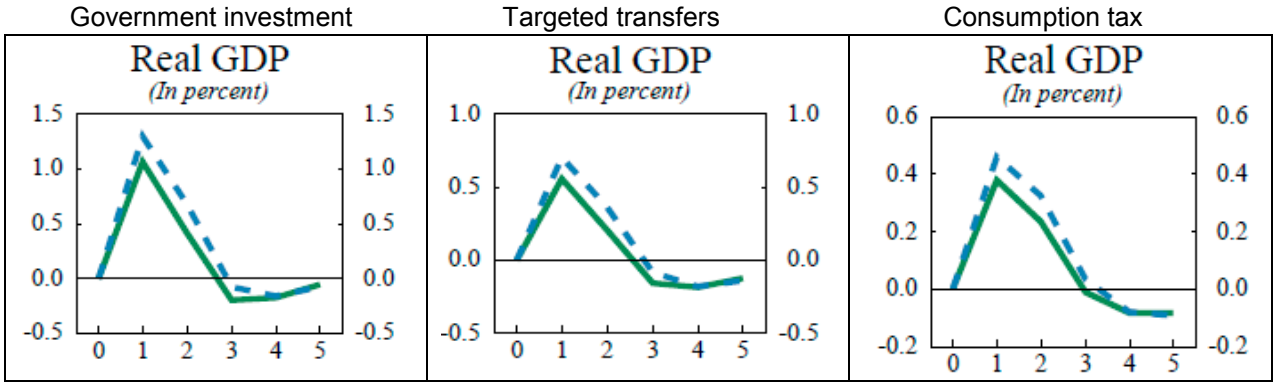
[13] See Kumhof and Laxton (2007 and 2009a) for a more detailed discussion of GIMF.

for 2009-10. In addition, we consider two scenarios of monetary policy—with and without monetary accommodation. In terms of the policy mix, we analyze the instruments most prominent in the actual French stimulus package, namely public investment, targeted transfers to cash-constrained households, and tax cuts.[14] For clarity, we measure and compare the impact of three stimulus packages, each consisting of one of those instruments.

86. **In terms of impact on real GDP, public investment provides by far the biggest "bang for the buck" followed by targeted transfers.** Infrastructure spending has the biggest impact on growth because direct government spending risks less being mitigated by a Ricardian reaction of the private sector. Transfers or tax cuts increase the purchasing power of private agents but can potentially be used by those agents to increase their saving rate; such a reaction is most likely for those agents that will foresee an increase in taxes at a later stage and are in a position to save part of their income. Hence, income support measures targeted to vulnerable households are more efficient that general tax cuts.[15]

87. **The response of monetary policy plays a significant role in determining the impact of any fiscal policy mix.** As shown in Figure III-2 below, all multipliers are higher when monetary policy is accommodative. The baseline scenario of monetary policy involves no monetary policy accommodation and the Taylor rule in the GIMF model continues to operate during the two years of the fiscal impulse. Under the alternative scenario, monetary policy does not react to the fiscal expansion and there is no change in the nominal interest rate for one year. Lower real interest rates then help promote economic activity. It is however noteworthy that such a policy is difficult to implement in the current context of very low inflation.

Figure III-2. Impact of a Fiscal Stimulus in France



___ without monetary accommodation; - - with one year accommodation

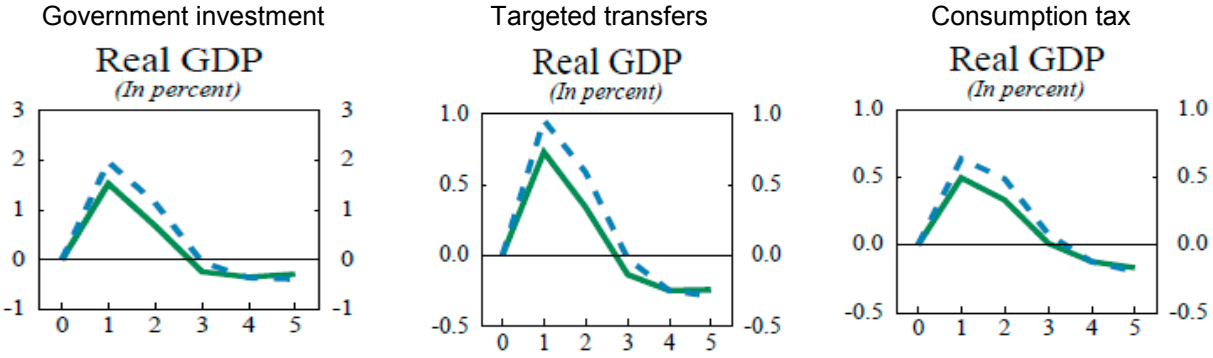
Source: Fund staff estimates.

