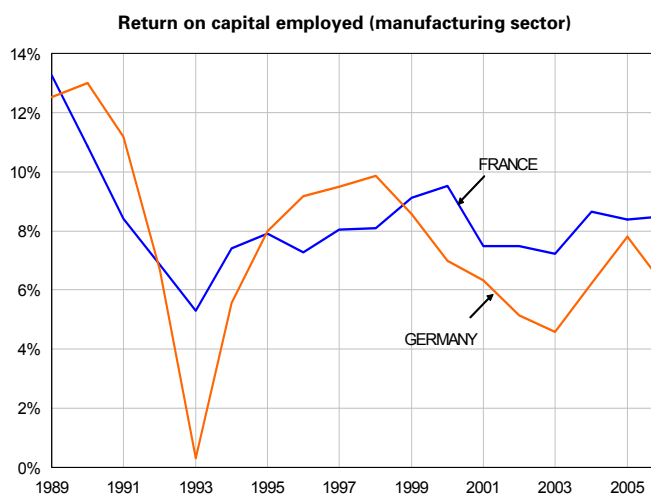


Can developments in profitability explain the strength of corporate investment?

This study was prepared under the authority of the Treasury and Economic Policy General Directorate and does not necessarily reflect the position of the Ministry for the Economy, Industry and Employment.

- French firms have invested heavily since the cyclical trough of 2003, even though their profit margins have remained stable. The investment rate of non-financial corporations was nearly 21% in 2007, matching the peaks reached in the early 1980s and 1990s. In Germany, on the other hand, corporations have relatively little raised their investment rates since their low point in 2004, despite sharply increasing profit margins.
- However, profit margins are a relatively restrictive measure of a company's financial health: return on capital employed (ROCE) and return on equity (ROE) represent more complete measures of performance. Indeed, profitability also takes account of the productivity of capital, together with the cost of borrowing and the financial structure of corporations. In addition, they are key variables driving investors' decisions in the financial markets.
- The fact that French firms consistently achieved high rates of return throughout the 1990s and 2000s could explain their ability to attract capital and, consequently, their high rates of investment. Based on national accounts, we establish that the ROCE of all French corporations, excluding revaluation effects, remained stable at a high level throughout the 1990s and 2000s.
- Moreover, this finding is consistent with the trends identified from company accounts in the manufacturing sector (from the European Commission's Bank for the Accounts of Corporations Harmonised-BACH). This sample exhibits no fall-off in the ROE of French firms relative to their German counterparts.

Source: BACH (European Commission).

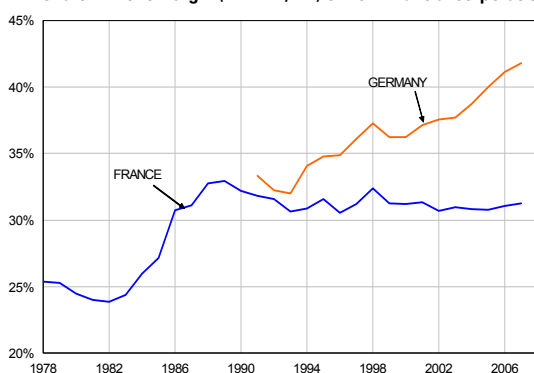


1. French corporate investment has been strong over the recent cycle, while profit margins have been steady

The profit margin measures the percentage of value added retained after payment of wage costs and production-related taxes. It serves to measure the profitability of a firm's operating activities. **French non-financial corporations¹ profit margins have been virtually stable since the end of the 1990s, whereas in Germany they have increased sharply** (see chart 1).

The saving rate measures the percentage of value added retained by firms after payment of wage costs and production-related taxes, as well as the payment of interest expense on borrowings, dividends and corporation tax. It represents the portion of post-tax profit that is not distributed to shareholders and serves in particular to finance investments and amortization charges. French corporations' rate of saving has fallen dramatically, as a result of both rising debt charges and the burden of dividends distributed, especially since 2003. Conversely, it has risen steeply in Germany.

