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FRANCE

Selected Issues

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Approved by the European Department

January 28, 2008

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I. Recent French Export Performance: Is There a Competitiveness Problem?[1]

A. Introduction

1. **A significant part of French activity fluctuations has a foreign source (e.g., Kose, Otrok, and Whiteman, 2003, Kabundi and Nadal De Simone, 2007).** Since 2000, French foreign sector performance has experienced a substantial deterioration vis-à-vis its own past and relative to Germany. Some observers have suggested that the country has not benefited fully from the opportunities offered by the rapid economic growth of emerging Asian economies and the eastward expansion of the EU. Therefore, the question arises as to whether France is suffering from a competitiveness problem. This question has had, so far, an elusive answer. Traditional variables that explain international trade, such as the exchange rate, relative unit labor costs, and demand pressure seem insufficient to illuminate the recent decline in France's export performance. Residuals from econometrically-estimated equations indicate a substantial drag on exports since 2001, not attributable to the standard global demand and price/cost factors.[2]

2. **In addition, equilibrium exchange rate analysis indicates that France's real effective exchange rate is largely in line with fundamentals.** National account data show, however, that changes in export margins have cushioned the effects of the euro fluctuations. Cost competitiveness of French producers worsened in 2005 and early 2006, though it remains in line with its long-term average. Despite that producers lowered export prices in euros to maintain price competitiveness, the external position deteriorated during the period.

3. **Hence, the relative underperformance of exports in past years may point to structural factors that leave French firms behind the global expansion.** A more flexible economy should be able to reorient the destination of its exports and product mix toward fast-growing economies and sectors. Indeed, a sectoral study of total factor productivity (TFP) growth in manufacturing found that, while France does not lag significantly behind the U.S. in terms of level, TFP growth is hampered by the high ratio of minimum to median wages.[3] Staff analysis also suggests that as France has become more sensitive to the global economy over time, it has tended to adjust more through changes in employment and productivity than through wage flexibility, strengthening the case for more structural reforms.[4]

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[1] Prepared by A. Kabundi (University of Johannesburg) and F. Nadal De Simone.

[2] See IMF, 2005.

[3] See Khan, 2006.

[4] See Kabundi and Nadal De Simone, 2007.

4. **This paper performs a descriptive analysis of French export data by destination and by SITC Revision 3 product classification distinguishing (optimally) between the cyclical and the trend components of the series.** Next, it analyzes the behavior of prices and quantities following a domestic and a foreign shock to the French economy. In particular, the paper contrasts and compares the reaction of French and German variables to shocks to unit labor costs in manufacturing and to terms of trade.

5. **Globalization has greatly influenced economies over the past three decades.** Countries' boundaries have dropped through intensive trade of goods and services, and financial integration. Economies have benefited from trade and foreign direct investment (FDI). Conversely, globalization can make countries more vulnerable to external shocks. Crises can be severe and contagion can spread rapidly to other parts of the globe, as recently exemplified by the subprime crisis that started in the U.S.

6. **There is a consensus in the literature that globalization has positive effects.** Globalization fosters comovement of macroeconomic variables across countries through trade and financial market integration (Imbs, 2004). Financial market integration has also contributed to the synchronization of business cycles through the opening of countries' capital accounts. Financial prices have become more synchronized through arbitrage (Brooks, Forbes, and Mody, 2003).

7. **On the empirical front, most findings show increasing synchronization of economic variables across countries (Nadal De Simone, 2002, Bordo and Helbling, 2004, Kose, Otrok, and Whiteman, 2005).** Alternatively, despite large increases in trade and financial openness, G-7 business cycles may have become less synchronized as a result, for instance, that trade flows lead to increased specialization of production (Stock and Watson, 2003, Kose and Yi, 2006).

8. **In addition, other studies have emphasized the sources of shocks, their spillovers, and channels of their transmission from one country or region to another.** Recent examples include the study of the monetary transmission mechanism in the euro area using structural VAR analysis by Ciccarelli and Rebucci (2006), and Canova, Ciccarelli, and Ortega (2007). Similarly, Canova and Ciccarelli (2006), using a VAR with time-varying parameters, find a positive and significant effect of U.S. GDP growth shock on France and Italy, but a negligible effect on German GDP growth. Given that the VAR methodology has some limitations—the most conspicuous being that it cannot accommodate a large panel of series without the risk of running short of degrees of freedom—Stock and Watson (2002) use the approximate structural dynamic factor model on a large panel of developed countries' variables and, like Kabundi and Nadal De Simone (2007) and Eickmeier (2007), find that U.S. demand shocks and EU supply shocks have a positive and significant effect on French and German output.

9. **The high degree of economic and financial integration stresses the importance of good and factor markets flexibility.** Economies' flexibility to absorb domestic- and foreign-origin shocks takes paramount importance, even more so when countries' policy menu is restricted in some sense such as by participation in a currency area. Not surprisingly, competitiveness issues have been taken to the front line of the economic and political debate.

10. **This study contains several findings.** (1) Divergences in recent trade performance between France and Germany are not related to the cyclical part of trade but to its trend. (2) For most categories of products, France's export cyclical component is less volatile than Germany's. (3) In the 2000s, France's trend export growth rate while higher than in the 1990s, was less than 60 percent Germany's. (4) Both France and Germany faced a negative common factor in the 2000s, most likely due to euro appreciation. (5) However, idiosyncratic factors were negative on average for France and positive for Germany; that was especially the case vis-à-vis China and Asia, and notably in terms of food and live animal, beverages and tobacco, and manufacturing. (6) The French economy seems less flexible to adjust to a negative shock to unit labor costs in manufacturing or to its terms of trade. In France, the adjustment tends to be done relatively more via quantities than via prices suggesting the need to make labor and product markets as flexible as possible.

B. Data and Non Stationarity

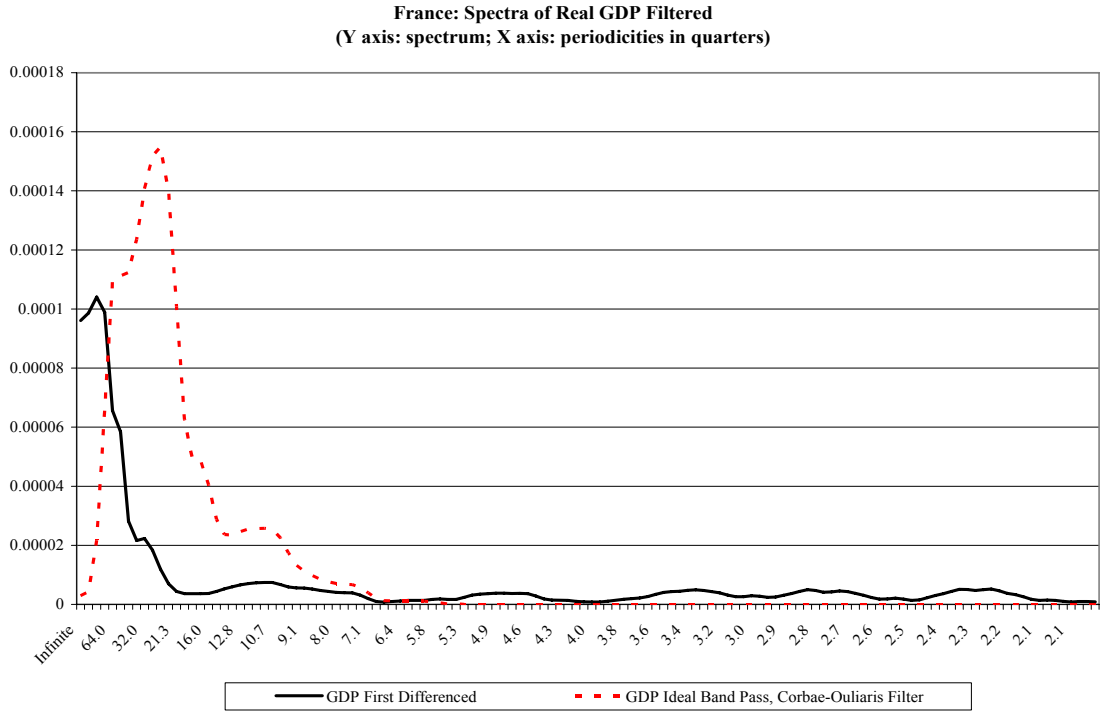
Data

11. **This study uses two large data panels.** The first one comprises 396 quarterly macroeconomic series and 106 series of trade by country (for a total of series $N = 502$). Trade series include imports and exports to the euro area, the EU, accession countries, Canada, the United States, the United Kingdom, Japan, China, Asia, Latin America, and the rest of the world. The second data panel contains 396 quarterly macroeconomic series and 110 series of trade by SITC Revision 3 category of products (for a total of series $N = 506$). The sample period is 1981:Q1–2006:Q4 (i.e., $T = 104$). The countries are France, Germany, Japan, the Netherlands, the United Kingdom, and the United States. In addition, a set of global variables is included, containing such items as crude oil prices, a commodity industrial inputs price index, world demand, and world reserves. Variables have no seasonal component left.

Dealing with non stationarity

12. **For estimation purposes, series have to be covariance stationary.** Instead of applying unit root tests to determine the degree of integration of the series and then difference or detrend them depending on whether they are I(1) or I(0) with a deterministic trend, respectively, the Corbae-Ouliaris Ideal Band-Pass Filter was used (Corbae and Ouliaris, 2006). There are several reasons for this approach. First, available unit root tests have low power and often the decision on the degree of integration of the series has to be

based on subjective judgment. Second, first differencing removes a significant part of the variance of economic time series. Third, Corbae and Ouliaris filter is consistent, is not subject to end-point problems and has no finite sampling error. As an illustration, note the large share of variance that first differencing of French real GDP produces at the business cycle frequency band (between 6 and 32 quarters, according to the NBER definition of business cycles, text figure).



C. Descriptive Part: Facts Without the Noise

13. **Several interesting features of recent French export performance are clear from the data once the noise of short-term fluctuations is removed.** First, French and German cyclical components of exports by country and products follow the same pattern, mimicking quite closely their business cycles. Export cycles of both countries portray a picture of negative growth in the early 1980s and 1990s, and at the end of the 1990s. The U.S. driven early-1980s recession, the European 1993 recession and the end of the stock market "bubble" at the end of the 1990s are clearly correlated to exports behavior (IMF, 2005). But, in general, France's export cyclical component is less volatile than Germany's, which may be associated with the product composition of both countries exports; German exports have a higher short-term elasticity. Hence, divergences in recent trade performance between both countries seem unrelated to the cyclical part of trade flows. What about their trend part? Figure I-1 shows annual exports trend growth. Looking at exports by destination, it seems that Germany has benefited more from the excellent economic performance of China than France. Starting in 2002-03, French export performance was also weak relative to Germany in terms of exports to the EU, the euro area, the U.S., and the U.K. France's export

performance is also weaker relative to its own past (Table I-1). Furthermore, France's trend export growth rate in the 2000s, while higher than in the 1990s, was less than 60 percent of Germany's.

14. **The deterioration of French export performance vis-à-vis its own past and relative to Germany can be related to products exported.** In the 1980s, French trend export growth dominated Germany's on SITC categories 1, 3, 4, 5 and 7 (i.e., primary products, chemicals, and miscellaneous manufactured products); the situation was almost the opposite in the 1990s. In the 2000s, of the traditional French exports, France's trend export growth rate was higher than Germany's only in chemicals and other goods.

15. **The analysis suggests that there has been since 2002-03 a clear underperformance of French exports relative to the past and relative to Germany.** The change in export performance is relatively recent, but has been protracted enough so as to raise the question of the competitiveness of the French economy. That France is less competitive in recent years does not seem to be related to the euro; its underperformance is quite broad from a product viewpoint. Yet, more analysis and time is needed to conclude that there is a structural issue.

D. Analytical Part: ULCM and TOT Shocks

The model and economic conditions for shocks identification

16. **To gain further insight into the causes of the deteriorating performance of the French foreign sector, this study uses a large dimensional approximate dynamic factor model in the tradition of Stock and Watson (2002).**[5] The estimation of the model comprises two main steps: estimating the common components and identifying a reduced number of structural shocks that explain the common components of the variables of interest.[6] Once a decision is taken on the process followed by the common components, structural shocks have to be identified. The identification of structural shocks is achieved by focusing on the reduced form VAR residuals. Following Eickmeier (2007), the identification scheme has three features: (1) maximize the explained variance of the forecast error of the chosen variable and calculate impulse-response functions; (2) assume that identified shocks are linearly correlated to a vector of fundamentals; and (3) identify orthogonal shocks by rotation using a sign-identification strategy that imposes inequality restrictions on the impulse-response functions of variables based on a typical aggregate demand and aggregate

[5] The model is closely related to the factor models of Sargent and Sims (1977) and Geweke (1977), except that it admits serial correlation and weakly cross-sectional correlation of idiosyncratic components, as Chamberlain (1983). Similar models have been used by Giannone, Reichlin, and Sala (2002), Forni and others (2005), and Eickmeier (2007).

[6] See Kabundi and Nadal De Simone (2007) for a description of the model.

supply framework.[7] Only those rotations among all possible rotations that have a structural meaning are chosen.

17. **The choice of the variables of interest was motivated by two observations.** First, France's economic activity is largely influenced by world developments. Thus, it seemed natural to identify a terms of trade (TOT) shock to compare the behavior of France relative to Germany. Second, only using unit labor cost measures of the REER, it can be seen that French competitiveness deteriorated against Germany in the euro area, although it improved against some other countries. Wages have increased faster in France, particularly at the bottom of the scale, only partially compensated by higher productivity growth. Thus, the second shock identified was a shock to unit labor costs in manufacturing (ULCM). The choice of shocks seems also relevant given last section results. The text table displays the sign restrictions for shock identification, imposed contemporaneously and during the first year after the shock.

Identification inequalities		
	Increase in ULCM	
	supply shock	demand shock
ULCM	≥ 0	≥ 0
Output	≤ 0	≥ 0
Real wages	≤ 0	≥ 0
	Increase in Terms of Trade	
	supply shock	demand shock
Terms of trade	≥ 0	≥ 0
Consumption	≥ 0	≤ 0
Current account	≤ 0	≥ 0

18. **As in major standard macroeconomic models, an increase in ULCM can be interpreted as the result of a fall in labor productivity or an increase in labor compensation.** The former is going to be interpreted as a supply shock and the later as a demand shock. This is consistent with the empirical observation that real wages are procyclical. Similarly, a rise in the TOT can result from a deterioration of the country's competitiveness related to structural factors or alternatively from strong world demand for the country's products. If the shock is persistent, it will result in an increase in consumption (and investment) and the current account will move into deficit. In contrast, if the TOT increase is due to strong world demand for the small country's products, given the transient

[7] See Peersman (2005) for more technical details.

nature of the shock, consumers will largely save the windfall and the current account will move into surplus. Savings will increase.

Estimation

19. **The first step of the estimation is the determination of the number of factors.** The estimation was done assuming that the series follow an *approximate* dynamic factor model.[8] Using Bai and Ng's (2002) selection criteria, four factors were retained. Next, the identification of the structural shocks followed the approach of the structural VAR literature. No identification technology is completely foolproof, however. While the identification technology followed in this paper is flexible enough not to require special restrictions to disentangle *common shocks* from the *contemporaneous transmission of regional or country-specific shocks*, it does require additional work, for example, to confirm the nature and source of shocks. Following Eickmeier (2007), this paper does not restrict the impact effect of the shock. Moreover, after identifying two shocks and giving them an economic interpretation, the same analysis done on a data set containing *only* French variables shows that the resulting impulse-responses are similar to those of the broader data set, supporting the identification of shocks' source.

20. **Only two structural shocks could be identified for each variable of interest.** The identification procedure proposed by Uhlig (2003) was applied to the common components of France and Germany's ULCM and TOT so as to find a reduced number of structural shocks that maximizes the explanation of its forecast error variance over 20 periods. As noted above, sign restrictions on impulse response functions were used to provide economic meaning to the structural shocks. Following Peersman (2005), the angle rotations were applied to the first two principal component shocks taking as pairs a supply shock and a demand shock. The bootstrap was made up of 500 draws. The impulse-response functions are calculated for the first five years to display the cyclical pattern associated with the structural shocks. Both the median response and a 90 percent bootstrapped confidence band are estimated.

E. Econometric Results

21. **Results are presented in the form of variance decomposition.**[9] Tables I-3 to I-6 show the variance decomposition and the forecast error variance of the common components (henceforth, error variance) of French and German variables explained by the two identified shocks to ULCM and TOT, respectively. These shocks suffice to explain up to 99 percent and to about 98 percent of the error variance of the common components of French and

[8] We are grateful to Sandra Eickmeier for having provided the main code and for her insights.

[9] Refer to Kabundi and Nadal De Simone, IMF Working Paper, forthcoming, for impulse-response analysis.

German ULCM and TOT over 20 quarters, respectively. The variance shares of ULCM common components are high as they reach about 75 percent for both countries. In contrast, the variance shares of TOT are much smaller, especially for France: up to 10 percent and 42 percent for France and Germany, respectively. This suggests that France's TOT are more influenced by idiosyncratic factors than Germany's. As in Kabundi and Nadal De Simone (2007), the TOT are relatively less significant channels of shock transmission for France.

22. **The demand shocks to ULCM and TOT are relatively more important than supply shocks for both countries.** Supply and demand shocks have qualitatively broadly similar responses in France and in Germany. However, the quantitative effects as well as the adjustment processes are significantly different.

23. **In both countries, supply shocks to ULCM reduce output, private consumption, investment, and the volume of exports.** Employment falls, despite some downward adjustment of real wages. The real exchange rate appreciates. The consumer price index, however, clearly falls in Germany while it is flat in France. The negative effect on output, exports, and employment of supply shocks is larger in France than in Germany (there seems to be a relatively larger downward rigidity of wages in France). The SMIC rises somewhat despite the fall in labor productivity. The dollar value of exports to all destinations increases in Germany, but not in France (e.g., exports to the U.S. fall). The total increase in the dollar value of French exports is half that of German exports. The same results apply in terms of the euro value of exports per product, especially for manufactures, transport equipment, and mineral fuels and lubricants. France's euro value of exports is larger than Germany's for beverages and tobacco, animal and vegetable oils, and commodities and transactions n.e.c. France adjusts relatively less via price and wage changes, and more via employment changes than Germany.

24. **Demand shocks to ULCM affect France and Germany differently.** In France, a demand shock to ULCM produces a short-term small increase in output while employment, real wages, and the consumer price index rise without denting productivity. Exports volume tends to increase somewhat while the real exchange rate tends to depreciate. However, as productivity declines, the process is reversed. The value of exports to all destinations and for all products falls. In Germany, the same shock has a much shorter positive impact on output and employment, i.e., less than a year. The consumer price index increases much less than in France; the real wage rise is short lived and gets undone already after 1½ years. Exports volume decreases and the real exchange rate appreciates. The value of exports is not much affected. So, when ULCM increase due to demand pressures, the German economy adjusts more rapidly and seems to display less cost inertia. The real exchange rate helps to offset the negative effects on output and exports while in the case of France it magnifies them.

25. **TOT shocks affect France less than Germany; that difference is more marked following a demand shock than following a supply shock.** Positive supply shocks to TOT increase output, investment, and the volume of exports. Employment rises, but in France it

does so only after real wages have fallen somewhat, given that labor productivity does not change much. In Germany, employment rises sooner and more than in France; the German increase in labor productivity is relatively larger and offsets the rise in real wages enough so that ULCM fall. The real exchange rate depreciation is similar in both economies in the medium run, but it takes relatively longer to reach that level in France. The consumer price index falls somewhat in France and is flat in Germany. The dollar value of exports to all destinations has a tendency to fall in France; the fall is more pronounced in Germany due to the larger short-run exchange rate depreciation. Exports by product in euros show no major clear patterns, but there is in general a slight increase. Summarizing, supply shocks that increase the TOT are more consistent with a persistent supply shock in Germany than in France.

26. **An upward, demand-driven shock to TOT results in a negative output effect in France and is clearly inflationary.** The real effective exchange rate appreciates as productivity falls and ULCM rise. The SMIC rises despite the fall in labor productivity. The dollar value of French exports by destination increases, except the value of exports to the U.S. and to accession countries. The increase is, however, larger for Germany. The euro value of French exports increases less than German exports. In fact, France's exports are mostly flat, except for crude materials, animal and vegetable oils, chemicals, and commodities and transactions n.e.c. Overall, France adapts less quickly to inflationary pressures due to strong world demand.

F. Conclusion and Policy Implications

27. **French economic activity is significantly affected by economic activity in the rest of the world. In recent years, the export performance of the French economy relative to its own past and relative to a major trading partner, Germany, has deteriorated.** Therefore, the question arises as to whether France is suffering from a competitiveness problem. So far, traditional variables explaining international trade have proved to be insufficient to elucidate the recent decline in France's export performance. This study has found that the recent deterioration of French export performance does not seem to be related to the "cycle," but to the trend growth of exports, which seems lower in the early 2000s than it was in the past and with respect to Germany. This result applies to exports by destination and by product composition.

