

Banking Deregulation and Industry Structure: Evidence from the French Banking Reforms of 1985

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ABSTRACT

We investigate how the deregulation of the French banking industry in the 1980s affected the real behavior of firms and the structure and dynamics of product markets. Following deregulation, banks are less willing to bail out poorly performing firms and firms in the more bank-dependent sectors are more likely to undertake restructuring activities. At the industry level, we observe an increase in asset and job reallocation, an improvement in allocative efficiency across firms, and a decline in concentration. Overall, these findings support the view that a more efficient banking sector helps foster a Schumpeterian process of “creative destruction.”

MANY ECONOMIES AROUND THE WORLD are characterized by heavily regulated banking sectors, whereby the state intervenes directly or indirectly in banks' lending decisions. These interventions can take a number of forms, such as state ownership of banks, regulatory limits on competition, subsidized lending, or directed credits. A large literature documents the prevalence and scope of such state interventions across countries (see, for example, La Porta, Lopez de Silanes, and Shleifer (2002), Dinç (2003), or Demirgüç-Kunt, Laeven, and Levine (2004)). A few papers, such as Sapienza (2004), Mian (2003), and Jayaratne and Strahan (1996), also show that these interventions can lead to distortions in banks' lending practices.¹ Yet we still have a rather limited understanding of how these

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¹ Sapienza (2004) and Mian (2003) demonstrate the existence of such distortions among state-owned banks. Jayaratne and Strahan (1996) find evidence for efficiency gains (through a reduction in bad loans) after the lifting of regulations that reduced banks' ability to compete across U.S. states.

distortions end up affecting the microeconomic behavior of firms and the subsequent structure and dynamics of the real sectors of the economy. The main objective of this paper is to focus on these real effects.

Our analysis suggests that a lowering of state intervention in the banking sector is accompanied by a more efficient allocation of bank loans across firms and an increase in restructuring activities, such as lowering wages or increasing outsourcing, at the firm level. Moreover, we find that less state intervention is also associated with important changes in the structure of product markets, for instance, an increase in firm entry and exit rates, a reduction in the level of product market concentration, and an improvement in the allocation of assets and jobs across firms. Overall, our analysis suggests that government intervention in banking may create implicit barriers to entry and exit in product markets by subsidizing poorly performing established firms. This product market channel could be a micro foundation for the relationship between financial development and growth as discussed in King and Levine (1993a, 1993b), Rajan and Zingales (1998), and Demirgüç-Kunt and Maksimovic (1998).

The particular reform we consider is the deregulation of the French banking industry in the mid-1980s. This deregulation drastically reduced government interventions in banks' lending decisions, virtually abolished subsidized bank loans, and allowed French banks to compete more freely in the credit market. In addition, several state-owned banks were privatized in the mid-1980s.² According to most observers, the main effect of the reform was to move to a more decentralized decision-making process on loan amounts and interest rates, and to introduce a stronger for-profit motive among banks.

While our analysis is restricted to the experience of a single country, the scope of regulations in place in France prior to the reform matches that of many other countries with regulated banking sectors (pervasiveness of subsidized loans, credit controls, interest rate controls, prevalence of state-owned banks). In this regard, the French reform is quite representative of the multiple changes other countries would have to carry out to liberalize their banking sector.³ For example, Raje (2000) argues that the limited achievement of the Indian banking reforms of the 1980s is partly due to the fact that the deregulation concentrated on a very narrow set of dimensions that did not take into account the multidimensional aspect of the problem.

² As we discuss in more detail later, about half of the bank assets that were privatized in the mid-1980s had only been nationalized in 1982. This has led many practitioners in France to believe that the impact of these privatizations may not have been as important as some of the other aspects of the banking reform.

³ To investigate how common this combination of banking regulations is, we obtain data from a recent study by Abiad and Mody (2005), who survey banking and other capital market regulations in more than 40 countries. We thank Abdul Abiad for making these data available to us. The data document financial policy changes along the following dimensions: credit controls/reserve requirements, interest rate controls, entry barriers in the banking sector, operational restrictions, and state ownership in the banking sector. We find very high correlations among the levels of regulation across these different dimensions (between 40% and 70%). These results suggest that many countries face similar sets of regulatory constraints as France before 1985.