Chart 1: Profit margin (EBITDA/VA) of non-financial corporations



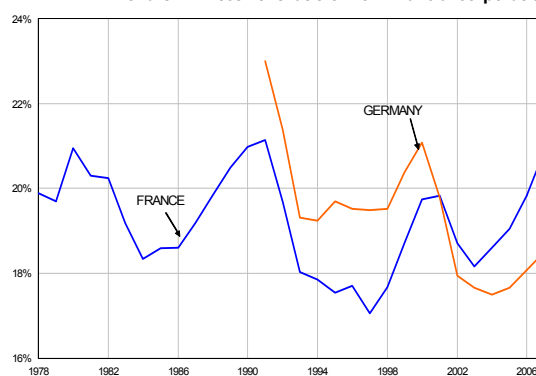
Source: INSEE, Eurostat.

However, steady profit margins and falling saving rates do not appear to have constrained French firms' investment spending. This has indeed been strong since the trough of 2003, lifting the rate of investment by French non-financial corporations to a historical high in 2007, well above the peak reached in the 2000s, and matching those reached in the 1980s and 1990s (see chart 2). Conversely, German corporations' investment rates have tended rather to stagnate at level close to their low point reached in 2004.

Does the ROE of French corporations explain their capacity to attract outside capital and the vigour of their investment spending? With a financing gap (defined as the difference between saving and investment), plus other net capital transfers, rising to 8.2 percentage points of their value added in 2007, French corporations have depended heavily on outside capital to

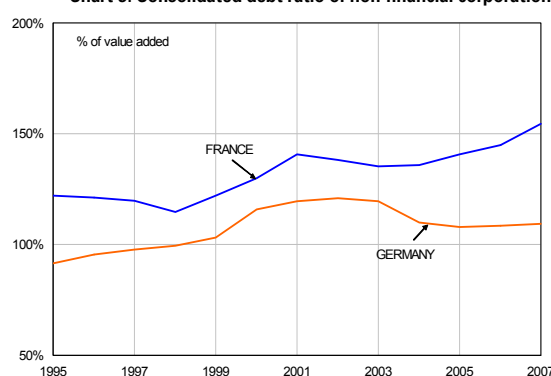
finance their activities², *via* debt and equity, pushing their debt / value added ratios to historically high levels in 2007 (see chart 3).

Chart 2: Investment ratio of non-financial corporations



Sources: INSEE, Eurostat, DESTATIS.

Chart 3: Consolidated debt ratio of non-financial corporations



Source: Eurostat.

In a market economy, however, capital allocation is driven by profit opportunities. It is therefore possible that corporations' *return on equity* (ROE) - a more complete indicator of the efficiency of the production process than *profit margin*, insofar as it also incorporates the productivity of capital, the cost of borrowing and the balance sheet structure - remained at a high level. Moreover, ROE is the key indicator followed by securities analysts and capital markets investors. Finally, this variable is one of the traditional theoretical determinants of investment (alongside outlets).

Here we evaluate the return on equity for French corporations in relation to that of their German counterparts: initially based on the national accounts, and then based on the accounts of manufacturing sector corporations.

- (1) In this paper we refer interchangeably to non-financial corporations or to firms or corporations without additional qualification.
- (2) Not only have they invested heavily, but they have also paid out substantial dividends with the spread of leveraged buy-outs (LBO) (see in particular INSEE (2008): "La situation financière des entreprises: vue d'ensemble et situation relative des PME" (*The financial condition of enterprises: overview and relative condition of SMEs*) in *L'Économie française, comptes et dossier*, INSEE - références).

Box 1: The standard measures of return on equity based on the national accounts

Return on capital employed (ROCE) measures the return generated by corporations on their operating capital. It takes account of all of the resources employed by corporations (capital made available by shareholders, and borrowings from banks and, where applicable, suppliers). More precisely, ROCE is customarily defined as the ratio between operating profit, net of fixed capital consumption (CCF), on the one hand, and capital employed, consisting of all non-financial assets (1), on the other. It can also be analysed as the product of (net) profit margin and apparent productivity of capital (2).