28. **The analysis of the effects of an increase in ULCM and in the TOT, suggests that the French economy is relatively less flexible to adjust than the German economy.** Faced with an upward shift in ULCM, France adjusts relatively less via price and wage changes, and more via employment changes than Germany. The same differences are also evident when both countries are faced with an upward TOT shock. Given that the convergence of the SMIC operated between 2003 and 2006 represented a significant increase in unit labor costs in the economy, and to the extent that the country is a price taker in most of its exports, the

study supports the view that the difficulties observed in the French foreign sector may be structural.

29. **The importance of trade flows and relative price changes in the international transmission of disturbances—as well as the policy constraints imposed by the euro area—highlight the relevance of price flexibility.** The French economy would benefit from further structural reforms that increase its good, service, and labor markets' flexibility. This will matter for the magnitude of the real effective exchange rate changes, trade flows, and the size of the current account balance that will be necessary to accommodate a given disturbance. In addition, the analysis highlights the importance of measures that increase productivity and, in particular, the desirability of avoiding SMIC adjustments unrelated to changes in productivity.

Figure I-1. Trend Exports from France and Germany by Destination

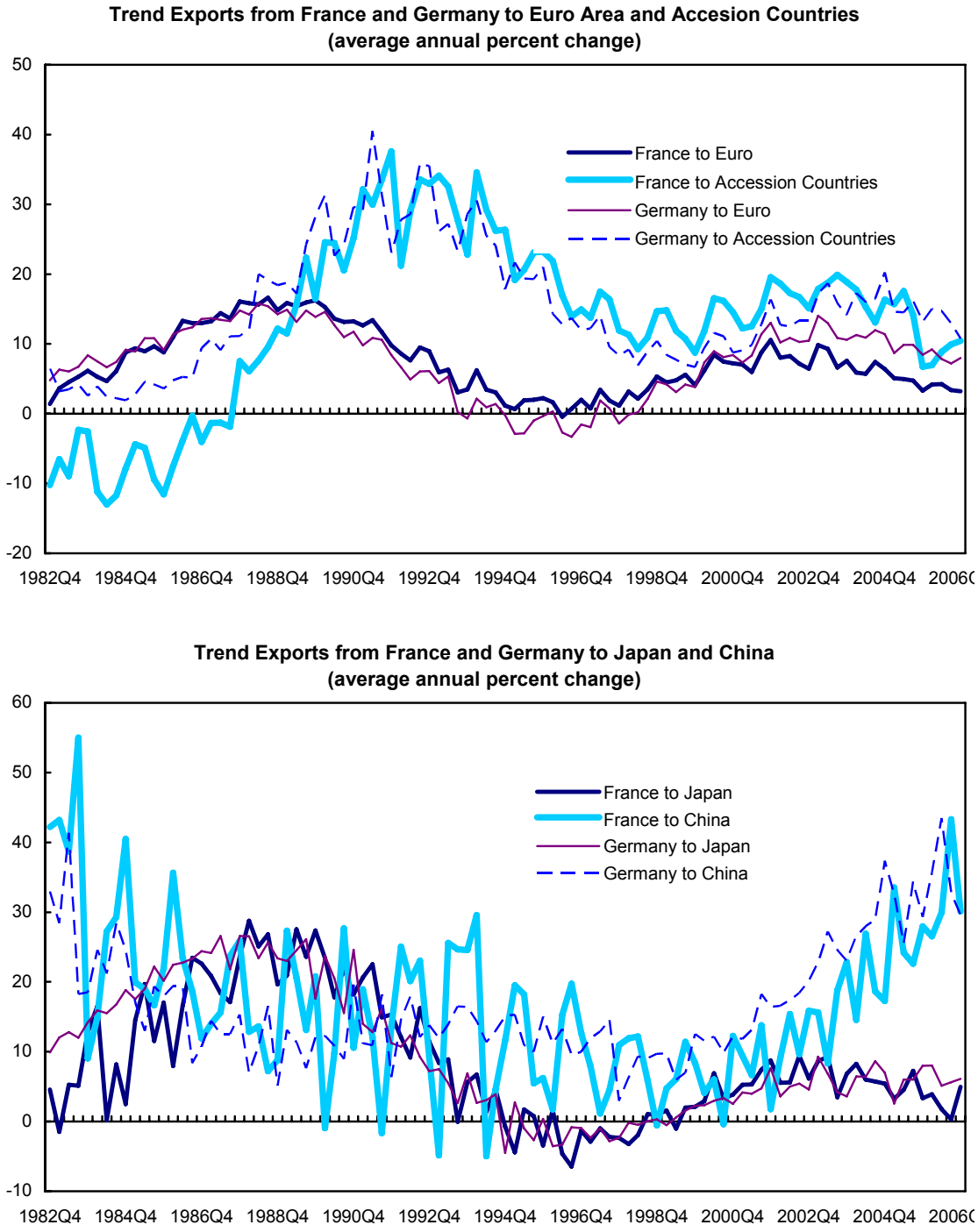
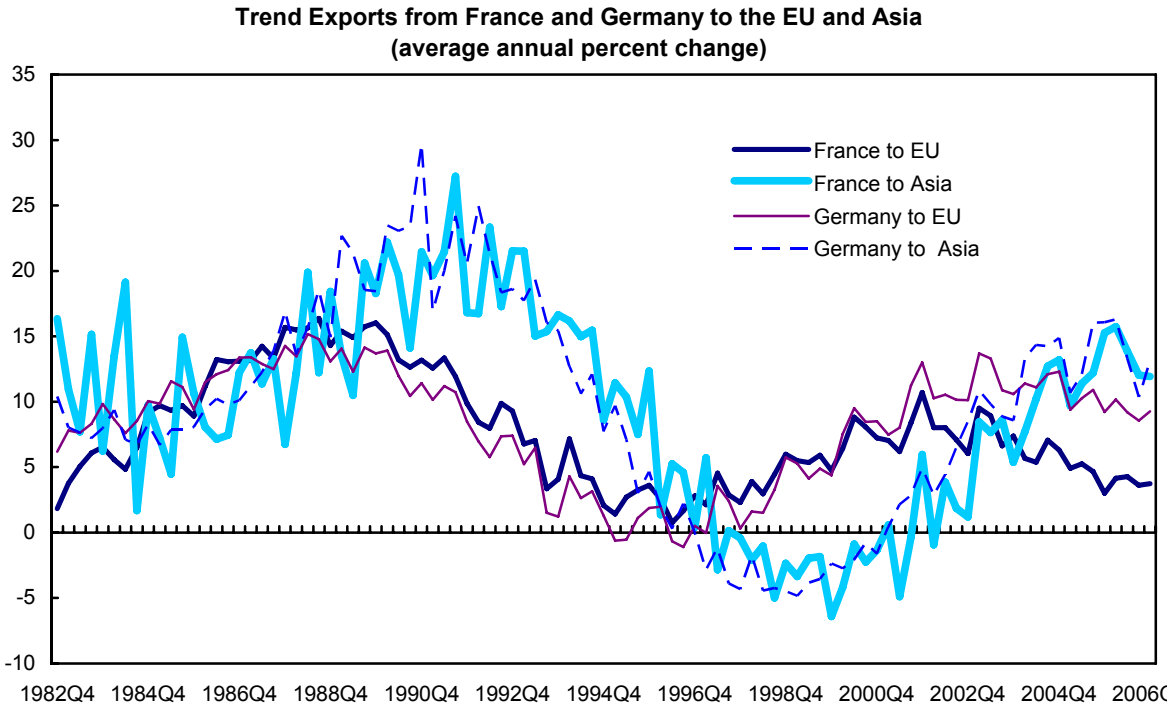


Figure I-1. Trend Exports from France and Germany by Destination (concluded)



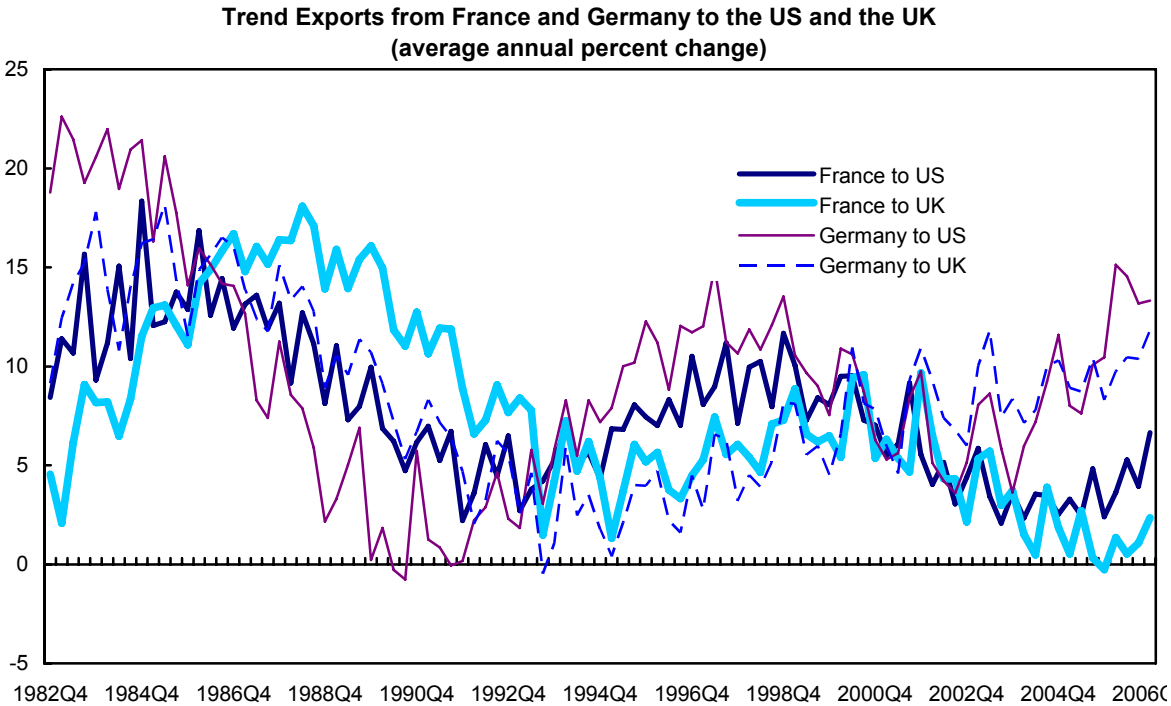


Table I-1. Trend Exports per Region
(Average annual percent change)

		1980-2006	1980-1989	1990-1999	2000-2006
France	France to EU	1.7	2.3	**1.3**	1.2
	France to Asia	2.1	2.4	**1.7**	1.9
	France to Japan	1.9	3.5	**1.0**	1.5
	France to China	**3.8**	**5.6**	2.4	3.8
	France to Euro	1.6	2.3	**1.2**	1.2
	Franceto Accession Countries	2.6	0.0	**4.9**	2.6
	France to United States	1.9	2.8	1.9	1.1
	France to United Kingdom	1.8	2.7	**1.6**	0.6
	France to ROW	0.9	0.3	0.6	1.7
Germany	Germany to EU	1.9	2.5	0.9	2.2
	Germany to Asia	2.3	2.6	1.1	2.7
	Germany to Japan	2.2	3.9	0.3	1.5
	Germany to China	3.7	3.2	2.5	5.3
	Germany to Euro	1.8	2.5	0.6	2.1
	Germany to Accession Countries	3.2	2.1	4.4	3.0
	Germany to United States	2.3	2.8	1.9	2.2
	Germany to United Kingdom	2.0	3.0	1.2	1.8
	Germany to ROW	1.6	1.3	0.6	3.2

Table I-2. Trend Exports per Product SITC
(Average annual percent change)

		1980-2006	1980-1989	1990-1999	2000-2006
France	Total	1.5	2.1	1.0	1.4
	Food and live animal - SITC 0	0.9	1.3	0.7	0.5
	Beverages and tobacco - SITC 1	1.5	**2.4**	0.8	1.4
	Crude materials, inedible, except fuels - SITC 2	1.2	2.1	-0.3	2.3
	Mineral fuels, lubricants and related materials - SITC 3	**1.5**	**-0.1**	**1.5**	3.8
	Animal and vegetable oils, fats and waxes - SITC 4	**1.2**	**0.8**	0.6	**2.3**
	Chemicals and related products - SITC 5	**2.1**	**2.7**	**1.4**	2.2
	Manufactured goods - SITC 6	1.2	1.5	**0.8**	1.4
	Machinery and transport equipment - SITC 7	1.7	**2.6**	**1.2**	1.1
	Miscellaneous manufactured articles - SITC 8	1.7	2.5	**1.0**	1.7
	Commodities and transactions - SITC 9	-1.5	-2.8	-7.4	**8.2**
Germany	Total	1.9	2.3	1.0	2.5
	Food and live animal - SITC 0	1.5	1.8	0.7	2.1
	Beverages and tobacco - SITC 1	2.1	2.3	1.4	3.2
	Crude materials, inedible, except fuels - SITC 2	1.8	2.1	0.5	2.8
	Mineral fuels, lubricants and related materials - SITC 3	1.3	-1.3	0.6	4.7
	Animal and vegetable oils, fats and waxes - SITC 4	0.7	0.5	1.1	0.7
	Chemicals and related products - SITC 5	2.0	2.3	1.1	2.8
	Manufactured goods - SITC 6	1.6	2.0	0.6	2.4
	Machinery and transport equipment - SITC 7	2.0	2.5	1.1	2.4
	Miscellaneous manufactured articles - SITC 8	2.0	2.9	0.7	2.5
	Commodities and transactions - SITC 9	3.0	1.3	3.5	2.9

Table I-3. Forecast Error Variance of the Common Components of France Variables Explained by the Supply and Demand Shock to ULCM, 1981-2006 1/

		Variance Shares of the Common Components	Supply Shocks	Confidence Intervals		Demand Shock	Confidence Intervals	
				Lower Bound	Upper Bound		Lower Bound	Upper Bound
1	GDP	0.81	0.75	0.16	0.90	0.12	0.04	0.71
2	Personal consumption expenditure	0.51	0.29	0.04	0.75	0.32	0.08	0.76
3	Private investment	0.87	0.38	0.03	0.88	0.44	0.06	0.89
4	Employment	0.70	0.74	0.20	0.89	0.08	0.03	0.58
5	Productivity	0.35	0.83	0.10	0.92	0.13	0.04	0.79
6	Unit labor cost of the manufacturing sector	0.74	0.07	0.02	0.62	0.93	0.36	0.98
7	Government savings	0.87	0.43	0.03	0.89	0.43	0.05	0.90
8	Consumer confidence	0.46	0.13	0.02	0.79	0.87	0.15	0.97
9	Industrial confidence	0.46	0.15	0.04	0.53	0.54	0.20	0.84
10	Consumer prices	0.91	0.05	0.00	0.60	0.83	0.30	0.94
11	Short-term interest rates	0.58	0.90	0.22	0.92	0.05	0.02	0.57
12	Long-term interest rates	0.59	0.41	0.06	0.80	0.07	0.01	0.47
13	M2 or M3	0.65	0.18	0.03	0.63	0.10	0.02	0.48
14	Stock prices	0.77	0.49	0.01	0.82	0.22	0.01	0.81
15	Real compensation of employees	0.63	0.77	0.24	0.89	0.07	0.03	0.54
16	SMIC	0.61	0.11	0.01	0.61	0.81	0.30	0.95
17	TFP	0.47	0.20	0.06	0.64	0.47	0.12	0.80
18	Exports total	0.81	0.92	0.15	0.92	0.04	0.01	0.60
19	Imports total	0.79	0.35	0.04	0.88	0.58	0.08	0.93
20	Terms of trade	0.10	0.48	0.01	0.77	0.06	0.02	0.65
21	Real effective exchange	0.79	0.61	0.01	0.91	0.31	0.01	0.83
22	Current account balance	0.41	0.33	0.04	0.83	0.60	0.08	0.92
23	FDI out	0.72	0.56	0.02	0.88	0.30	0.02	0.88
24	FDI in	0.52	0.55	0.02	0.87	0.24	0.02	0.85
25	Exports to Euro	0.83	0.26	0.01	0.72	0.57	0.06	0.89
26	Exports to EU	0.84	0.28	0.01	0.72	0.58	0.07	0.90
27	Exports to EU accession ctrys	0.68	0.11	0.00	0.68	0.68	0.20	0.91
28	Exports to United States	0.44	0.44	0.01	0.74	0.17	0.00	0.74
29	Exports to United Kingdom	0.74	0.38	0.01	0.81	0.57	0.07	0.93
30	Exports to Japan	0.77	0.45	0.03	0.74	0.33	0.04	0.76
31	Exports to China,P.R.: Mainland	0.16	0.43	0.02	0.81	0.44	0.04	0.86
32	Exports to Asia	0.56	0.35	0.03	0.76	0.51	0.09	0.87
33	Exports to ROW	0.64	0.37	0.02	0.81	0.60	0.12	0.95
34	EXP SITC Total	0.90	0.64	0.01	0.69	0.09	0.09	0.88
35	EXP SITC 0: Food and live animal	0.64	0.77	0.01	0.85	0.02	0.02	0.85
36	EXP SITC 1: Beverages and tobacco	0.87	0.67	0.01	0.80	0.02	0.02	0.87
37	EXP SITC 2: Crude materials, inefible, except fuels	0.91	0.71	0.03	0.67	0.11	0.14	0.85
38	EXP SITC 3: Mineral fuels, lubricants and related materials	0.58	0.15	0.02	0.87	0.81	0.07	0.95
39	EXP SITC 4: Animal and vegetable oils, fats and waxes	0.64	0.28	0.04	0.42	0.04	0.01	0.33
40	EXP SITC 5: Chemicals and related profucts, n.e.s	0.92	0.75	0.02	0.75	0.05	0.05	0.83
41	EXP SITC 6: Manufactured goods	0.92	0.71	0.02	0.71	0.09	0.12	0.88
42	EXP SITC 7: Machinery and transport equipment	0.87	0.51	0.01	0.62	0.12	0.11	0.85
43	EXP SITC 8: Miscellaneous manufactured articles	0.87	0.64	0.01	0.75	0.05	0.05	0.87
44	EXP SITC 9: Commodities and transactions n.e.c	0.24	0.42	0.03	0.90	0.37	0.01	0.65

1/ Forecast horizon is 20 quarters and refers to the levels of the series. Confidence intervals are constructed using bootstrapping methods.

Table I-4. Forecast Error Variance of the Common Components of Germany Variables Explained by the Supply and Demand Shock to ULCM, 1981-2006 1/

		Variance Shares of the Common Components	Supply Shocks	Confidence Intervals		Demand Shock	Confidence Intervals	
				Lower Bound	Upper Bound		Lower Bound	Upper Bound
1	GDP	0.70	0.13	0.01	0.83	0.82	0.11	0.86
2	Personal consumption expenditure	0.34	0.02	0.00	0.51	0.84	0.20	0.85
3	Private investment	0.93	0.05	0.02	0.58	0.86	0.28	0.90
4	Employment	0.77	0.05	0.01	0.69	0.79	0.11	0.83
5	Productivity	0.36	0.30	0.03	0.89	0.45	0.01	0.62
6	Unit labor cost of the manufacturing sector	0.74	0.34	0.00	0.62	0.66	0.35	0.96
7	Government savings	0.71	0.01	0.01	0.62	0.88	0.20	0.88
8	Consumer confidence	0.32	0.02	0.01	0.51	0.89	0.36	0.93
9	Industrial confidence	0.54	0.25	0.04	0.48	0.62	0.30	0.87
10	Consumer prices	0.92	0.69	0.02	0.86	0.03	0.01	0.77
11	Short-term interest rates	0.76	0.07	0.02	0.77	0.88	0.15	0.89
12	Long-term interest rates	0.54	0.38	0.04	0.76	0.43	0.02	0.64
13	M2 or M3	0.47	0.30	0.01	0.79	0.51	0.05	0.62
14	Stock prices	0.69	0.01	0.01	0.55	0.87	0.22	0.86
15	Real compensation of employees	0.53	0.61	0.03	0.89	0.31	0.04	0.50
16	Exports total	0.69	0.15	0.01	0.79	0.81	0.14	0.87
17	Imports total	0.84	0.04	0.01	0.60	0.89	0.28	0.91
18	Terms of trade	0.42	0.70	0.06	0.91	0.05	0.02	0.75
19	Real effective exchange	0.74	0.21	0.03	0.88	0.61	0.02	0.81
20	Current account balance	0.16	0.05	0.01	0.62	0.01	0.02	0.38
21	FDI out	0.52	0.32	0.01	0.60	0.40	0.11	0.85
22	FDI in	0.15	0.01	0.01	0.60	0.86	0.20	0.88
23	Exports to Euro	0.88	0.52	0.06	0.87	0.10	0.01	0.60
24	Exports to EU	0.90	0.52	0.07	0.87	0.12	0.01	0.56
25	Exports to EU accession ctrys	0.64	0.57	0.02	0.85	0.04	0.00	0.62
26	Exports to United States	0.49	0.84	0.06	0.91	0.02	0.01	0.51
27	Exports to United Kingdom	0.87	0.44	0.04	0.87	0.28	0.02	0.42
28	Exports to Japan	0.81	0.63	0.04	0.92	0.19	0.03	0.48
29	Exports to China,P.R.: Mainland	0.69	0.22	0.01	0.64	0.47	0.07	0.72
30	Exports to Asia	0.75	0.56	0.03	0.90	0.29	0.03	0.44
31	Exports to ROW	0.92	0.48	0.05	0.86	0.13	0.01	0.54
32	EXP SITC Total	0.92	0.37	0.05	0.82	0.44	0.01	0.46
33	EXP SITC 0: Food and live animal	0.92	0.38	0.03	0.81	0.36	0.00	0.42
34	EXP SITC 1: Beverages and tobacco	0.58	0.37	0.01	0.79	0.21	0.00	0.32
35	EXP SITC 2: Crude materials, inefible, except fuels	0.81	0.36	0.06	0.87	0.57	0.03	0.66
36	EXP SITC 3: Mineral fuels, lubricants and related materials	0.64	0.08	0.02	0.55	0.86	0.41	0.92
37	EXP SITC 4: Animal and vegetable oils, fats and waxes	0.41	0.28	0.01	0.66	0.21	0.04	0.44
38	EXP SITC 5: Chemicals and related profucts, n.e.s	0.89	0.47	0.07	0.86	0.41	0.01	0.46
39	EXP SITC 6: Manufactured goods	0.91	0.40	0.06	0.84	0.45	0.01	0.50
40	EXP SITC 7: Machinery and transport equipment	0.89	0.37	0.03	0.81	0.39	0.00	0.41
41	EXP SITC 8: Miscellaneous manufactured articles	0.91	0.36	0.03	0.81	0.36	0.00	0.41
42	EXP SITC 9: Commodities and transactions n.e.c	0.09	0.09	0.01	0.68	0.68	0.03	0.74

1/ Forecast horizon is 20 quarters and refers to the levels of the series. Confidence intervals are constructed using bootstrapping methods.

