

French Firms in the face of the 2008/2009 crisis

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During the 2008/2009 crisis French businesses were hit by a slump in domestic and world demand, while French banks encountered difficulties that encouraged them to tighten their credit conditions.

This crisis strongly affected the number of business start-ups as well as the initial size of these start-ups; their growth was also slashed, in particular that of the most promising among them.

In 2008 and 2009 subsidiaries of groups experienced a sharper drop in activity than independent enterprises, particularly in the manufacturing industry. The companies that were least likely to be affected by financial constraints were those that most adjusted their short-term output, as well as their employment and investment levels. These elements suggest that in France, unlike in the United States, enterprises suffered more from a demand shock than a credit shock.

A worldwide shock with a lesser effect on France, relatively speaking, than on its main economic partners

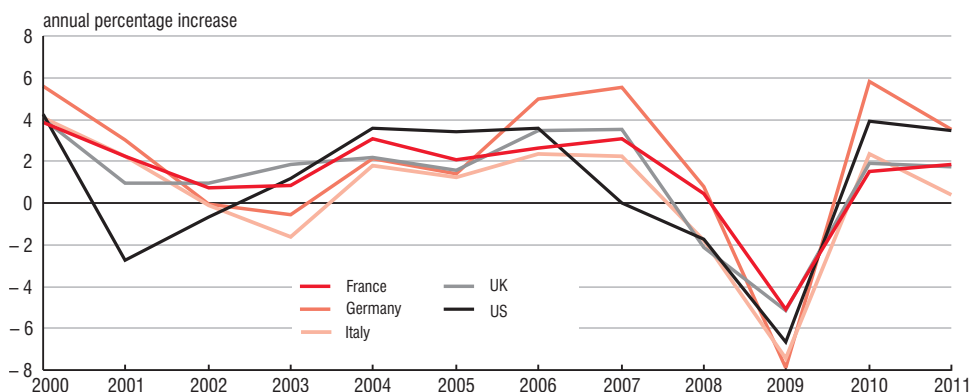
Like that of its main industrialised partners, the French economy was hard hit by the downturn in 2008. Activity mainly shrank in Q4 2008 and Q1 2009, when the world stock markets plunged following the collapse of Lehman Brothers in mid-September 2008.

In the short-term, however, French companies were relatively less affected than their European and American counterparts : the value-added of non-financial companies grew slightly in volume between 2007 and 2008 in France (+ 0.5%), as it did in Germany (+ 0.8%), whereas it contracted in Italy (- 1.8%), in the United Kingdom (- 2.1%) and in the United States (- 1.7%, *figure 1*). In 2009 too, the contraction in value added was not as sharp in France (- 5.1%) as in Germany (- 7.9%), the United States (- 6.6%) or Italy (- 7.5%). British companies saw a similar trend to French businesses (- 5.1%).

This uneven situation from country to country can be ascribed to various factors : the difference in scale of the demand shock, the heterogeneous credit supply shock that companies suffered in terms of external financing, particularly from banks; and the differences between the policies implemented by national governments in response to the crisis (*insert 1*).

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1. Value added produced by non-financial corporation : international comparisons



Coverage : Non financial corporations.

Interpretation : in Germany, the total value added produced by non-financial firms decreased by 7.9% in 2009 as compared to 2008.

Note : Value added has been deflated by the VA price index provided in national accounts.

Source : OECD.

Insert 1

In France, a very business-focused response from the State

Intervention strategies in response to the crisis (amounts committed, schedule of targets) differed from State to State. In 2008 and 2009, the French stimulus plan corresponded to around 1.5 GDP points, that is, higher than the amounts committed in Italy and Great Britain, but lower than those of the United States or Spain (OECD, 2009a and 2009b, IMF, 2009 and 2012, Minefi, 2010). On average, the countries with larger automatic stabilisers opted for smaller-scale discretionary measures.

The countries affected by the bursting of property bubbles (USA, UK, Spain, Ireland) set up stimulus plans as early as 2008 (for at least 15% of the total

amounts), while the other OECD countries only did so in 2009. In France, 75% of the total amount was distributed in 2009 and 25% in 2010.

Lastly, the French plan was more focused on businesses and investment than the American and British plans, which were more targeted to households (OECD, 2009b, IMF, 2009b). Among other things, it included measures to support the financing and cash-flow of SMEs (credit mediator; interventions targeted to the banking sector), sectoral measures (benefiting the automotive industry, for example), and an infrastructure investment plan.

A sharp contraction in domestic demand and, above all, in world trade

One of the most notable aspects of the 2008/2009 downturn was the collapse of world trade¹, which fell by 10% overall in 2009, according to IMF estimates (2012). The smaller participation by French companies to world trade (combined with their lower level of specialisation in the manufacturing industry) kept them relatively better protected from the massive contraction in this demand component than their German counterparts, for example. The contraction in exports in France came to 3.1 GDP points in 2009, and the concomitant fall in imports restricted the negative contribution of world trade to just 0.5 GDP points.

Furthermore, domestic demand was not affected by the massive wealth effects observed in some countries (USA, UK, Spain), where certain categories of over-indebted agents proceeded to a significant correction of their balance sheet [Fortin and Bouveret, 2009].