(1) Return on capital employed: $ROCE = \frac{ENE}{CE}$

(2) $RROCE = \frac{ENE}{VAN} \cdot \frac{VAN}{CE} = tm \cdot pK$

ENE represents operating profit net of fixed capital consumption, *CE* capital employed, comprising non-financial assets (i.e. fixed assets, in particular housing, other buildings and civil engineering structures, machinery and equipment, and software; land; inventories; patents and business goodwill); *VAN* is value added net of *CCF*, *tm* is the profit margin (net), and *pK* is the apparent productivity of capital.

Return on equity (ROE) measures the revenue earned by corporations on their equity alone. This focuses solely on the return on the capital provided by shareholders. In formal terms, it is the ratio between operating profit net of fixed capital consumption (CCF), interest expense and tax on the one hand, and equity on the other (3). It can also be written as the sum of economic profitability and a term called the leverage effect, which corresponds to the product of leverage (ratio of debt to equity) and the of difference between economic profitability and cost of borrowing (4). Thus when economic profitability is greater than the cost of borrowing, then ROE exceeds economic profitability, with the resulting surplus revenue reverting to the shareholders alone. The smaller the initial equity, the greater the difference between ROE and ROCE. Conversely, in periods of rising interest rates, the leverage effect turns into a snowball effect as ROE falls below economic profitability.

(3) Return on equity: $RF = \frac{ENE - I - T}{FPN}$

(4) The leverage effect is given by the formula: $ROE = ROCE + (ROCE - i) \cdot \frac{DN}{FPN}$

I represents net interest paid, *T* the current tax charge, *FPN* net equity consisting of shares and net UCITS, net insurance technical reserves and net value (corresponding to the working capital requirement in terms of cash flows), *RE* is economic profitability after tax, *i* the apparent nominal interest rate, and *DN* net debt consisting of net cash and deposits, securities excluding shares, net, and net trade receivables.

2. ROE of French corporations based on the national accounts: a favourable diagnosis after eliminating the impact of revaluations

2.1 The ROE of French corporations is estimated to have declined since 1998 and to have been overtaken by that of German corporations since the turn of the century

ROCE of French corporations was stable at a high level during the 1990s (see box 1 and chart 4). After registering a pronounced rise in the 1980s, fuelled by sustained growth in the profit margin (due to the oil counter-shock and pay restraint, see chart 5), ROCE has stabilised at around 6–7% in the 1990s. This relative stability is thought to have stemmed from stable profit margins and apparent productivity of capital.

However ROCE has declined since its 1998 peak³.

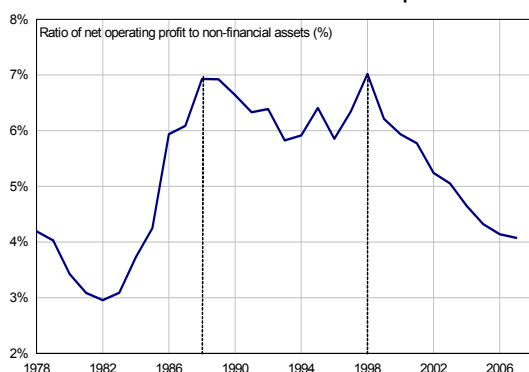
ROCE has thus fallen distinctly (by 3 percentage points) under the combined effects of a sharp drop in apparent productivity of capital (contributing –2 percentage points) and, more marginally, shrinking profit margins (contributing –1 percentage point).

The decline in apparent productivity of capital itself stems from the vigorous growth in the value of non-financial assets under the powerful impact of positive upward revaluations⁴, in particular land and, to a lesser extent, housing and other buildings (see chart 6).

(3) Over the whole of the period 1978-2007, the economic profitability of French non-financial corporations amounted to 5.2% on average, which is close to the level measured by Plihon (2002): "Rentabilité et risque dans le nouveau régime de croissance" (*Return on equity and risk in the new growth regime*) Rapport du CGP and Picart (2004): "Évaluer la rentabilité des sociétés non financières" (*Evaluating the ROE of non-financial corporations*), Economie et Statistiques, no. 372) over the same population.

