FRANCE

SELECTED ISSUES

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INTERNATIONAL MONETARY FUND

FRANCE

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CONTENTS

THE DRIVERS OF BUSINESS INVESTMENT IN FRANCE: REASONS FOR RECENT WEAKNESS[1, 2]

A.   Introduction

1.   While the resilience in private consumption has supported domestic spending in France during the crisis, business investment remains a substantial drag on growth. In 2013, private consumption was 2.5 percent higher than its pre-crisis level whereas business investment was still 9 percent lower than its pre-crisis peak.

2.   This paper reviews business investment patterns in France during the crisis. The main motivation is to explore whether investment has recently evolved in line with established determinants or displayed somewhat unconventional dynamics. We address three distinct questions. First, has recent investment behavior essentially been consistent with past trends or is there any discernible structural break as a result of the crisis? Second, what drove the contraction in investment during the crisis? Third, what is the investment outlook and can we expect a swift and strong rebound going forward?

3.   The rest of the paper is organized as follows. Section II describes investment developments during the crisis. Section III discusses the estimation methodology and presents the data used in the analysis. Section IV puts forward the main results and discusses the outlook for investment and priors underpinning our projections.

B.   Stylized Facts

4.   The collapse of investment in the immediate post-Lehman period is yet to be fully reversed (Figure 1). Following the sharp fall over 2008Q2–2009Q3, business investment rebounded before stabilizing during the first half of 2011. The arrival of the Euro area sovereign debt crisis was followed by two years of contraction in investment, which eventually rebounded in 2013Q4 after relative growth resilience in 2013. Overall, business investment at end–2013 was 9.3 percent below its pre-crisis peak. This is in contrast with developments in other demand components, which have supported GDP during the crisis and exceed by now their pre-crisis marks. Specifically, private and government consumption and exports currently are 2.5, 8.2, and 4.4 percent higher than their 2008 marks, respectively.

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[2] The data underlying this paper pre-date the ESA2010 revision in National Accounts of May 15.

Figure 1. France: Business Investment during the Crisis

GDP by Demand Components
(In percent contribution to annual growth)
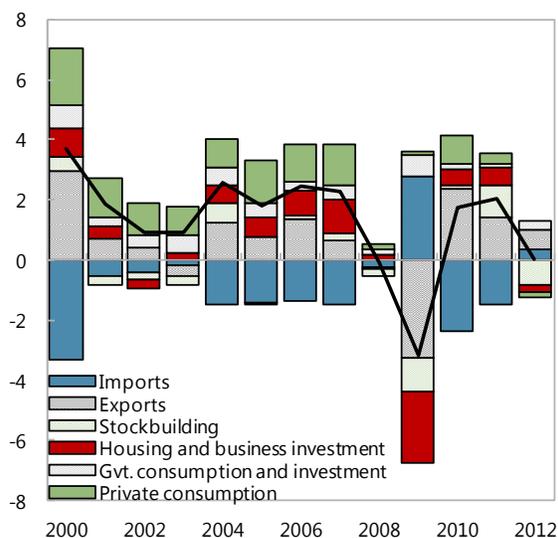
Cyclical Behavior of GDP and Demand Components
(Gap between actual and HP-filtered series, in percent of actual value)
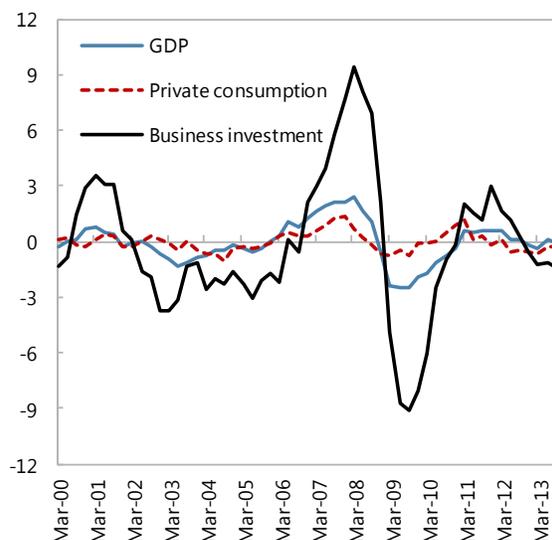
Source: Haver Analytics, and staff calculations.

5.   There are a number of variables that can potentially explain the sluggish investment during the crisis. They include depressed growth, financial and financing conditions (declining profit margins, higher indebtedness, and costly capital), as well as deteriorating confidence and heightened uncertainty.

- *Profit margins.* French NFCs profitability, as measured by gross operating surplus as a share of gross value added has deteriorated since the outset of the crisis (Figure 2). While a comparison of levels across countries is difficult because of methodological differences, the relatively worse situation of French companies is also apparent in the gap between current profits and historical averages. Indeed, the profit share of German and Spanish NFCs is currently above its 1991–2007 average levels, unlike that of French companies, which has decreased significantly since 2008. Weak and recently deteriorating self-financing may have weighed on NFCs' investment capacity.

Figure 2. France: Profit Margins

Profit Margins
(In percent of gross value added)

Contributions to Profit Margins, NFCs
(In percent change, y-o-y; bars in contribution to total)
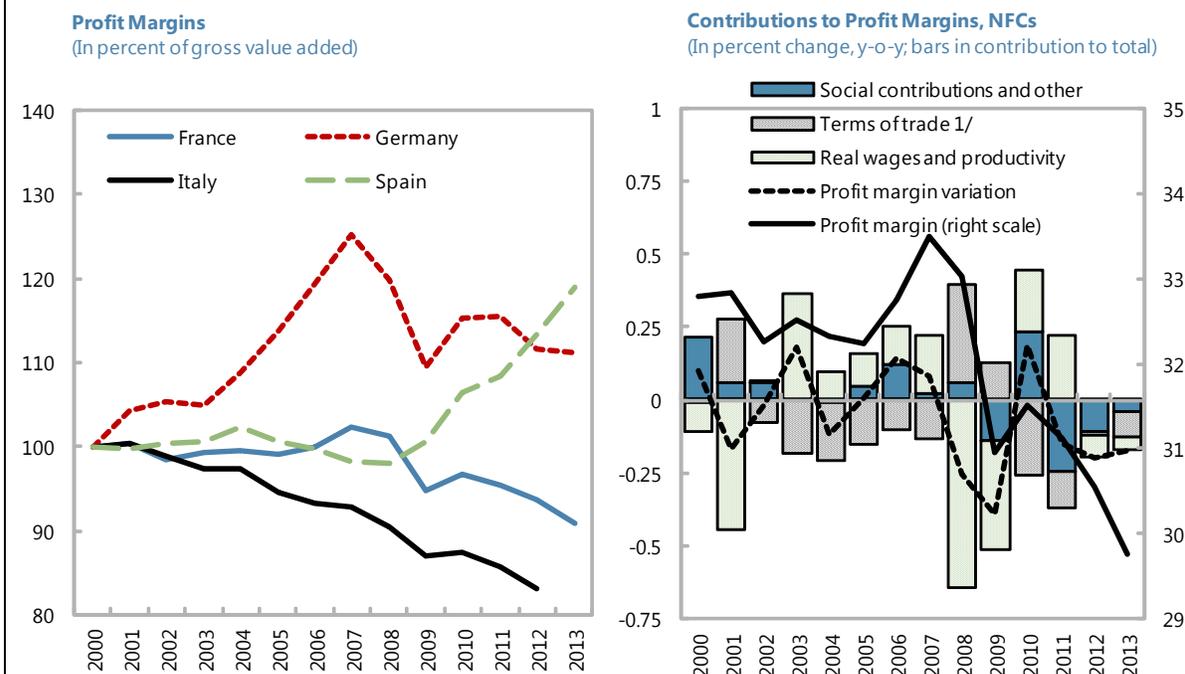
Source: : INSEE, Eurostat, and IMF Staff calculations.
1/ Ratio of value added deflator to consumption deflator.

- *Confidence and uncertainty*. Confidence and uncertainty, as measured by firms' average and divergence in expectations about future economic conditions, have also deteriorated during the crisis (Figure 3). After a major setback at the trough of the crisis, confidence bounced back to reach historical highs in early 2011, before declining again throughout 2011–12. Although confidence has improved thereafter, it remains below average levels. Business uncertainty has abated considerably in France after the sharp increase registered in 2008, yet it remains high by historical comparison.

Figure 3. France: Confidence and Uncertainty Indicators

Business Confidence
(balances of responses 1/)

Business Uncertainty
(Index, normalized 2/)
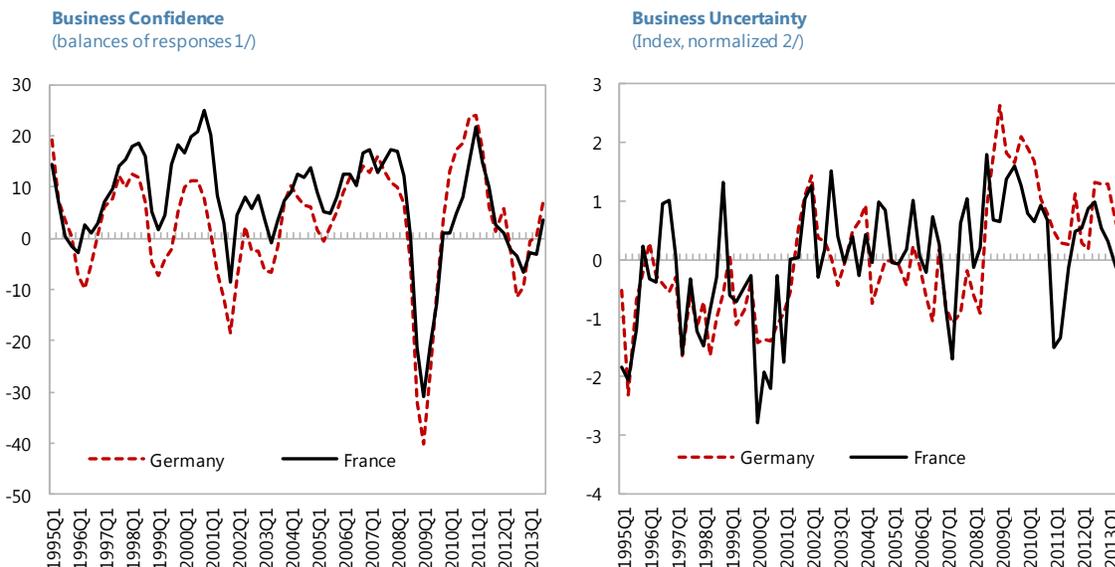
Source: European Commission Business and Consumer Surveys and Authors' calculations.
1/ Average of responses to survey question *"how do you expect your production to develop over the next three months?"* See Section III.B for details on the construction on the index.
2/ Dispersion of responses to survey question *"how do you expect your production to develop over the next three months?"* See section III.B. for details on the construction of the index.