1. The weight of exports in GDP was 27% in France in 2008 against more than 47% in Germany.

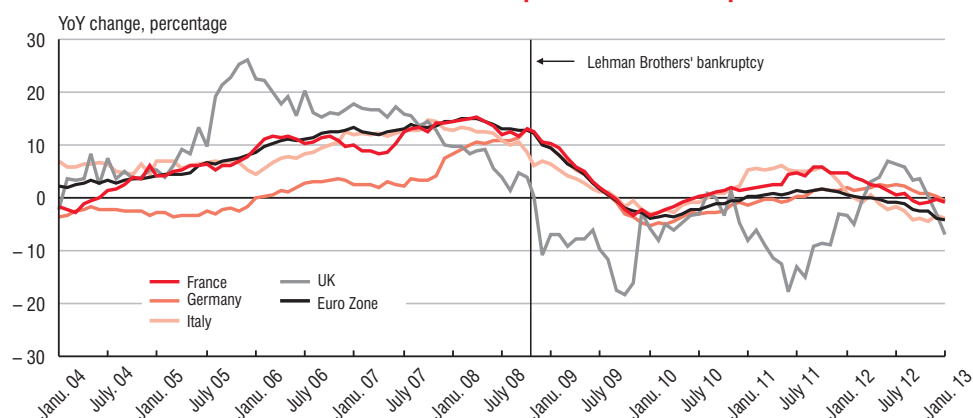
Nonetheless, the drop in French GDP was exceptionally large (- 3.1%, a figure unmatched over the last 50 years). Corporate behaviour contributed heavily to this drop : the decline in investment by non-financial companies contributed - 1.5 GDP points and the mass destocking trend - 1.2 GDP points.

A drastic reduction in lending to companies, although with little short-term influence on the capital structure of French companies

Outstanding bank loans to companies collapsed in the main European countries. This occurred in 2009 at the latest and as early as 2007 in Italy and the United Kingdom (figure 2).

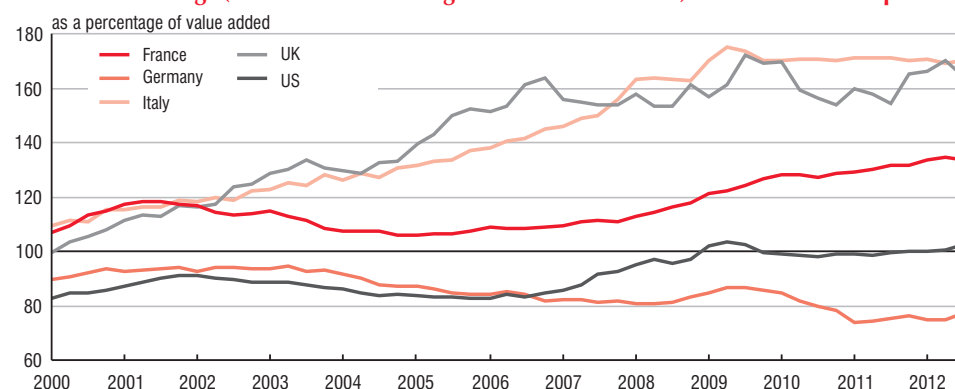
However, the outstanding debt of non-financial companies diminished less than their value added, so that the average debt ratio of non-financial companies continued to grow in France after Q4 2008, whereas it fell in all the other countries under study (figure 3).

2. Credit distributed to non-financial firms - comparison across European countries



Coverage : Credit distributed by financial institutions (excluding central banks) to non-financial firms.
 Interpretation : credit distributed to German non-financial firms decreased by 5.2 percentage point in January 2010, as compared to January 2009.
 Source : Banque de France.

3. Financial leverage (defined as outstanding debt over value added) - international comparisons



Coverage : Non financial corporations.
 Interpretation : in the first quarter of 2009, the outstanding debt of French non-financial firms represented 121% of the value added they produced.
 Source : Banque de France.

We refer to a "demand shock" when companies adjust their activity downwards because of a fall in orders. However, when the drop in activity stems from companies' inability to complete their projects due to lack of financing (in this case, because the banks exposed to the financial crisis restricted access to credit), we refer to a "credit shock". The macroeconomic elements above suggest that in France, companies suffered more due to a demand shock than to a credit shock. An analysis of the individual behaviour of businesses in France using microeconomic data sources allows refining the diagnostic : in the same way as the impact of the crisis on various long- and short-term strategy components, the scale of the supply and demand shocks may differ substantially according to the population of enterprises under consideration. In particular, the French productive fabric is characterised by the significant economic weight of groups in terms of value added and employment, contrasting with the significant demographic weight of independent legal units [Béguin et al., 2012] : in 2009, while only 6% of legal units belonged to a group, they employed 64% of employees and produced 70% of value added.

In contrast, the renewal of the production fabric² was in the main achieved by 94% of independent companies, often very small and without any access to the internal capital markets of groups : these companies might have been affected differently by the 2008 shock.

The crisis significantly reduced the number of independent business start-ups and their initial size

Data from the DADS and EPURE datasets contain information on employees and the companies they work for; this allows a detailed analysis of business start-up processes and the growth rate of these businesses at the start of their lifecycle (*insert 2*). The analysis conducted here covers independent businesses that employ at least one person.

In an unfavourable macroeconomic context, it is expected that numerous entrepreneurs would tend to postpone or abandon their decision to start up a business, or else do it on a smaller scale than previously planned (size effect). Conversely, if only the most productive companies remain capable of entering the market (selection effect) and entrepreneurs barely adjust the size of their projects when they decided to deploy them (limited-scale size effect), then the average size observed at start-up is likely to increase when the cycle is low. We assess the respective contribution of these two mechanisms thanks to a combined analysis of the start-up rate and the initial size of companies.