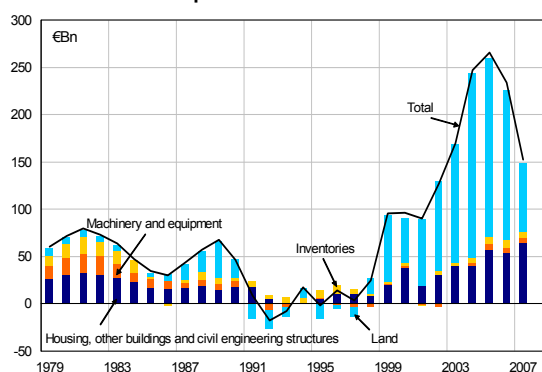
(4) In the national accounts, capital is recorded at its market value (marked to market). Revaluations correspond to the change in market value between two dates. Since 1999, these have accounted for 70% of changes in the value of non-financial assets, on average.

Chart 4: ROCE of non-financial corporations in France



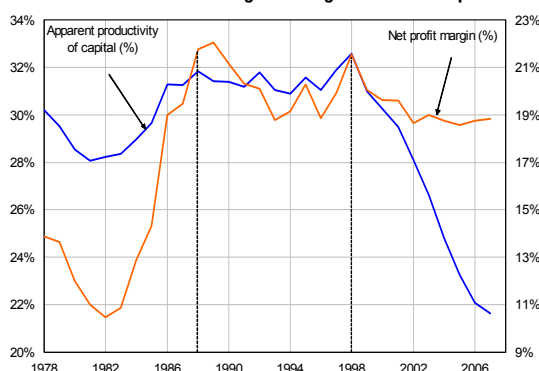
Source: INSEE, DGTPE calculations.

Chart 6: Components of revaluation of financial assets



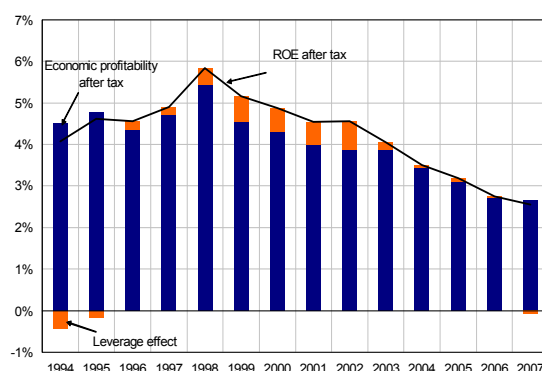
Source: INSEE.

Chart 5: Factors accounting for changes in economic profitability



Source: INSEE, DGTPE calculations.

Chart 7: Breakdown of ROE



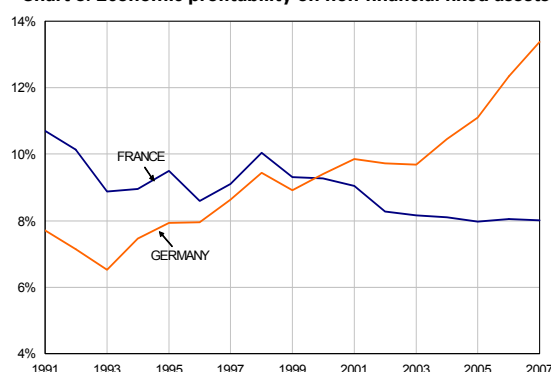
Source: INSEE.

As for the ROCE, the ROE of French non-financial corporations has declined since the end of the 1990s. Certainly shareholders are thought to have benefited from a (slight) positive leverage effect between 1996 and 2006 (of 0.3% on average, peaking at 0.7% in 2002, see chart 7), under the impact of falling interest rates⁵. ROE would therefore have exceeded economic profitability during the period. Nevertheless, ROE has trended downwards since 1998, following economic profitability; in 2007, it even fell slightly below economic profitability under the impact of the monetary tightening.