[14] For more details on the French stimulus package see SR 2009

[15] The model emphasizes these results as it takes all government investment as productive. The relative effectiveness of targeted transfers versus general transfers or tax cuts is dependent on the share of cash-constrained households.

88. **A simultaneous European fiscal effort will significantly enhance the benefits of stimulating the economy.** In the open French economy, highly integrated in the monetary union, any given fiscal stimulus is expected to produce "leakages" as public money will increase imports and raise output in partner countries.[16] The French "demand-enhancing policy" conducted in 1981 is a perfect example of how such leakages can deteriorate the external current account balance. However, simultaneous efforts at the level of the Euro zone can circumvent the problem. If all trading partners adopt a fiscal stimulus, domestic demand is boosted in all countries, and hence, the part of the stimulus that falls on imports is compensated by the rise in exports provoked by the increased demand of partner countries. Figure III-3 below shows our estimate of fiscal multipliers when France and its partners simultaneously adopt a fiscal stimulus of the same size. Table III-1 below shows the values of fiscal multipliers in France under two different scenarios: (i) when France undertakes a fiscal expansion alone and (ii) when its partners in the euro area expand too. Our estimated fiscal multipliers are in line with results from the empirical literature and other estimates on the French economy (see Table II-1, Chapter 2). For all types of policy measures, the benefits are considerably larger when the effort is simultaneous.

Figure III-3. The Impact of Coordinated Europe-Wide Fiscal Stimulus



___ without monetary accommodation; - - with one year monetary accommodation (in all countries)
Source: Fund staff estimates.

Table III-1. The Impact of Coordinated Europe-Wide Fiscal Stimulus

Multiplier (peak value)	Public Investment	Targeted Transfers	Tax Cuts
Fiscal stimulus in France			
(with 1 year monetary accommodation)	1.06	0.56	0.38
	(1.30)	(0.70)	(0.46)
Fiscal stimulus in France and in the			
Euro zone	1.53	0.73	0.50
(with 1 year monetary accommodation)	(1.96)	(0.96)	(0.65)

Source: Fund staff estimates.

[16] For more analysis on fiscal policy in Europe, see OECD 2009b.

89. **Ensuring that the fiscal stimulus is temporary is critical for its effectiveness.** For discretionary fiscal policy measures to be able to boost output effectively, agents must not be increasing their savings in reaction to the government's spending spree. To that effect, fiscal credibility over the medium run is crucial. Most measures in the current stimulus are designed to be temporary but not all, placing upward pressure on the public debt.[17] To simulate the persistence of some of these stimulus measures, we run a scenario where the fiscal stimulus lingers for an additional third year by a further 0.5 percent of GDP. As Table III-2 below shows, the peak response on the economy is actually lower- as some of the forward-looking agents react to the deterioration of the fiscal stance and increase their precautionary savings.

Table III-2. The Impact of French Fiscal Stimulus Extended by 1 Year

Multiplier (peak value)	Public Investment	Targeted Transfers	Tax Cuts
2 year fiscal stimulus (with 1 year monetary accommodation)	1.06 (1.30)	0.56 (0.70)	0.38 (0.46)
3-year fiscal stimulus (with 1 year monetary accommodation)	0.95 (0.97)	0.53 (0.45)	0.34 (0.34)

Source: Fund staff estimates.

E. Fiscal Policy in Dire Times

90. **Whether the effectiveness of fiscal policy varies with the state of the economy is becoming a particularly relevant issue as the fiscal instruments are so widely used to counter recession.** So far, little research has been done on the state-dependency of fiscal policy. Theoretically, two sorts of effects are possible: fiscal multipliers could be bigger, since the disruption of financial markets could lead more households and firms to base their spending on current income, thus making public spending more efficient. On the other hand, it can also be argued that impaired credit markets will not allow private agent to leverage income earned from government spending, thus undermining the effectiveness of fiscal action.