- *NFCs financial conditions*. French NFCs' debt to equity and debt to financial assets ratios have generally stayed below the euro area average and those in Germany, Italy or Spanish peers (Figure 4). The relatively healthy financial situation of French NFCs would in turn support investment activity, as would favorable financing conditions (i.e. inexpensive cost of capital) during the crisis.

Figure 4. France: NFCs' Financial Conditions

Real Cost of Capital[1]
(In percent)

Sources: Segoe UI - Size 18

Gross Debt to Equity of NFCs
(In percent)
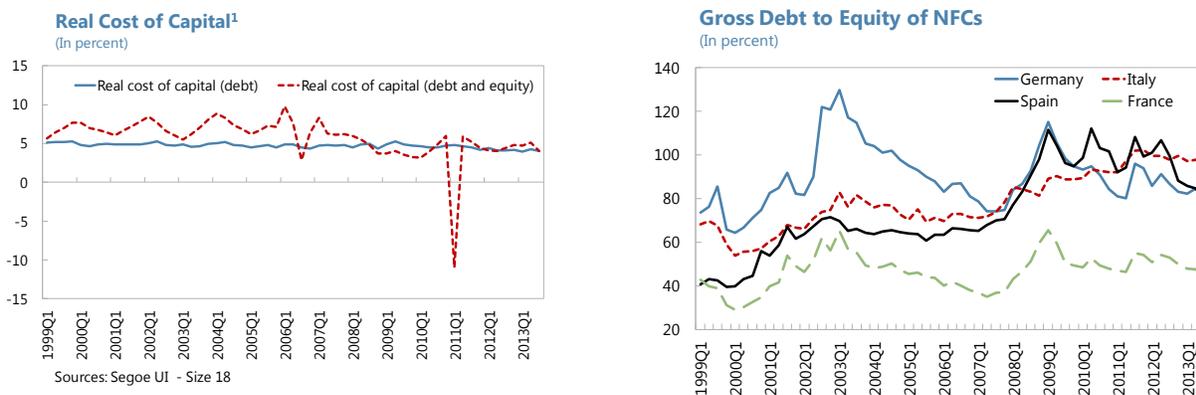
Sources: Haver Analytics, ECB, and IMF Staff calculations.

[1] See Section III.B for calculation.

C. Priors and Data Requirements

Estimation Methodology and Priors

6.   We interpret investment trends in France by means of a co-integration model. This type of model aims to establish a long-term relationship between investment and its fundamental determinants. Deviations from the estimated long-term relationship are in turn explained by a short term dynamic equation.

7.   We use quarterly data covering the period 1995Q1-2013Q3 to estimate the co-integration model

- **Long-term relationship**. The co-integration regression is estimated by fully modified OLS (Phillips and Moon, 1999; Pedroni, 2000, 2001; Kao and Chiang, 2000; Mark and Sul, 2003), which produces asymptotically unbiased, normally distributed coefficient estimates. The co-integration relationship takes the form:

$$I_t = c + \beta X_t + \varepsilon_t \qquad (1)$$

  where *I* is investment, *c* is the constant of the regression, and *X* is a vector of variables comprising the value added of the private sector, capacity utilization, and a set of financial and financing conditions (profit margins, corporate debt, the real cost of capital[3], and the share of equity in total liabilities). All variables enter the regression in log levels.

- **Short-term relationship.** The dynamic equation is estimated by OLS. It links changes in investment to changes in its long-term determinants; swings in firms' confidence and uncertainty about future economic conditions[4]; as well as deviations of investment from its long-term value (or error correction term). The dynamic relationship therefore takes the form:

$$\Delta I_t = \beta \Delta X_t + \gamma \Delta U_t + \delta ECM_{t-1} + \varepsilon_t \qquad (2)$$

  where Δ denotes first differences, *U* includes confidence and uncertainty indicators, and ECM represents the deviation of investment from its long-term value.

8.   The priors we test are informed by conventional investment theory and are summarized as follows:

- *Output*. A standard accelerator view of investment suggests that investment outlays depend on expected output growth.

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[3] See next section for details on measurement.

[4] See next section for details on measurement.

- *Spare capacity*. A margin of spare capacity weighs on the level of investment and vice-versa, tight capital utilization signals constraints in the use of capital and acts as a spur to investment. A distinct response of investment to capacity utilization (over and beyond value added) may also be explained by productivity shocks affecting the ratio of capacity utilization to value added.

- *Financial and financing conditions*. A range of such factors can influence investment spending: (i) low corporate profits can adversely affect investment plans insofar as external finance is more difficult to access (or is more expensive) than internal funds; (ii) highly indebted firms may defer investment as a means of adjusting the balance sheet to conserve cash and reduce debt; (iii) a high real cost of capital is likely to reduce investment in order to align the rate of return on investment to the cost of capital; (iv) and the lower share of equity in total liabilities, the lower investment.

- *Confidence and Uncertainty*. Since it is difficult to reverse investment once new capital is installed, low confidence and elevated uncertainty increases the option value of deferring investment.

Data and Measurement Issues

9.   All series are taken directly from conventional data sources, except the real cost of capital and the confidence and uncertainty indicators which are constructed for the purpose of the regressions. Business investment and the value added of the private sector come from National Accounts (NA), as does profit margins (which we calculate as the share of gross operating surplus and mixed income in gross value added), and the equity to total liabilities ratio (which is computed from the corresponding stocks allocated to NFCs by the NA financial balance sheet system). Capacity utilization is taken from the INSEE quarterly business survey.

10.   The real cost of capital is computed as the weighted cost of different sources of financing (net of the depreciation rate) adjusted for the relative price of investment goods:

$$r_k = (r - \pi + \delta) * \frac{P_I}{P_{VA}} \quad (3)$$

where r_k is the real cost of capital, r the weighted nominal cost of short- and long-term debt and equity, π is the GDP deflator inflation, and $\frac{P_I}{P_{VA}}$ is the investment goods deflator relative to GDP deflator. Equation (3) follows from neo-classical theory (Jorgenson, 1971) and postulates that, in equilibrium, companies invest up to the point where the return on capital equals the cost of financing it. The cost of equity is calculated as follows:

$$r_s = 100 \left(\frac{D_{t+1}}{E_t} + \frac{D_{t+1} - D_t}{D_t} \right) \quad (4)$$

where r_s is the cost of equity, *D* is total National Accounts dividend payments, and *E* is total National Accounts shares and other equity.

11.   The indicators measuring firms' confidence and uncertainty about future economic conditions are constructed from business surveys. Specifically, we rely on the responses to the forward-looking question in the European Commission Business and Consumer Surveys "*how do you expect your production to develop over the next three months?*" Confidence measures the average expectations about future economic conditions, thus we compute it as the average of survey responses. Uncertainty measures the divergence in firms' views about the economic outlook, thus we compute it as the dispersion in survey responses. The basic idea is that a divergence of economic agents' expectations about the future should be a sign of higher uncertainty in the economy. To measure this divergence, we use the Theil's formula:

$$Uncertainty = \frac{1}{n} * \sum_{i=1\ to\ n} \alpha_i * \log(\alpha_i) \quad (5)$$

where log denotes the neperian logarithm, α_i is the share of respondents choosing each type of reponse, and n is the number of response categories for the forward-looking question, which is equal to 3 (increase, remain unchanged, decrease). The uncertainty index so computed ranges between 0 (respondents fully agree on economic prospects, whether gloomy or bright) and 0.3 (greatest divergence in perceptions about the future across respondents).

D.   Business Investment: Past Behavior and Future Prospects

Business Investment Drivers

**12.   **Our evidence supports a role for many of the aforementioned factors in shaping business investment spending in France. The estimates account for much of the variation in France investment over time (Figure 5).