In terms of international comparisons, it is estimated that their German counterparts caught up with, and even overtook, the ROE of French corporations around 2000⁶.

As a result, while the economic profitability of German non-financial corporations is thought to have been close to that of French corporations at the end of the 1990s, it has overtaken it by around 5 percentage points in 2007 (see chart 8)⁷.

Chart 8: Economic profitability on non-financial fixed assets⁸



Source: INSEE, Eurostat, DGTPE calculations.

However, this difference looks less pronounced than that observed for the profit margin (see chart 1), insofar as the productivity of capital of German non-financial corporations, although rising slightly since the mid-1990s, is estimated to have remained slightly below that of French non-financial corporations over the period under review.

- (5) Nevertheless, even if, as we have seen, the ratio of corporate debt to value added has increased sharply since 2003-2004, leverage, as the ratio of debt to equity, has trended downwards over the period when one considers that the steep rise in the value of equity mechanically reduces the leverage effect and hence ROE.
- (6) Since Germany has no balance sheet accounts (non-financial), these figures are based on an estimate of the stock of capital in volume terms of German non-financial corporations by aggregating gross fixed capital formation flows net of CCE.
- (7) See also Espinoza A. (2006): "La compétitivité de l'économie allemande" (The competitiveness of the German economy), *DPAE*, no. 104, March.
- (8) The only population on which it is possible to calculate ROE in Germany, due to statistical constraints.

Box 2: Alternative ways to measure returns based on national accounts

- Measuring by means of the stock of capital excluding revaluations.

The stock of capital excluding revaluations (referred to as "pseudo-value") for a given year (t) is calculated by applying to the previous year's stock of capital excluding revaluations (t-1) the rate of growth between the stock of capital excluding revaluations for the year in question (t) and the customary nominal stock of capital for the previous year (t-1). By successive iteration, we deduce the following formula:

$$(5) CE_t^{pval} = CE_{t-1}^{pval} + \frac{CE_{t-1}^{pval}}{CE_{t-1}^{val}} \cdot (flux_t + acvaj_t - ccft_t)$$

where $CE_t^{pval(val)}$ represents the capital employed at date t (end of period) in pseudo-value (respectively, in nominal terms), $flux_t$ the real flow of new investments at date t, $acvaj_t$ other volume changes and adjustments at date t and $ccft$ nominal consumption of fixed capital at date t.

- Measurement, including revaluations, within profit.

$$(6) \text{ Economic profitability before tax, including revaluations, within profit: } REr^{AI} = \frac{ENE + r\acute{e}evals}{CE}$$

where $r\acute{e}evals$ represents non-financial revaluations.

2.2 Nevertheless, after correction for the effect of revaluations, the economic profitability of French corporations has actually remained stable at a high level in the 1990s and 2000s

It is hard to measure revaluations, and their economic interpretation with respect to ROE trends is problematic. As seen in the preceding section, the sharp rise in real estate prices in France (built real estate, and above all land) since the end of the 1990s mechanically weakened corporations' ROCE. Reciprocally, the current return to normal of real estate prices ought therefore to boost corporations' ROCE in 2008. In other words, using the customary measurement of ROCE presented here, a decline in the value of their real estate assets should, all other things being equal, raise French corporations' profits in book terms.

These difficulties of interpretation aside, measuring revaluations is tricky in itself, being based on estimates, since prices are directly observable only for a certain number of assets (this applies to non-new non-financial fixed assets especially⁹).

Two alternative measures of economic profitability have been carried out in an effort to remedy this problem arising from revaluation.

In the first place, economic profitability has been calculated corrected for the effect of revaluations; this in fact is reckoned to have been stable for French corporations in the course of the 1990s and 2000s. Measured on a stock of capital excluding revaluations¹⁰, the economic profitability of French corporations has risen sharply in the course of the 1980s, stabilising at a high level in the 1990s (see chart 9). Since 1998, whereas the customary indicator presented in the preceding section has deteriorated by 3 percentage points, this corrected indicator has risen slightly (by 1 ½ percentage point between 2002 and 2006).