The number of start-ups of businesses employing at least one person began to fall in number in 2008 in the non-agricultural market sector (*figure 4*). This reduction was much more marked in 2009, which would tend to show a stronger selection effect during the start-up process; nevertheless, the number of employing start-ups in 2009 was still slightly higher than that of 2003

4. Creations of employer firms in the for-profit, non agricultural industries, from 2003 to 2009

	2003	2004	2005	2006	2007	2008	2009
Number	76,437	85,233	92,150	90,688	92,178	89,866	79,498
Index (base : 2003)	100	112	121	119	121	118	104

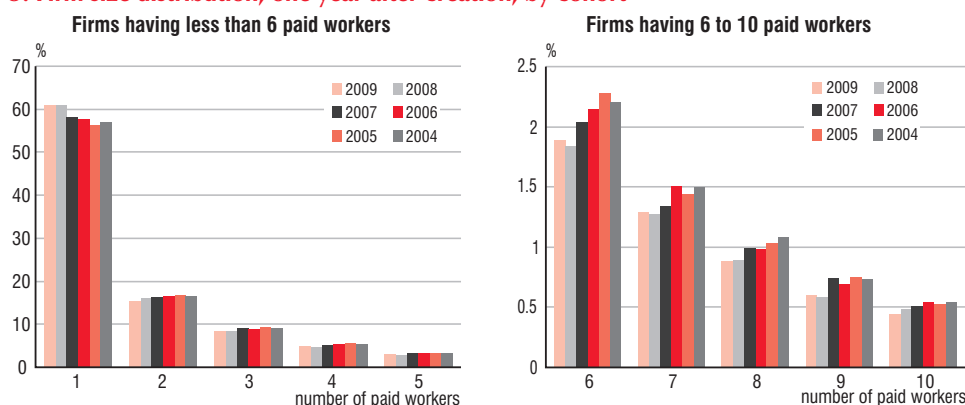
Coverage : French economy; firms that are active in the for-profit, non-agricultural industries and that are employer within the first year after creation. Affiliates of corporate groups are excluded.

Source : Insee, DADS dataset and LIFI survey.

2. The vast majority of "real" business start-ups and destructions occur among independent "legal units". [Picart, 2004; Duhautois and Lagarde, 2004; Accardo and Cordellier, 2013].

The businesses started up in 2008 and 2009 were also smaller, in terms of employment, than those started up previously : slightly more of them were started up with just one employee, and slightly fewer of them with more than two employees (*figure 5*). The differences are significant, as shown by χ_2 tests applied to the deviations, taken one by one, in the size distributions of 2002 to 2007 cohorts relative to those of 2008 or 2009 cohorts³. The size effect was thus very important, and in all cases predominated over any selection effects.

5. Firm size distribution, one year after creation, by cohort



Coverage : French economy; firms that are active in the for-profit, non-agricultural industries and that are employer within the first year after creation. Affiliates of corporate groups are excluded.

Interpretation : Among firms that were created in 2009 and were still active in 2010, 1.9% have 6 (full-time equivalent) paid workers.

Source : Insee, DADS dataset and LIFI survey.

Insert 2

Analysis of the business start-up and growth processes : sources and measurement

The analysis of the business start-up and growth processes is based on DADS data (annual employer declaration data) and that of the EPURE (extension of the income and employment project), which come from the payroll tax forms filled out by companies. The only companies considered were those that are independent (not belonging to any group). They were isolated by means of the LIFI survey (survey on financial ties). More precisely, to study the growth between years n and $n+1$ of companies that were independent in year n , companies belonging to a group in n were thus excluded, although companies that were independent in n and joined a group in $n+1$ were retained. However, they were excluded for the analysis of later transitions.

The scope of analysis includes sole proprietorships and commercial companies belonging to the non-agricultural market sector and employing at least one salaried employee. This latter criterion causes a sharp divergence between this scope and the far broader scope of series of business start-ups published by the

Insee, and that of Accardo and Cordellier (2013). The concept of size used is that of full-time equivalent salaried employment.

A company is considered as started up in year n when it is present in the DADS data in year $n+1$. Although a number of businesses are not included (those that do not survive from n to $n+1$), this methodology does account for the numerous companies that did not have any employees the first year (and hence did not feature in DADS that year) but hired staff after a few months.

As an illustration, for 2009 this methodology gives us 79,498 independent business start-ups. This corresponds to 67,594 independent companies that started up with employees in 2009, minus the 6,488 businesses that disappeared between 2009 and 2010, plus the 18,392 companies started up in 2009 but which only had employees from 2010.

Initial size is measured at the age of one year, for the same reason : many companies have no employees in the year of their creation but hire the year after.

3. For this test all companies with at least 21 employees are grouped together in a single cell, while one cell per size is retained for the rest of the distribution.

The crisis also slowed down growth in young companies

The growth of companies also suffered due to the crisis : irrespective of age, companies saw weaker growth in their workforce in 2009 and 2010 than prior to the crisis. However, this decline in growth mostly affected young companies, which normally enjoy higher growth rates. Companies can be ranked according to their "growth potential" measured from their workforce growth dynamic in the course of the period under analysis, taking account of the average dynamic for companies in the sector (*insert 3*). We find that among young enterprises, it was respectively those with the highest and lowest growth potentials that most suffered in the crisis; companies with intermediate growth potential were almost unaffected (*figure 6*).

Furthermore, Fougère *et al.* (2012) show those young companies saw a sharp rise in excess mortality because of the crisis, in the order of 30% in the trade sector and almost 50% in manufacturing industry.