Figure 5. Business Investment in France: Actual and Fitted Values

Cointegration Relationship
(In logs)
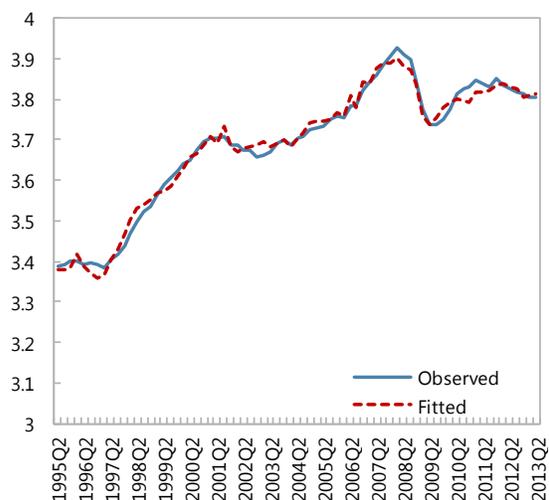
Dynamic Relationship
(In log first differences)
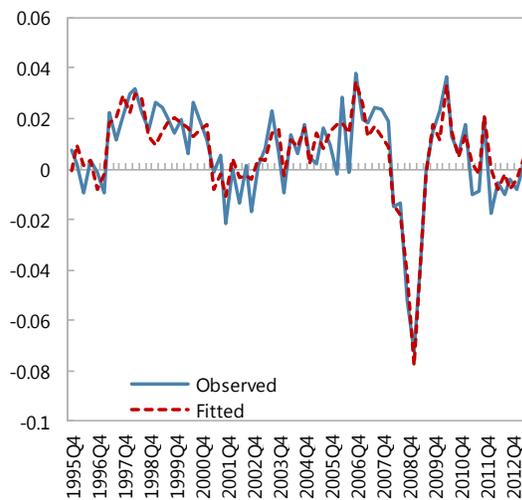
Source: Staff estimates.

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13.   The elasticities estimated from the co-integrating equation link investment to its long-term determinants (Table 1). In the long term, a one percent increase in the value added of the private sector will lead to an increase in investment of almost 1.5 percent[5]; the estimates suggest a one percent increase in the profit margin raises investment by ½ a percent; in addition, a one percent rise in capacity utilization translates into a 0.3 percent increase in investment; also, a one percent increase in the real cost of capital will lead to a decrease in investment of 0.1 percent; and a one percent decrease in the ratio of equity to total liabilities will dampen

Table 1. Cointegration Relationship (France, 1995Q1-2013Q3)		
Dependent variable: log (business investment)		Prob.
Constant	-16.38	0.00
log (value added private sector)	1.52	0.00
log (profit margins)	0.53	0.00
log (capacity utilization)	0.31	0.00
log (real cost of capital)	-0.09	0.00
log (equity liatilities/total liabilities)	0.07	0.02
(T>25)*(T<28)	0.03	0.01
T=46	-0.09	0.00
R-squared	0.99	Mean dependent var	3.69
Adjusted R-squared	0.99	S.D. dependent var	0.15
S.E. of regression	0.02	Sum squared resid	0.02

Source: Staff estimates.
Note: Fully modified least squares estimator; 72 observations.

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[5] In the very long run, the investment to GDP ratio shows little or no trend. Consistent with this, the elasticity of investment to output estimated from long samples would converge to one. In the sample used here, the investment to GDP ratio shows a slight upward trend; hence the estimated elasticity is higher than one. When the regression is extended to also include the price of investment goods relative to the GDP deflator, we obtain a coefficient higher than one for the real value added and of 0.5 for the relative prices. The restrictions for real value added and the relative prices of, respectively, 1 and -1, are rejected.

investment by 0.1 percent. Although the level of NFCs' indebtedness may have been important elsewhere, we have not found evidence that it operated in France.

14.   The estimated parameters in the dynamic equation reveal several interesting results for the period considered (Table 2). Investment growth responds positively to contemporaneous gains in output, reductions in spare capacity, and increases in profit margins. Although rightly signed, uncertainty is not significant. When investment deviates from its long-term determinants, the error correction term brings the system back to the long-term equilibrium from the following quarter.

Table 2. Dynamic Relationship (France, 1995Q4-2013Q3)		
Dependent variable: dlog (business investment)		Prob.
dlog (business investment (-1))	0.22	0.00
dlog (value added private sector)	1.20	0.00
dlog (profit margins)	0.35	0.00
dlog (capacity utilization)	0.22	0.00
d(uncertainty(-1))	0.00	0.24
error correction term	-0.26	0.00
T=47	0.02	0.01
T=67	0.02	0.00
R-squared	0.84	Mean dependent var	0.01
Adjusted R-squared	0.83	S.D. dependent var	0.02
S.E. of regression	0.01	Sum squared resid	0.00
Source: Staff estimates.		
Note: OLS estimator; 72 observations.		

15.   What were the main factors underlying business investment dynamics during the crisis? (Figure 6). During 2008Q2–2009Q3 investment fell sharply in France (by almost -16 ppts cumulatively). A recovery followed over 2009Q4–2011Q4, with a partial catch up of the previous decline (around +12 ppts cumulatively), after which investment decreased again, if more moderately (about -5½ ppts cumulatively over 2012Q1–2013Q3).

- *2008Q2–2009Q3 period*. The most important factor pushing down investment in 2009 was the contraction in value added (58 percent of the predicted fall in investment), followed by declines in capacity utilization and profit margins (34 percent and 31 percent of the predicted fall respectively); the lower cost of capital played an offsetting role and encouraged investment (25 percent of the variance), while the improvement in the share of equity in total liabilities only played marginally.

- *2009Q4–2011Q4 period*. Investment behavior during this period was dominated by the accelerator motive (82 percent of the variance). Investment growth also responded markedly to rising capacity utilization (43 percent of the variance). Higher real cost of capital, and firms' lower profit margins and equity ratio dampened investment (19½, 3½, and 3 percent of the variance, respectively).

- *2012Q1–2013Q2 period*. In a low inflation environment, the rise in the real cost of capital accounted for much of the predicted drop in investment (44 percent of the variance). Weak capacity utilization weighed heavily on investment too (28 percent of the variance), as did continued declines in profit margins (22 percent of the variance). The accelerator played a smaller role (7 percent of the variance).

Figure 6. France: Business Investment and Contributions

Cointegration Relationship
(In log first differences)

Legend:
- Capacity utilization
- Profit margins
- Equity ratio
- Real cost of capital
- GVA private sector
- Business investment (fitted)

Dynamic Relationship
(In log first differences 1/)

Legend:
- Uncertainty
- Error correction term
- Profit margins
- Capacity utilization
- GVA private sector
- Business investment (lagged)
- Business investmment, fitted
- Period dummy (2011Q4)
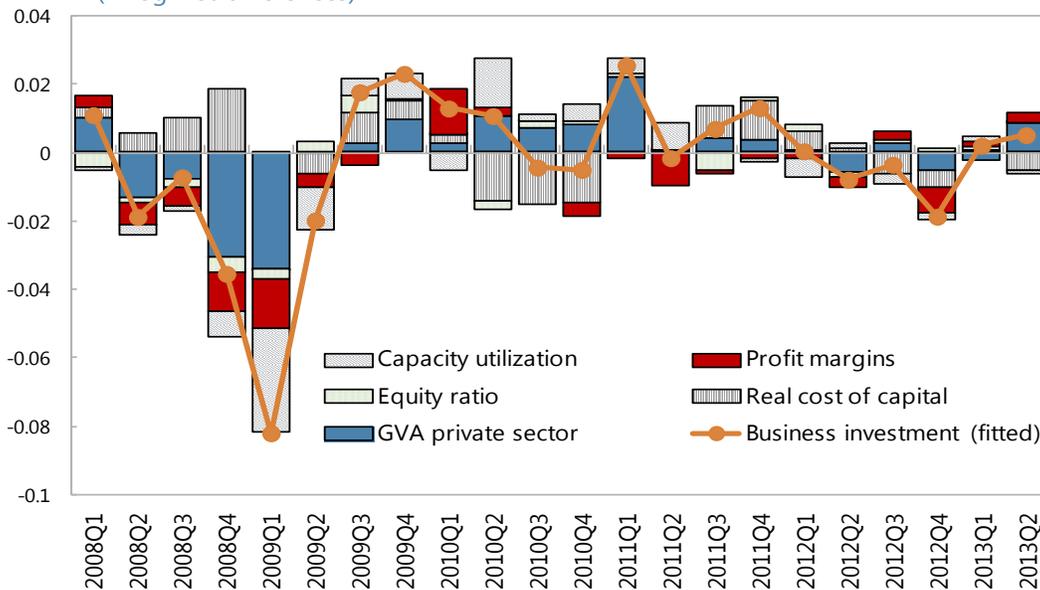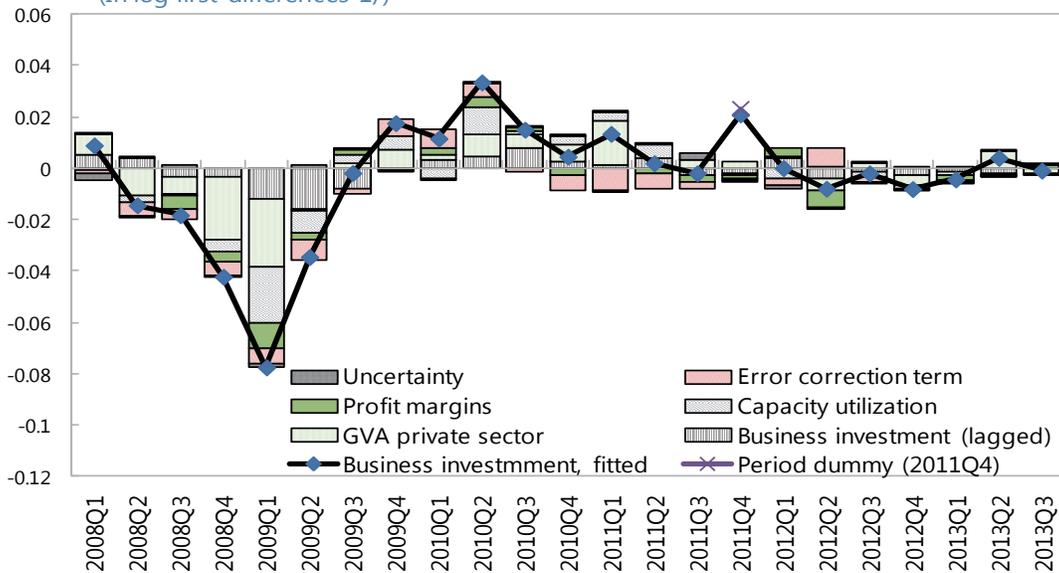
1/ All variables are log first differences, except the error correction term (ECT), which is in levels. A positive contribution from the ECT means the actual investment level is below its long term norm.