91. **We contribute to the debate by measuring fiscal multipliers in a global recession scenario and show that fiscal policy instruments remain effective in the current downturn.** We first simulate a recession, and then apply a fiscal stimulus to the slumping economy. Our results show that fiscal multipliers stay close to their historical values at the

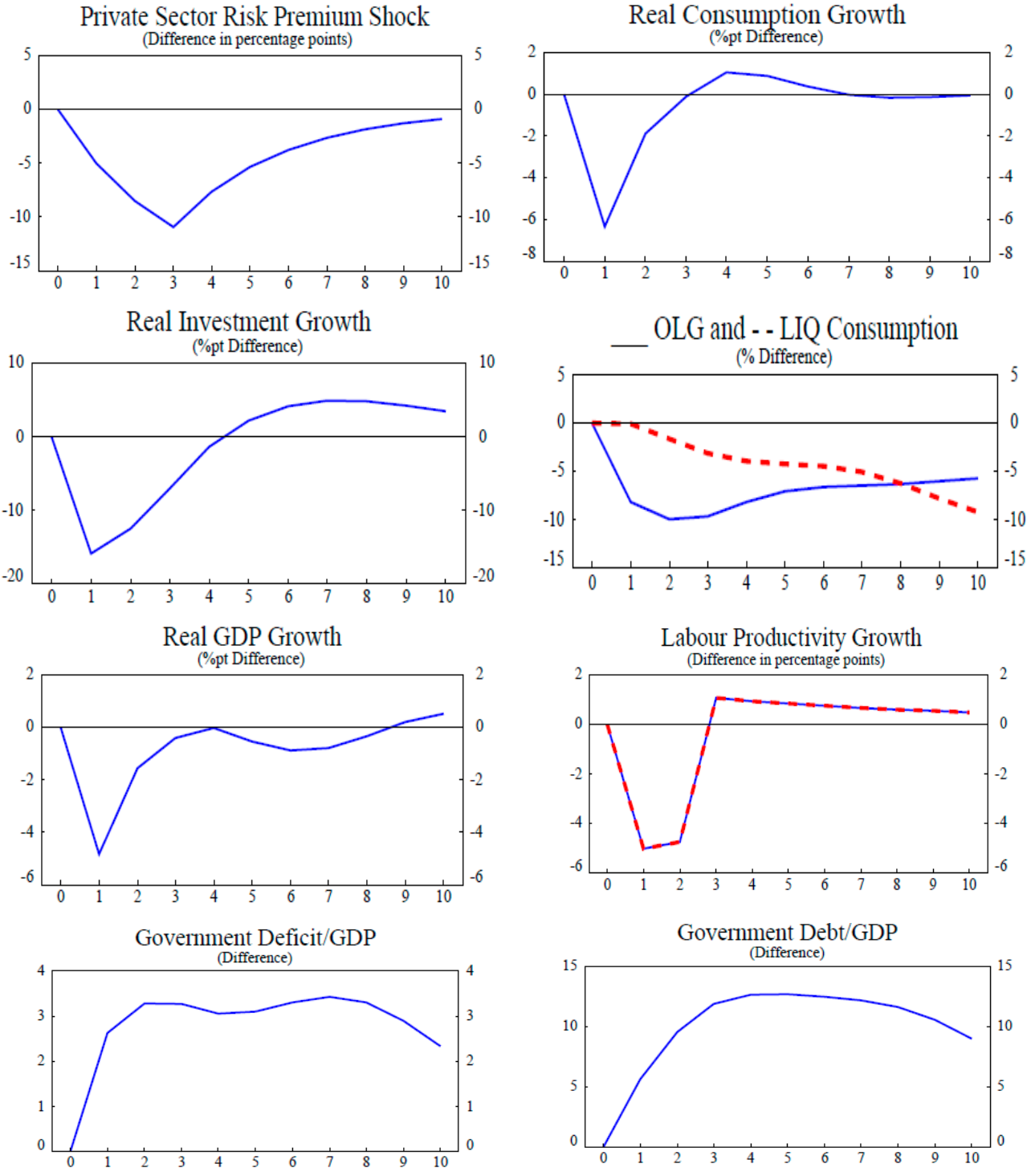
[17] For example, there is no sunset clause for the VAT reduction for restaurants.

steady state. The composition of the policy package also remains important and monetary policy continues to play an important role in amplifying the impact of fiscal measures. In a context of heightened uncertainty, lifting the Taylor-rule and bringing lower real interest rates will increase the effectiveness of any fiscal stimulus.