Insert 3

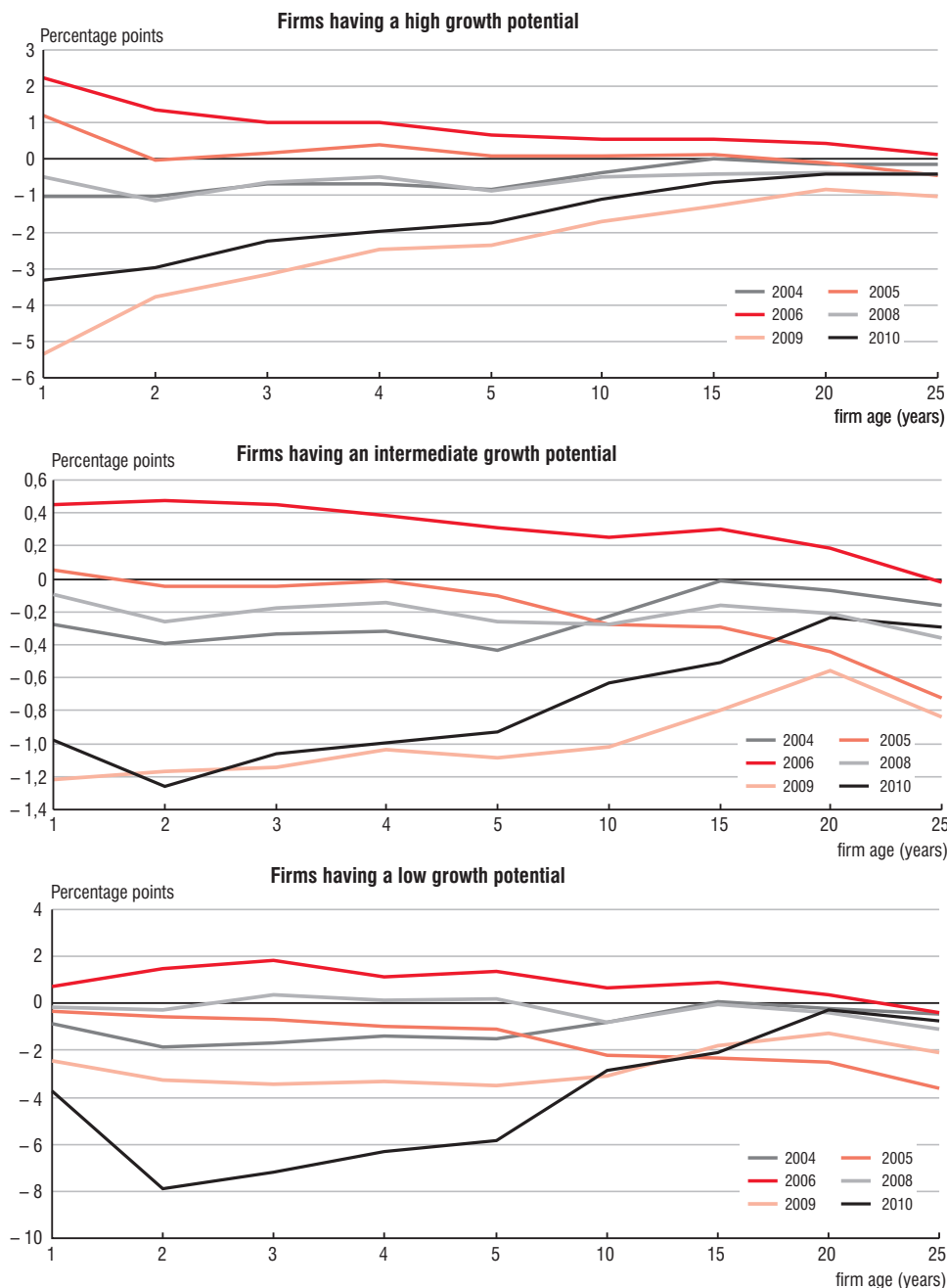
Econometric modelling of firm growth

An econometric model inspired by Evans (1987) is used to analyse heterogeneity in the effects of macroeconomic shocks on corporate growth. Through this methodology we assess the economic cycle effect for different company populations defined according to their "growth potential", and account for the fact that a company can disappear or be created. The specification models the quantiles of the logarithm for company size (quantile regression) and takes the following form :

$$\ln(S_{n+1}) = c(U) + \alpha(U) \cdot \ln(S_n) + X' \beta(U) + \sum_{k=2004, k \neq 2007}^{2010} \gamma_k(U) \cdot (n+1 = k)$$

where S_n is firm size in year n , and X the industry where the company operates. The company's "growth potential" U is the conditional quantile in $n+1$, that is, the "ranking" (ranging between 0 and 1) of companies, ranked according to the dynamism of their growth. At given size S_n , sector X and observation period n , having a higher growth potential U leads to a larger size at date $n+1$. This variable U captures the effect of all the unobserved company characteristics likely to affect growth over the period. The coefficients $\gamma_k(U)$ measure the scale of macroeconomic effects on corporate growth, with 2007 as the reference year. These effects are estimated from individual company data for each quartile of growth potential U , and by age level (different estimates are made for companies aged 1 year, 2 years, etc.). They are shown in figure 6 according to age and growth potential. We can see that the economic cycle was less favourable to companies with high growth potential (belonging to the last distribution quartile of U) in 2009 than in 2007, with 2010 being slightly better. The coefficients obtained fall sharply with age until they reach zero : this suggests that the effect of the crisis was greater for the youngest companies, which did not benefit from a catch-up effect. The same is true, although in a lesser proportion, of companies with intermediate or low growth potential. For companies with lower growth potential, 2010 was even more difficult than 2009, at least among young companies.

6. Annual growth of firms, across firm age classes (as compared to growth in 2007)



Coverage : French economy; firms that are active in the for-profit, non-agricultural industries and that are employer within the first year after creation. Affiliates of corporate groups are excluded.

Interpretation : "All else equal", firms having a high growth potential and which had been created in the previous year (1 year old) grew up by 3.3 percentage point less between 2009 and 2010, as compared to their growth between 2006 and 2007..

Note : These figures describe firm growth "all else equal" between year n-1 and year n, as compared to growth between 2006 and 2007. The definition of "growth potential" (75th, 50th, 25th quantiles) and the estimation method is described in insert 3.