Our focus on France is further motivated by the availability of comprehensive and very detailed firm-level accounting data for this country. While most commonly used international firm-level data sets cover only publicly traded firms, the data we use in this paper include both private and publicly traded firms. The coverage of private firms is central to our analysis. First, since these firms typically have access to few sources of external finance besides bank loans, they are likely to be most affected by any changes in the banking sector. Second, and equally important, these firms represent a very large fraction of overall economic activity, making their coverage in the data necessary to any study of the impact of banking reform on industry structure and dynamics.

While the French banking deregulation constitutes an economy-wide shock, we propose to isolate its effect on firm behavior and product market dynamics by studying *differential* post-reform changes across sectors, based upon the degree to which different sectors relied on bank finance prior to the reform. The identifying assumption of this empirical strategy is that industries that were more financially dependent on banks prior to the reform should be more affected by the deregulation. We then assess the robustness of our findings to using a U.S.-based measure of external financing dependence (à la Rajan and Zingales (1998)) as an alternative source of cross-sector variation in the strength of exposure to the banking reform.⁴

Using a firm-level panel that spans the period 1978 to 1999, we document large changes in capital structure and banks' lending behavior following the banking reform. In particular, consistent with the identifying assumption above, we find that post-reform changes in capital structure and bank lending are especially pronounced in those industrial sectors that relied more heavily on bank debt prior to the reform. First, we find a sharp decline in bank debt, especially among poorly performing firms. This decline in bank debt is compensated in part by an increase in the use of trade credit, especially for poorly performing firms. Furthermore, we find a statistically significant increase in the cost of capital in the more bank dependent sectors, and a widening of the interest rate spread between poorly and better performing firms. We also find that, post-reform, banks appear more reluctant to extend credit to firms experiencing negative shocks to performance. Lastly, we find evidence suggestive of improved bank monitoring or screening abilities; specifically, we show that subsequent to reform, net new loans to individual firms are associated with stronger improvement in performance. Overall, these results suggest that banks became less likely to bail out underperforming firms after the deregulation.

After documenting the above changes in lending patterns, we analyze how firm behavior and overall industry structure in the nonfinancial sectors changed after the reform. First, we look at how firms altered their real decisions after deregulation. We find some evidence that firms in more bank-dependent

⁴ We thank an anonymous referee for this suggestion. More generally, we report in Section IV.B a series of robustness tests aimed at addressing the possible concern that the French sectors that were more reliant on bank lending prior to the reform may also have been more affected by other economic and regulatory changes in the French economy in the mid-1980s.

sectors engage in more cost-minimizing measures following the reform. We also observe higher firm exit rates in the more bank-dependent industries after the reform, and an increased sensitivity of firm exit to poor performance. This last result suggests that the disciplining effects of stricter bank lending work in part on the extensive margin, that is, by forcing underperforming firms to shut down.

This last finding we confirm in our analysis of the implications of the banking reform for industry structure and dynamics. We analyze industry-level gross asset and job creation through investments by incumbent firms and entry of new firms, as well as divestitures and exit of incumbent firms. Our results indicate a relative increase in reallocation rates in the more bank-dependent sectors after the reform. Most interestingly, the higher reallocation rates are driven mainly by the extensive margin, that is, by entry and exit decisions. At the same time, we find a net increase in employment in these sectors after deregulation. We also observe a reduction in labor cost per worker and some evidence suggestive of increased value added per worker. Allocative efficiency appears to improve in the more bank-dependent sectors after deregulation, with better performing firms controlling higher market shares after the reform. Finally, product market concentration, as measured by both a Herfindahl index and the market share of the five largest firms in the industry, decreases after the banking reform.

Overall, these findings are consistent with a model in which distortions in bank lending create artificial barriers to entry in the real sectors of the economy. New entrants may be discouraged by the easy access to cheap credit for incumbent firms. Once banks become less willing to provide such (cheap) credit to poorly performing firms, prospective new entrants find it more attractive to come in and compete with incumbents. A more efficient banking sector therefore appears to play an important role in fostering a Schumpeterian “creative destruction” process that has been theoretically, and increasingly empirically, linked to higher economic growth.⁵ Our findings that distortions in bank lending are associated with relative sclerosis and lower restructuring activity in the real sectors of the economy are also very reminiscent of Caballero, Hoshi, and Kashyap’s (2003) discussion on the role of Japanese banks in the slowdown of the Japanese economy over the last decade. Finally, some of our findings build on the recent work by Black and Strahan (2002) and Cetorelli and Strahan (2004), who study changes in industry-level entry rate, number of firms, and size distribution of firms in the context of the U.S. interstate banking deregulation. One major difference between these papers and the study undertaken here (in addition to the obvious focus on a different set of reforms) is our access