Table I-5. Forecast Error Variance of the Common Components of France Variables Explained by the Supply and Demand Shock to TOT, 1981-2006 1/

		Variance Shares of the Common Components	Supply Shocks	Confidence Intervals		Demand Shock	Confidence Intervals	
				Lower Bound	Upper Bound		Lower Bound	Upper Bound
1	GDP	0.81	0.46	0.08	0.83	0.08	0.05	0.79
2	Personal consumption expenditure	0.51	0.61	0.12	0.83	0.24	0.04	0.68
3	Private investment	0.87	0.33	0.02	0.82	0.43	0.05	0.87
4	Employment	0.70	0.39	0.08	0.81	0.05	0.06	0.75
5	Productivity	0.35	0.37	0.02	0.80	0.14	0.07	0.87
6	Unit labor cost of the manufacturing sector	0.74	0.07	0.02	0.74	0.22	0.00	0.53
7	Government savings	0.87	0.29	0.01	0.81	0.46	0.06	0.88
8	Consumer confidence	0.46	0.18	0.02	0.80	0.25	0.01	0.64
9	Industrial confidence	0.46	0.38	0.11	0.81	0.04	0.00	0.38
10	Consumer prices	0.91	0.01	0.00	0.60	0.26	0.00	0.58
11	Short-term interest rates	0.58	0.19	0.02	0.72	0.03	0.05	0.79
12	Long-term interest rates	0.59	0.25	0.02	0.76	0.12	0.02	0.47
13	M2 or M3	0.65	0.26	0.02	0.66	0.16	0.03	0.62
14	Stock prices	0.77	0.02	0.00	0.55	0.63	0.24	0.90
15	Real compensation of employees	0.63	0.25	0.03	0.70	0.05	0.09	0.80
16	SMIC	0.61	0.02	0.01	0.61	0.20	0.00	0.48
17	TFP	0.47	0.68	0.26	0.89	0.09	0.02	0.44
18	Exports total	0.81	0.14	0.01	0.73	0.03	0.02	0.71
19	Imports total	0.79	0.37	0.03	0.84	0.32	0.03	0.78
20	Terms of trade	0.10	0.13	0.03	0.50	0.82	0.47	0.96
21	Real effective exchange	0.79	0.00	0.00	0.42	0.10	0.00	0.46
22	Current account balance	0.41	0.47	0.08	0.85	0.17	0.02	0.63
23	FDI out	0.72	0.11	0.00	0.65	0.54	0.16	0.89
24	FDI in	0.52	0.08	0.00	0.64	0.63	0.22	0.91
25	Exports to Euro	0.83	0.05	0.01	0.69	0.16	0.00	0.33
26	Exports to EU	0.84	0.04	0.01	0.69	0.16	0.00	0.33
27	Exports to EU accession ctrys	0.68	0.00	0.00	0.54	0.24	0.00	0.54
28	Exports to United States	0.44	0.01	0.00	0.46	0.52	0.23	0.86
29	Exports to United Kingdom	0.74	0.04	0.01	0.70	0.12	0.00	0.37
30	Exports to Japan	0.77	0.18	0.03	0.68	0.04	0.02	0.60
31	Exports to China,P.R.: Mainland	0.16	0.08	0.02	0.68	0.08	0.01	0.47
32	Exports to Asia	0.56	0.13	0.03	0.76	0.09	0.00	0.43
33	Exports to ROW	0.64	0.05	0.02	0.69	0.11	0.00	0.35
34	EXP SITC Total	0.90	0.39	0.01	0.69	0.03	0.01	0.32
35	EXP SITC 0: Food and live animal	0.64	0.25	0.01	0.53	0.10	0.01	0.51
36	EXP SITC 1: Beverages and tobacco	0.87	0.23	0.00	0.54	0.02	0.00	0.29
37	EXP SITC 2: Crude materials, inefible, except fuels	0.91	0.57	0.05	0.77	0.07	0.01	0.54
38	EXP SITC 3: Mineral fuels, lubricants and related materials	0.58	0.37	0.03	0.82	0.37	0.01	0.67
39	EXP SITC 4: Animal and vegetable oils, fats and waxes	0.64	0.56	0.08	0.68	0.36	0.21	0.86
40	EXP SITC 5: Chemicals and related profucts, n.e.s	0.92	0.41	0.02	0.65	0.09	0.01	0.52
41	EXP SITC 6: Manufactured goods	0.92	0.42	0.02	0.69	0.03	0.01	0.38
42	EXP SITC 7: Machinery and transport equipment	0.87	0.41	0.01	0.73	0.04	0.01	0.30
43	EXP SITC 8: Miscellaneous manufactured articles	0.87	0.30	0.00	0.61	0.02	0.00	0.28
44	EXP SITC 9: Commodities and transactions n.e.c	0.24	0.03	0.01	0.70	0.58	0.03	0.78

1/ Forecast horizon is 20 quarters and refers to the levels of the series. Confidence intervals are constructed using bootstrapping methods.

Table I-6. Forecast Error Variance of the Common Components of Germany Variables Explained by the Supply and Demand Shock to TOT, 1981-2006 1/

	Variance Shares of the Common Components	Supply Shocks	Confidence Intervals		Demand Shock	Confidence Intervals	
			Lower Bound	Upper Bound		Lower Bound	Upper Bound
1 GDP	0.70	0.46	0.08	0.92	0.26	0.01	0.43
2 Personal consumption expenditure	0.34	0.03	0.01	0.80	0.55	0.01	0.63
3 Private investment	0.93	0.09	0.04	0.88	0.73	0.02	0.73
4 Employment	0.77	0.27	0.06	0.88	0.53	0.01	0.63
5 Productivity	0.36	0.30	0.01	0.79	0.36	0.05	0.82
6 Unit labor cost of the manufacturing sector	0.74	0.06	0.03	0.74	0.76	0.07	0.81
7 Government savings	0.71	0.09	0.02	0.86	0.55	0.01	0.60
8 Consumer confidence	0.32	0.02	0.01	0.85	0.57	0.01	0.62
9 Industrial confidence	0.54	0.23	0.05	0.69	0.21	0.01	0.52
10 Consumer prices	0.92	0.04	0.00	0.30	0.93	0.64	0.98
11 Short-term interest rates	0.76	0.32	0.07	0.91	0.44	0.01	0.53
12 Long-term interest rates	0.54	0.16	0.07	0.78	0.14	0.02	0.61
13 M2 or M3	0.47	0.54	0.08	0.82	0.13	0.01	0.36
14 Stock prices	0.69	0.07	0.02	0.84	0.58	0.01	0.63
15 Real compensation of employees	0.53	0.70	0.07	0.84	0.12	0.04	0.71
16 Exports total	0.69	0.54	0.12	0.91	0.33	0.01	0.48
17 Imports total	0.84	0.11	0.05	0.89	0.71	0.02	0.69
18 Terms of trade	0.42	0.11	0.01	0.43	0.88	0.56	0.99
19 Real effective exchange	0.74	0.39	0.04	0.86	0.09	0.03	0.64
20 Current account balance	0.16	0.15	0.01	0.43	0.53	0.06	0.70
21 FDI out	0.52	0.02	0.01	0.65	0.88	0.22	0.91
22 FDI in	0.15	0.07	0.01	0.88	0.45	0.00	0.51
23 Exports to Euro	0.88	0.10	0.01	0.40	0.86	0.53	0.97
24 Exports to EU	0.90	0.12	0.01	0.44	0.84	0.47	0.96
25 Exports to EU accession ctrys	0.64	0.03	0.00	0.31	0.93	0.62	0.96
26 Exports to United States	0.49	0.11	0.01	0.52	0.67	0.27	0.92
27 Exports to United Kingdom	0.87	0.33	0.02	0.67	0.42	0.15	0.88
28 Exports to Japan	0.81	0.42	0.02	0.69	0.44	0.20	0.88
29 Exports to China,P.R.: Mainland	0.69	0.26	0.09	0.85	0.01	0.01	0.42
30 Exports to Asia	0.75	0.54	0.04	0.80	0.27	0.09	0.82
31 Exports to ROW	0.92	0.12	0.01	0.42	0.81	0.46	0.95
32 EXP SITC Total	0.92	0.05	0.01	0.51	0.89	0.36	0.96
33 EXP SITC 0: Food and live animal	0.92	0.03	0.00	0.48	0.89	0.38	0.96
34 EXP SITC 1: Beverages and tobacco	0.58	0.02	0.00	0.46	0.79	0.24	0.93
35 EXP SITC 2: Crude materials, inefible, except fuels	0.81	0.05	0.02	0.65	0.89	0.23	0.94
36 EXP SITC 3: Mineral fuels, lubricants and related materials	0.64	0.25	0.05	0.80	0.69	0.05	0.78
37 EXP SITC 4: Animal and vegetable oils, fats and waxes	0.41	0.20	0.04	0.77	0.08	0.00	0.31
38 EXP SITC 5: Chemicals and related profucts, n.e.s	0.89	0.04	0.01	0.56	0.89	0.26	0.96
39 EXP SITC 6: Manufactured goods	0.91	0.05	0.01	0.55	0.88	0.31	0.96
40 EXP SITC 7: Machinery and transport equipment	0.89	0.05	0.01	0.49	0.87	0.39	0.96
41 EXP SITC 8: Miscellaneous manufactured articles	0.91	0.04	0.00	0.47	0.89	0.38	0.96
42 EXP SITC 9: Commodities and transactions n.e.c	0.09	0.19	0.01	0.62	0.79	0.33	0.95

1/ Forecast horizon is 20 quarters and refers to the levels of the series. Confidence intervals are constructed using bootstrapping methods.

References

Bai, J., and S. Ng, 2002, "Determining the Number of Factors in Approximate Factor Models," *Econometrica*, 70(1), pp. 191–221.

Bordo, M.D., and T. F. Helbling, 2004, "Have National Business Cycles become more synchronized?" in Siebert, Horst (ed.) *Macroeconomic Policies in the World Economy*, Springer Verlag (Berlin and Heidelberg).

Brooks R., K. Forbes, and A. Mody, 2003, "How strong are Global Linkages?" *Manuscript,* http://www.imf.org/external/np/res/seminars/2003/global/pdf/over.pdf.

Canova, F., and M. Ciccarelli, 2006, "Estimating Multi-Country VAR Models," ECB Working Paper 603.

———, and E. Ortega, 2007, "Similarities and Convergence in G-7 Countries," *Journal of Monetary Economics,* 53(3), pp. 850-878.

Canova, F., and G. de Nicoló, 2003, "On the Sources of Business Cycles in the G-7," *Journal of International Economics,* 46, pp. 133–66.

Chamberlain, G., 1983, "Funds, Factors, and Diversification in Arbitrage Pricing Models," *Econometrica* 51, pp. 1281–304.

Ciccarelli, M. and A. Rebucci, 2006, "Has the transmission mechanism of European monetary policy changed in the run-up to EMU?" *European Economic Review*, 50(3), pp. 737-776.

Corbae, D., and Ouliaris, S., 2006, "Extracting Cycles from Nonstationary Data," *Econometric Theory and Practice: Frontiers of Analysis and Applied Research,* Cambridge University Press, D. Corbae, S. Durlauf and B. Hansen, eds.

Eickmeier, S., 2007, "Business Cycle Transmission from the U.S. to Germany—A Structural Factor Approach," *European Economic Review*, 51, pp. 521-551.

———, and J. Breitung, 2006, "How synchronized are new EU member states with the euro area? Evidence from a structural factor model," *Journal of Comparative Economics*, Vol. 34(3), pp. 538-563.

Forni, M., D. Giannone, M. Lippi, and L. Reichlin, 2005, "Opening the Black Box: Structural Factor Models with Large Cross-Sections," manuscript.

Geweke, J., 1977, "The Dynamic Factor Analysis of Economic Time Series," in *Latent Variables in Socio-Economic Models;* edited by D.J. Aigner and A.S. Golberger (Amsterdam: North-Holland), p. 19.

Giannone, D., L. Reichlin, and L. Sala, 2002, "Tracking Greenspan: Systematic and Unsystematic Monetary Policy Revised," CEPR Working Paper 3550.

Imbs, J., 2004, "Trade, Finance, Specialization and Synchronization," *Review of Economics and Statistics*, 86(3), pp. 723–34.

IMF, 2005, "France, Germany, Italy, and Spain: Explaining Differences in External Sector Performance Among Large Euro Area Countries," IMF Country Report No. 05/401 (Washington: International Monetary Fund).

Kabundi, A. and F. Nadal De Simone, 2007, "France in the Global Economy: A Structural Approximate Dynamic Factor Model Analysis," IMF Working Paper 07/129 (Washington: International Monetary Fund).

Khan, T., 2006, "Productivity Growth, Technological Convergence, R&D, Trade, and Labor Markets: Evidence from the French Manufacturing Sector," IMF Working Paper 06/230 (Washington: International Monetary Fund).

Kose, M.A., C. Otrok, and C.H. Whiteman, 2003, "International Business Cycles: World, Region, and Country-Specific Factors," *American Economic Review*, 93(4), pp. 1216-39.

———, 2005, "Understanding the Evolution of World Business Cycles," IMF Working Paper 05/211 (Washington: International Monetary Fund).

Kose, M.A., and K. Yi, 2006, "Can the Standard International Business Model Explain the Relation between Trade and Comovement?" *Journal of International Economics*, 68, pp. 267-295.

Nadal De Simone, F., 2002, "Common and Idiosyncratic Components in Real Output: Further International Evidence," IMF Working Paper 02/229 (Washington: International Monetary Fund).

Peersman, G., 2005, "What Caused the Early Millennium Slowdown? Evidence Based on Vector Autoregressions," *Journal of Applied Econometrics*, 20, pp. 185–207.

Sargent, T.J., and C.A. Sims, 1977, "Business Cycle Modeling without Pretending to have too Much a Priori Economic Theory," in *New Methods in Business Research,* edited by C.A. Sims (Minneapolis: Federal Reserve Bank of Minneapolis).

Sims, C.A. and T. Zha, 1999, "Error Bands for Impulse Responses," *Econometrica* 67(5), pp. 1113–55.

Stock, J.H., and M.H. Watson, 2002, "Macroeconomic Forecasting Using Diffusion Indexes," *Journal of Business & Economic Statistics*, 20(2), pp. 147–162.

———, 2003, "Has the Business Cycle Changed? Evidence and Explanations," in *Monetary Policy and Uncertainty,* Federal Reserve Bank of Kansas City, pp. 9–56.

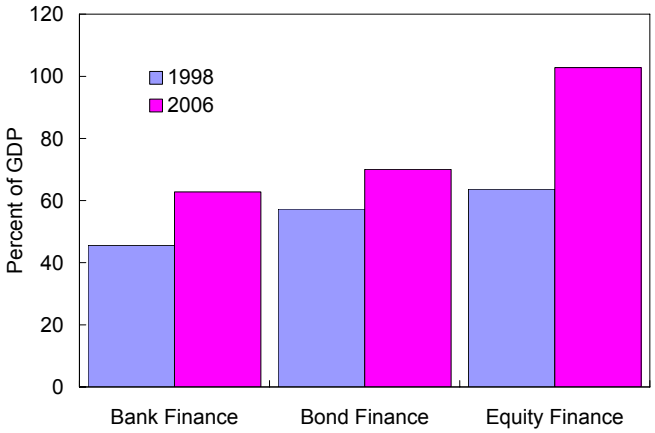
Uhlig, H., 2003, "What Moves Real GNP?" manuscript.

II. Financing and Risks of French Firms[10]

A. Introduction

30. The financing landscape of the French economy has changed since the introduction of the euro. The single currency eliminates currency risk and promotes the development of security markets, which has affected the way the government, financial institutions, and companies raise external funds. Bank financing increased from 46 percent in 1998 to 63 percent of GDP in 2006, bond financing from 57 percent to 70 percent, and equity financing from 64 percent to 103 percent (Figure II-1). An analysis of how each economic sector shapes the change will help achieve a better understanding of the pattern and associated risks.

Figure II-1. Financing of French Economy



Sources: Eurostat and BdF.

31. This paper aims to provide an overview of financing and risks of the non-financial corporate (NFC) sector. This sector is the main driver of productivity, contributing to about half of the growth. Corporate financing decisions have implications for monetary policy, as the transmission mechanism depends on the financing behavior and balance sheet structures of firms. In France, 82 percent of corporate financing came from external sources in 1999, rising to about 90 percent in 2007. By comparison, external financing was relatively stable at 82 percent in the euro area. With the increasing reliance on external financing, linkages with financial institutions and markets became stronger, which may have implications for financial stability.

32. The paper documents the role of capital markets in financing NFCs and pinpoints its implications for risk. The analysis suggests that market financing has played a more important role in financing French corporates than the euro area counterparts. The credit risk of French firms has reduced substantially over the past several years. Recent turbulence has clouded the credit environment, but the impact on the corporate risk appears to be limited.

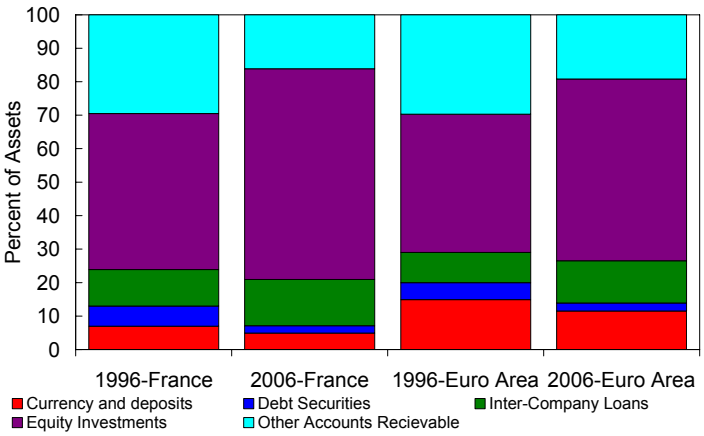
[10] Prepared by Yingbin Xiao.

B. Financing of French Firms

Dynamics of traditional financing instruments

33. There have been structural shifts in financial assets over the past decade. Equity investments account for the largest share of assets, rising from 47 percent in 1996 to 63 percent in 2006 (Figure II-2), indicating the degree of financial linkages between French corporations. The euro area showed a similar, but smaller trend, with the share of equity increasing from 41 percent of assets in 1996 to 54 percent in 2006. Debt securities play a minor role in both France and the euro area. The share of inter-company loans was relatively stable, while other accounts receivable declined. Currency and deposits of French NFCs, as very liquid assets, fell in 2006 and represented about half of the average level in the euro area.