Source : Insee, DADS and Epure datasets; LIFI survey.

Among "mature" companies, affiliates of groups reduced their volume of activity by more than independent companies

The SUSE and ESANE data sources (*insert 4*) taken from the accounting documents filed by companies with the tax administration serve to enrich the diagnostic by comparing legal units belonging to groups with independent companies in terms of their operating accounts and financial accounts.

In the trade (section G of the NAF rev. 2 classification of activities), manufacturing industry (section C) and services to businesses ("specialised, scientific and technical activities, section M) industries, the volume of activity measured by revenue fell more sharply among affiliates of corporate groups than among independent enterprises (*figure 7*). The 2009 shock was particularly big in the manufacturing industry and for enterprises in the trade sector, where the contraction in revenues exceeded 10% for groups and stood at around 7% for independent companies, i.e. twice as much as in the business services sector.

Adjustments made to employment were also very different according to company type and sector (*figure 8*). The manufacturing industry saw by far the most negative trend, particularly in 2009 and 2010, but in this sector employment was already experiencing a downward trend before the shock occurred.

Insert 4

Statistical sources and methodology for the analysis of real and financial strategies of enterprises

Company tax reports (full balance sheet, profits and losses statement) contain extremely rich information about companies' choices in terms of financing, production and investment strategies. Here we use information from the most detailed tax reports from companies subject to the "Actual Profits" taxation scheme (BRN). The corresponding files cover the years 2003 to 2010. We restrict the analysis to the manufacturing (section C) trade (section G) and business services (section M) industries, for which coverage is the most comprehensive: this taxation system is compulsory for firms making revenue of over 234,000 Euros excluding VAT in the services industries, and 777,000 Euros in other sectors; but smaller companies may choose it as an option. This source therefore offers almost total coverage of the legal units of relatively large size but less coverage of smaller companies: in 2003, the coverage rate was over 80% for companies employing more than 10 people and almost 100% for those with more than 20 employees.

These files are then matched to the DADS files, as well as to the LIFI survey (financial ties) in order to reconstruct the structure of groups and analyse the functioning of internal capital markets.

The resulting file is used to describe the impact of the crisis on various dimensions of corporate strategies, financial or "real" (e.g. relating to investment or employment). We implement a "difference in differences" estimation strategy that is very simple and intuitive. It is based on comparisons of variations in indicators between different populations of companies, which (we assume) would have been exposed differently to a potential reinforcement of credit constraints.

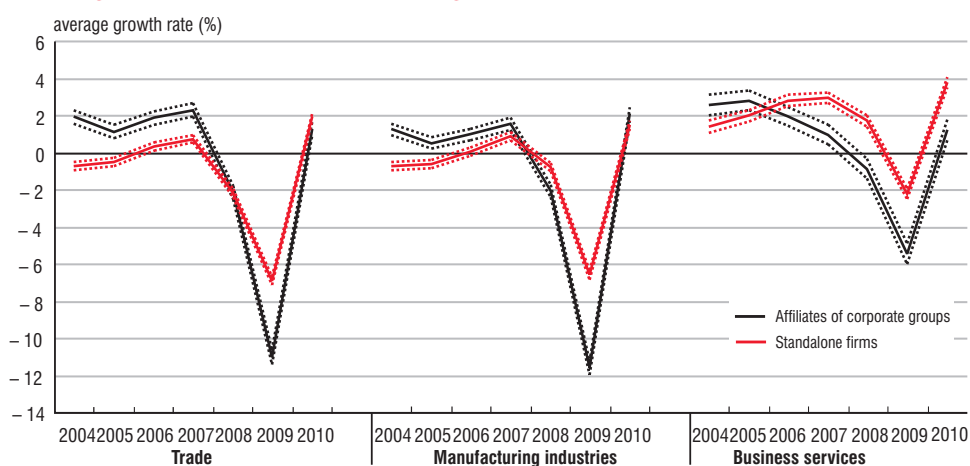
We introduce a rich set of control variables into the regressions (firm fixed effects controlling for differences between units that are stable over time, firm age, trends in workforce growth, capital intensity and productivity) which allow an "all else being equal" analysis. All the regressions also integrate the logarithm of global value added produced in the industry to which each enterprise belongs in order to control for potential demand shocks that are specific to each sector.

To interpret the results of our regressions we assume that for given size, sector and level of productivity, enterprises globally face the same demand shocks. The differences in growth or adjustments are then interpreted as the impact of potential financing constraints, or more precisely of their amplification, on the various strategies that we analyze.

Conversely, in the trade and services to businesses sectors the 2008 downturn had limited effects : growth in employment was reduced among independent companies, while companies belonging to a group only reduced their employment slightly.

Across all sectors, firms belonging to groups made larger adjustments to both their volume of activity and their level of employment (and thus payroll). As a result of this dual behaviour, the margin rate, defined as the ratio of gross operating profits (value added minus payroll) to

7. Sales growth in the trade, manufacturing and business services industries

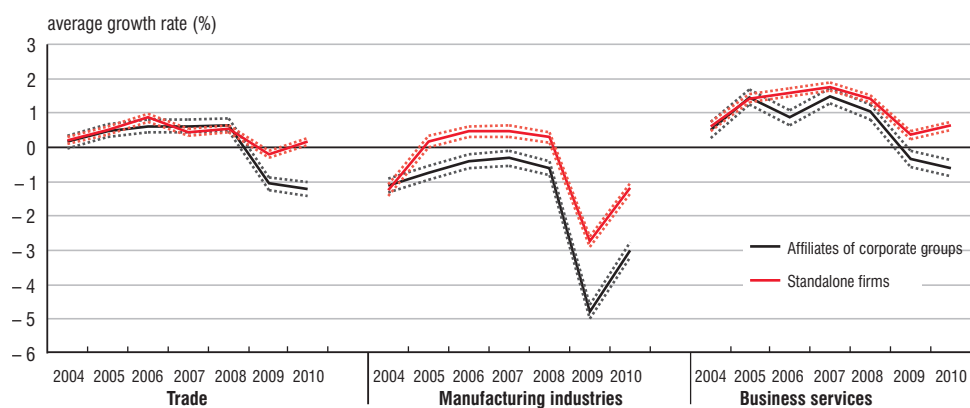


Coverage : French economy, firms reporting to the "BRN" (Bénéfice Réel Normal) tax scheme and active in the trade (NAF G), manufacturing (NAF C) and business services (NAF M) industries.