In the second phase, it has been measured with the aid of a profit indicator expanded to include revaluations, a method close to corporate accounting practice (see below) and as used by the OFCE (2007)¹¹; here, economic profitability went through a phase of pronounced improvement between the trough of 1993 and 2004, followed by a period of decline until 2007 (see chart 10).

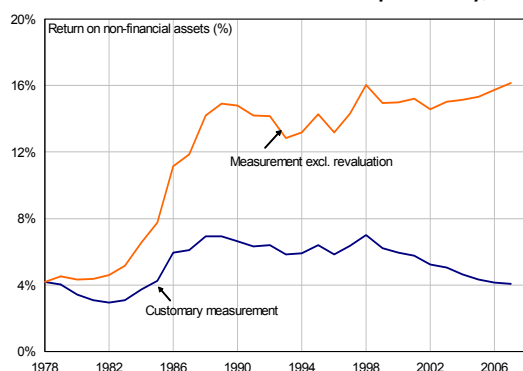
At that date it is estimated to have reverted to its 1998 level.

(9) See INSEE (2008): "Les comptes de patrimoine et de variations de patrimoine" (Long-term asset accounts and variations in long-term assets), Note de base, no. 10, January.

(10) The constructed stock of capital excluding revaluations grows solely in line with the net fixed capital consumption flows adding to it each year.

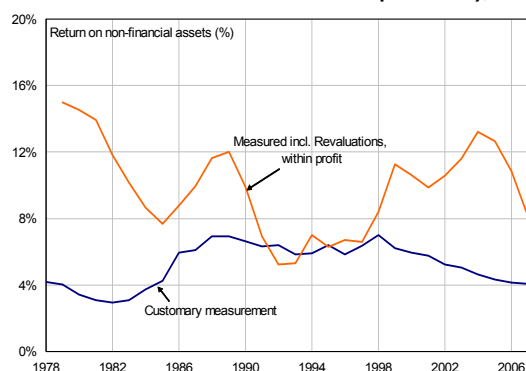
(11) OFCE (2007): "France, relance isolée, perspectives pour l'économie française 2007-2008" (Isolated Revival: Forecasts for the French economy for 2007 and 2008), presentation (and Lettre de l'OFCE, no. 290), October.

Chart 9: Nominal economic profitability, France



Source: INSEE.

Chart 10: Nominal economic profitability, France



Source: INSEE.

3. ROE of French manufacturing corporations measured on the basis of company accounts is relatively stable at a high level, especially relative to Germany

3.1 An evaluation not readily comparable with the evaluation based on national accounts

The aims and conventions of national and private-sector accounts are different. Whereas national accounts seek to provide a consistent overall evaluation of the national economy (and so logically serves as a foundation for macroeconomic studies), the aim of private-sector accounts is to provide a tool for financial analysis of the outcome of corporations' strategic choices. Logically, therefore, the conventions governing these two accounting sources diverge on three broad points, namely:

(i) The two bases measure the stock of capital differently. Whereas national accounts record this at market prices (mark to market), in private accounting¹² it is valued at historical cost (i.e. its entry value in corporate balance sheets).

(ii) Depreciation is calculated slightly differently. In national accounting, depreciation referred to as fixed capital consumption is estimated on a straightline basis. In private accounting, on the other hand, depreciation charges, which are the charges effectively recognised in the company accounts, are tax optimised.

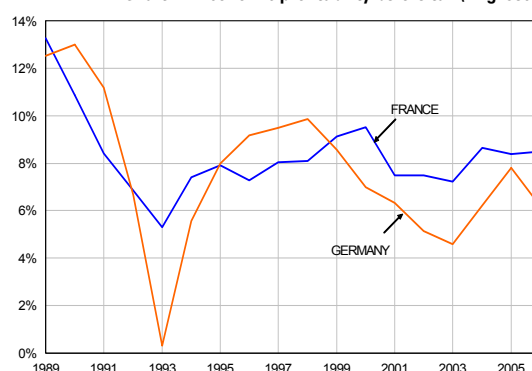
(iii) Finally, the two bases define profit differently. Whereas in national accounting, EBITDA or saving does not take account of revaluations (which are recorded in the balance sheet accounts), operating profit or net income is recognised net of additions to and reversals of provisions for risks and charges (or provisions, under IFRS) (which are akin to revaluations in the national accounts¹³).