92. **Our recession scenario mimics the current crisis suffered by the French economy.** As shown below, distressed financial markets lead to financing difficulties for firms and therefore increase the risk premium for the private sector. In turn, private investment plummets while consumption drops but less so as it is upheld by the relatively large automatic stabilizers and the social safety net. Job destructions imply a loss in human capital and a drop in labor productivity. Those factors depress real GDP by up to 5 percent compared to the historical average, a plunge, which corresponds to the -3 percent output contraction expected in 2009.[18] Forward-looking consumers are able to adjust their consumption pattern more than liquidity-constrained ones. On the public finances side, the recession worsens the deficit as automatic stabilizers are allowed to operate fully and increases the public debt.

[18] In figure 4 below, all variables are presented in difference to the steady state values; for example, a drop of real GDP growth of 4.5 percent corresponds to an output contraction of 3 percent.

Figure III-4. France: Global Recession

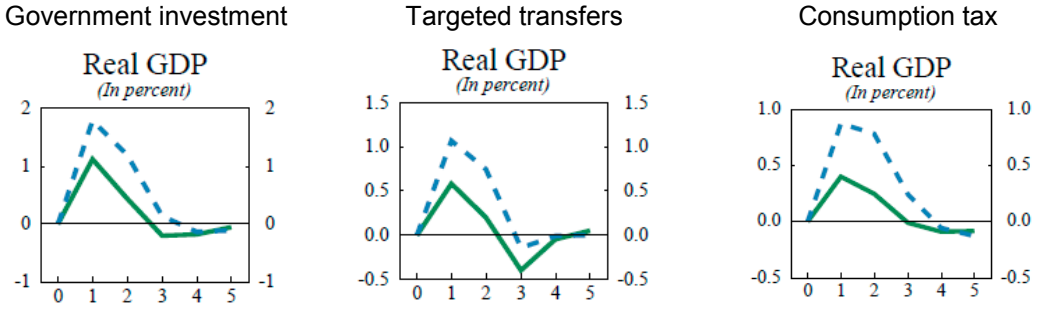


Source: Fund staff estimates.

93. **In this recessionary context, we simulate the impact of a fiscal stimulus.** To the recession shock, we add a fiscal stimulus of the magnitude and type described above, i.e. an increase in public spending of 1 percent the first year and 0.5 percent the second year. Again, we will measure the efficiency of three different instruments, investment, transfers, and tax cuts.

94. **Fiscal policy remains effective while monetary accommodation is particularly potent.** As shown in Figure III-5 below, multipliers remain in the same range than at the steady state. In addition, the hierarchy of their respective sizes remains unchanged. The impact of a responsive monetary policy is particularly large as it will limit crowding out effects and lower real interest rate will support private sector activity.