Interpretation : In 2007, the average sales growth in the trade industry was 2.4% among affiliates of groups, and 1% among standalone firms. When the confidence intervals delimited by the dashed lines do not overlap, then the average growth rates in the two groups are statistically different.

Source : Insee, BRN and Esane Information systems; LFI survey.

8. Employment growth in the trade, manufacturing and business services industries



Coverage : French economy, firms reporting to the "BRN" (Bénéfice Réel Normal) tax scheme and active in the trade (NAF G), manufacturing (NAF C) and business services (NAF M) industries.

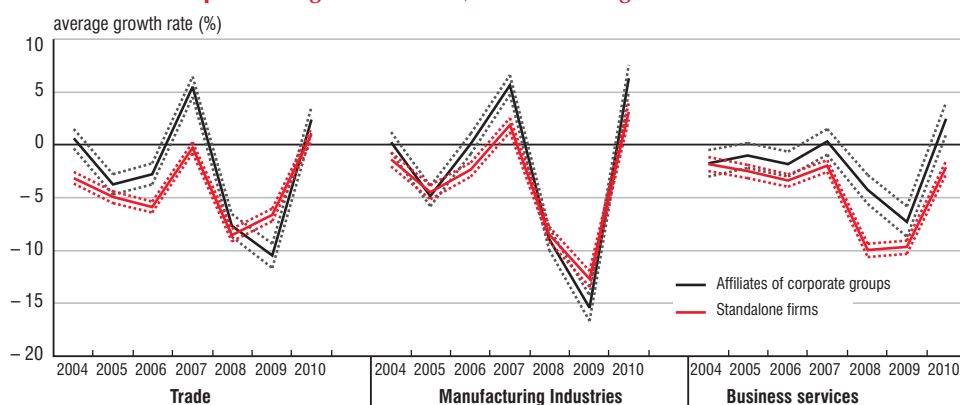
Interpretation : In 2007, the average employment growth (in full-time equivalent) in the trade industry was 0.6% among affiliates of groups, and 0.4% among standalone firms. When the confidence intervals delimited by the dashed lines do not overlap, then the average growth rates in the two groups are statistically different.

value added, did not vary in a particularly contrasting manner between groups and independent companies (figure 9).

Independent enterprises in the business services sector were less successful in protecting their margins, but the most significant fact is still the scale of the drop in margin rate in the manufacturing industry, both for legal units belonging to groups and for independent enterprises⁴.

Industry level heterogeneity in terms of variation in margin rate is not reflected in the average variation in investment (figure 10). In all sectors the amounts invested fell by around

9. Evolution of the profit margin in the trade, manufacturing and business services industries

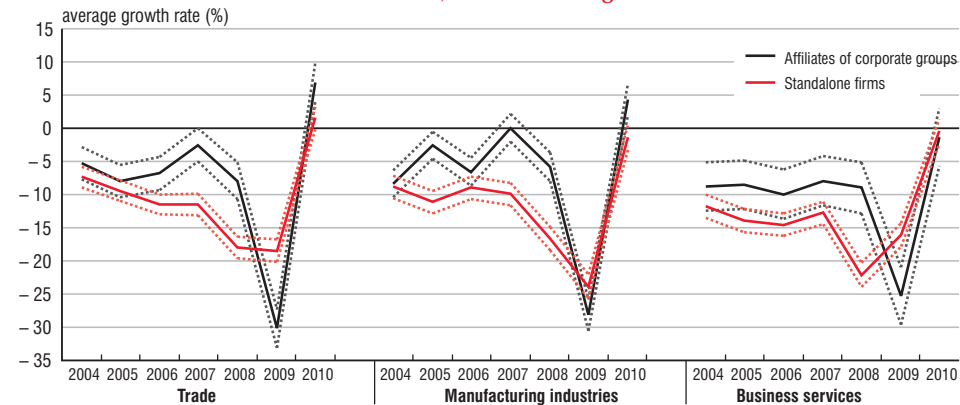


Coverage : French economy, firms reporting to the "BRN" (Bénéfice Réel Normal) tax scheme and active in the trade (NAF G), manufacturing (NAF C) and business services (NAF M) industries.

Interpretation : In 2007, the profit margin in the trade industry increased by 5.5% among affiliates of groups, and decreased by 0.3% among standalone firms. When the confidence intervals delimited by the dashed lines do not overlap, then the average growth rates in the two groups are statistically different.

Source : Insee, BRN and Esane Information systems; LIFI survey.

10. Evolution of investment in the trade, manufacturing and business services industries



Coverage : French economy, firms reporting to the "BRN" (Bénéfice Réel Normal) tax scheme and active in the trade (NAF G), manufacturing (NAF C) and business services (NAF M) industries.

Interpretation : In 2007, investment in tangible assets decreased by 2.5% among affiliates of groups, and by 11.5% among standalone firms. When the confidence intervals delimited by the dashed lines do not overlap, then the average growth rates in the two groups are statistically different.

Source : Insee, BRN and Esane Information systems; LIFI survey.