3.2 The ROE of French manufacturing corporations is relatively close to that of their German counterparts

The economic profitability of French and German manufacturing corporations is reckoned to be fairly close. However, the economic profitability of French manufacturing corporations has overtaken that of their German counterparts since 1999.

Between 1989 and 2006, the economic profitability (before tax) of manufacturing corporations averaged 8.3% in France versus 7.6% in Germany (cf. chart 12).

Chart 11: Economic profitability before tax (mfg. sector)



Source: BACH (European Commission).

While these ratios moved fairly comparably in the two countries between 1989 and 1998, their profiles have diverged somewhat in subsequent years. In France, the economic profitability of manufacturing corporations was more or less stable around 8% between 1998 and 2006; in Germany, on the other hand, it retreated significantly

(12) At least in the case of unconsolidated company accounts governed by French accounting law.

(13) Even so, they are not strictly comparable. In the private accounting system, only realised gains are recorded in the income statement, while provision is made for losses as soon as they become probable. In the national accounts, on the other hand, positive and negative revaluations are treated symmetrically.

over the period (by nearly –4 percentage points). The divergence between trends in ROE ratios calculated since the end of the 1990s is accounted for by divergences in the apparent productivity of capital: whereas this declined slightly in France, it declined sharply in Germany. Nevertheless, this fall is probably artificial in part. To a large

extent, it can be accounted for by the marked increase in the "groups and associates" debt item (on the denominator side of the ROE ratio) as a consequence of the break-up of certain entities in Germany in the late-1990s, leading to an increase in cross-shareholdings¹⁴.

Box 3: Measuring profitability based on company accounts

The evaluations presented in this section are based on the European Commission Bank for the Accounts of Corporations Harmonised (BACH) database. This database aggregates and harmonises the company accounts (unconsolidated) of corporations in eleven European Union countries by sector of activity over the period 1989-2006. We focus here on the manufacturing sector since it is highly representative, samples for the service sectors being smaller, particularly in Germany. In the case of France, the BACH data are drawn from the Banque de France Fiben database, which includes the data of French corporations and the subsidiaries of foreign corporations operating on French soil :

Economic profitability and return on equity are defined here as follows:

$$(7) \text{ Economic profitability before tax: } ROCE^{AI} = \frac{RNE}{CE}$$

where *RNE* represents operating profit net of allocations to /reversals of provisions for depreciation and to provisions for risks and charges, and *CE* capital employed comprising net debt and shareholders' equity (in accounting terms these correspond roughly to the sum of real estate, plant and equipment, inventories, and trade receivables). **Ideally, net debt should be confined to net financial borrowings; however, they are not recorded separately for Germany in BACH.**

$$(8) \text{ ROE after tax: } ROE = \frac{(RNE - CFN) \cdot (1 - \tau)}{CP}$$

where *CFN* represents net interest expense, τ the apparent tax charge, and *CP* shareholders' equity. The numerator corresponds to net profit, excluding only exceptional or non-recurring items.

Several factors make it difficult to compare the evaluation of ROE proposed on the basis of these company data with that derived from the national accounts. The scope covered by the term capital is not strictly comparable (non-financial assets in section 2.1 versus non-financial assets expanded to include certain financial assets, including net accounts receivable in this section). Moreover, whereas in national accounting it is relatively easy to calculate ROE ratios for all corporations and to make European comparisons^a, there is no directly aggregated and harmonised source in private-sector accounting. Indeed, most evaluations in the literature are confined to company segments, e.g. quoted corporations^b, large corporations or SMEs^c, and manufacturing corporations^d, as here).

a. National accounting systems harmonised at the European level.