⁵ See, for example, Caballero and Hammour (2000), He, Morck, and Yeung (2003), or Aghion et al. (2003). Also, a number of theoretical papers analyze the effects of changes in banking competition on the lending and deposit-taking behavior of banks, for example, Broecker (1990), Petersen and Rajan (1995), and Dell’Ariccia, Friedman, and Marquez (1999). However, the implications of these models do not easily translate to our empirical analysis since these papers analyze the effect of a change in competition *holding constant* the for-profit motive of banks. As we discuss above and come back to in Section I, the for-profit motive of French banks changed substantially after the reforms.

to firm-level data. These data allow us not only to look at restructuring activities at the firm level but also to study the reallocation of capital across firms and the *specific* dynamic changes that take place at the industry level (such as the evolving relationship between firm performance and firm exit).⁶

The rest of the paper is organized as follows. In Section I, we describe in more detail the institutional changes that took place in the French banking industry around 1985. Section II presents data sources, sample construction, and definitions of the major variables used in the analysis. The effects of the reform on capital structure and banks' lending decisions are reported in Section III, while Section IV investigates effects on firm behavior and industry-level outcomes. We offer some concluding remarks in Section V.

I. The French Banking Deregulation of 1985

The 1985 banking reform marked a dramatic turn for the French banking sector. Before discussing the major changes that took place in the mid 1980s, we start with a historical perspective on the main institutional features of the French banking sector prior to the reform.⁷

A. French Banking Prior to the 1985 Reform

The post–World War II French financial sector was under the centralized control of the Treasury, whose general aim was to channel savings and deposits into priority industries. To control the credit market, the Treasury set up a deposit network, consisting of savings banks, the postal checking system, the Bank of Foreign Trade, and four large cooperative banks. This network had privileged access to some deposits and the bond market, and a monopoly over the distribution of subsidized loans allocated by the Treasury. Increased governmental control over savings collection and use was also achieved through the nationalization of some of the biggest banks (such as Société Générale and Crédit Lyonnais).

The economic turmoil following the 1974 oil shock further strengthened bureaucratization and state involvement in the banking sector. In the aftermath of the oil shock, the French economy experienced a continuous productivity slowdown. A combination of miscalculated government interventions and intense labor-capital conflicts left the French economy with high levels of inflation, large budget deficits, and growing unemployment (Blanchard (1997)). In an attempt to revive job creation, the conservative government of the late 1970s strengthened the system of bank loan subsidies through its deposit network to encourage more investment and exports.

To stabilize exchange rates within the European Union, member countries set up a system of quasi-fixed parities in 1972 (the “Monetary Snake,” replaced in 1979 by the European Monetary System). Given the French government's

⁶ Our results are also related to a growing literature on the political economy of market entry and financial regulation. See, for example, Rajan and Zingales (2003).

⁷ See also Melitz (1990) for a very good overview.

unwillingness to increase interest rates, the exchange rate of the franc began to slide and the franc was forced out of the system two times, in 1974 and 1976. To prevent further dishonorable devaluations, a stabilization program was introduced in 1976 with the goal of constraining money growth. This was implemented through the “encadrement du crédit” program, which consisted in setting monthly ceilings on credit growth for each bank *individually*. A direct consequence of such a rationing policy was to further strengthen the relative importance of subsidized loans and government control over lending decisions. Indeed, the credit growth ceilings implied by the “encadrement du crédit” did not apply to the subsidized loans that could be allocated only by members of the Treasury-controlled deposit network. So, while the deposit network under the Treasury’s control could expand credit almost without limit, banks that were not part of that network were asphyxiated. By 1979, subsidized loans amounted to nearly half of all new loans granted to the private sector.

In May 1981 a new socialist government was elected. Under this new government, fiscal policy became more expansionary, and a further nationalization of the banking sector was implemented. While the largest banks had already been state-owned since World War II, several additional banks were nationalized in 1982. The Treasury also increased the pressure on state-owned banks to bail out failing industrial groups. The number of different loan subsidization programs increased dramatically, as the Treasury focused more and more on “job preservation” and preventing the shutdown of poorly performing firms. As a result, the credit market became even more opaque, supporting many different interest rates for different loan subsidization programs,⁸ and banks were increasingly accumulating nonperforming loans. By 1983, this interventionist approach was threatening to cause a complete standstill of the French banking industry. In fact, the French banking industry was so heavily regulated that interest rates played almost no role in the allocation of capital (Naouri (1986)).