4. According to the national accounts, the margin rate of non-financial companies deteriorated once again in 2011, after the temporary recovery in 2010.

30% in 2009 in subsidiaries of groups, before a slightly positive or barely negative variation in 2010. Once again, this slump tended to be less severe among independent companies.

A predominant demand shock?

All these aggregated trends suggest that subsidiaries of groups, which are generally larger in size and have access to an internal capital market, and are thus potentially less exposed to credit constraints, suffered more during the crisis than independent companies. It appears that independents continued to finance their projects, perhaps thanks to the many support programmes for access to credit and liquidity implemented during this period and mainly targeted to SMEs (*insert 1*).

According to economic analysis (*insert 5*), this asymmetric adjustment indicates that the demand shock suffered by companies predominated over the credit shock. Moreover, subsidiaries of groups and independent enterprises suffered different demand shocks because of their differentiated exposure to international trade.

We complement the descriptive approach by regressions that allow an "all else being equal" approach. These regressions serve to compare enterprises that are active on the same markets and that initially (before the crisis) present an identical level of efficiency.

The criterion of being backed (or not) by a larger corporate group is a good indicator of probable exposure to financing constraints [Garicano and Steinwender, 2012]. However, affiliates of corporate groups and independent enterprises are only comparable in terms of their "real" corporate strategies, but not in terms of their financial strategies. Indeed, the structure of the balance sheets of groups is very specific as it is significantly affected by intra-group holdings and other borrowings. Therefore, to refine the analysis we use two

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Credit constraints and credit supply shocks

The notion of credit constraints is not intuitive and it is also extremely difficult to measure their magnitude empirically. Indeed a company that is refused a loan is not necessarily constrained : the loan might have been refused simply because the bank deemed the project less profitable than others submitted to it. Credit constraints appear when, at equilibrium, certain projects are not financed despite being socially profitable. This is the case in situations of information asymmetry : Stiglitz and Weiss [1981] show that when investors are not able to assess the profitability or degree of risk of each project submitted to them by entrepreneurs, then it is optimal for them to partially ration the credit.

In this situation, the credit supply corresponds to the total amount of credit offered by banks (according to the interest rate paid), while rationing, which measures the magnitude of credit constraints, corresponds to the difference between supply and demand for a given for given levels of expected profitability and risk. In other

terms, credit rationing corresponds to the proportion of businesses that do not obtain credit for projects that are similar (from the investors viewpoint).

In such a setting, we can show that a reduction in the credit supply results in an increase in the number of rationed companies. We use this result to empirically analyse the compared scale of credit supply shocks and demand shocks on the final goods market, in the context of the 2008 crisis. Indeed, if the supply shock dominated, then the companies that were most likely to be financially constrained before the crisis are those that must have suffered most from the tightening of credit, and hence suffered most during the crisis in terms of production volume and long-term investment capacity. In contrast, if the demand shock dominated, these "credit constrained" enterprises should adjust to the drop similarly to, if not less than, the other companies given their sub-optimal scale of operation prior to the crisis.

additional indicators correlated with the probability of being financially constrained that have been proposed in the economic literature and that are specific to each sub-population of enterprises (affiliates on one hand, and independent firms on the other hand).

– For independent enterprises we use collateral, since this characteristic probably determines their debt capacity [Almeida and Campello, 2007]. We measure it by fixed tangible assets per employee.

– For affiliates, we use the global wealth level of the group because this characteristic determines the ability of the internal capital market to make up for the deficiencies of the external capital market [Boutin et al, 2012]. "Wealth" is calculated as the total gross operating surplus generated by the group as a whole on the national territory plus the total net liquid assets held by French subsidiaries⁵.

In each case, we split the sub-population into firms having an indicator below, or above the sample median. The comparison of the results obtained with these alternative indicators of financing constraints allows assessing the robustness of our findings related to the magnitude of financing constraints during this period.

The "all else being equal" analysis globally confirms the descriptive results found previously (*figure 11*) which would suggest a far more prominent role played by the demand shock than the credit shock : independent companies adjusted their production volume, be it

11. The 2008/2009 shock (as compared to the 2004/2007 period), for sub-populations of firms that are differentially exposed to financing constraints

%, "all else equal"