b. See for example Delaveau, B. and Du Tertre, R., 2007, "Quelle appréciation porter sur le redressement de la ROE des entreprises françaises cotées en Bourse?" (*Assessing the upturn in ROE of quoted French corporations*), *Note de Veille du Centre d'Analyse Stratégique*, no. 60, May.

c. See for example, Picart, C., 2008, "Les PME françaises: rentables mais peu dynamiques?" (*French SMEs: profitable but sluggish*), Document de travail de l'INSEE, G 2008 / 01, February.

d. See for example, Bataille E. (2005): "La rentabilité des entreprises : une approche à partir des comptes nationaux", *Bulletin de la Banque de France* n°134.

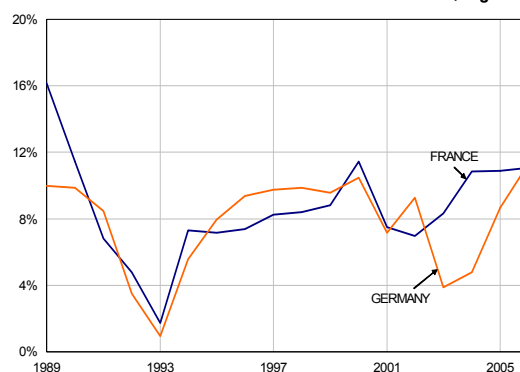
(14) For example, Deutsche Bahn (the German Federal Railway) in 1999, which was replaced by around twenty private and public-sector corporations. See Bataille E. (2005) : "La rentabilité des entreprises: une approche à partir des données individuelles agrégées de la base BACH" (*Corporate profitability: an approach using aggregated individual data from the BACH database*), *Banque de France Bulletin*, no. 134, February) and Durant D. (2005): "La rentabilité des entreprises, une approche à partir des comptes nationaux" (*Corporate profitability: an approach using national accounts data*), *Banque de France Bulletin*, No. 134, February.

The ROEs of French and German manufacturing corporations are therefore relatively close in terms of their level; however, their profiles are thought to have diverged since the early-2000s.

Until 2001, the ROE (after tax) of French manufacturing corporations was close to that observed in Germany, both in terms of level (around 8% on average) and trend (see chart 13). Nevertheless, whereas ROE has continued to rise steadily in France since the trough of 2001-2002 (under the combined impacts of rising economic profitability and leverage), in Germany it fell sharply in 2003, but has risen subsequently.

The steep fall in the ROE of German manufacturing corporations in 2003 stemmed from the pronounced decline in interest and dividend income in that year, no doubt reflecting the bursting of the stock market bubble of the early-2000s (share prices reached their low point in 2003). This divergence in ROE trends between France and Germany is awkward to interpret, however, since it could equally well reflect either Germany's strong exposure to the stock market shock of the early-2000s or differences in loss provisioning policies in the two countries. In 2006, the ROE of manufacturing corporations in France and Germany had converged at the same level.

Chart 12: ROE after tax (mfg. sector)



Source: BACH (European Commission).

Although French corporations' profit margins have remained virtually stable, they have invested heavily since the trough of 2003. In Germany, on the other hand, corporate investment has barely risen since its low point in 2004, despite steadily rising profit margins and savings. A review of the economic profitability and ROE of French corporations shows that the fact that these remained at a high level throughout the 1990s and 2000s could explain their capacity to attract outside capital and hence their high rate of investment. In the manufacturing sector, French corporations do not appear to have lost ground relative to their German counterparts in terms of their return on equity.

Stéphanie PAMIES-SUMMER

Publisher:

Ministère de l'Économie,
de l'Industrie et de l'Emploi
Direction Générale du Trésor
et de la Politique économique
139, rue de Bercy
75575 Paris CEDEX 12

Publication manager:

Philippe Bouyoux

Editor in chief:

Philippe Gudin de Vallerin
+33 (0)1 44 87 18 51
tresor-eco@dgtp.e.fr

Layout:

Maryse Dos Santos
ISSN 1777-8050

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