B. The Need for Reforms

The expected benefits from an increased centralization of the banking system did not materialize. First, the balance of payments continued to deteriorate. More importantly, the centralized approach to bank lending was creating increased bureaucratic costs. The *encadrement du crédit* system required the continuous monitoring of each bank, which became increasingly complex with the exemption of more and more subsidized loans. The subsidized loans system itself had become unmanageable: Given the large number of different programs (some 250 by 1984), it was difficult to assess their cost to the state’s budget.

In the fall of 1984, the socialist government announced a drastic reversal of policy. The goal was to transform the financial system into a decentralized credit

⁸ In the words of Jean Charles Naouri, then one of the key advisors to the finance minister, “the subtle difference in interest rates [across various loans] reflects less the fine tuning of the procedures than the historical accumulation of procedures both archaic and often extravagantly complex” (Naouri (1986)).

market, whereby interest rates would be used to match the supply and demand of capital for each type of project. Specifically, three sets of banking reforms took place. First, starting in 1985, most subsidized loans were eliminated. While “small firms” (those whose total sales were below one billion francs—about 150 million dollars at the time) retained access to subsidized loans, the amount of subsidies to these small firms fell dramatically between 1984 and 1986, and the distribution of these remaining subsidized loans was no longer the monopoly of the Treasury-controlled deposit network.

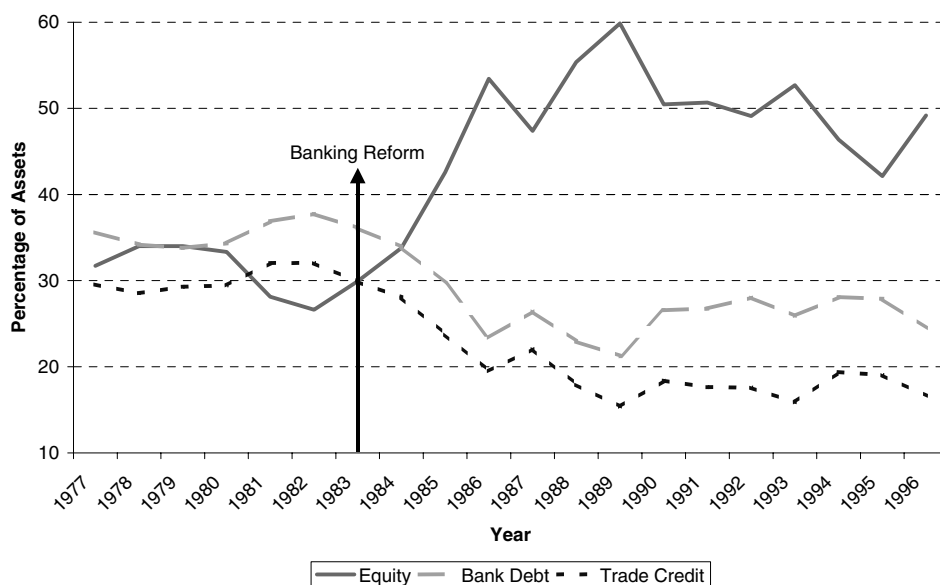
Second, the “encadrement du crédit” was abolished in 1985, allowing capital flows in the economy to be determined by market forces. In particular, between 1985 and 1987, credit growth limits were gradually removed and replaced by a system of reserve requirements against deposits. Monetary policy was now conducted through interest rates on the money market and legal reserve requirements instead of through quantity controls. The money market was also reformed to stimulate interbank lending: Private banks could borrow more funds from the Treasury network, which now had little use for them. In addition, the system of capital controls, strengthened in 1981 to defend the franc, was progressively eliminated through a string of reforms ending in 1990 (Naouri (1986)).

Third, market conditions became more transparent and conducive to fair competition. The 1985 Banking Act partially unified a myriad of banking regulations, and progressively also eliminated subsidized loans. Partial monopolies over deposits and lending enjoyed by some banks were progressively dismantled. Banks also faced more competition from other providers of external finance, as firms’ access to the bond and equity markets was facilitated.⁹

A number of banks were privatized over the 1986 to 1988 period (about 10% of the banks and 20% of the banking assets). Most industry observers believe, however, that the regulatory changes described above were more important in reforming the French banking industry in the mid-1980s than this partial privatization effort. Part of the rationale driving this belief was that roughly one half of the bank assets that were privatized in the mid-1980s had just been nationalized in 1982.¹⁰

⁹ Many reforms encouraging stock market finance and participation were undertaken starting in the mid-1980s. The prominent changes include: 1986, the monopoly of the Paris brokers was dismantled; between 1984 and 1990, capital controls were progressively removed; and 1986, the French stock market was among the first to become electronic. Tax breaks for stock market investment and simplifications of procedures for bond and equity issues were introduced at various points of the mid-1980s. However, we show later in the paper that these changes do not seem to drive our results.