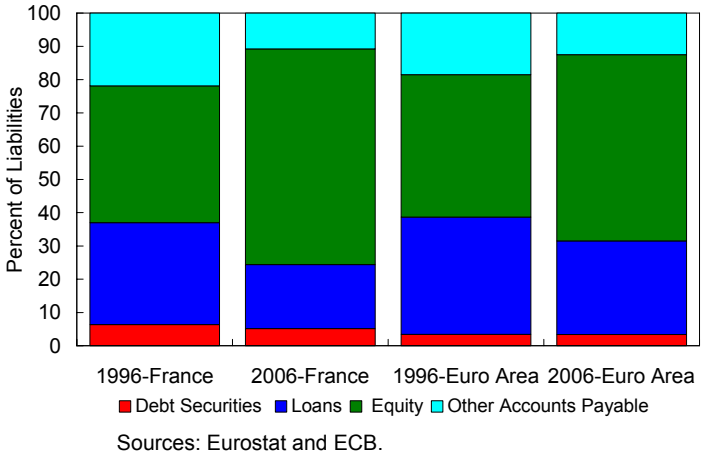
Figure II-2. Composition of Assets



Sources: Eurostat and ECB.

34. Marked structural shifts have also taken place in financial liabilities. The share of equity in total liabilities makes up the largest means of financing, rising from 41 percent in 1996 to 65 percent in 2006 (Figure II-3). Although the average ratio in the euro area was higher than France in 1996 (43 percent), it ended up much lower by 2006 (56 percent). Loans are the second most important source of corporate liabilities. However, their weight in French NFCs dropped from around 31 percent in 1996 to 19 percent in 2006. The decline in the euro area was smaller, a 7 percent decline to 28 percent. The share of debt securities of French NFCs was on average 5 percent, higher than counterparts in the euro area (3 percent).

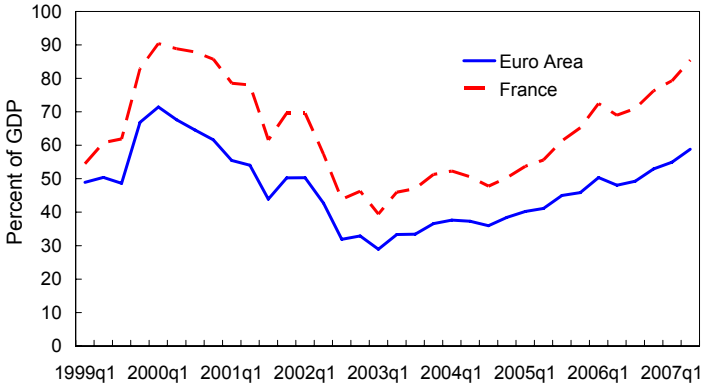
Figure II-3. Composition of Liabilities



Sources: Eurostat and ECB.

35. Quoted shares are a more significant financing source for NFCs in France than in the euro area. After the adoption of the euro, quoted shares first rose sharply to peak in France and the euro area in the first quarter of 2000 and then dropped substantially to trough in the

Figure II-4. Quoted Shares

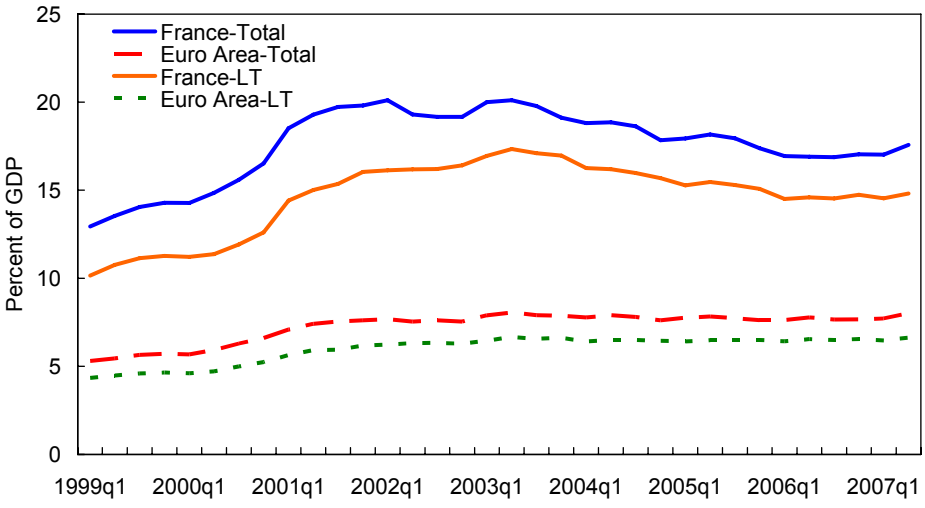


Sources: Eurostat and ECB.

third quarter of 2002 following the bust of stock bubbles (Figure II-4). They recovered ever since and reached 85 percent of GDP in France and 59 percent in the euro area in 2007. The dynamics reflect the strong cyclical nature of public equity markets and M&A activities.

36. Corporate bonds are more important in France than in the euro area. The introduction of the euro promoted the development of corporate bonds. They represented 20 percent of GDP in the first quarter of 2002 in France and declined somewhat to 18 percent in the second quarter of 2007 (Figure II-5). In the euro area, outstanding amounts of euro-denominated corporate debt securities almost doubled between 1999 and 2003, but remained relatively stable afterwards. Their share relative to GDP was only half of the level of French NFCs. Long-term bonds play a dominant role in bond financing in both France and the euro area, but the dynamics were somewhat different. In particular, French NFCs increased the use of long-term bonds from 78 to 84 percent while the use in the euro area was relatively stable at 82 percent.

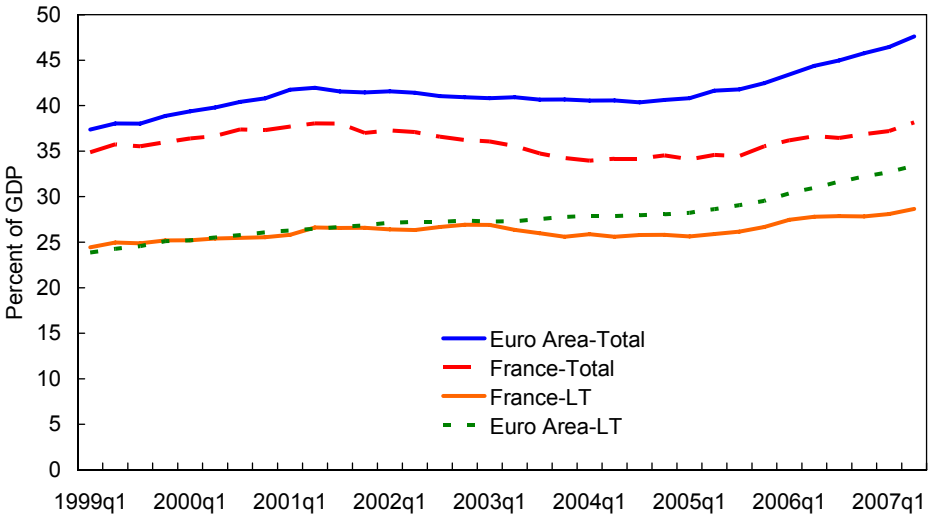
Figure II-5. Bonds



Sources: Eurostat and ECB.

37. Bank loans are less important in financing NFCs in France than in the euro area. In France, the share of corporate loans was lower and saw a slow increase (3 percent) while the increase in the euro area was much faster (11 percent) (Figure II-6). There does not seem to be a move by NFCs in the euro area towards borrowing at arm's length. Mirroring the relative minor role of bonds, borrowing through bank loans is still more attractive for euro area NFCs. French and euro area NFCs increased the use of long-term loans over the years.

Figure II-6. Bank Loans



Sources: Eurostat and ECB.

New players

38. Non-bank financial market players, such as institutional investors and private equity, have seen rapid development in recent years. They play an increasingly important role in financing NFCs in France. The following describes the role and developments of new players such as insurance companies, mutual funds, hedge funds, and private equity.

39. The French insurance sector is one of the largest sources of financing. Against a background of aging populations and rising longevity, households have changed asset allocation strategies. Their declining investments in currency and deposits mirror increasing investments in insurance contracts (which is broadly in line with the increase in corporate market financing). The French insurance sector, the fourth largest in the world in terms of contributions, had assets under management in the amount of €1,400 billion at the end of 2006. Insurance companies in the past mainly invested in high-quality long-term government bonds to match the duration of their liabilities. However, with the deepening of corporate bond and equity markets, about half of the assets held by French insurance companies are invested in corporate securities, with 30 percent of investments in corporate bonds and 20 percent in equities.

40. The asset management industry in France has undergone a notable expansion. It registered quadruple growth in ten years, to about €2,450 billion in 2006, and captured 20 percent of the European market. Among managed assets, mutual funds have become an increasingly important saving medium for households, who are thus indirectly investing in equity and corporate bonds issued by NFCs. French mutual funds amount to over €1,500 billion, the second largest in the world. Mutual funds not only provide corporate financing, but also affect the relative prices and issuance of certain corporate financing

instruments through fund managers' investment behavior, which are sometimes driven by their incentives.

41. The hedge fund market in France is still limited, but grows briskly. It more than doubled from 2004 to 2006 (to €26.5 billion). The steep increase was spurred by the legislation on funds of hedge funds introduced in 2003 and by demand from other institutional investors who desire to chase high yield uncorrelated with general markets. Although hedge funds were initially restricted to institutional and sophisticated investors, they have become increasingly accessible to a broader circle of investors. For many institutional investors, placements in hedge funds offer an opportunity to diversify their portfolio because the hedge fund return on average shows little correlation with that of equity or bond indices.

42. The private equity industry has played a growing role in financing NFCs, especially via leveraged buyouts (LBOs). Private equity investments rose from €1.2 billion in 1997 to €10.3 billion in 2006, the second largest in Europe. However, different segments show different dynamics. Venture capital investments have declined following the boom-bust cycle of the new economy, but LBOs have expanded substantially, driven by favorable global economic environment and financing conditions. In 2006, about 80 percent of private equity investment was in LBOs.

43. These new players may benefit corporate financing in several ways. They broaden financing sources for NFCs and increase available financing directly by buying corporate bonds or equities. As household savings have become increasingly handled by asset managers, NFCs turn more to market financing instead of traditional bank intermediation. In addition, these players allow banks to diversify credit risk more effectively. As risk buyers, these institutional investors shift credit risk outside the banking system and foster risk management innovation and competition among intermediaries. Furthermore, these players impose market discipline and influence the behavior of NFCs by having significant corporate ownership in NFCs. For example, hedge funds are often active investors in corporate equity and active shareholders of the companies in which they invest. The incentives in LBOs between management and shareholders may be aligned more effectively than in publicly held companies, thus having an impact on corporate governance and speeding up the restructuring of industrial structures.

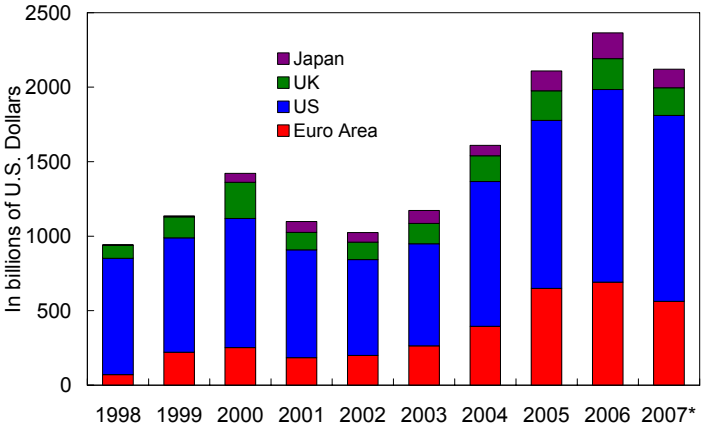
44. These new players can also be sources of vulnerability, however. Although the role of venture capital in financing young and innovative firms is well understood, the long-term effects of buyout activities of private equity firms on target companies are more controversial. It is not clear the extent to which private equity incentives are aligned with those of the target companies. In addition, buyouts are normally highly leveraged operations, which could push up the debt levels in target companies by paying out large dividends financed by new debt and increase default risk. Spreading out risks may make risk hard to

localize and leave risk borne by market participants who are not as experienced and sophisticated as banks in risk management.

New developments in syndicated loans

45. Syndicated loans have experienced tremendous growth recently. The global volume of international syndicated loan facilities rose in size from US$900 billion in 1998 to over US$2.3 trillion in 2006 in the U.S., U.K., Japan and euro area combined (Figure II-7). Syndicated loans appeal to both NFCs and banks. For NFCs, syndicated loans provide greater and better access to finance. They are preferred financing alternatives for firms in need of large loans, but unwilling to issue public debt due to disclosure concerns. They are also chosen by firms with high growth potential seeking cheaper funds in comparison to the bond market, but suffering from high levels of asymmetric information. Syndicated loans also facilitate renegotiation in case of financial stress because of the small number of parties involved. For banks, syndicated lending enables them to spread risks more effectively by diversifying sector and geographical concentration from the origination business. Substantial syndication fees are also important sources of revenue.

Figure II-7. Syndicated Loans to Major Borrowers



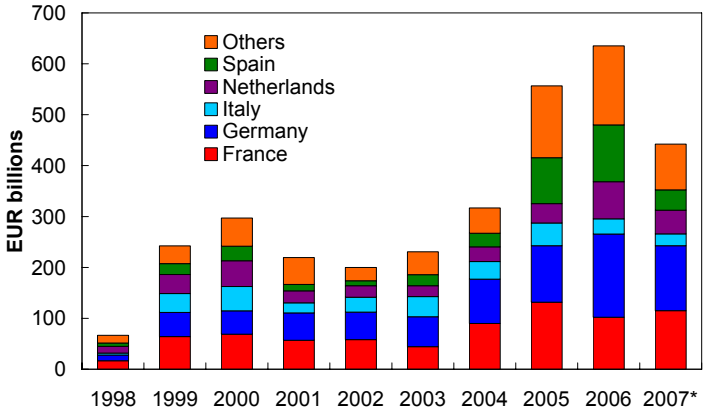
Source: Dealogic.
* 2007 data are until October.

46. The expansion of syndicated loan markets in the euro area broadened NFCs' access to capital. Cross-border bank lending activity remains very limited in Europe, but syndicated loans allow banks to reduce their monitoring and operating costs and to provide credit to large borrowers without supplying the full amount of finance. The total volume of syndicated lending to euro area firms in 2006 was approximately ten times the level seen in 1998. In contrast, during the same period, syndicated lending in the U.S. and the U.K. grew by 37 percent and 95 percent respectively.

47. French NFCs are main clients of the syndicated loan market in the euro area. French NFCs represent about a quarter of borrowers (Figure II-8). The fact that syndicated loans offer the possibility of raising larger amounts of finance at attractive terms within a tight time frame has made them a powerful financial tool for strategic corporate transactions such as M&As. In fact, given the decline in interest rates, syndicated loans have in recent years been increasingly used for M&A and leveraged buyout (LBO) funding. The share of loans

extended to euro area borrowers and issued for financing M&A activity increased dramatically in 2005 and 2006, accounting for half of the use of proceeds.

Figure II-8. Syndicated Loans to Eurozone Borrowers



Source: Dealogic.
* 2007 data are until October.

Small and medium enterprise (SME) financing

48. The SME contribution to the French economy is on par with the euro area average. In France, SMEs account for 69 percent of employment, more or less the same as the euro area average (67 percent). In terms of value added, the contribution from SMEs is 45 percent, below the euro area average (60 percent).

49. SMEs have gained better access to bank financing, but need to develop more equity financing. BdF's recent studies (2007) show that SME access to bank financing has improved over the years as a result of several initiatives and reforms. New loans grow at a faster pace and at a lower cost than euro area counterparts. The implementation of Basel II is expected to benefit SME financing by allowing banks to use favorable risk weightings and to lower their capital requirements for SME loans. The creation of the Alternext equity market is intended to facilitate equity financing of SMEs. It is a lightly regulated market in NYSE-Euronext and tailored to the financing needs of SMEs. It enables SMEs to raise capital with less regulatory burden compared with the traditional stock exchanges. As of October 2007, it had 110 companies listed with a market cap of €5.6 billion. The Autorité des Marchés Financiers (AMF) set up a working group to further simplify procedures and requirements for SMEs listings and recently approved the creation of a segment on the regulated market for listings with no prior public offering.

C. Risks of French Firms

50. Financing shifts may have risk implications. In a perfect Modigliani-Miller world, a firm's financing does not affect its value. However, in the real world—with imperfections such as agency costs and asymmetric information—a firm's financing choice may change its value and risk (Harris & Ravis, 1991). This section aims to empirically assess the risk of listed French firms using different approaches and conducts a comparison with similar firms in other developed economies.

51. The risk analysis is conducted in both time-series and cross-country dimension. It employs data of about 13,600 listed firms in France, Eurozone, U.S., U.K., and Japan. It makes use of individual balance sheet accounts and income statements during

2002Q1-2007Q3 from Thomson Financial and monthly, weekly, or daily data on equity markets, bond markets, and CDS markets from Datastream. As firms included in Thomson Financial are listed firms, the coverage is not as comprehensive as country-specific data base such as FIBEN (Fichier Bancaire des Entreprises).[11] However, it is available and widely used because of its high frequency and standardization across countries, which facilitates international comparison. Results using Thomson Financial may be different from those using national databases because of the different samples.

52. The analysis takes three approaches. One is the balance sheet analysis, which obtains several indicators—leverage, liquidity, and profitability—based on financial statements. The second one is the market approach, which obtains price, volatility, and spreads from trading instruments and ratings from rating agency. The third one is the structural approach, which combines balance sheet and market information and applies option valuation framework.

Balance sheet analysis

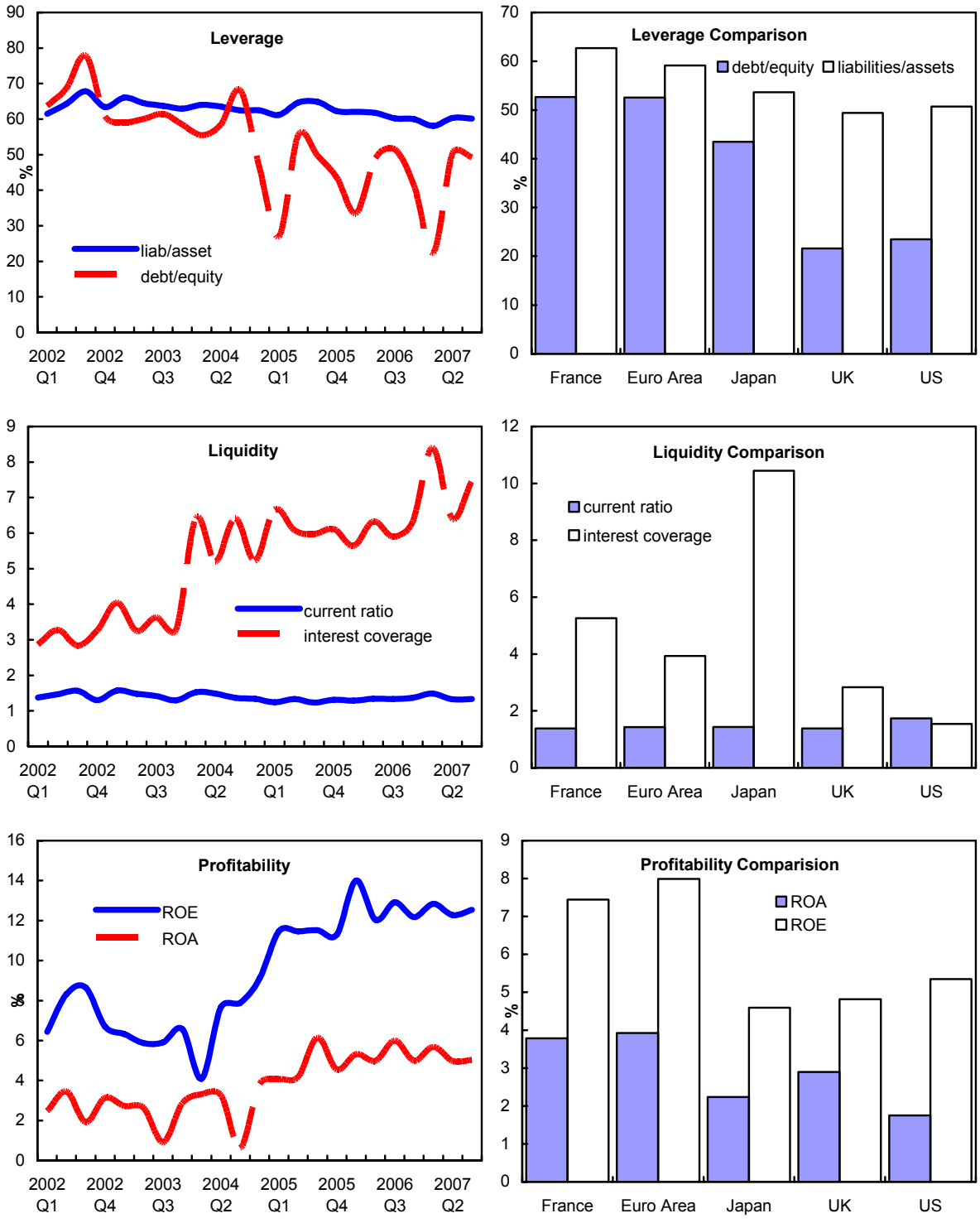
53. In the balance sheet analysis, leverage is measured by debt-to-equity and liabilities over assets. Liquidity is measured by the current ratio, defined as current assets over current liabilities, and the interest coverage ratio, defined as EBIT (earnings before interest and tax) over interest expenses. Profitability is measured by ROA (return on assets) and ROE (return on equity).