Source: Staff estimates.

The Outlook

16.   Based on our analysis of the drivers of business investment and our priors on such determinants, we expect investment to contribute to growth moderately in 2014 before firming up vigorously as of next year. Our projection for investment is based on: (i) an accelerator effect linked to the upturn in growth; (ii) the waning drag from spare capacity—capacity utilization is set to return to its average level of 2000–2007 by 2019; (iii) improved profitability (by 4 percentage points over the projection period) as moderate wage growth during the recovery correct past biases in the distribution of income towards labor; and (iv) the persistence of favorable financing conditions, i.e. the continuation of current levels for the cost of capital and the equity ratio.

France: GDP and Investment Projections
(In index number, 2008Q1=100)
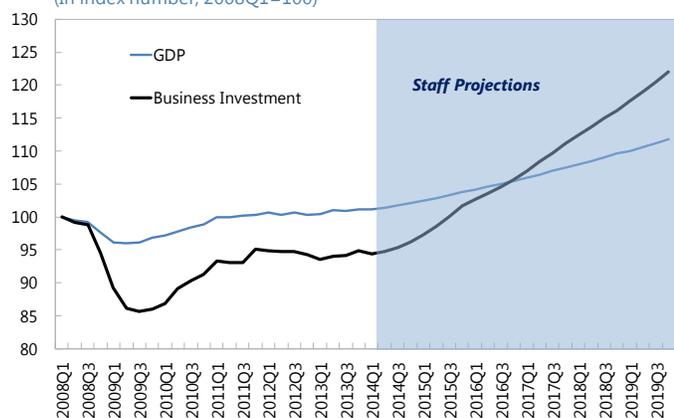
Sources: Haver and Staff projections.

17.   Recent and prospective tax changes that increase after-tax profitability should have an additional effect positive effect on investment. These effects are not explicitly captured in the model which is estimated on the basis of gross profit margins. The positive outlook for the recovery of investment also reflects the lack credit supply constraints, the absence of a NFCs debt overhang, and the abatement of uncertainty.

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FRANCE IN THE GLOBAL VALUE CHAINS: REVISITING THE COMPETITIVENESS LOSS[1]

A.   Introduction—What Can the Analysis of Global Value Chains Bring to the Assessment of Competitiveness?

1.   France's loss of competitiveness predates the crisis. The decline in France's share in world exports is one of the largest among advanced economies. The rise in international trade of large emerging markets like China is partly responsible for this decline. However, this is not the only reason. France's share in exports of various advanced countries group (thus excluding emerging economies) has declined from its peak in the first half of the 1990's (Figure 1).[2] The loss in competitiveness risks becoming more severe. Following Germany, several Euro Area countries have undertaken significant reforms of their labor and services market that will increase their competitiveness in coming years putting additional pressure on France. Already, as illustrated in Figure 2, while all many Euro Area countries experienced a rebound in their export market share in 2013, France's share only remained stable.

Figure 1. France's Share in Merchandise Exports of Advanced Economies (in percent)

Sources: IMF (DOTS) and author's calculations.

Figure 2. World Merchandise Export Market Share (Index 2000=100)

Source: IMF (DOTS) and author's calculation.

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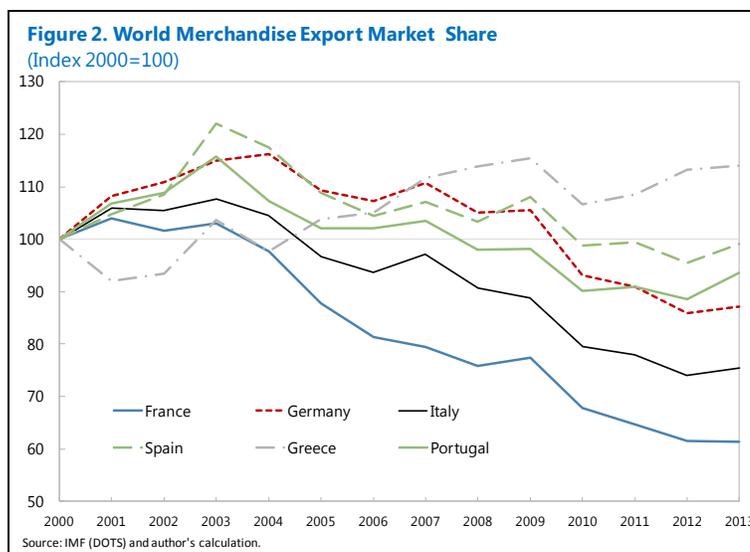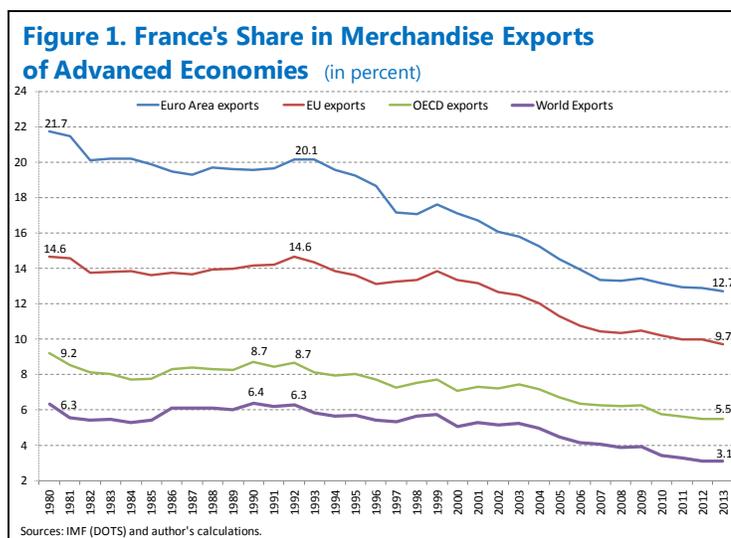
[1] Prepared by Jean-Jacques Hallaert (EUR). The author thanks Edward Gardner (IMF), Antoine Berthou (Banque de France), Pierre Gaudin (Ministry of Finance) and the participants to the Seminar organized by the French Treasury on May 9, 2014 for their comments.

[2] For more details on France competitiveness, see the Staff report for the 2012 Article IV Consultation (Country report No.12/342) and Hallaert (2013a).

2.   **The increasing fragmentation of production across borders (the "global value chains"—GVCs) has important implications for the analysis of competitiveness**. First, trade in intermediates has become the main engine of trade and accounts for over two thirds of global trade. Second, traditional measures of competitiveness such as the real effective exchange rate, change in export market share, and revealed comparative advantages become less meaningful (IMF, 2013 and Tumlir et al., 2013). Third, the fragmentation of production means that the domestic value added content of exports can be very small compared to the value of the exported goods and services making difficult to assess the contribution of exports to a country's income (GDP) on the basis of traditional trade statistics.

3.   **Two new databases allow to refine the assessment of France's competitiveness**:

- First, the November 2013 vintage of the World Input-Output Database (WIOD)[3] covers trade in both goods and services and 40 countries (27 countries are European). It provides annual data for the period 1995-2011. It allows to evaluate France's integration in the GVCs and to have a better sense of the internationalization of France production.

- Second, the OECD-WTO trade in value-added database (TiVA) released in May 2013[4] covers 57 countries for 1995, 2000, 2005, 2008, and 2009. It provides the domestic value added content of a country's export and allows to assess how much a country's income depends on exports and to measure more accurately than traditional trade data the relative importance of goods and services in a country's total exports.

4.   **This paper is organized as follows**. The second section provides a survey of empirical literature on the importance of imports for productivity (and thus for economic growth) and export performance. This importance has been magnified by the development of GVCs. The third section describes the integration of France in the GVCs and the internationalization of French production. The Fourth section discusses how exports contribute to GDP and how the picture of France's trade structure and export performance is affected when trade is analyzed in value added terms. The Fifth section concludes and summarizes the policy implications.

B.   Imports as source of growth – A literature survey

5.   **Imports are an important, but underestimated, engine for growth**. The role of exports as a source of growth is well accepted and analyzed (Hallaert, 2006). In contrast, the fact that imports contributes to growth remains underestimated though it has been long recognized by economists and has gained renewed emphasis in endogenous growth model such as Romer (1990) and Grossman and Helpman (1991). This is partly due to the difficulty to provide robust empirical evidence. However, empirical literature by shifting its focus from cross-country analysis to firm-level

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[3] Available at: http://www.wiod.org/new_site/data.htm

[4] Available at: http://stats.oecd.org/index.aspx?queryid=47807.

analysis is now able to provide convincing evidence and to test the relative importance of the various channels through which imports affects productivity and export performance.

6.   **Imports can foster productivity through two main channels**. First, imports can affect productivity through their competitive impact. Competition fosters within firm improvements through reorganization, elimination of inefficiencies, and by providing incentives to innovate. Imports also lead to an average productivity increase as the less productive domestic firms exit, pushed by foreign competition. Second, imports provide domestic firms with access to better, cheaper or new inputs and equipment. As a result, production costs decline and production of new goods becomes possible. In this context, literature has highlighted that imports are an avenue for transfers of technology (foreign technology is embodied in imported inputs and equipment).