Figure III-5. Impact of a Fiscal Stimulus During the Global Recession



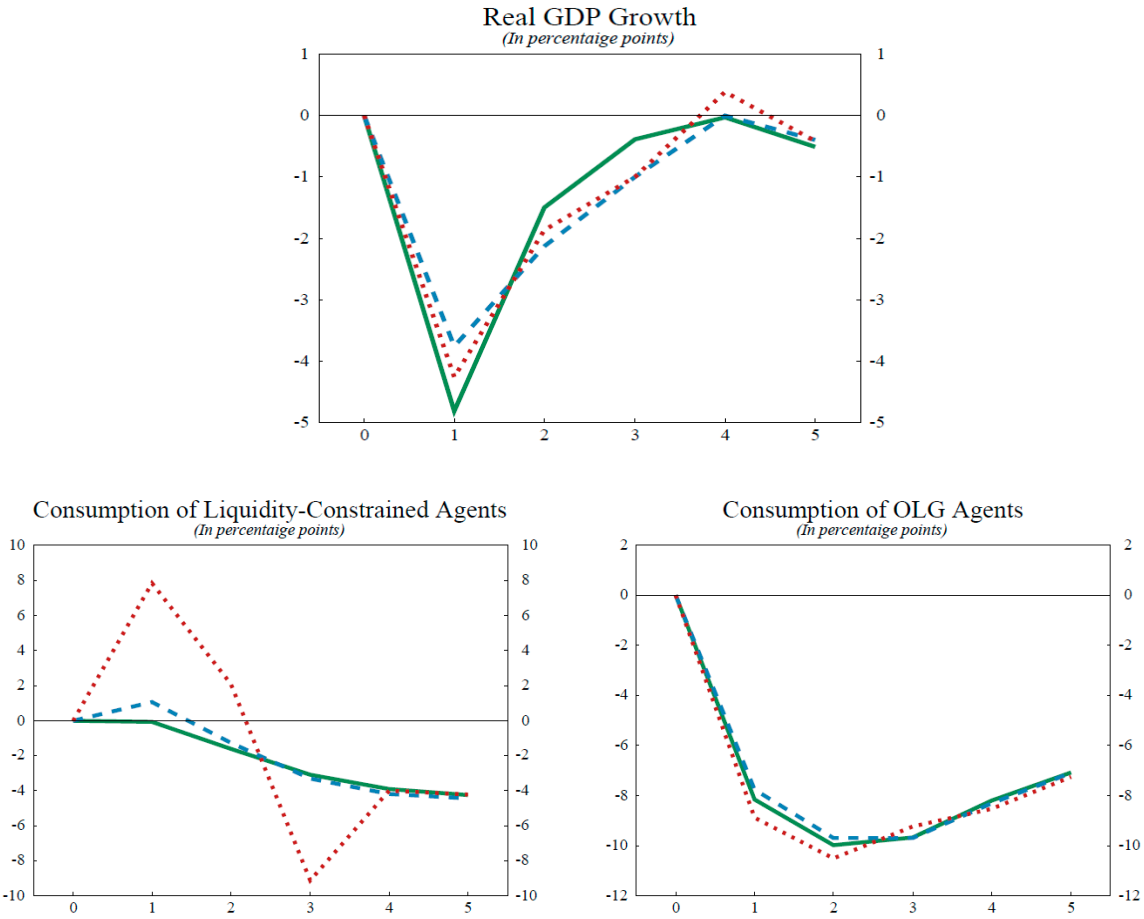
___ without monetary accommodation; - - with one year monetary accommodation

Source: Fund staff estimates.

95. **A stimulus softens the recession and protects vulnerable households.** Expansionary fiscal policy measures reduce the magnitude of the downturn and increases the consumption of vulnerable households. An investment-based stimulus package is the most effective for boosting GDP growth[19] but targeted transfers support the purchasing power of vulnerable households.

[19] As the model assumes that all public investment is productive, this result may be somewhat overestimated.