54. Figure II-9 shows both time-series and cross-sectional results. Quarterly data are used to show the dynamics over time, and time-weighted average data are used for cross-country comparison. It shows the following:

- French NFCs have relatively high leverage. Over time, overall indebtedness as measured by liability over assets is more stable than debt-to-equity. Both measures have come down from the highs of years ago, but edged upwards in recent quarters. On average, listed French firms' median debt to equity ratio is 53 and liabilities are 63 percent of total assets, both are high compared to other industrialized countries.

[11] FIBEN is maintained and managed by Banque de France, but not publicly accessible. Entities covered in the database not only include firms, but also legal and natural persons. It provides accounting and financial data from the balance sheet and profit-and-loss account for companies meeting certain criteria.

Figure II-9. Balance Sheet Risk and Comparison



Source: Thomson Financial

- French NFCs have average liquidity. Over time, the current ratio is relatively stable at around 1.2-1.5. The interest coverage ratio trended up, but then has declined since the beginning of 2007. On average, listed French firms' median current ratio is 1.38, which is at a level similar to U.K., but is lower than the rest of the comparison group. Interest coverage ratio is 5.26, which is below only Japan.

- French NFCs have average profitability. Over time, ROA and ROE trended up initially and then fell in recent quarters. On average, listed French firms' median ROA is 3.78 and ROE is 7.44, which is below the euro area, but higher than the rest of the comparison group.

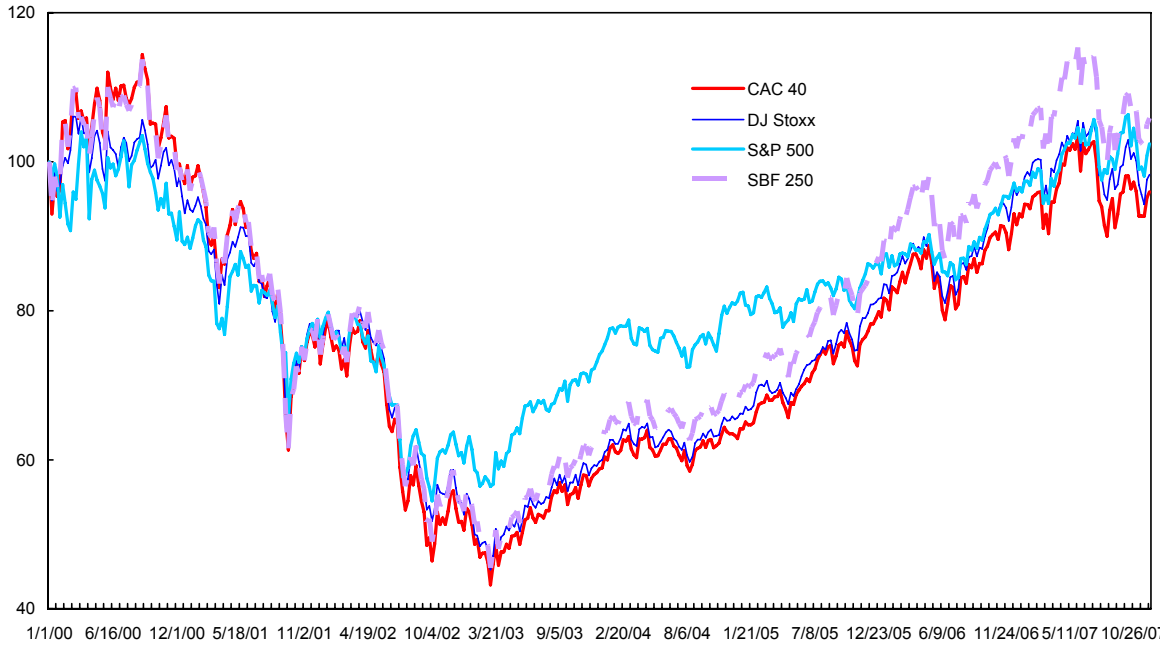
55. The balance sheet approach has shortcomings. First, it is backward-looking, as it assesses corporate credit risk by relying on historical balance sheet information. Second, it prevents timely analysis. Financial statements often arrive with a significant lag, which makes the inclusion of the fourth quarter results impossible for the analysis purpose. Third, with leverage, liquidity, and profitability going in different directions, it is hard to draw a conclusion about the corporate risk.

Market approach

56. French stock markets, as stock markets elsewhere, displayed very strong price swings. Stock prices in the French markets, as measured by CAC 40 and SBF 250, hit the trough in early 2003, and then rose sharply to twice the level before the turbulence (Figure II-10). During the first weeks of the 2007-08 financial turmoil, it suffered from significant losses. It subsequently staged a broad-based recovery following repeated central bank liquidity injections into inter-bank money markets and lower policy rates in the United States. While risk aversion heightened again in mid-October, intensifying concerns about the financial and economic implications of the U.S. subprime mortgage crisis triggered a renewed correction in stock prices in November. Between the end of August and the beginning of December, the level of French stock prices remained broadly unchanged. Euro area stock prices, as measured by the Dow Jones EURO STOXX index, experienced likewise swings over the same period, reflecting the trend in global markets.

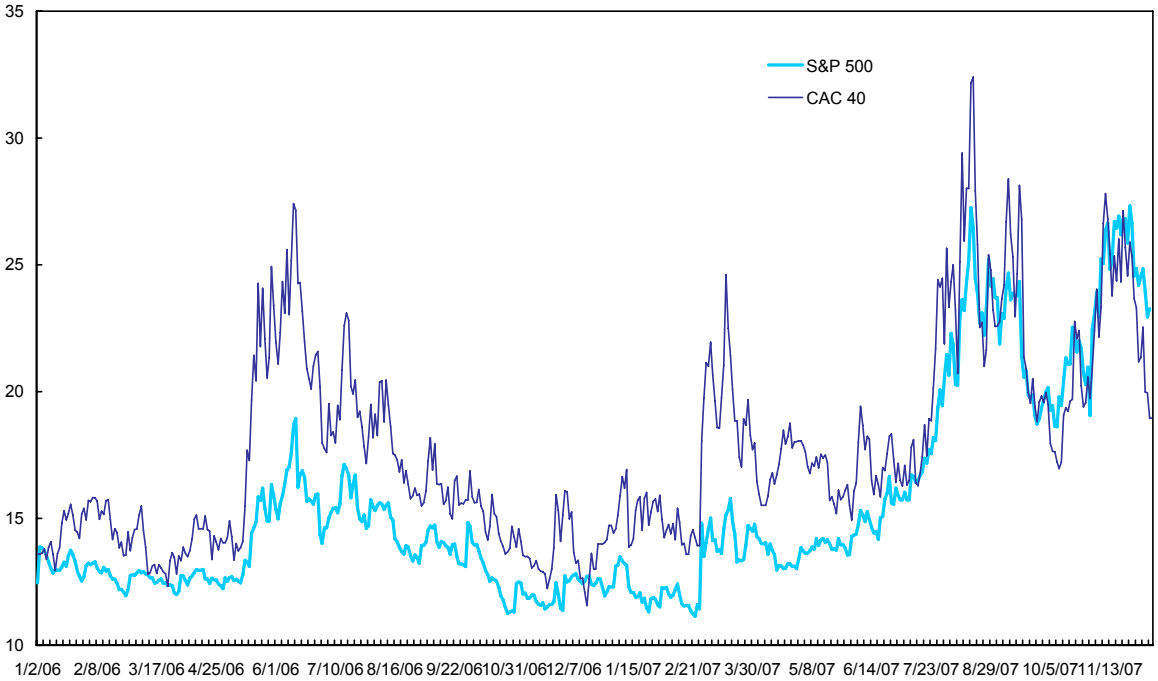
57. **Volatility surged from a relatively low pre-crisis level.** French stock market uncertainty, as measured by the implied volatility extracted from CAC 40 stock options, rose sharply from 12 percent to 32 percent following the outbreak of the financial market tensions in August 2007 (Figure II-11). This development reflected the sudden change in investors' assessment of risks because of growing uncertainty about the broader implications of the U.S. mortgage crisis. As investors' concerns appeared to have abated later, market volatility moderated significantly and reached a low of 16 percent on 11 October. However, unfavorable news about the U.S. housing market subsequently revived earlier concerns about direct and indirect exposures to associated economic and financial risks, which led investors' uncertainty to rebound sharply and rose to 27 percent just one month later.

Figure II-10. Overall Stock Markets
(Jan 2000=100, weekly)



Source: Datastream.

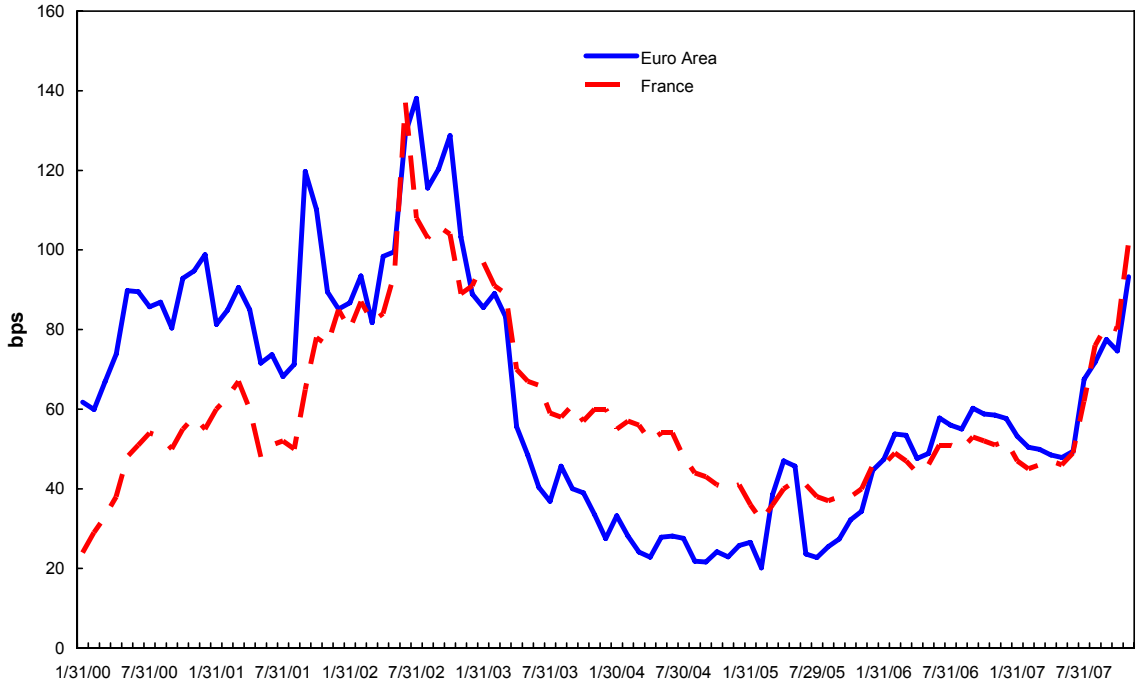
Figure II-11. Implied Volatility (percent)



Source: Datastream.

58. Corporate bond spreads picked up sharply after a sustained period of moderation. Weighted average spreads of all ratings and all maturities of French firms climbed to over 100 bps, doubled the level seen in the beginning of 2007, but still less than the peak in 2002 (Figure II-12). Euro area NFCs followed similar dynamics. As NFCs are not generally exposed directly to the U.S. subprime market or associated securitized products, the pick-up in spreads was modest compared to the widening of spreads on bonds issued by financial institutions. In addition, record level low default rates and robust profit growth in recent years contributed to contain the impact.

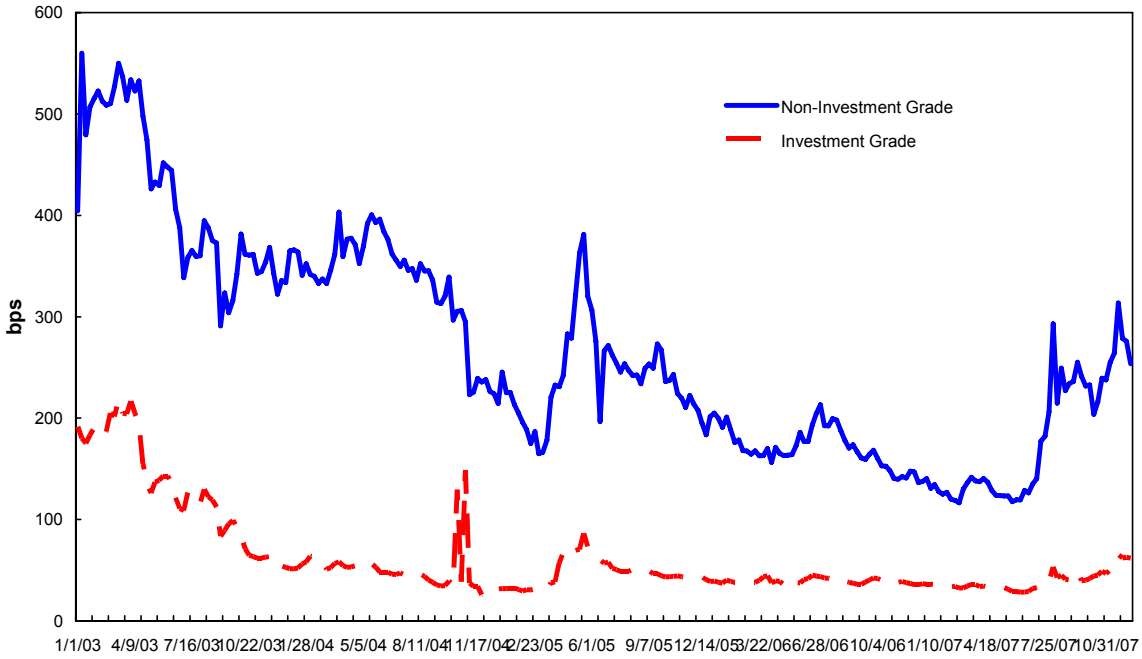
Figure II-12. Corporate Bond Spreads



Source: Datastream.

59. The French corporate CDS market also experienced swings in premiums, especially for non-investment grade credit. Spreads came down dramatically before July and started to rise sharply during the global reappraisal of risks and re-pricing of financial assets as a result of the U.S. subprime concerns. Speculative credit spreads reached over 290 bps in August 2007 (Figure II-13). With the liquidity injection of central banks triggering a strong price reaction across all market segments, credit spreads tightened somewhat, as immediate concerns about systemic risk eased. From mid-October, negative sentiment started once again to spill over from mortgages into the broader credit market, as investors refocused on lingering problems with exposures to risky assets. CDS spreads reached new highs to over 300 bps in December. Although spreads on investment grade credit were much more stable than speculative credit, the swing was similar. They climbed from 30 bps to 50 bps initially and then increased to over 60 bps, reflecting the weakness in credit conditions. The swings in spreads were more pronounced than in the bond market since it is easier to short an index or buy protection on a CDS than it is to sell a bond.

Figure II-13. CDS Spreads



Source: Datastream.

60. The market approach has advantages and disadvantages. It is better than the balance sheet approach because market prices are forward-looking. Market information is readily available, which permits a timely analysis. However, the market approach depends on tradable prices, which only a small number of tradable instruments have. This limits the scope of the analysis and prevents a meaningful conclusion of corporate risk. The next section thus turns to the structural approach.

Structural approach

61. Limitations of balance sheet approach and market approach may be addressed by the structural approach. The structural approach is based on pioneer work on option valuation by Black-Scholes-Merton (Black and Scholes (1973), Merton (1973,1974)). It combines market information and balance sheet information and takes into account the volatility of assets when estimating credit risk. The volatility of assets is crucial since firms may have similar levels of equity and debt, but very different probabilities of default if underlying asset volatility differs. The usefulness of this approach has been demonstrated in Crosbie and Bohn (2003), Vassalou and Xing (2004), and Gapen, Gray, Lim, and Xiao (2005, 2008).

62. The structural approach builds on three principles: (i) the value of liabilities is derived from assets; (ii) liabilities have different seniority resulting in different risks; and (iii) asset value evolves stochastically over time. Equity has a junior or residual claim on the asset value. The value of equity is derived from the residual value after the promised debt payments have been made. Debt has a senior claim on the asset value, which may not be

sufficient to meet the promised debt payments. The value of risky debt consists of two components, the default-free value of the debt and the expected loss arising from default.

63. Consequently, the approach reverse-engineers option pricing models. In option pricing models, the value of the underlying is used to infer the value of options. In this approach, the expected loss in risky debt is an implicit put option, and equity or junior claims are implicit call options. The value of the options—debt and equity—is observable. However, the value of the firm is unobservable. Using the seniority of liabilities in the capital structure and the balance sheet identity that the total market value of debt plus equity must equal the current market value of the firm, the observed option value is used to infer the unobserved underlying.

64. In this approach, higher asset volatility implies higher default risk. When assets are highly volatile, the probability becomes greater that assets will fall below the threshold necessary to meet the debt payments over the horizon. Other things equal, higher volatility means higher expected loss and a lower value of risky debt. The expected losses are a function of the asset value, asset volatility, the default free value of debt, and the time horizon in option pricing models.

65. The model set-up is as follows:

The total market value of assets, *A*, of a firm financed with debt, *D*, and equity, *E*, is equal to the market value of equity plus market value of risky debt.

$$A = D + E, \tag{1}$$

Asset value follows the geometric brownian motion

$$dA/A=\mu_A dt+\sigma_A dw \tag{2}$$

Where

μ_A is the expected rate of return of assets;
σ_A is standard deviation of the value of assets;
dw is the weiner process.

If assets fall to a level where debt cannot be serviced, then default occurs. This level is commonly referred to as distress barrier, *DB*, which is equal to or close to the default-free value of debt.

66. Equity holders hold a call option on the residual value of assets, receiving the maximum of either assets minus the distress barrier, or nothing in the case of default. The value of equity can be expressed as:

$$E = max\ [\ A - DB,\ 0\ ]. \tag{3}$$

67. Debt holders are obligated to absorb losses in the event of default, receiving either the default-free value or, in the event of default, the senior claim on assets. The resulting losses in the case of default can be modeled as an implicit put option. Since the value of default-free debt is equal to the distress barrier and the implicit put option on the assets, the market value of risky debt can be modeled as,

$$D = min\ [\ A,\ DB\ ] = DB - max\ [\ DB - A,\ 0\ ]. \tag{4}$$

Inserting (3) and (4) into (1) to obtain a market value of firm assets:

$$A = DB - max\ [\ DB - A,\ 0\ ] + max\ [\ A - DB,\ 0\ ]. \tag{5}$$

68. The standard option pricing formulas can then be used to relate changes in the price of firm assets to changes in equity. Applying the Black-Scholes formula, the value of equity as a call option on firm assets is,

$$E = AN(d_1) - DBe^{-rT}\ N(d_2), \tag{6}$$

where r is the risk-free rate of interest, T is the time to maturity on the default-free bond in years. $N(d)$ is the cumulative probability distribution function for a standard normal variable where,

$$\begin{aligned} d_1 &= \frac{\ln\left(\frac{A}{DB}\right) + \left(r + \frac{1}{2}\sigma_A{}^2\right)T}{\sigma_A\sqrt{T}}, \\ d_2 &= d_1 - \sigma_A\sqrt{T}, \end{aligned} \tag{7}$$

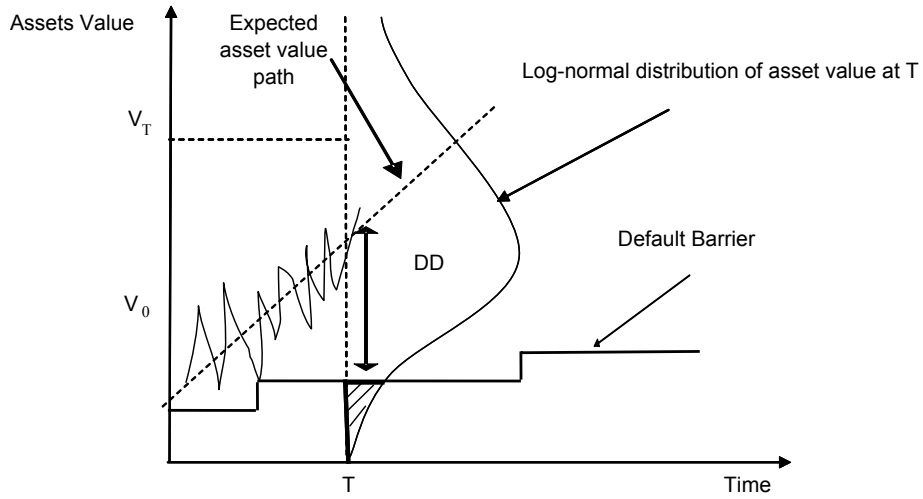
The relationship between volatility of firm assets and volatility of equity is given by,

$$E = \frac{\sigma_A}{\sigma_E} AN(d_1), \tag{8}$$

where σ_E is the standard deviation of equity.