7.   **These channels are sizable and magnified by the development of GVCs**. The weight of empirical evidence, summarized in Appendix 1,[5] is that the role of imports on productivity is significant. Appendix 2 provides additional evidence focusing on the role of offshoring (which is at the core of the GVCs) on productivity. It suggests that the offshoring of goods has a stronger impact on productivity than the offshoring of services.

8.   **In the case of France, imports and integration in the GVCs have a positive impact on productivity and export performance**. Bas and Strauss-Khan (2011) find that the increase in imported inputs during 1995–2005 boosted average firm's total factor productivity by 1.5 percent. Importantly for our purpose, they also find that this increase in productivity was the main channel through which imported inputs contributed to export growth and export diversification. MacGarvie (2006) finds evidence of a transfer of technology through imports that contributes to French firms' innovation. Fontagné and Toubal (2011) argue that the impact of imported inputs on competitiveness is more limited in France than in Germany and that French exports are negatively affected by a low participation in the GVCs. Indeed, a low integration in the GVCs leads to a relatively lower import content of exports, which is an important determinant of the differences in export performance across advanced economies (Hallaert, 2013a). Finally, Jabbour (2010) shows that offshoring has a positive impact on France's productivity. This impact is limited to offshoring to developing countries suggesting that the main impact is through the cost channel rather than technology channel.

C.   Trade in Intermediates: France in the GVCs and the Internationalization of its Production

9.   **One feature of the GVCs is a rapid increase in trade of intermediates**. Therefore, identifying the reasons of France's loss of export market share requires having a look in its integration in the GVCs and of the internationalization of its production.

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[5] Table 1 does not report cross-country studies on imports as a source of transfer of technology such as Coe and Helpman (1995), Coe *et al.* (1997), Eaton and Kortum (2001), Keller (2000), or Xu and Wang (1999).

The declining position of France in the European value chain

10.   The importance of France as a supplier of intermediates has declined. Figure 3 reports the origin (column) of the intermediates consumed by selected European countries (row). On the sale side, France was a major supplier of 4 European countries in 1995 and remained so for 3 countries in 2009. On the purchase side, France has a very geographically concentrated sourcing of intermediates which is dominated by Germany. This concentration has increased: the share of France consumption of intermediates from Germany almost doubled between 1995 and 2009 and the role of the United States as a supplier of intermediates has fallen.3.

11.   The role of France as a hub in the European value chain has become marginal by international standards. Figure 4 reports the share of bilateral trade in intermediates in percent of global trade in intermediates in 1995 and 2009 (instead of the share of a country's consumption as in Figure 3). As pointed by Baldwin and Lopez-Gonzalez (2013), the Global Value Chains are actually regional. There are three GVCs centered on Europe, North America, and Asia. The links between these GVCs is limited to the extra-regional trade of Germany, the United States, and China. The Asian value chain has become more complex. Japan was the only hub in 1995 but its role has since diminished with the emergence of China as a hub. In contrast, the European value chain has become simpler. In 1995, the European value chain had three hubs: Germany, France, and the United Kingdom with strong two-way trade in intermediates between France and Germany. In 2011, the European value chain has only one hub significant at the global level: Germany. The role of France as a global supplier of intermediates has dramatically diminished contributing to the overall loss in export market share and signaling a relatively weak integration in the GVCs. Moreover, bilateral trade in intermediates between France and Germany has become more asymmetrical suggesting that France's value chain is merging with Germany's value chain.

Figure 3. Consumption of Intermediates by Origin
(in percent of row country's total consumption of intermediates)

1995 — From

Consumption by	Austria	Belgium	Czech Rep.	France	Germany	Italy	Netherlands	Poland	Spain	UK	USA	China	Japan
Austria	74.2				9.4	1.7							
Belgium		64.9		4.7	7.2		6.6			2.9	2.2		
Czech Rep.			77.0		6.7								
France				85.9	2.6						1.6		
Germany					85.0								
Italy				1.8	2.4	85.6							
Netherlands		3.8		1.8	5.8		68.8			2.4	3.2		
Poland					3.4			86.8					
Spain				2.4	2.2				86.3				
UK					2.7					83.1	2.0		
USA											92.4		
China												91.4	1.6
Japan													95.2
Korea											3.1		3.3

2011 — From

Consumption by	Austria	Belgium	Czech Rep.	France	Germany	Italy	Netherlands	Poland	Spain	UK	USA	China	Japan
Austria	68.8		2.4		11.0	1.7							
Belgium		59.6		3.6	5.9		8.4			2.5	2.4	1.7	
Czech Rep.			65.8		9.3			2.5					
France				80.8	5.0								
Germany				1.7	75.2		2.2			1.5		1.9	
Italy					3.7	80.6							
Netherlands		3.1		4.5			61.6			4.1	4.0	2.3	
Poland					6.0			72.4					
Spain				2.2	2.1				80.6		1.6		
UK					2.2		1.8			80.0	2.9		
USA											87.7	1.6	
China												90.1	
Japan												1.6	89.0
Korea											2.3	4.5	2.4

Source: WIOD and author's calculation.

Note:
- Less than 1.5 percent
- 1.5 to 3 percent
- More than 3 percent
- Domestic supply

Figure 4 - Global Supply Chains
(Share of imported intermediates Goods and Services in percent of total trade in intermediates)

Imports 1995 — From (columns) / By (rows)

By \ From	Austria	Belgium	Czech Rep.	France	Germany	Italy	Netherlands	Poland	Spain	UK	Ireland	Sweden	Russia	Brazil	USA	Canada	Mexico	Australia	China	Taiwan POC	Japan	Korea	India	Indonesia	ROW
Austria					0.6%																				
Belgium				0.5%	0.8%		0.7%			0.3%															0.3%
Czech Rep.																									
France		0.7%			1.2%	0.6%	0.4%		0.3%	0.5%					0.8%										0.8%
Germany	0.5%	0.8%		1.0%		0.8%	0.9%			0.8%			0.4%		0.8%						0.3%				1.3%
Italy				0.7%	0.9%					0.3%					0.4%										0.9%
Netherlands				0.5%	0.8%					0.3%					0.5%										0.9%
Poland																									
Spain				0.5%	0.5%																				0.5%
UK		0.4%		0.5%	1.0%	0.3%	0.5%								0.7%										0.9%
Ireland																									
Sweden					0.3%																				
Russia																									
Brazil																									0.4%
USA				0.8%	0.8%	0.5%	0.5%			1.1%						3.0%	1.1%		0.4%	0.6%	1.8%	0.6%			3.8%
Canada															2.5%										
Mexico															1.3%										
Australia																									0.4%
China															0.4%			0.4%			0.7%	0.4%			0.8%
Taiwan POC															0.5%						0.7%				0.6%
Japan															1.4%	0.5%		0.4%	0.4%	0.3%		0.5%	0.3%	0.4%	2.5%
Korea															0.7%						0.7%				0.9%
India																									0.5%
Indonesia																					0.3%				

Imports 2011 — From (columns) / By (rows)

By \ From	Austria	Belgium	Czech Rep.	France	Germany	Italy	Netherlands	Poland	Spain	UK	Ireland	Sweden	Russia	Brazil	USA	Canada	Mexico	Australia	China	Taiwan POC	Japan	Korea	India	Indonesia	ROW
Austria					0.5%																				
Belgium					0.4%		0.5%																		
Czech Rep.					0.3%																				
France					1.2%																				0.7%
Germany	0.4%	0.4%	0.3%	0.6%		0.4%	0.7%	0.3%		0.5%					0.5%				0.6%						1.1%
Italy					0.8%																				1.0%
Netherlands					0.4%					0.3%					0.3%										0.6%
Poland					0.3%																				0.7%
Spain				0.3%	0.3%																				0.7%
UK					0.5%		0.4%								0.6%										0.7%
Ireland										0.4%					0.4%										
Sweden																									
Russia																									
Brazil																									0.6%
USA				0.6%					0.6%	0.3%						2.1%	1.4%		1.9%		0.6%	0.3%	0.4%		3.8%
Canada															1.5%										
Mexico															1.1%				0.3%						
Australia																			0.4%						0.5%
China					0.8%								0.5%	0.3%	1.4%			1.0%		1.1%	1.3%	1.3%			4.8%
Taiwan POC																					0.4%				0.8%
Japan															0.5%			0.5%	0.9%			0.4%			2.4%
Korea															0.4%				0.8%		0.4%				1.6%
India																			0.5%						1.4%
Indonesia																									0.6%

Sources: WIOD database and author's calculation.

Note: Imports of intermediates by the row country from the column country as a share of total trade in intermediates reported in the WIOD database.

Legend:
- Less than 0.3 percent
- 0.3 percent to 0.67 percent
- 0.67 percent to 1 percent
- Regional hubs

Countries with no bilateral trade above 0.3 percent in either period are not shown.

The internationalization of production

12.   France's production and exports have internationalized at the same speed as in other large European countries (except Germany). Figure 5 shows that the internationalization of production is similar in France, Italy, Spain, and the UK. Germany is an outlier: its share of imported intermediates in intermediates consumption was similar to that of other large European countries in 1995 but has increased much faster and was about 5 percentage points larger in 2011. This reflects that fact that Germany integrated the GVCs much more forcefully than other European countries. Figure 6 shows that the import content of France's exports is both lower than Germany's and the average of the 57 countries of the TiVa database. However, it is higher than in Italy, Spain or the United Kingdom and the import content of France's export has been growing faster since 1995 than in these countries. Again Germany stands out, the import content of its exports were similar to France's in 1995 but has increased much faster.