¹⁰ Note that in order to “benchmark” the effect of such privatizations *in isolation* from the other regulatory changes described above, we replicate most of our analysis around the 1993 event date, which is when the next and largest wave of banking privatizations occurred in France. We do not find any significant effects on capital structure or restructuring activities at the firm level. Of course, we certainly cannot rule out the possibility that the bank privatizations of the mid-1980s contributed to the real sector effects we report below. As such, these privatizations are part of the same overall move away from a state-controlled banking system toward a more market-based one.



Source: Bank of France, tableau des opérations financières.

Figure 1. Capital structure of nonfinancial corporations in France, 1978–1996. Equity is calculated as the sum of book equity and retained earnings divided by total liabilities. Debt is the ratio of total debt over total liabilities, and trade credit is the ratio of trade payables over total liabilities.

C. Consequences

According to the flow of funds data published by the Bank of France, the ratio of total debt to assets was very high in the early 1980s, at around 70%. Two years after the reforms, this ratio went down to, and remained stable at, around 50% over the 1986 to 1996 period (see Figure 1). Half of this decrease in leverage was due to a reduction in bank loans.

Part of this aggregate trend might be explained by the increase in interest rates starting in the mid-1980s. Indeed, monetary policy was tightened from 1983 onwards in order to fight inflation; the resulting increase in interest rates likely reduced the reliance on bank loans. It seems, however, that tighter monetary policy cannot be the sole force behind the sharp decrease in leverage. While the change in capital structure occurred very quickly after 1985 and stabilized thereafter, the increase in real interest rates continued progressively until 1992.

The second widely (at least anecdotally) discussed consequence of the reform was a change in banks' behavior. The reforms signaled that the Treasury was willing to let market forces shape the credit market landscape for the long run. These new conditions forced banks to change their lending practices and restructure internally, in part with the help of the diffusion of new technologies. A survey conducted in 1985 among French bankers showed drastic changes in attitudes about the internal management of banks (Rémy and Sergent (1986)). According to the survey, the focus of bank managers was increasingly on reducing

costs, controlling risks, and introducing tighter performance monitoring. The greater competitive pressures were most intensely felt by banks in the Treasury network, as these banks had lost their privileged access to deposits and loan markets. The Treasury network's share in all deposits decreased by 28% between 1985 and 1990, and its share of loans declined by some 25% (Plihon (1995)).

Our goal in the rest of this paper is to assess the real effects of these regulatory changes in the banking sector. As a preliminary step, we provide quantitative evidence supporting the view that banks did alter their lending practices post-reform. We then move to the main part of our analysis, where we study how firm behavior and survival, as well as industry structure and dynamics, were affected by the banking deregulation. Before moving to this empirical investigation, we describe the data sources and sample construction.

II. Data

The firm- and industry-level data sets used in this study are based on accounting data extracted from the tax files used by the Ministry of Finance for corporate tax collection purposes. The accounting information available covers all French firms, public or private, whose annual sales exceed 100,000 euros in the service sector and 200,000 euros in other sectors. French firms above these thresholds are required by tax authorities to fill in a detailed balance sheet and profit statement. Also included in the tax files is a four-digit industry classification code that is very similar to the SIC coding system in the United States. In addition, the data also contain reliable firm-level employment figures that have been cross-checked with information from employer labor tax reports. Individual firms can be tracked over time by the use of a unique identifier, which allows for the construction of a panel data set.

A. Firm-Level Sample

Our firm-level sample covers the period 1978 to 1999. Because the tax files cover approximately 600,000 firms each year, we decide to focus our firm-level analysis on firms with revenues above 20 million euros or firms with at least 100 employees. More specifically, firms are included in our sample if they lie above either of these two thresholds for more than 3 years over the sample period. We track these firms throughout the sample period, that is, both prior to and after the date they cross the threshold. Firms drop out of our sample only when they leave the tax files data, which occurs because they realize true exit (bankruptcy, acquisition), they change identifier, or they fall below a size threshold of less than five employees. This sample construction allows us to track firm exit and entry throughout the period. Finally, we exclude firms in the financial sector from the sample (banking and insurance industries), since standard accounting measures are less meaningful in this industry.¹¹ We end up with a sample of about 350,000 firm-year observations, which corresponds to about 15,000 firms per year.