69. Distance to distress (DD) is d_2. It can be interpreted as the number of standard deviations of asset value from distress. A graphical interpretation is demonstrated in the following figure.

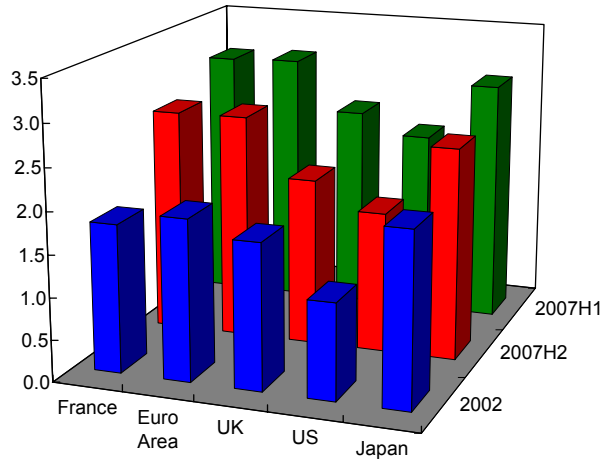
Figure II-14. Distance to Distress



70. As (7) and (8) contain two unknowns, firm assets and volatility of firm assets, the option pricing formula is used in a two-step process. First, the observed market value of equity and the distress barrier are used with the call option formula to derive the value of firm assets. The value of firm assets and the distress barrier are then used with the put option formula to derive the implied market value of risky debt. Thus, the structural approach uses call and put option pricing formulas to develop a mark-to-market balance sheet based on observed financial market variables and financial statement information.

71. The approach is applied to France, U.S., U.K., Japan, and other euro area countries. The first step is to calculate distress barrier of aggregated firms. They are equal to book value of short-term debt, half long-term debt, plus interest. The second step is to estimate implied asset value and volatility using market value and volatility of equity. The third step is to calculate distance to distress based on formula (7). The results are shown in Figure II-15, in which 2002 figure is the average of monthly DD, 2007H1 and 2007 H2 are the weekly average of DD in the first half and second half of 2007, and euro area figure is the equally weighted average of each country in the euro area except for France.

Figure II-15. Distance to Distress by Country

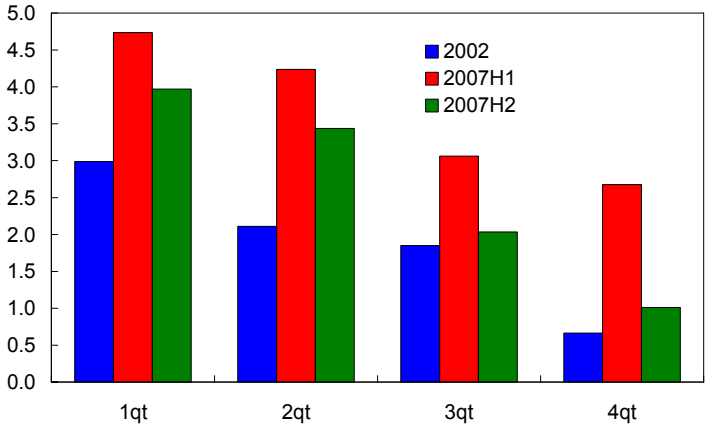


Sources: Datastream and staff calculations.

72. The country aggregate analysis suggests that the credit risk of listed French NFCs declined substantially before the turbulence and rebounded modestly during the turbulence. In particular, the DD of French NFCs rose from 1.76 to 3.12, meaning that the cushion between the asset value and the distress barrier increased from less than two standard deviations of asset value to more than three standard deviations of asset value. This result is driven mostly by the improvement in balance sheet fundamentals and declining volatility. The fall of the DD in the second half of 2007 indicated the impact of the turmoil. In the case of French NFCs, DD dropped to 2.68. The same directional change in the comparison group suggests the influence of global factors on NFCs' credit risk, while the different magnitudes reflect the different balance sheet fundamentals and market forces demonstrated by the balance sheet analysis and market approach.

73. A breakdown analysis by size shows that relatively small firms have more volatile credit risk. In this experiment, the French sample is further divided by size quartiles. The same procedure is done for each quartile for the same period as in the previous analysis. Results suggest that size plays a role in the change of credit risk (which is consistent with the literature). Specifically, for largest firms, DD rose from less than 3 to about 4.7, then fell to about 4 (Figure II-16). For smallest firms, DD climbed from 0.6 to 2.7, then dropped to barely above 1. This reflects small

Figure II-16. Distance to Distress by Size



firms' relatively high leverage and high volatility. As DD is a forward looking measure, it means that the default rate of small firms may pick up going forward.

D. Conclusions

74. The financing analysis of French firms demonstrates that NFC financing landscape has changed greatly with the adoption of the euro. Specifically, equity and bond markets are more important in financing French corporates than ones in the euro area. The increasingly important involvement of non-bank institutional investors broadens the sources of financing, but also raises some concerns. French NFCs use syndicated loans to support LBO activities. Although SMEs have seen improvements in bank financing, more equity financing is needed.

75. The risk analysis indicates that French firms have seen a significant improvement in the corporate health and seem resilient to the recent financial shock despite differences across firms. The overall credit risk of listed French firms fell more than ones in the U.S., U.K., Japan, and the rest of the euro area between 2002 and the first half of 2007. The impact of the recent turmoil on the corporate vulnerability appears modest, but differs among different firms. The breakdown of French firms by size shows that smaller firms are more at risk than larger ones, with their distance to distress declining more markedly in the recent financial turbulence than larger firms.

References

Banque de France, 2007, Le système financier français accompagne-t-il le développement des PME? Monthly Bulletin No. 165.

Black, Fischer, and Myron S. Scholes, 1973, "The Pricing of Options and Corporate Liabilities," *Journal of Political Economy* 81: 637–654.

Crosbie, Peter J., and Jeffrey R. Bohn, 2003, "Modeling Default Risk," Moody's KMV [online]. Available on the World Wide Web: (http://www.moodyskmv.com).

Crouhy, Michel, Dan Galai, and Robert Mark, 2000, "A Comparative Analysis of Current Credit Risk Models," *Journal of Banking & Finance* 24: 59–117.

ECB, 2007, "Corporate Finance in the Euro Area," Occasional Paper No. 63.

Gapen, Michael T., Dale F. Gray, Cheng Hoon Lim, and Yingbin Xiao, 2005, "The Contingent Claims Approach to Corporate Vulnerability Analysis: Estimating Default Risk and Economy-Wide Risk Transfer," in *Corporate Restructuring: Lessons from Experience*, edited by Michael Pomerleano and William Shaw, World Bank.

———, 2008, "Measuring and Analyzing Sovereign Risk with Contingent Claims," *IMF Staff Papers*, forthcoming.

Gray, Dale F., Robert C. Merton, and Zvi Bodie, 2002, "A New Framework for Analyzing and Managing Macrofinancial Risks," Presentation at NYU CV Starr/RED Conference on Finance and the Macroeconomy, October 11-12 2002.

Harris, Milton, and Artur Ravis, 1991, The Theory of Capital Structure, *The Journal of Finance* 46: 297-355.

Merton, Robert C, 1973, "Theory of Rational Option Pricing," *The Bell Journal of Economics and Management Science* 4: 141–183.

———, 1974, "On the Pricing of Corporate Debt: The Risk Structure of Interest Rates," *The Journal of Finance* 29: 449–470.

———, 1977, "An Analytic Derivation of the Cost of Loan Guarantees and Deposit Insurance: An Application of Modern Option Pricing Theory," *Journal of Banking & Finance* 1: 3-11.

Vassalou, Maria, and Yuhuang Xing, 2004, Default risk in equity returns, *The Journal of Finance* 59: 831–868.

III. FRANCE: REVIEWING THE TAX SYSTEM[12]

A. Introduction

76. France is now embarked on a wide-ranging review of the tax and social contribution system—the *revue générale des prélèvements obligatoires* (RGPO)—with a view to initiating a program of reform around the end of 2008. There are indeed significant challenges to be faced. At around 45 percent, the tax ratio is such that careful design is needed to avoid costly distortions of economic activity. Moreover, fundamental tax innovations of the kind seen elsewhere in Europe and the wider world over recent years, largely as a response to intensifying economic integration—including dramatically reduced rates of corporation tax, fundamental rethinking of the income tax, and movement to greater tax neutrality—have not as yet been in France. Increased awareness of environmental issues, not least in relation to climate change, raises a further set of challenges—and opportunities.

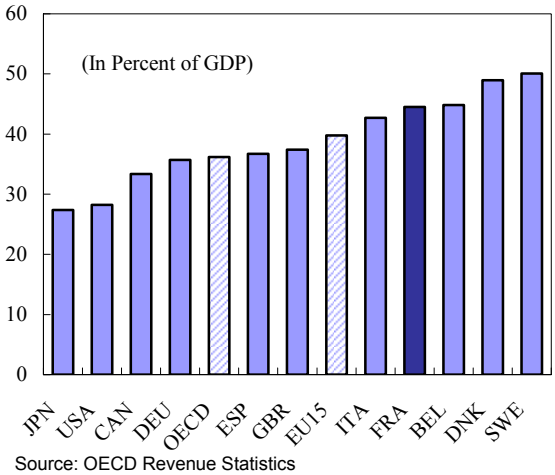
77. The purpose of this paper is to set out, at this early stage in the review process, broad considerations and options for improving the French tax system drawing on wider international developments to identify key strategic considerations. Section B provides broad background, describing key features of the present system and objectives of reform. Subsequent sections look in turn at key elements of the tax system: business taxation, personal taxation, and indirect taxation. Section F concludes.

B. Context and Objectives of Reform

Tax revenues: level, composition and challenges

78. At 44.5 percent (in 2006), the tax ratio—revenue, relative to GDP—is well above the OECD and EU 15 averages (of 36.2 percent and 38.8 percent, respectively), being exceeded in the OECD by only Belgium, Sweden, and Denmark (Figure III-1). It would remain high even with a reduction to around 40 percent, to which President Sarkozy made a commitment in the 2007 presidential election. Any such reduction would need to be carefully sequenced with expenditure reduction,[13] moreover, the current intention being to eliminate by 2012 a

Figure III-1. Tax Revenues, 2006



Source: OECD Revenue Statistics

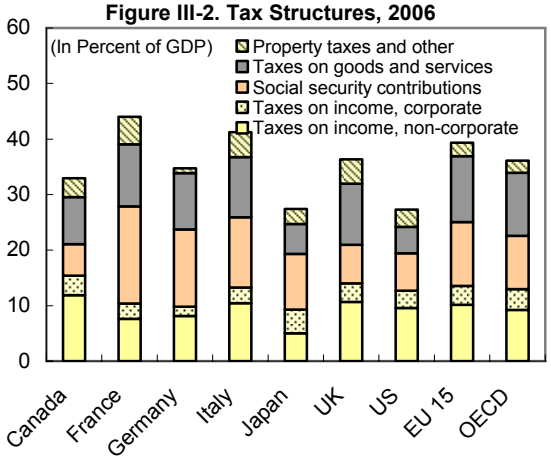
[12] Prepared by Michael Keen and Rodolfo Luzio.

[13] Public spending is also currently the subject of a broad review, the *Révision Générale des Politique Publiques (*RGPP).

fiscal deficit (now 2.4 percent of GDP) that has led to a large build up of public debt (64 percent of GDP). Nor, it should be noted, would tax-cutting in itself greatly reduce the challenges of tax design in France: effective tax rates, and possible inefficiencies, will remain high. And identifying the areas in which any tax reductions would be most constructive is not easy.

79. The most striking feature of the composition of tax revenues is the heavy reliance on social contributions (37 percent of tax revenue, compared to an OECD average of 25.6 percent) and relatively low reliance on personal income taxation (Figure III-2). The latter—which includes not only the personal income tax proper (*impôt sur le revenue,* the IR) but also, taxes in all but name, the flat rate *contribution social généralisée* (CSG) and *contribution au remboursement de la dette sociale* (CRDS)—accounts for 17 percent of tax revenue, compared to an OECD average of 25 percent. The share of VAT in tax revenue is around the OECD average. More suggestive is that that revenue from the corporate tax (*impôt sur les sociétés*, IS) is somewhat lower than the OECD average not only as a share of tax revenue, but also relative to GDP—despite a statutory rate that, at 33.33 percent, is not low by international standards. Property taxes account for a relatively high fraction of tax revenue, exceeded among OECD members, relative to GDP, in only Canada and the U.K.

Figure III-2. Tax Structures, 2006



Source: OECD Revenue Statistics.

80. An important part of the wider tax-benefit system, is the earned income tax credit (*prime pour l'emploi*, PPE) introduced in 2002.[14] This is a refundable tax credit against the IR for those in employment, which has been increased in generosity over the years to the point at which it is now received by nearly 9 million households: about one in four.

The development of the French tax system

81. There have been many changes to the French tax system over the last two decades or so. Many have been both creative and apparently effective. Measures to reduce social contributions at and just above the minimum wage (the *Salaire minimum interprofessionelle de croissance*, SMIC) since 2002, for example, are estimated to have increased employment by around 3 percentage points. Similarly, the PPE, while still undergoing improvement (most recently in accelerating payments so as to be available in times of need), has to a large degree

[14] PPE credits that do not eliminate liability are reported as reductions in IR revenue; payments to households are reported as expenditure.

succeeded in making employment more attractive. Measures to allow payments of minimum income support (*Revenu minimum d'insertion*, RMI) and other benefits available to the unemployed to be phased out rather than summarily removed on taking up employment have had similar effect. The simplification of the IR schedule, with a reduction in the top marginal rate and elimination of the abatement for wage income, were also constructive measures. And in terms of administration, the recent decision to merge the *Direction general des impôts* (DGI), responsible for tax assessment, with the *Direction générale de la comptabilité publique* (DGCP), responsible for tax collection, should generate significant efficiency gains.

82. However, tax policy changes over the years have in many cases been made on a piecemeal basis, responding to immediate pressures and priorities—and often attempting to offset policy-induced distortions—rather than reflecting a strategic vision of the tax system. Several of the changes introduced in the recent TEPA (*Loi du 21 août 2007 en faveur du travail, de l'emploi et du pouvoir d'achat*), are of this kind (Box III-1). It is not clear, for example, how the introduction of a tax credit in relation to purchases of a principal residence, intended to promote owner-occupation, sits with the continued existence of a tax incentive under the IR to invest in property for rent.[15] And while the tightening of the *bouclier fiscal*, seems largely intended to weaken the impact of the annual wealth tax (*Impôt sur la fortune*, ISF), it does so in a way that adds to complexity and opens avoidance opportunities,[16] all of which could be avoided by simply reducing the rates and/or raising the various thresholds under the ISF. Exempting overtime pay from IR and social contributions, while signaling the government's intention to encourage work, may have only limited effects on hours worked and employment (conceivably reducing the latter), but introduce considerable additional complexity for tax administration and firms alike.

83. Piecemeal tax policy-making is not unique to France, of course. One feature that is striking, however, is that the ingenuity of several of the measures discussed above is addressed at circumventing distortions in the labor market created by the relatively high level of the SMIC,[17] the 35-hour week, and other labor market restrictions. This is also true of the rebating, starting in the late 1990s, of employers' social contributions (of 26 percent at the SMIC, phased out by earnings of 1.6 times the SMIC). Assessments of the employment effects of such measures vary, but have generally been positively evaluated—Ministry of Economy, Finance, and Industry (2007a) concludes that around 300,000 jobs have been created, at a direct revenue cost of about €10,000 each. But the remaining scope for such measures is now limited, as will be seen. This brings home increasingly starkly the point that

[15] In similar spirit, Leibfritz and O'Brien (2005) give the example of a tax credit for consumption loans being given in 2004 at the same time as substantial tax incentives for saving.

[16] By, for instance, creating a potential incentive to induce more variability in income receipts, so as to engineer years in which the bouclier can be used.

[17] France has the highest minimum-to-median relative wage in the OECD (Jamet, 2007a).

tax policy is not the most effective device for mitigating policy-induced labor market distortions: even if they were to fully offset them, for instance, the benefit would be reduced by the distortions caused by raising the revenue to finance them. The better-targeted policy is to remove or modify the underlying labor market distortions themselves.

Box III-1. Central Elements of the TEPA, 2007

- ***A refundable mortgage interest payment tax credit*** was introduced, for new mortgages only: up to 40 percent of interest payments—capped at €3,750 for a single person household and €7,500 for a couple—will be deductible in the first year, and 20 percent in the next four.
- ***Tightening the ceiling on personal taxes*** (*bouclier fiscal*). The ceiling on payments of the IR, ISF, and certain real estate taxes on the primary residence—introduced in 2007—was cut from 60 to 50 percent of income, and the CSG and CRDS added to the capped payments.
- ***Elimination of taxes and social charges on overtime:*** personal taxes (including CSG and CRDS) and employee's social contributions on overtime earnings are eliminated, with a small absolute reduction in employers' contributions also provided.
- ***Reduction of the inheritance and gift tax***, with the exemption per direct descendent tripled and the charge eliminated for transfers to living partners.
- ***A credit against the wealth tax of investments in SMEs*** of up to 75 percent of the investment, to a limit of €50,000.

Objectives for tax reform

84. The general aim set for the RGPO is to improve the simplicity, stability, and predictability of the tax system.[18] These concerns speak directly to the need to break with the piecemeal policy-making just described, which has indeed resulted in a highly complex system. They point, moreover, to the importance of developing a strategic vision to guide the many and quite fundamental tax policy choices that will continue to arise in coming years—and a clear view of what the tax system can, and cannot, be expected to achieve.

85. Such a vision requires, not least, recognizing the challenges from intensifying globalization: meaning, in particular, increased mobility of tax bases, and likely to be especially marked in relation to capital income. This implies that the effective burden of taxation will tend to fall on less mobile factors—in which case efficiency calls for taxing them directly. Taxes on corporate income, for example, may be shifted onto immobile labor, as companies move abroad in search of higher after-tax returns, leading to a reduction in domestic labor productivity (Hassett and Mathur, 2006). It is then better to tax such labor income directly, so as to avoid distorting capital-labor ratios. The key issue is then to identify what are likely to be the most immobile bases, the natural candidates being relatively low- and, perhaps especially, high-skilled labor, consumption, and property that has location-

[18] http://www.elysee.fr/elysee/elysee.fr/francais/interventions/2007/juillet/lettre_de_mission_adressee_a_mme_christine_lagarde_ministre_de_l_economie_des_finances_et_de_l_emploi.79066.html

specific attractions not found elsewhere. The distributional implications of this may be unwelcome, but maintaining a high overall tax ratio inescapably means a high burden on such bases—and the problem is then how to do so in ways that are least distorting, and fairest.

C. Business Taxation

86. A wide range of taxes are formally incident on businesses, but pressures for reform are most evident for two: the corporation tax and the *taxe professionelle*.

Impôt sur les Sociétés (IS)

87. The corporation tax has been the subject of substantial (and continuing) reform both in Europe and more widely. The most dramatic aspect has been a reduction of headline statutory rates—the OECD average falling from 41 percent in 1986 to around 27 percent now—but there has also, and perhaps ultimately more fundamentally, been significant experimentation in the structure of the tax. In France, however, although the statutory rate has also fallen (most recently with the elimination of the 3 percent surcharge in 2006) the IS has not changed as fundamentally as elsewhere.

88. The impact of any corporate tax depends not just on the statutory rate but also on the base: in particular, the generosity of depreciation allowances and the treatment of financial costs. Box III-2 describes how key aspects of the corporate tax are conventionally summarized by supplementing the headline rate with measures of marginal and average effective tax rates (METR, AETR), capturing respectively the likely impacts on the level and cross-country location of investment. Table III-1 reports estimates of all three rates, the final column reporting estimates of the implicit corporate tax base (in percent of GDP), calculated by dividing revenue from the corporation tax by its (highest, marginal) statutory rate: this is a crude estimate of revenue productivity, giving the additional revenue that would be raised—assuming unchanged behavior—by a one-point increase in the statutory rate.

Box III-2. Analyzing Corporate Taxes

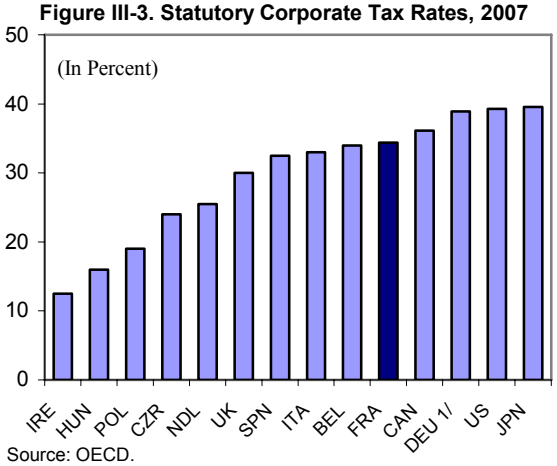
The ***statutory rate*** of corporation tax directly affects firm's decisions regarding income shifting, meaning the use of devices other than real investment—transfer pricing, financial arrangements, and so on—to shift taxable receipts from countries in which the statutory rate is high to those in which it is low, and deductible expenses in the opposite direction.