Figure 5. Share of Imported Intermediates in Consumption of Intermediates
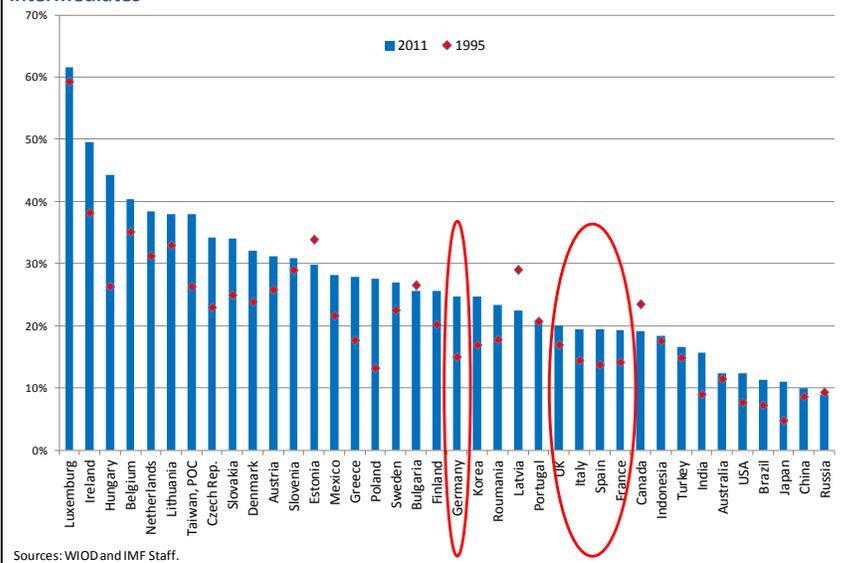
Sources: WIOD and IMF Staff.

Figure 6. Intermediate Imports Embodied in Exports
(in percent of total intermediate imports)
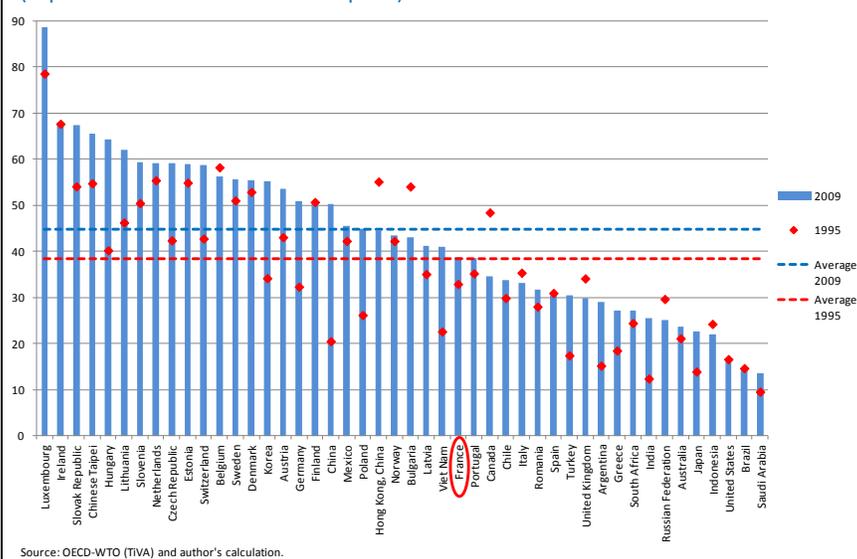
Source: OECD-WTO (TiVa) and author's calculation.

D.   Trade in Value-Added: Reassessing Export Performance and the Importance of External Trade

13.   Integrating the GVCs grosses up a country's trade but it does not necessarily increase the domestic value added content of its exports. Trade in intermediates shows how France is integrated in the GVCs but it does not provide indication on where value is added in the process of production. Therefore, to measure the importance of exports for France income and, as a consequence, to assess if the poor export performance matters it is necessary to shift the focus to trade in value-added.

14. **Trade in value added is smaller than traditional trade because it eliminates the double counting due to reimports/reexports**. Intermediates cross borders multiple times along the production process. For example, a country may exports an intermediate to be processed abroad and then re-import it to incorporate it in a final good that is then exported. Conventional statistics (hereafter "gross" trade) register two exports and one import. However, the processing abroad of intermediates may add little value and the value added of the re-imported intermediates may be largely made of domestic value added. As a result, for a country heavily involved in the GVCs like China value added exports accounts for only 65 percent of gross exports (Figure 7). At the other extreme, for a country that is little integrated in GVCs, such as Saudi Arabia, value added exports are 97 percent of gross exports. For France, value added exports are 74 percent of gross exports. This is more than the average of the countries of the TiVa database (71 percent) or of Germany (70 percent). Highlighting the development of the GVCs, France's value added exports accounted for 80 percent of gross exports in 1995. The 6 points increase in the gap between gross exports and value added exports pales in contrast with the 22 points increase for China but is only slightly smaller than for Germany's (7 points).

Figure 7. Gross Exports versus Value Added Exports
(2009, in millions of US dollars)

Source: OECD-WTO (TiVa) and author's calculation.
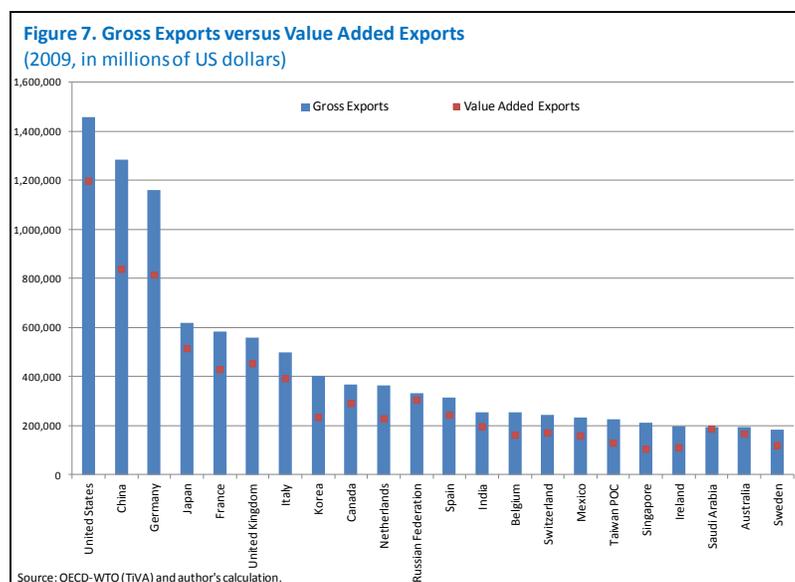
Confirming the deterioration of export market shares

15. **Trade in value added confirms France's loss of competitiveness**. As a result of the elimination of the double counting, the picture of export performances can evolve significantly when trade in value added is considered. France is then the 6th largest exporters instead of the 5th (Figure 7). However, France's market share in world exports of goods and services, appear broadly similar in gross and value added terms. As in gross terms, France export performance compares poorly with other European countries (Table 1).

Table 1. Export Market Shares
(In percent, Goods and Services)

	Gross Exports			Value Added Exports		
	1995	2009	Change 2009/1995	1995	2009	Change 2009/1995
Germany	9.4	8.1	-1.4	9.5	8.5	-1.0
France	6.2	4.2	-1.9	6.0	4.3	-1.8
United Kingdom	5.4	4.5	-1.0	5.5	4.1	-1.4
Italy	5.0	3.9	-1.1	5.0	3.6	-1.4
Netherlands	2.8	2.3	-0.5	3.4	2.6	-0.7
Belgium	1.9	1.6	-0.3	2.5	1.8	-0.7
Spain	2.2	2.4	0.3	2.1	2.3	0.1

Sources: OECD-WTO (TiVA) and author's calculations.

The declining contribution of exports to France income

16.   Exports contribution to France's income is smaller than in other European countries of the same size. In 2009, exports contributed to just above 16 percent of GDP. This is slightly less

than in 1995 and little by international standards (Figure 8). As the importance of trade is related to the size of the economy (large countries trade *relatively* less than small countries), it is more appropriate to compare France to countries of the same economic size, i.e. Germany, Italy, and the United Kingdom. For all of them the contribution of exports is larger and, at 24.7 percent, is particularly important for Germany.

Figure 8. Exports Contribution to GDP
(Value added exports in percent of GDP)

Source: OECD-WTO (TiVA).
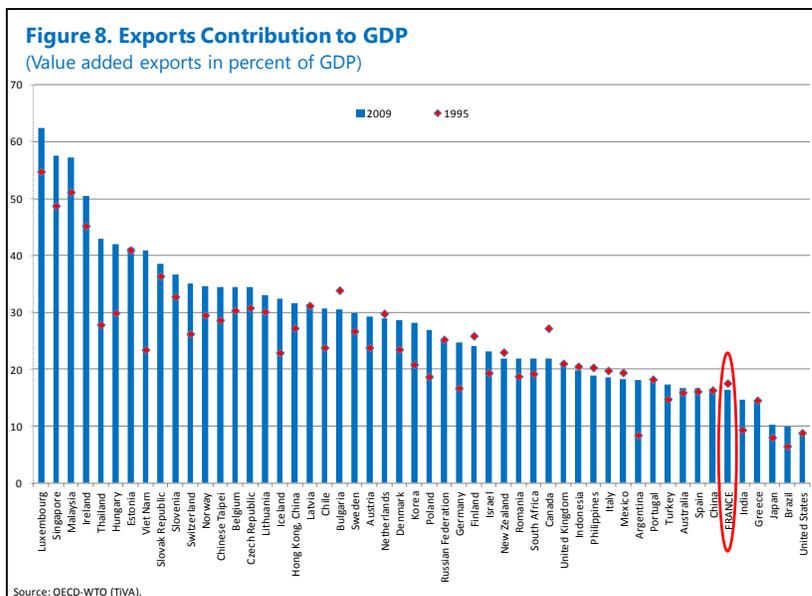
17.   The contribution of exports to GDP was similar in France and Germany in the second half of the 1990s, but in the 2000s the two countries' growth model differed. In the second half of the 1990s, the ratio of gross exports to GDP was similar in France and in Germany (Figure 9). However, in the 2000s, the ratio declined in France while it increased significantly in Germany.[6] Trade in value added shows that this difference in trajectory led to a different engine of growth. Germany's income increasingly