	Standalone firm (A)	Group affiliates (B)	Difference (A) – (B)	Standalone firms		Difference (C) – (D)	Affiliates of corporate groups		Difference (E) – (F)
				low collateral (C)	high collateral (D)		cash poor (E)	cash rich (F)	
Value added	-9.1*** (0.1)	-10.4*** (0.3)	1.3*** (0.3)	-8.5*** (0.1)	-9.8*** (0.2)	1.3*** (0.2)	-9.8*** (0.3)	-10.5*** (0.5)	0.6 (0.5)
Sales	-5.2*** (0.1)	-7.7*** (0.2)	2.5*** (0.2)	-4.9*** (0.1)	-5.6*** (0.1)	0.7*** (0.2)	-5.8*** (0.3)	-6.2*** (0.4)	0.4 (0.5)
Increase in inventories (oui/non)	0.5*** (0.1)	2.8*** (0.2)	-2.3*** (0.2)	0.4*** (0.1)	0.6*** (0.1)	-0.2 (0.1)	1.8*** (0.2)	4.0*** (0.4)	-2.3*** (0.4)
Outstanding debt	-13.2*** (0.3)	-8.9*** (0.8)	-4.3*** (0.9)	-10.1*** (0.4)	-17.4*** (0.4)	7.3*** (0.6)	-7.1*** (0.010)	-13.8*** (1.6)	6.7*** (1.9)
Probability to draw on credit lines	8.8*** (0.1)	5.5*** (0.2)	3.3*** (0.3)	9.4*** (0.1)	8.2*** (0.2)	1.2*** (0.2)	6.5*** (0.3)	2.8*** (0.4)	3.7*** (0.5)
Cash held	-4.9*** (0.3)	-8.7*** (0.9)	3.8*** (0.9)	-5.9*** (0.4)	-3.8*** (0.5)	-2.1*** (0.6)	-3.3*** (1.1)	-19.2*** (1.8)	15.9*** (2.1)
Operating profit margin (operating profit / VA)	-12.3*** (0.2)	-11.5*** (0.5)	-0.8 (0.5)	-11.0*** (0.3)	-13.7*** (0.3)	2.7*** (0.4)	-12.1*** (0.7)	-12.4*** (0.8)	0.4 (1.0)
Employment	-8.4*** (0.3)	-4.9*** (0.7)	-3.5*** (0.8)	-6.5*** (0.4)	-10.8*** (0.4)	4.3*** (0.6)	-4.3*** (0.9)	-6.7*** (1.2)	2.4 (1.5)
Investment	-3.9*** (0.1)	-6.3*** (0.2)	2.4*** (0.2)	-4.8*** (0.1)	-2.8*** (0.1)	-2.0*** (0.1)	-6.1*** (0.2)	-6.8*** (0.3)	0.6* (0.4)
	-15.8*** (0.4)	-12.4*** (0.8)	-3.4*** (0.9)	-10.7*** (0.6)	-21.1*** (0.6)	10.4*** (0.8)	-13.1*** (1.0)	-13.9*** (1.3)	0.9 (1.6)

Coverage : French economy, firms reporting to the "BRN" (Bénéfice Réel Normal) tax scheme and active in the trade (NAF G), manufacturing (NAF C) and business services (NAF M) industries.

Interpretation : All else equal, group affiliates experienced a decrease in value added by 10.4% in 2008/2009 relative to 2003/2007. Standalone firms experienced a decrease by 9.1%. The difference between the two sub-populations is 1.3 percentage point and is statistically significant.

Note : These results are from regressions which include a wider set of controls : firm age, lagged employment growth, capital intensity, productivity, firm level fixed effects. All regressions also include the logarithm of the total value added produced in the industry where the firm is operating. Standard errors are reported in parentheses, *** denotes significance at the 1% level, ** denotes significance at the 5% level, and * denotes significance at the 10% level.

Source : Insee, BRN and Esane Information systems; LIFI survey.

5. Our measure of the wealth of groups does not include foreign subsidiaries (which do not feature in our data) and thus probably underestimates the total wealth of highly internationalised groups. However, analyses conducted on a sample excluding subsidiaries whose group head is located abroad (for which this problem is particularly severe) give similar results to those presented, which suggests that our conclusions are robust to this measurement problem.

in terms of value added or revenue, significantly less than those that were members of a group. The adjustment was also smaller for independent companies with low collateral than for those with high collateral, while the subsidiaries backed by groups with varying wealth levels did not see differentiated adjustments. Complementary analyses contrasting individual companies and group subsidiaries according to their export activity show that subsidiaries of groups exported more often and were in fact more exposed to the contraction in world demand. The (fewer) independent enterprises that also participated to international trade suffered a shock that was comparable in magnitude⁶.

Moreover, group subsidiaries ran down their inventories more often than independent enterprises over the period. This result is compatible with the hypothesis of a strong demand shock if we assume that prior to the crisis, independent companies faced tougher financing constraints : the companies which during that period were operating at an activity level close to optimum would have been forced to adjust more suddenly than those which had financing difficulties before 2008 and thus had a lower than optimum production. However, the result is less compatible with the hypothesis of an increase in credit constraints, which should have produced an equally asymmetric adjustment between these two populations, but in the opposite direction (see also Kremp and Sevestre, 2012).

A comparison of the variations in capital structure (outstanding debt) between populations of companies – when this comparison is interpretable (between independent companies according to their amount of collateral, or between group subsidiaries according to the wealth of the group) – shows that the adjustments made by the companies that should be facing tighter restrictions were significantly less pronounced than those made by enterprises that were initially less financially constrained. This contrasts strongly with what has been observed in the United States [Campello *et al.*, 2011].

Enterprises drew more often from their credit lines, probably in anticipation of a risk of illiquidity, as suggested by Campello *et al.* (2011). The change in terms of this strategy was more pronounced among credit constrained companies, which used their lines of credit minimally before the crisis in order to limit the high financial costs associated with this type of very short-term debt. They also asked more often for advance payments on orders from their clients, in such a way that the liquidity shock was relatively limited. A complementary analysis would show that cash flow held preventively tended to increase slightly in 2009-2010 compared to the pre-crisis period, except for affiliates of groups for which this strategy was pointless because of the size of the internal capital markets upon which they could rely.

The savings ratio generally fell by less than the profit margin rate, and independent companies that had little collateral experienced a less unfavourable trend as they made a sharper adjustment in terms of their employment than their collateral-rich counterparts. Lastly, all else being equal, independent companies scaled back their investment level more than group subsidiaries, contrary to what the purely descriptive analysis suggested. However, within the population of independent companies, the units that were a priori more exposed to financing constraints scaled back their investment efforts significantly less.

Further analyses would show that group subsidiaries based abroad⁷ tended to reduce their employment by more than their "domestic" counterparts. This latter pattern is not fully explained by their greater participation to international trade. This result suggests that internationalised groups tended to withdraw partially from the French market, either to help offset increased difficulties on markets that were even more exposed to the 2008/2009 downturn, or to reposition their activity on more dynamic foreign markets. ■

6. However, they drew from their inventories less frequently.

7. The groups owning subsidiaries abroad are identified via the LIFI survey on financial ties (*insert 4*).

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