Decisions on the level of investment in a given country depend on the ***marginal effective tax rate***, which is a summary measure of how the statutory rate and tax allowances together affect the before-tax return that a firm must earn in order to provide investors with the after-tax return they require. If the METR is zero, for example, then the tax system has no effect on the marginal decision to invest even though it may will collect revenue by taxing the return on infra-marginal investments.

The choice as to the country in which to locate a given discrete investment—a factory, for example—depends on comparing the ***average effective marginal tax rate*** in each, this reflecting the present value of taxes to be paid—including on infra-marginal profits—over the life of the project. In practice, the AETR—which is a weighted average of the statutory rate and METR (Devereux and Griffith, 2003)—often tracks the statutory tax rate quite closely.

89. The most striking feature of the French corporate tax by current international standards is that the statutory rate is relatively high (Figure III-3 and Table III-1)—indeed with the reduction in Germany from the start of 2008 to an average of just under 30 percent (inclusive of the lower-level trade tax) France now has the second highest rate in the EU. It is (slightly) exceeded only by Belgium, which (see below) operates a quite different type of corporate tax, and is far higher than in the 12 new members (their average rate now being less than 20 percent). The METR and AETR do not appear so out of line, at least with the older members. This reflects what now seem to be fairly generous depreciation allowances, particularly in relation to plant and machinery (though this is an area in which the diversity of country practice makes simple comparisons difficult). More generally, the final column of Table III-1 suggests the implicit corporate tax base in France to be relatively low: while more than suggestive (reflecting, for instance, non-tax related cross-country differences in the size of the corporate sector), the implicit base has the merit of reflecting all base-reducing measures, whereas the more stylized effective tax rate calculations reflect only such generalized features as depreciation allowances.

Figure III-3. Statutory Corporate Tax Rates, 2007



Source: OECD.
1/ Germany reduced its tax rate to 30 percent in 2008

Table III-1. Corporate tax rates, selected countries, 2006
(In percent)

	Statutory rate (2007) 1/	Average effective tax rate (2006) 2/	Marginal effective tax rate (2005) 2/ 3/		Implicit tax base (2006) 4/
			Equity	Debt	
Australia	30.0	26.0	24.0	-23.0	0.19
Austria	25.0	22.0	20.0	-18.0	0.09
Belgium 5/	34.0	26.0	22.0	-35.0	0.11
Canada	36.0	28.0	25.0	-37.0	0.10
Finland	26.0	21.0	17.0	-23.0	0.13
France	**33.3**	**25.0**	**20.0**	**-36.0**	**0.09**
Germany 6/	38.7	32.0	29.0	-37.0	0.05
Ireland	12.5	11.0	10.0	-8.0	0.30
Italy 7/	33.0	26.0	19.0	-48.0	0.10
Japan	40.0	32.0	28.0	-40.0	0.12
Netherlands	25.5	25.0	21.0	-29.0	0.11
Norway	28.0	24.0	22.0	-21.0	0.44
Spain	32.5	26.0	21.0	-38.0	0.12
Sweden	28.0	21.0	16.0	-29.0	0.14
Switzerland	24.0	25.0	20.0	-36.0	0.13
Kingdom	30.0	24.0	20.0	-28.0	0.13
United States	35.0	29.0	24.0	-46.0	0.09

Sources: OECD Revenue Statistics, Institute for Fiscal Studies, Marini (2007)
1/ 2007, including lower-level taxes, from Marini (2007) and OECD Revenue Statistics.
2/ Corporate taxes only from: http://www.ifs.org.uk/publications.php?publication_id=321
3/ Equity financed, investment in plant and machinery, rent at 10 percent.
4/ Ratio of corporate tax revenues to top corporate tax rate.
5/ Subsequent adoption of ACE will have reduced METR to zero.
6/ Reform of 2007 reduced METR on equity and raised it on debt.
7/ Statutory rate excludes the IRAP .

90. The central concern raised by these comparisons is the risk of profit-shifting from a statutory rate from France to countries offering a lower rate.[19] The consequent prospect of a significant reduction in the statutory rate raises several questions.

91. One is whether a rate reduction in France is likely to trigger further reductions elsewhere, diluting any benefit derived. It seems likely that tax competition is now so pervasive that France alone can have little impact on the final outcome. But in determining an appropriate IS rate it is important to recognize that higher tax rates are more appropriate for larger countries than for small: the small domestic tax bases of the latter mean they stand to lose relatively little from cutting tax rates, but to gain a lot from inducing inward movement of tax bases from abroad. There is thus good reason to suppose that the IS rate in France should remain towards the upper end of those in industrialized countries.

92. A second question is whether any such reduction should be achieved in one-step or phased. The disadvantage of a substantial one-step adjustment is that it effectively imposes a windfall loss on the government: less revenue is collected from investments that have already occurred.[20] Against this is the possibility that a phased reduction will send a weaker and perhaps less credible signal to investors of the intention to provide a more supportive tax regime. It may be, however, that signaling concerns need not be as prominent in France as they have been in the reforming countries of Eastern Europe.

93. A third and critical issue is whether the revenue cost of reducing the rate of the corporate tax can appropriately be recovered, to some degree, by expanding the base. Most rate-reducing corporate tax reforms in the OECD have indeed been accompanied by some base-broadening (particularly through scaling-back depreciation allowances). And revenues have generally held up or even increased (Devereux, Griffiths, and Klemm, 2002), though how far this reflects base-broadening rather than other developments—including an increased GDP-share of profits (especially of the financial sector), perhaps for reasons unrelated to tax reform[21]—remains unclear. The figures above do suggest, in any event, that the base in France has become relatively narrow. Beyond less generous depreciation, other candidates for base-broadening are the various special allowances and tax holidays, such as the holidays (and subsequent reduced rates) for investments in competitiveness centers, urban free zones, and new enterprises meeting R&D criteria. Being unrelated to either

[19] The use in France of a territorial rather than worldwide system potentially amplifies exposure to such risk, in that tax on active foreign income is not merely deferred but escaped.

[20] A pre-announced reduction in the statutory tax rate may also cause a temporary increase in investment, as this is brought forward to take depreciation and other allowances at the higher rate. The desirability or otherwise of this will naturally depend on the cyclical position

[21] Other possibilities include tax-induced shifting of activity into the corporate sector (De Mooij and Nicodeme, 2006), growth of the financial sector (Devereux, Griffiths, and Klemm, 2004) and, given imperfect loss offset provisions, increased volatility of corporate profits (Auerbach, 2006).

investment or employment, such measures are not well-targeted to what are presumably the underlying objectives, create avoidance opportunities—and are a particularly ineffective way of helping new companies, which are particularly unlikely to have positive taxable profits.[22]

94. The rationale and effectiveness of the reduced IS rate of 15 percent for SMEs—relatively generous by international standards—are also questionable. While such preferential treatment is common (though not universal—Australia, Austria, and New Zealand, for example, apply the same rate to all corporations), the weakness of their rationale is increasingly recognized (see International Tax Dialogue (2005)): the U.K., for example, recently raised the small business rate while lowering the general rate. Preferentially low rates for SMEs introduce their own distortions—even, perversely, discouraging firm growth[23]—and are unlikely to be the most effective way of alleviating credit market imperfections particularly affecting smaller firms. Indeed the access of SMEs to bank finance in France compares favorably to that in other EU countries (Gabrielli, 2007). That only around 60 percent of eligible enterprises derive any benefit suggests that the measure is not especially well-targeted. More generally, the wide array of measures favoring SMEs, including other tax breaks such as that introduced in the TEPA (which EU rules means apply to SMEs anywhere in the EU, not just in France) as well as non-tax measures, seems to merit review and simplification.

95. Fourth, the question arises as to whether more fundamental reform of the structure of the corporate tax is appropriate. The last few years have seen substantial experimentation in this area, focused on eliminating the bias towards debt finance that is implied by the deductibility of interest costs but not of the return to shareholders—a bias that is evident from the negative METRs for debt finance in Table III-1, and is exacerbated by financial innovation in constructing instruments that have many of the properties of equity but are treated as debt for tax purposes (Auerbach, 2006). There are broadly two ways of doing this. One is by curtailing interest deductibility—moving towards a comprehensive business income tax (CBIT), as has been done in Denmark and Germany.[24] The other is by providing more generous treatment for equity costs: as Estonia has done by eliminating corporate tax on undistributed profits, and as can also be achieved by allowing a tax deduction for an

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[22] The need for R&D treatment as generous as at present—a tax credit for 30 percent of all spending up to a ceiling and 5 percent on the excess—is also questionable. While there is evidence that tax breaks can increase measured R&D (Bloom, Griffith, and van Reenen, 2002), it is not clear how much of this generates public rather than private benefit. And while these provisions may serve to attract especially mobile international investments, a reduction in the general IS rate would reduce the need for such measures. Nevertheless, stability argues against immediate change to a regime that was reformed and substantially simplified in 2007.

[23] Eligibility ceases once turnover exceeds €7.63 million, implying a large jump in tax liability at that point—and hence a potential incentive to remain below it.

[24] In Germany, for instance, deductible interest is now limited (above some minimum amount) to 30 percent of taxable earnings before interest, taxes and depreciation.

imputed cost of equity finance—an allowance for corporate equity (ACE). The latter route has been adopted in Belgium since 2006, to some degree in Brazil and (formerly) Italy and Croatia. Both approaches substantially level the playing field across sources of finance. A key difference is that the base is wider under the German approach, so that the revenue-neutral statutory rate is correspondingly lower—and hence pressure from profit-shifting likely to be less. The ACE approach, while it appears to have worked well in Croatia (see Keen and King (2002), and Klemm (2007) for a broader review of the ACE experience) has also proved potentially vulnerable to avoidance devices (Quaghebeur, 2007). Against this, however, a reform along German lines would tend to increase METR for equity finance (Klemm and Danninger, 2006) whereas movement to an ACE would them [25] There may be no immediate need for fundamental structural corporate tax reform in France—just as there may be no immediate need for a substantial rate cut—but in shaping the medium-term prospects for the IS it will be important to recognize that the challenges go far beyond those concerning the headline rate, and to learn from the experiences of innovations elsewhere in Europe.

Taxe professionelle (TP)

96. The taxe professionelle is a cumbersome charge on assets in business use. Revenue and rate-setting powers are allocated (within bounds) to regions, departments and communes; and the tax has been eroded by exemptions (covering around 25 percent of businesses), the cost of which is covered by central government (so distorting tax-setting incentives at lower level and eroding the local accountability that is a key reason for giving tax-setting powers to lower-level governments (Jamet, 2007b). The TP has been subject to many changes (most recently an exemption for new investment), and its future long debated. A lasting solution to these difficulties is likely to be found only in a broad review of the architecture of fiscal relations between levels of government, including the desirability of the increasing importance over recent years of vertical transfers from the center. There may, in particular, be quite different types of lower-level finance that would be less distortionary and simpler, such as an add-on to the IR or CSG. Many countries do, however, find a charge on businesses that is related not to profitability but to some broad measures of activity appealing, as a rough form of user charge for locally-provided services.

97. In that respect a strong case can be made—as the *Conseil des impôts* did as far back as 1989—for converting the TP into a tax on value added; not on the invoice-credit and destination-basis of the TVA, but an accounts- and origin-basis. Such a tax (the *imposta regionala sulle attività produttive*, IRAP) has operated, with success, in Italy, the regions being allowed to vary the rate (and to some degree the base) within centrally specified limits: see for instance Keen (2003). Recent decisions have confirmed the consistency of the IRAP

[25] Since the METR for debt-financed investments currently tends to be negative, an increase in the IS rate would tend to *discourage* such investment, which would be a *reduction* in tax-induced distortions.

with EU law. Moreover, the TP is already largely of this form: around 45 percent of payments are by firms for which the constraint that payments not exceed 3.5-4.0 percent of value added (depending on turnover) bites. Explicit movement in this direction—which would need to be accompanied by some adjustment in vertical transfers—offers scope for both simplification and improved coherence. There appears, however, to have been strong resistance to the idea of an IRAP, largely because of a reluctance to impose additional taxes on labor. But EU rules (precluding local sales taxes), the difficulties of taxing capital income, and the already-heavy use of property taxes, leave few options.

D. Taxes and Charges on Personal Income

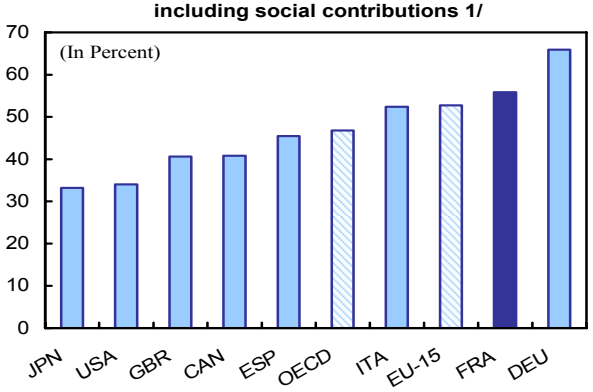
98. The treatment of personal income in France has several distinctive features. One is the limited scope and revenue yield of the IR itself, the IR: paid by only about half of all taxpayers, it raises only about 6.5 percent of all tax revenue (almost three-quarters paid by just 10 percent of taxpayers). While the IR is thus quite progressive, in the sense that payments are concentrated largely amongst the better-off, its limited yield means that the equalizing effect on the distribution of after-tax income is relatively modest. Also notable features of the IR are the use of mandatory joint taxation and the absence of mandatory withholding: in the OECD, the former is now found only in Greece and Luxembourg, and the latter only in Switzerland. Largely offsetting the relative weakness of the IR are the broad-reaching and flat rate CSG (at 7.5 percent for wage income, 8.2 percent for capital income and 6.6 percent for pensions) and CRDS (at 0.5 percent). Withheld at source, with payments (earmarked to finance social benefits but carrying no benefit entitlement, making them—as noted earlier—effectively taxes), these raise almost twice as much as the IR. Less distinctive, but critical to the overall structure of the system, is the PPE, a refundable credit against the IR (paid on earnings at marginal rates, for full-time workers, of 14.2 percent and then 7.7 percent before being withdrawn beyond the SMIC level; and equivalent in amount, at the SMIC, to working a thirteenth month).

99. Interest income is fully taxable under the IR, but with an option for final withholding at a flat rate of 27 percent (16 percent for the IR, plus CSG, CRDS and *prélèvement social* summing to 11 percent). Exemptions are available for *livret A* accounts and longer-term equity and pension savings. Personal capital gains above threshold, and other than from principal residences (which are exempt), are also typically subject to a flat 29 percent. Since removal of the *avoir fiscal*, under which credit was given for underlying corporation tax, only 60 percent of dividends are included in taxable income (with, in addition, a modest tax credit), but with an option for taxation at a flat 29 percent.

Employment

100. The relatively high social contribution rates, in particular, imply marginal tax wedges—the gap between the gross cost to the employer of increasing the wage and the amount received by the worker—that are also relatively high, being somewhat above OECD average: Figure III-4.

Figure III-4. Marginal rate of income tax including social contributions 1/

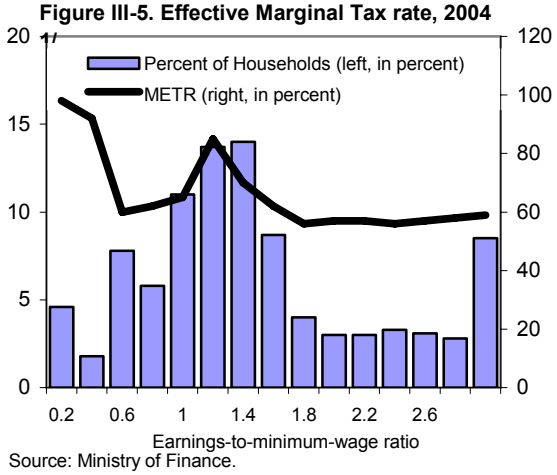


Source: OECD.
1/ For single worker in manufacturing sector earning gross wage.

101. The likely employment impact of such tax wedges depends on the nature of wage bargaining, being least if it is either fully centralized (so that their effects are fully recognized in the bargaining) or fully decentralized (so that the labor market clears at any tax rate). While France is generally reckoned to occupy an intermediate position in this respect, pointing to stronger effects than elsewhere, it seems likely that a general reduction in income tax or social contribution rates would need to be quite large—and hence costly in revenue terms—to have any very marked impact on employment (see, for example, Nickell, 2006).

102. Stronger employment effects might be realized from cuts targeted on the lower paid. This though is an area in which France has already shown considerable ingenuity and achieved much, with the substantial reduction in employers' social contributions at lower incomes and operation of the PPE. One consequence is relatively high marginal effective tax rates as earnings rise above the SMIC (reflecting withdrawal of the PPE, rebates to employer's social contributions, and other benefits): Figure III-5. To some degree this is inevitable, in that moderate support for those in work requires relatively high marginal tax rates somewhere in the lower part of the distribution in order to limit the revenue cost. Revenue needs permitting, it would in principle be possible to go further than at present either by eliminating some remaining contributions (discussed further below), eliminating other contributions up to a somewhat higher income level, or introducing a wage subsidy. Minimizing distortions points to smoothing the increase in the marginal effective rate by taking the second of these options; but just as the relative thickness of the income distribution where the marginal effective peaks suggests that these distortions may be a significant concern, so it indicates that the revenue cost of such a restructuring is likely to

Figure III-5. Effective Marginal Tax rate, 2004



Source: Ministry of Finance.
1/ One-earner housholds with two children.

be relatively high. Ultimately, tax policy instruments are inherently an expensive way of dealing with the labor market distortions created by the SMIC, best addressed by letting it fall in real terms.

103. Much has also been done to improve the attractions of work relative to inactivity, largely by the extension in 1998 of the period for which unemployment benefit and the RMI can continue to be enjoyed after returning to work. This is another relatively expensive device—compared to reducing the real value of out-of-work benefits—but one for which there has apparently been a social consensus. Experiments are underway towards combining the PPE and a series of benefits, including for housing and single parents, into an integrated income-related schedule, the *revenu de solidarité active* (RSA). Given the potential usefulness of providing some benefits in kind rather than cash—easing incentive constraints insofar as these benefits are more valuable to those with genuinely low earning ability—full income-relation may not be entirely desirable. Nevertheless, these experiments offer the prospect of further simplification and more complete assurance of marginal effective tax rates on entering employment of under 100 percent—and are a potentially important example of the careful project evaluation enabled by a constitutional reform in 2003.

Base-broadening and simplification

104. Recent years have seen significant reduction in the number (from seven to five) and, more important, the rates of the IR: the top marginal rate has been reduced from 48.1 to 40 percent, now being broadly in line with those elsewhere in Western and Northern Europe (though far above the flat rates of Eastern Europe). This has been facilitated by some base-broadening (notably the elimination of the 20 percent abatement for earned income). There remain, however, a range of exemptions and deductions under the IR (most of which noticeably do not apply under the CSG) whose elimination could enable further rate reduction—likely to be especially appropriate if the IS rate is lowered, in order to limit tax biases towards incorporation—and significant simplification. These include not only a relatively high threshold, but such special treatments as the tax credits for salaries of domestic staff, investments in improved energy efficiency (there being no obvious reason why these should be restricted to those with high enough incomes to pay the IR), and investments in residential properties for letting. For the longer term, the new mortgage interest credit also merits reconsideration: not only does it sit uneasily with the incentive for letting, but the benefits are likely to be largely capitalized in house prices and so simply convey a benefit to existing owners. Experience elsewhere suggests that the increase in home ownership—presumably a key objective of the reform—could be modest: Glaeser and Shapiro (2002), for instance, find this to have been the case in the U.S. Removing this tax break can be difficult (because it means windfall capital losses for homeowners), though France did succeed in removing a similar measure in 1995. It would seem prudent, at the least, to keep the upper limits fixed in nominal terms and so allow the benefit to erode over time, as was done, for example, in the U.K.