Figure 9. Contribution of Value Added Exports to GDP
(in percent)

Source: OECD-WTO (TiVA) and author's calculation.

relied on exports (exports contribution to GDP almost doubled growing from 21.5 percent of GDP in 1995 to 40 percent in 2008) while France's income relied increasingly on domestic demand in

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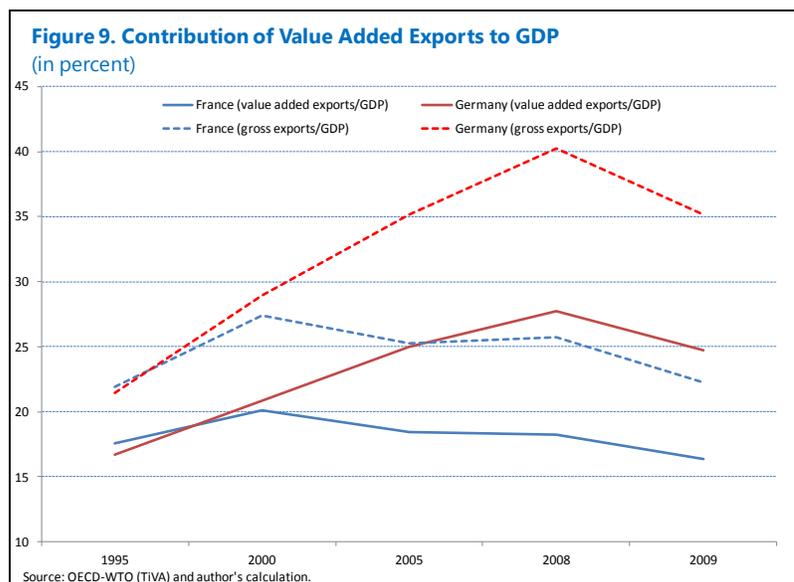
[6] Caution should be used when analyzing the 2009 decline. 2009 is the year of the "great trade collapse." In part due to the development of GVCs, the elasticity of international trade to GDP was much larger than in previous recessions.

the 2000s and its trade balance shifted from a surplus of 2 ½ percent of GDP in 1998 to a deficit of 2½ percent of GDP ten years later.

Revisiting trade linkages

18.   In value added terms, France's GDP is less exposed to development in the Euro Area than in gross terms. The share of EU(27) in France exports falls from for 56.2 percent in gross terms to 50.5 percent in value-added terms (Figure 10). The importance of Euro Area countries as export markets (notably Germany, Belgium, and, to a lesser extent, Spain and the Netherlands). The importance of United States, the United Kingdom, Japan, and Russia as export markets increases. Similarly, on the import side (Figure 11), the EU(27) contributes to 54.5 percent of France imports of value added compared to 60 percent in gross terms.

Figure 10. France's Exports by Destination in 2009
(Gross exports and exports of value added, in percent)

Sources: OECD-WTO (TiVA) and author's calculation.

19.   While Germany is by far France's largest export market in gross terms, in value added terms, its importance is comparable to the United States. Moreover, the importance of Germany for France's trade has declined since 1995 and this decline is larger in value added terms than in gross terms. The same trends are visible on the import side, though Germany remains a larger supplier than the United States.

Figure 11. France's Imports by Origin in 2009
(Gross imports and imports of value added, in percent)

Sources: OECD-WTO (TiVA) and author's calculation.
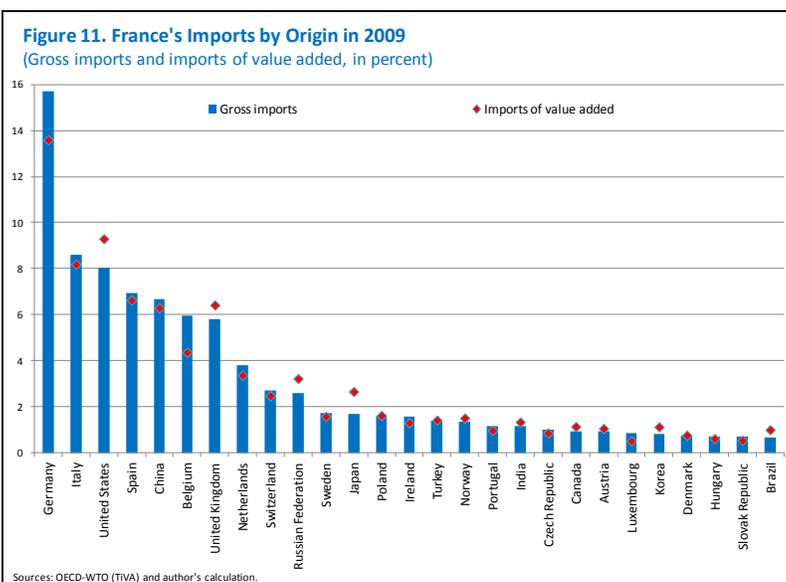
20.   Therefore, trade in value added provides a more nuanced picture of trade linkages. On the one hand, the impact, through trade, of the Euro Area crisis on France's growth may be more limited than reported by gross trade data. On the other hand, the impact of Germany and Belgium relatively strong growth will be more limited than suggested by gross exports but France is set to benefit more than suggested by gross trade data from a recovery in North America.

Revisiting the importance of services for export performance

21.   **Most of France's exports are services**. Gross trade data lead to the apparent paradox that while services accounts for the bulk of GDP, global trade remains dominated (at about 80 percent) by goods. When trade is considered in value added terms, this paradox becomes less obvious. 51 percent of France's gross exports is made of services (up from 46 percent in 1995) and 55 percent of exported value added (up from 47 percent in 1995).[7] This is large by international standards (Figure 12).

22.   **The importance of services for France's exports suggests that productivity gains in services would have a positive impact on France export performance**. Services are a major input for other sectors and for exporters. Therefore, the benefit of services sector deregulation would not be limited to its sizable positive impact on productivity, as documented in the 2012 Article IV Consultation (Hallaert, 2013b), it will also foster export performance.

Figure 12. Share of Services in Exports

Sources: OECD-WTO (tiVA) and author's calculation.
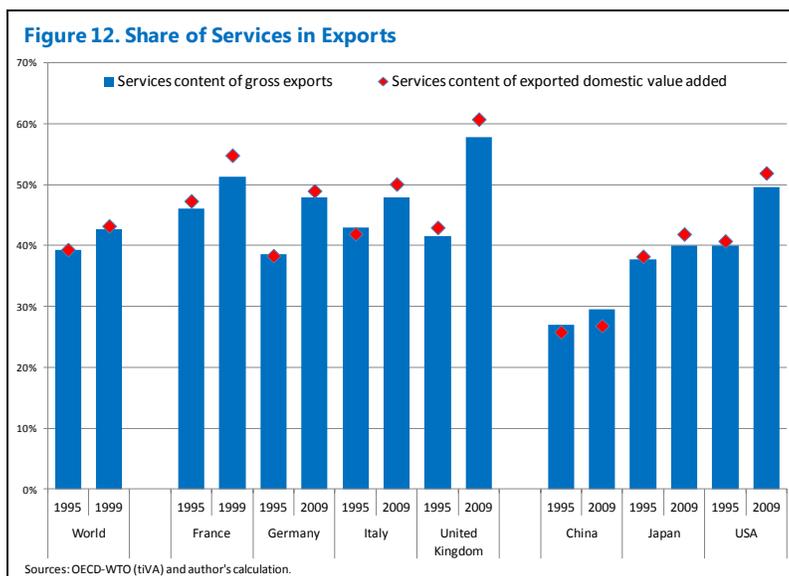
E.   Conclusion—Policy Implications

23.   **Imports are a source of productivity growth and contribute to export performance**. The development of the GVCs has increased this role and empirical evidence suggests that imports and the integration of the GVCs have a positive of France's productivity, export growth, and export diversification.

24.   **France has integrated the GVCs as much as the other European countries of comparable economic size except Germany**. France remains, for many European countries, a significant supplier of and market for intermediates. However, from a global perspective, the role of France as a hub in the European supply chain has become marginal and Germany emerged as the sole hub.

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[7] The difference is foreign value added embodied in exports. It is considered in gross exports but not in exported domestic value added.

25.   The integration in the GVCs grosses up trade flows but does not necessarily increase the value added content of exports. Therefore, an assessment of an economy's openness requires looking at trade in value added. In this context it appears that:

- **France export market shares in value added declined faster than in other European countries**. This confirms the loss of competitiveness highlighted using gross exports.

- **Exports contribution to GDP is smaller in France than in other European countries of the same size**. Moreover, the contribution of exports to France's income has declined since 2000.

- **In the 2000s, France relied increasingly on domestic sources of growth**. This contrast with Germany whose income is increasingly generated by exports. In the second half of the 1990s' exports contributed in the same proportion to the two country's income. In the 2000s', exports became the main engine of Germany's growth while France relied increasingly on domestic sources of growth.