Figure III-6. Comparison of Different Fiscal Stimulus



__ without fiscal stimulus; -- with public investment stimulus; ... with transfers to LIQ stimulus

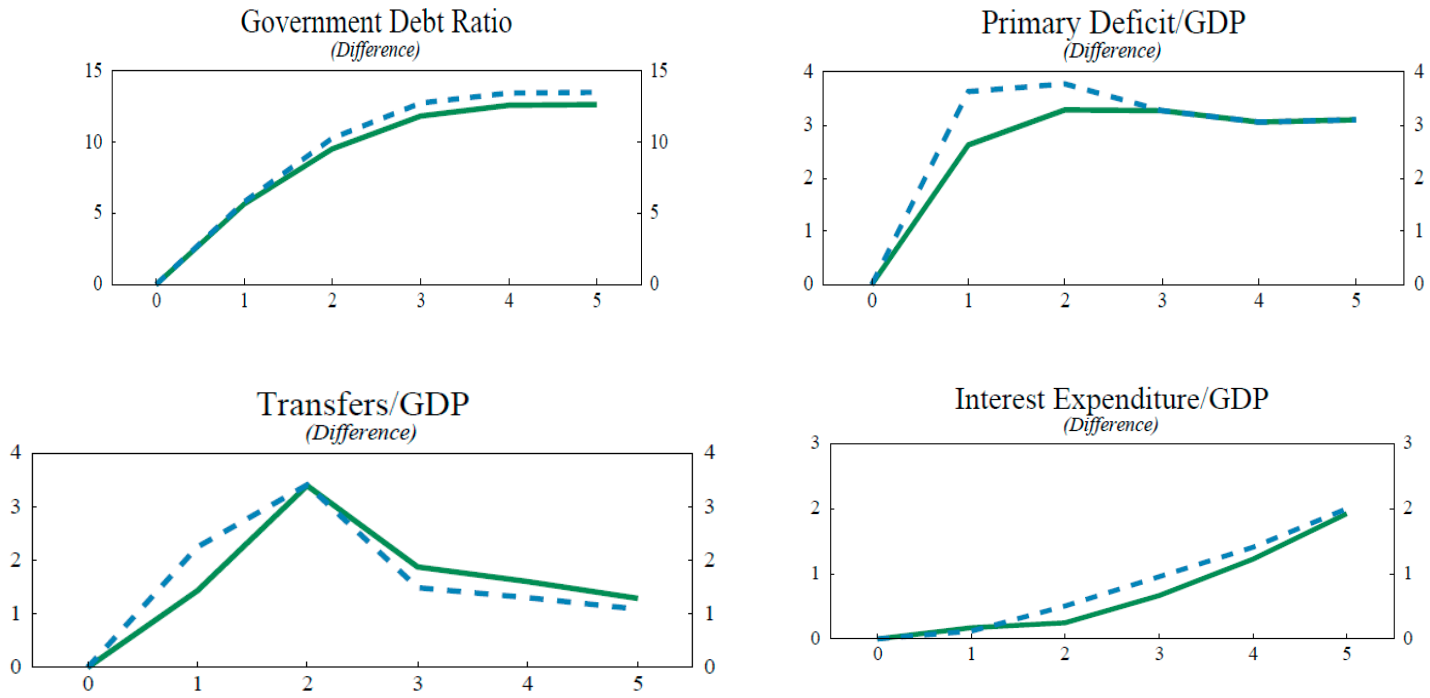
Source: Fund staff estimates.

F. The Costs and Consequences of a Stimulus.

96. **Discretionary fiscal stimulus helps soften the downturn especially when it is large, without significantly worsening the debt-to-GDP ratio.** Compared to the public debt profile under our weak economy scenario, a temporary shock does not seriously worsen public finances as the positive impact on real GDP compensates for the deterioration in the fiscal balances.

97. **However, even containing the debt ratio at 10 percent above its target implies a steep adjustment.** As interest expenditures rise steeply, they force a correction of the primary deficit. This adjustment would require in turn a steep reduction in transfers.

Figure III-7. Cost of Fiscal Stimulus (Public Investment Scenario) in Global Recession



___ without fiscal stimulus; - - with public investment stimulus

Source: Fund staff estimates.

G. Conclusion and Policy Implications

98. **As France faces an unprecedented growth shock triggered by a collapse of world trade and financial markets turmoil, an expansionary fiscal policy is the appropriate response.** With limited scope for monetary policy and no export based recovery to be expected, fiscal policy is the only option to limit the magnitude of the recession. However, as the benefits of fiscal expansion come with future public liabilities, it is essential to protect medium-term fiscal solvency.

99. **The optimal fiscal policy needs to promote GDP growth in the short term without damaging fiscal solvency in the medium run.** Indeed, putting fiscal sustainability at risk could trigger an adverse reaction from private sector agents and markets. The rise of sovereign spreads and CDS premiums raises funding costs for public intervention. In addition, reassuring economic agents about the temporary nature of the stimulus and signaling clearly and credibly that measures will be taken to reestablish fiscal credibility are essential to avoid Ricardian reactions that will undermine the impact of the stimulus.

100. Our results suggest the following:

- **An investment-based stimulus package will be the most effective in protecting growth while targeted transfers shelter the purchasing power of vulnerable households.** In addition, targeted support to vulnerable groups is more efficient than broad based tax cuts. Given the uncertainty associated with any given measure, a well-diversified package that balances different policy goals is the most appropriate.

- **An accommodative monetary policy can help both reducing public funding costs and boosting economic activity.**

- **Simultaneous fiscal stimulus with France's main partners in the euro zone would amplify the effects of fiscal expansion.**

- **The effectiveness of fiscal policy does not weaken during recessionary times but support measures need to be accompanied by a credible consolidation strategy to ensure fiscal sustainability.**

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