105. The distinctive quotient system for family taxation[26] has potentially powerful efficiency and distributional effects. It creates a tax incentive to marriage—though at lower incomes the family nature of the PPE acts in the opposite direction (Legendre and Thibault, 2007)—and is parameterized so as to provide strongly favorable treatment of children. Joint taxation also implies high marginal tax rates on secondary earners entering work (because they have no allowance to set against that income): O'Donoghue and Sutherland (1999) show, for example, that moving the U.K. population from a largely independent system to one akin to the French would have increased the average marginal tax rate on wives by about 4 points, and reduced that on husbands by somewhat less. And the Irish experience, at least, suggests that the impact on labor supply could be noticeable (Callan, van Soest, and Walsh, 2007). Concern with these effects has led almost all other countries towards independent taxation: the Czech Republic, for example, recently returned to independent taxation after a brief experiment with joint. These effects may be muted in France by the relatively limited scope of the IR—certainly female participation rates do not appear especially low relative to male (though both are low overall). But that also means that the benefits are concentrated among the better-off, reducing the progressivity of the overall tax system. Further limiting the effect is an explicit cap on the benefit of the quotient system to families with children; though this is a source of significant complexity.[27]

106. There are no simple rules on how best to tax members of a family,[28] and some degree of joint treatment is widely recognized as proper for the PPE (so as to avoid subsidizing partners of high income individuals). But moving away from the strongly constraining structure of current quotient arrangements, building on the existing family allowance system, could provide both some simplification and more effectively-targeted child support.

Withholding and integration of the CGS and IR

107. With both the IR and the CSG/CRDS serving as taxes on personal income, some simplification could be achieved by integrating the two into a single charge, with the further benefit of extending to the IR employer withholding on wage income. There is some risk in doing so, however, that political pressures will undermine the integrity of the CSG—one of the main strengths of the French tax system—by extending to it the range of allowances and exemptions available under the IR. The inclusion of the CSG in the bouclier fiscal, introduced in the TEPA, is perhaps a warning of the potential risk to the CSG.

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[26] Under a quotient system, aggregate family liability on an aggregate family income of Y is $NT(Y/N)$, where the quotient N reflects household composition and the schedule $T(.)$ is the same for all household types.

[27] It is also unclear why, as a matter of policy, a tax benefit associated with children should be available only to those sufficiently well-off to pay the IR and then increase with their income, but only up to some limit.

[28] Kleven, Kreiver and Saez (2006) find—leaving aside the marriage bias issue—that it is typically optimal for the marginal rates on primary and secondary earners to be negatively related: precisely the opposite occurs under joint taxation, since higher income of one partner then increases the marginal tax rate faced by both.

108. Extending mandatory wage withholding to the IR does not, in any event, require combining the two sets of charges (though there would be evident advantages in integrating their administration). The potential advantages of withholding are substantial. It would reduce taxpayers' compliance costs (potentially eliminating the need, depending on the form of withholding and the rate structure of the IR, for many to file returns), reduce the authorities' costs of administration (by enabling them to focus monitoring on withholders, far fewer in number than recipients), and could be expected also to improve compliance. It is hard to gauge the potential revenue gain (which will be mitigated in that some taxpayers already opt for withholding). Experience from the introduction of withholding in the U.S. states, with a long-run gain of around 22 percent of revenue (Dušek, 2002)—this in addition to the one-off timing effect, and at unchanged tax rates—suggests that it could be noticeable. Plans for mandatory withholding have indeed long been mooted in France, one outstanding issue being how to deal with the transition: with taxes currently paid in the year following that in which they arise, but concurrently under withholding, moving from the former to the latter can imply paying two years' taxes—and consequent liquidity problems—in the first year. Almost all countries, however, have found ways around this difficulty: Box III-3. The adoption of withholding is perhaps best delayed until the merger of the DGI and DGCP is complete, but preparing for it should be a core element of this structural redesign.

Box III-3. Moving to Withholding

There are broadly two ways in which the impact on taxpayers of moving to withholding can be reduced (both, by the same token, reducing the increased present value of tax revenue otherwise resulting from the acceleration of payments):

- Liability over some period can be waived: Denmark, for instance, forgave taxes for the six months prior to the introduction of withholding in 1967. If pre-announced, such a 'holiday' can have beneficial incentive effects—marginal tax rates in that period are zero—but also creates opportunities for avoidance by, shifting income into the tax-free period.
- Payment periods in respect of liabilities arising before the introduction of withholding may be lengthened. This was the approach taken in Australia at the introduction of withholding in 2000, for example, payments being spread over 5-6 years.

To assure horizontal equity, the 'holiday' approach would need in France also to apply to those who already opt for withholding. Extended payment may offer a better compromise between safeguarding revenue and minimizing disruption to taxpayers.

Taxation of capital income

109. The tax treatment of personal income in France is far from the textbook notion of a progressive individual-based tax on a comprehensively-defined income. Instead, the present architecture is in many respects similar to a dual income tax (DIT) of the kind found in Nordic countries: it combines a relatively low flat tax uniform across all forms of capital income with a progressive tax on labor income (operating at lower levels through the PPE, and marked also at higher levels). And the level of that flat tax rate, around 29 percent, is broadly the same as in the Nordic countries. Such a system has much to recommend it, given

the difficulty of taxing increasingly mobile capital income at marginal rates close to those at which it is typically desired to tax labor income. Movement to a full DIT would require significant change in the treatment of individual entrepreneurs and close companies (more able than most to shift reported income between capital and labor): some form of mandatory income splitting would likely be required, and not easy to implement. Even without going so far, however, systematic adoption of uniform flat rate taxation of financial capital income could enable simplification, reduced inefficiencies, and provide a coherent framework for dealing with pressures from globalization.

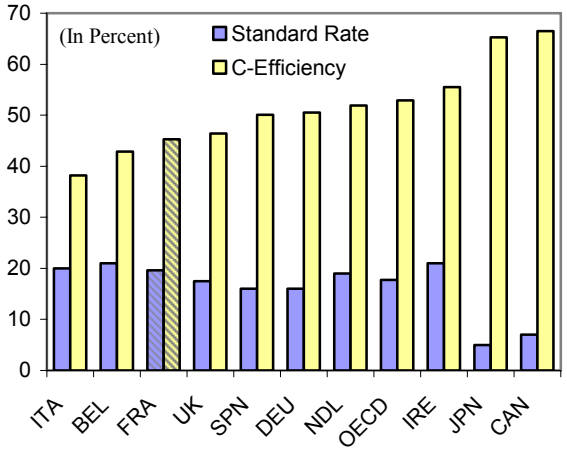
110. A full assessment of capital income taxation would require addressing a wide range of issues, including wider objectives in the tax treatment of savings. With interest and personal capital gains already largely taxed at the same flat rate, the most substantial change in moving closer to a DIT would be shifting to mandatory taxation of dividends at the same flat rate. At current rates, the flat rate option for dividend taxation is generally attractive only to those in the highest IR bracket (and not subject to the bouclier). While mandatory flat taxation mandatory would reduce the marginal rate currently faced by such taxpayers, the more marked effect would be to raise that faced by those on lower incomes; but it is not clear why, as now, they should be encouraged to hold equity rather than debt (and, if desired, they could be protected by exempting some small amount of dividend receipts). Perhaps no less important than the change in dividend taxation, however, is the need to review the preferential treatment of housing investment, which is likely to prove of doubtful merit.

E. Indirect Taxation

111. This section considers two central issues of indirect tax design in France: the structure of the VAT, and a strengthening of environmental taxes.

The value added tax

Figure III-6. VAT Standard Rate and C-Efficiency,



Source: OECD.

112. A mainstay of the wider tax system, the VAT raises around 16 percent of all tax revenue. It is marked by a standard rate which, at 19.6 percent, is somewhat above the OECD average (17.6 percent in 2006, Figure III-6). Still more striking is the extensive rate differentiation. As noted in Ministry of Economy, Finance, and Industry (2007b), France makes quite full use of the possibilities for reduced rates within EU rules, with rates of 5.5 percent (including for most foodstuffs, public transport, social housing, housing renovation) and 2.1 percent (on, for example, reimbursable medication, books and newspapers). A consequence of this is that the VAT has relatively low productivity: C-efficiency—VAT revenue divided by the product of consumption and the standard rate

(which would be 100 percent if the standard rate applied to all consumption)—is well below the OECD average (Figure III-6).

113. This low C-efficiency suggests significant benefits from moving to a more uniform rate structure. Achieving the same C-efficiency as New Zealand—widely regarded as having one of the best-designed VATs—would enable the same revenue to be raised with a single rate of around 8 percent. Even moving to the OECD average would allow the standard rate to be cut by nearly 3 points. Unification would have the further benefit of reducing compliance costs of taxpayers and administration costs of the authorities, including through a lesser likelihood of refunds being due and less need to deal with borderlines (chocolate bars being taxed differently depending on whether they contain nuts, for example).

114. Against this, two benefits might be claimed for the present rate differentiation. One is that it mitigates the distributional impact of the VAT, to the extent that lower rates are applied to items consumed disproportionately by those with lower-incomes. That is indeed the case (Besson, 2007), though the effect will be less marked if assessed relative to aggregate consumption rather than current income (the former arguably being a better indicator of lifetime well-being, correcting to some degree for simple variation of income over the life-cycle). The critical point, however, is that rate differentiation is likely to be a poorly-targeted way of pursuing distributional objectives: even if the less well-off spend a larger *proportion* of their budget on, for example, food, it is likely that the better-off spend a larger *absolute* amount and so derive the greater part of the subsidy implicit in a reduced tax rate. Better instruments—the PPE, for instance—are available to achieve equity objectives. A second reason given for rate differentiation is to encourage employment, by setting low rates on labor-intensive commodities (under the terms of an experiment currently approved within the EU until 2010). Views differ on the likely effectiveness of such measures: Commission of the European Communities (2003), for example, is skeptical, estimating the cost of each job created by such measures in France to be at least €60,000. There seems, in any event, little reason to direct labor into these particular occupations: once again, tax policy is being asked to serve a role for which it is not well-suited.

115. There is thus a strong case for moving towards a more uniform rate structure—and a notable feature of the most recently-introduced and modern VATs is a tendency to charge a single rate (International Tax Dialogue, 2005). This might be done initially by moving selected items from the lower taxed categories to the standard rate (or, subject to EU approval, a new but higher intermediate rate), paving the way for a reduction in the standard rate, without any risk to—indeed possibly increasing—overall VAT revenue.[29]

[29] Quite to the contrary, however, suggestions have been made of adopting still more differentiation, exploring the possibility of doing do so on items not subject to intra-EU trade. Such measures hold little prospect of improving the coherence and effectiveness of the tax system—unless used as staging posts towards phasing out the reduced rates.

116. There has also been much discussion of the possibility of a *TVA sociale*, meaning increasing VAT revenue in order to finance a cut in social contributions. The emerging consensus appears to be that the employment effects of this are likely to be limited by adjustments in transfer payments and wages to reflect increased consumer prices—the former reducing the amount available to reduce employers' wage costs, the latter tending to counteract the direct reduction in those costs—and, moreover, are likely to be modest unless the contribution reductions are focused on the lower-paid. Ministry of Economy, Finance, and Industry (2007), for example, estimates that a 1.5 percent increase in the standard VAT rate would enable employment to be increased by 300,000 if the reduction in labor costs is focused at the SMIC, but only 30,000 if applied generally. The extent of previous reductions in employers' social contributions is such that it is now difficult to further reduce labor costs at the SMIC without providing a wage subsidy,[30] which would raise its own practical difficulties (Besson, 2007), though a further strengthening of the PPE might have similar effects. The alternative is to lengthen the earnings interval over which the near-complete elimination of social contributions applies.

117. It is important to recognize that there is a strong case for reform of the VAT irrespective of any potential link with employment creation. The arguments above suggest substantial scope for gain even from revenue-neutral reform of the VAT, and there may well be other beneficial uses to be made from any increase in VAT revenue—best achieved not by raising the standard rate (which could, for instance, increase evasion and informality) but by unifying the rates at a moderate level—such as reducing the rate of the IS or (as suggested by Cette (2007)) the TP.

Environmental taxation

118. The mandate for the RGPO includes a welcome emphasis on environmental taxation—an area in which France has been less aggressive than others (with revenue yield somewhat below the EU average: see for instance Marini (2007))—with a particular stress on dealing with climate change. This will require attention to the excises on fuel, including the continued preferential treatment of diesel: environmental considerations continue to suggest that diesel should bear a higher charge.[31] Allocating revenue from the *taxe intérieure sur les produits pétroliers*, TIPP) to lower-level governments while retaining rate-setting powers at

[30] Although social contributions carrying no benefit entitlement have been eliminated, since 2007, at the SMIC level for enterprises with less than 20 employees, there remain some charges that function like taxes to such a degree that their elimination could be considered. These include the 2.1 percent charge that remains for larger enterprises (there being no obvious reason why employment in smaller enterprises should be favored) and charges, summing to around 6 percent, related to training and transport. The implications of this for social fund arrangements are discussed in Besson (2007).

[31] That diesel is more fuel efficient than gasoline is not in itself an argument for taxing it less heavily: the carbon content per gallon is no lower, and indeed since each gallon used will thus be associated with a greater distance traveled, the appropriate charge for other road use-related externalities will be higher.

the center also merits reconsideration: since the state then takes the political pain of increasing excises but obtains no direct benefit, it may create a downward bias in tax rates (which, through lower-level tax competition, would likely be exacerbated if, as some have suggested, rate-setting powers were also decentralized).

119. Carbon pricing developments will be shaped in the wider context of negotiations towards a successor to the Kyoto protocol and improvement of the Emissions Trading System of the European Union. Eventual movement to full auctioning of rights has significant potential for the public finances of France, as for other EU members. One more immediate issue is the possibility of reducing the impact of more forceful carbon pricing on international competitiveness, and the risk that emissions will simply shift elsewhere, by adopting some form of border tax adjustment (BTA): remitting domestic carbon prices on exports and imposing countervailing tariffs on imports. This can indeed be to the advantage of those imposing carbon pricing, supporting a policy of uniform taxation and so avoiding the distortions that might otherwise arise from more favorable treatment of energy-intensive sectors. Moreover, BTA may be one of the few credible devices for encouraging non-participating countries to adopt some degree of carbon pricing. Against this, the WTO-consistency of such measures remains unclear (OECD, 2006)—the risk of implicit protection is clear—and the practical challenges of implementation are considerable: what credit should be given for carbon prices implicit in permits that were given away free, for example? The BTA issue is a difficult one—and likely to come increasingly to the fore as climate negotiations intensify over the coming months.

F. Concluding Remarks

120. A full review of the tax system would need to address many design issues not considered here. One is the proper role and nature of the annual wealth tax, which relatively few countries still impose (Sweden, for instance, having recently abolished it). Another is the possibility of basing property taxes more closely on current market values. Several issues will need to be addressed in the context of common EU tax policy formation, including carbon pricing, the control problems associated with the zero-rating of intra-EU supplies (which the increase in refund claims reported in Marini (2007) suggest may be of increasing importance in France) and possible movement towards a common corporate tax base.

121. Nevertheless, several core strategic design challenges are evident, and summarized in Box III-4. More important than the specific points there, however, is the importance of taking the opportunity that the RGPO offers to move away from the long-established tendency in France to piecemeal tax policy-making, and to establish a coherent structure well-attuned to the likely challenges of the coming years.

Box III-4. Strategic Issues for the RGPO

- Key issues for the ***corporation tax*** are:
  - Responding to pressures to reduce the statutory rate—perhaps phasing this in order to limit the windfall revenue loss, and further cushioning the revenue impact (as well as eliminating distortions and avoidance opportunities) by scaling back tax holidays and other special treatments, including for SMEs.
  - Whether, and if so how, to follow others in reducing the tax bias to debt finance.
- The ***personal income tax*** offers scope for considerable simplification, and possible further rate reduction, by reviewing allowances, perhaps moving towards independent taxation, and achieving greater neutrality in the taxation of different forms of capital income—particularly in relation to housing.
- The ***value added tax*** is currently not well-designed to do what it does best—raise revenue. Improving its effectiveness requires less rate differentiation, not more.
- The debate on the ***TVA sociale*** stresses that tax policy measures to reduce labor costs are ultimately not the best response to policy-induced labor market distortions.
- While there is a strong case for replacing the ***taxe professionelle*** by an IRAP-type tax on value added, a lasting solution is likely to be found only in a wider review of fiscal federal relations, touching such issues as the allocation of revenue from the TIPP.

References

Auerbach, Alan, 2006, "The Future of Capital Income Taxation," *Fiscal Studies*, Vol. 27, pp.399-420.

Besson, Eric, 2007, "TVA sociale," Ministry of Economy, Finance, and Industry, Secrétariat d'état chargé de la prospective et de l'évaluation des politiques publiques, Report, September 2007 (www.premier-ministre.gouv.fr/IMG/pdf/TVA_sociale_rapport_remis_par_Eric_Besson.pdf).

Bloom, Nick, Rachel Griffith, and John van Reenen, 2002, "Do R&D Tax Credits Work? Evidence from an International Panel of Countries," *Journal of Public Economics*, Vol. 85, pp.1-31.

Callan, Tim, Arthur van Soest, and John R. Walsh, 2007, "Tax Structure and Female Labour Market Participation: Evidence from Ireland," IZA Discussion Paper 3090.

Cette, Gilbert, 2007, "Quelques considérations générales sur les changements d'assietes de financement de protection sociale et sur la TVA sociale, " Contribution No 1, pp.131-150 in Besson (op. cit).

Commission of the European Communities, 2003, "Evaluation report on the experimental evaluation of a reduced rate of VAT to certain labor-intensive services," Working Paper SEC(2003) 622.

De Mooij, R.A., and G. Nicodeme, 2006, "Corporate Tax policy, Entrepreneurship and Incorporation in the EU," European Commission Economic Paper No. 269.

Devereux, M.P., and R. Griffith, 2003 "Evaluating Tax Policy for Location Decisions" *International Tax and Public Finance,*10, 107-126.

———, and A. Klemm, 2002 "Corporate Income Tax Reforms and International Tax Competition" *Economic Policy*, Vol. 35, 451-495.

———, 2004, "Why has the UK corporation tax raised so much revenue?" *Fiscal Studies*, Vol. 25, pp. 367-388

Dušek, Libor, 2002, "Do Governments Grow When They Become More Efficient? Evidence from Tax Withholding," Mimeo, University of Chicago.

Gabrielli, Daniel, 2007, "L'accès des PMEs aux financement bancaires," *Bulletin de la banque de France*, September, pp. 21-29.

Glaeser, Edward L., and Jesse M. Shapiro, 2002, "The Benefits of the Home Mortgage Interest Deduction," National Bureau of Economic Research Working Paper 9284.

Hassett, Kevin, and A. Mathur, 2006, "Taxes and Wages," Working Paper, American Enterprise Institute, Washington D.C.

International Tax Dialogue, 2005, "The Value-added Tax: Issues and Experience," at www.itdweb.org.

———, 2007, "Taxation of Small and Medium Enterprises," at www.itdweb.org.

Jamet, Stéphanie, 2007a, "Combating Poverty and Social Exclusion in France," Working Paper No 569, Economics Department, OECD.

———, 2007b, "Meeting the Challenges of Decentralization in France," Working Paper No 571, Economics Department, OECD.

Keen, Michael, 2003, "Tax Reform in Italy," *Tax Notes International*, Vol.29, pp. 665-682.

———, and John King, 2002, "The Croatian Profits Tax: An ACE in Practice" (with John King), *Fiscal Studies*, Vol. 23, pp. 401-418.

Klemm, Alexander, 2007, "Allowances for Corporate Equity in Practice," *CESifo Economic Studies* Vol. 53, pp.229-262.

———, and Stephan Danninger, 2006, "Business Tax Reform in Germany," Selected Issues, Country Report No. 06/436 pp. 56-75 (Washington: International Monetary Fund).

Kleven, Henrik Jacobsen, Claus Thustrup Kreiner, and Emmanuel Saez, 2006, "The Optimal Income Taxation of Couples," NBER Working Paper 12685.

Leibfritz, Willi, and Paul O'Brien, 2005, "The French Tax System: Main Characteristics, Recent Developments and Some Considerations for Reform," OECD Economics Department Working Paper No. 439.

Legendre, François, and Florence Thibault, 2007, "Les concubins et l'impôt sur le revenue en France," *Économie et Statistique*, No. 401, pp. 3-21.

Marini, Philippe, 2007, "Rapport d'information sur les prélèvements obligatoire et leur evolution," Doc.Sénat, Session ordinaire 2007-08, séance du 25 octobre 2007.

Ministry of Economy, Finance, and Industry, 2007a, "Cycle emploi pouvoir d'achat," background paper for Conférence Emploi Pouvoir d'Achat.

———, 2007b, "Etude sur la possibilité d'affecter une partie de la TVA au financement de la protection social en contrapartie d'une baisse des charges sociales pesant sur le travail," Note d'étape.

Nickell, Stephen, 2006, "Work and Taxes," pp.75-96 in Jonas Agell and Peter Birch Sørensen (eds), *Tax Policy and Labor market Performance* (Cambridge Massachusetts: MIT Press).

O'Donoghue, Cathal, and Holly Sutherland, 1999, "Accounting for the Family in European Income Tax Systems," *Cambridge Journal of Economics*, Vol. 23, pp.565-598.

Organization for Economic Cooperation and Development, 2006, *The Political Economy of Environmental Taxation* (Paris: OECD).

Queghabeur, Marc, 2007, "Belgium Targets Risk Capital Deduction Abuses," *Tax Notes International*, November 12, pp.627-628.