- **Trade in value added terms shows that European countries are less significant trade partners than suggested by traditional trade data**. This is largely due to the fact that the importance of Germany as an export market is much smaller in value added terms than in gross terms. In contrast, the importance of the United States and, to a lesser extent, Japan as trading partners is substantially larger. This leads to nuance trade linkages: the impact on France's GDP from a strong recovery in the United States and in Japan will be stronger than suggested by traditional trade data. In contrast, the impact of a recovery in Germany and Belgium will be more limited.

- **Services are crucial for France export performance**. Services contribute to 55 percent of exported domestic value added. Therefore, productivity gains in services would have a positive impact on France export performance.

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Appendix I. The Productivity Impact of Imports: Overview of Evidence at the firm- and plant-level

Source	Country	Period	Productivity	Imports	Importers	Impact	Channel tested
Stone and Shepherd (2010)	115 countries	?	Total Factor Productivity	Intermediates and equipment goods	100,000 firms	Imports have (i) a positive impact of imports on firm productivity and (ii) a positive role on firm-level innovation	Access to inputs
Bloom et al. (2011)	12 European countries	2000-2007	Total Factor Productivity	All imports	Up to half a million firms	Competition from Chinese imports explains 12 percent of productivity growth during 2000-2007 and is associated by increased innovation	Competition
Muendler (2004)	Brazil	1986-1998	Total Factor Productivity	Intermediates and equipment goods	9500 manufacturing firms	Competition increases productivity immediately; access to foreign inputs is negligable for productivity; the elimination of less productive firm has a slow and small impact on aggregate productivity	Competition (trade liberalization), access to inputs, and rellocation of output
Schor (2004)	Brazil	1989-1998	Total Factor Productivity	Inputs and final goods	4484 manufacturing firms	Impact of reducing tariffs on inputs (access chanel) is slightly stronger than the impact of reducing tariffs on final goods (competition channel).	Competition (trade liberalization) and access to inputs
Trefler (2004)	Canada, USA	1989-1996	Labor productivity	All imports	Manufacturing plants	Productivity of manufacturing increased by 6 percent as a result of tariff cuts of the Canada-U.S. Free Trade Agreement	Competition (trade liberalization)
Kasahara and Rodrigue (2008)	Chile	1979-1996	Total Factor Productivity	Intermediates	3,598 manufacturing plants	Uses of imported intermediates immediately raises productivity by 2.6 percent (downward biased estimates) to 22 percent	Access to inputs
Pavcnik (2002)	Chile	1979-1986	Plant productivity and industry-level aggregate productivity	All imports	4,379 manufacturing plants	Productivity of import-competing industries increased by 3 to 10 percent more than non traded goods sectors due to the liberalization. Reallocatrion of putput explains about 2/3 of the manufaring sector productivity growth after trade liberalization	Competition (trade liberalization)
Yu, Ye and Qu (2013)	China	1998-2002	Total Factor Productivity	Import penetration	Over 150,000 manufacturing plants	Positive for firm producing differentiated goods. Negative for firm producing homogenous goods.	Competitive pressure (trade liberalization)
Fernandes (2007)	Colombia	1977-1991	Total Factor Productivity	Intermediates and equipment goods	6,474 manufacturing plants	Imports have a strong positive impact on productivity due to access to inputs (within-plants productivity) and reallocation of output	Competition (trade liberalization), access to imports (technology embodied in imported inputs)

Smeets and Warzynski (2010)	Denmark	1998-2005	Total Factor Productivity	Intermediates and equipment goods	About 4,500 Manufacturing firms	Imports increase productivity	Access to inputs (input cost and technology embodied in imported inputs)
Bas and Strauss-Khan (2011)	France	1995-2005	Total Factor Productivity	Intermediates	About 21,000 manufacturing firms	Increase in imported inputs boosted average firm's productivity by 1.5 percent	Access to inputs (technology embodied in imported inputs and variety)
Halpern et al. (2005)	Hungary	1992-2001	Total Factor Productivity	Product-level imports	2,043 large exporting manufacturing firms	Imports explain 30 percent of productivity growth. Half of this effect is through the reallocation of output across continuing firms and the remaining is intra-firm increase of productivity due to access to imported inputs.	Access to inputs (variety and quality) and reallocation of output
Harrison et al. (2011)	India	1985-1994; 1998-2004	Total Factor Productivity	Inputs and final goods	Up to 587,303 manufacturing firms	Trade liberalization and FDI reforms explain a large part of productivity growth. Within-firm improvement is the main source of productivity growth on the whole period but immediately after the 1991 trade liberalization, reallocation is the main source. Cut in tariffs on inputs has the largest productivity impact followed by the cut of tariffs on final goods.	The two competition chanels (trade liberalization): reallocation of output and within-firm improvement
Topalova and Khandelwal (2011)	India	1989-1996	Total Factor Productivity	Inputs and final goods	About 4,100 manufacturing firms	Lower tariffs on final goods and lower input tariffs, both increased firm-level productivity, with input tariffs having a larger impact	Competition (trade liberalization) for final goods Access to (better) inputs
Amiti and Koenings (2007)	Indonesia	1991-2001	Total Factor Productivity	Inputs and final goods	Plant level (manufacturing)	Productivity impact of a fall in input tariffs is at least twice as high as the impact of lower tariff on final goods	Competition (tariff cuts) and access to input
Tybout and Westbrook (1995)	Mexico	1984-1990	Total Factor Productivity	All imports	2,227 manufacturing plants	Trade liberalization increased productivity by 11.2 percent during the period. 9.6 percent was due to within-firm improvements, 1 percent to reallocation, and 0.6 percent to economies of scale	Competition (reallocation of output and within-firm improvement) and economies of scale
Augier et al. (2013)	Spain	1991-2002	Total Factor Productivity	Intermediates and capital goods	2,354 manufacturing firms	10 ppts increase in imports raises productivity by 1.5 percent	Access to inputs (technology embodied in the imported inputs)
Lööf and Andersson (2010)	Sweden	1997-2004	Labor Productivity	All imports	57,000 manufacturing firms	Imports cause higher productivity. The larger the share of imports from the G7 in total imports the stronger the productivity impact of imports	Access to inputs (technology spillovers through imports)
Keller and Yeaple (2009)	USA	1987-1996	Total Factor Productivity	All imports (import penetration)	1,277 manufacturing firms	Imports have a positive but non significant impact	Access to inputs (technology spillovers through imports)

Source: Author.

Appendix II. The Productivity Impact of Offshoring

Source	Country	Period	Measure of Productivity	Impact
I. Goods Offshoring				
Egger and Egger (2006)	EU(12)	1992-1997	Labor Productivity (Low-skilled workers) in 21 manufacturing industries.	Short term: Negative; Long Term: Positive.
Egger *et al.* (2001)	Austria	1990-1998	Total Factor Productivity in 18 manufacturing industries.	Positive.
Jabbour (2010)	France	1990-2001	About 1,950 manufacturing firms.	Positive but only for outsourcing to developing countries.
Görg and Hanley (2005)	Ireland	1990-1995	Total Factor Productivity of 652 plants of 12 electronics industries.	Short term: Positive (1 percentage point increase in offshoring intensity increases TFP by 1.2 percent).
Görg, Hanley, and Strobl (2008)	Ireland	1990-1998	Total Factor Productivity in 1,099 manufacturing plants.	Positive but not always significant depending on the simulation method. The Impact is smaller than for service offshoring.
Daveri and Jona-Lasinio (2008)	Italy	1995-2003	Labor productivity in 21 manufacturing industries.	Positive.
Morrisson Paul and Yassar	Turkey	1990-1996	Labor productivity and total factor productivity of 1193 plants of the textile and apparel sector.	Positive. The impact of offshoring is larger than the impact of domestic outsourcing.
Amiti and Wei (2009)	USA	1992-2000	Labor and Total Factor Productivity in 96 manufacturing industries.	Positive on both measures of productivity. Good offshoring explains 5 percent of labor productivity growth. This impact is both smaller and less significant than the impact of Service offshoring.
Mann (2003)	USA	1995-2002	Total Factor Productivity.	Positive: Offshoring led to a drop in IT hardware prices triggering investment in IT and change in production process. As a result productivity growht was about 0.3 percentage point higher per year.
II. Services Offshoring				
Winkler (2010)	Germany	1995-2006	Labor Productivity of manufacturing.	0.9 to 2.0 percent per year.
Görg and Hanley (2003)	Ireland	1990-1995	Labor Productivity of 12 electronics industries.	Not clear for the all sample Positive for downstream firms only.
Görg and Hanley (2005)	Ireland	1990-1995	Total Factor Productivity of 652 plants of 12 electronics industries.	Short term: Positive but insignificant.
Görg, Hanley, and Strobl (2008)	Ireland	1990-1998	Total Factor Productivity in 1,099 manufacturing plants.	A 10 percentage point increase in service offshoring increases productivity by 0.8-0.9 percent (full sample). This is fully due to the positive impact for exporters (no significant impact for non-exporters).
Daveri and Jona-Lasinio (2008)	Italy	1995-2003	Labor productivity.	No impact.
Crisculo and Leaver (2005)	UK	2000-2003	Total Factor Productivity in manufacturing and services (about 37,000 plants).	Positive for the full sample (10 percent increase in srvices offshoring intensity is associated with 0.37 percent increase in productivity). When separating manufacturing and services firms, positive only for services firms (impact on productivity is 0.68 percent).
Amiti and Wei (2009)	USA	1992-2000	Labor and Total Factor Productivity in 96 manufacturing industries.	Positive. Services o0ffshoring explains 10 percent of labor productivity growth. This is 2 times more than the impact of goods offshoring.

Sources: Author, Olsen (2006), and Winkler (2010).
Short term impact through access to better and/or cheaper inputs. Long term impact is through the restructuring i.e., changes in factor shares.