¹¹ This encompasses all firms in sectors 88 and 89 according to the French industry classification.

Throughout the text, corporate performance is defined as return on assets (ROA), computed as the ratio of operating profits to total assets (net of depreciation). Operating profits are computed as sales minus intermediate consumption minus wages minus employer taxes. We measure capital cost as the ratio of interest payments on financial debt over debt. We define trade credit as the ratio of trade payables over the sum of the book value of equity, debt, and trade payables. Equity is defined as the book value of equity over the sum of the book value of equity, debt, and trade payables. Outsourcing is defined as the ratio of intermediate product consumption to total sales.

We define debt as the ratio of debt over the sum of the book value of equity, debt, and trade payables. In most of our analysis, we use this measure as a proxy for banking dependence. This is a somewhat controversial measure, since debt also includes group loans, debt owed to the owners of the firms, and payables to the tax authorities and social security administration. We choose to focus on this measure because of the need to measure firms' debt uniformly over time: More specifically, due to a change in accounting regulation, we can only isolate the bank debt component of debt after 1984.¹² Based on calculations for the post-1984 period, we estimate that nonbank debt represents about 40% of total debt excluding trade payables, and we verify that while debt is likely to be a noisy estimate of bank debt, it very strongly correlates with it—the correlation is about 0.8. The high correlation of the two measures is not surprising given that two of the main components of nonbank debt, namely indebtedness to the tax authorities and indebtedness to the social security administration, vary little within a firm-size category.

Based on these firm-level data, we construct a measure of banking dependence by sector in the pre-reform period. Due to the data limitation highlighted above, we define this measure as average debt (over book value of equity plus debt plus trade payables) in each four-digit industry over the years 1978 to 1983. We compute both nonweighted and asset-weighted measures. While we focus our analysis on the nonweighted measure, these two measures are highly correlated and all of the results reported below are qualitatively unchanged when we use the asset-weighted measure instead.¹³

¹² Prior to 1984, total liabilities are broken down into debt and trade payables. Debt is then divided into debt with less than 1 year of maturity and debt with more than 1 year of maturity. Debt with less than 1 year of maturity includes (1) credit lines, (2) indebtedness to the state and social insurance, and (3) short-term loans from owners and potentially other group firms (if the firm is part of a business group). Debt with more than 1 year of maturity is divided into bonds (which is rarely above zero in our sample) and other long-term debt. After 1984, there is substantially more detailed information on long-term debt. Total nontrade-related debt is broken down into: (1) nonfinancial debt (indebtedness to tax authorities and social security) and (2) financial debt. Financial debt is then broken down into (1) bonds, (2) bank debt, and (3) other financial debt. Other financial debt includes group and owner loans.

¹³ As we discuss above, one could compute more precise measures of industry-level banking dependence in the post-1984 data. However, any such measures would naturally be much more endogenous to the reform. For the sake of completeness, we replicate all of our empirical tests using 1984 and 1990 measures of banking dependence by sector. All of the findings carry through. We also experiment with using changes in industry-level average debt between the 1978 to 1983 period and the 1985 to 1989 period (this last measure defines as “more treated” by the banking reform those sectors that experienced the largest changes in debt). Again, we obtain qualitatively similar results.

B. Industry-Level Data

The industry-level measures that we use in the last part of our empirical analysis are constructed from the entire corporate tax files data set (hence, covering about 600,000 firms each year). Again, we compute these industry measures for the period 1978 to 1999.

For each two-digit industry-year cell, we compute two different measures of product market concentration, namely, the Herfindhal index and the market share of the five largest firms in that industry-year cell, both computed in terms of sales, assets, or employment. The data reveal a clear, though moderate, aggregate downward trend in these concentration measures over the period under study.

We also construct yearly measures of asset and employment reallocation within these two-digit industries. We measure reallocation on both the intensive and extensive margins. Measures of reallocation on the intensive margin are based on incumbent firms. Using firms that were present in the industry in the previous year, we compute the sum of all positive 1-year changes in assets or employment in these firms. We define gross asset (job) creation by incumbents as the sum of these positive asset (job) changes. We follow an analogous procedure to define gross asset (job) destruction by incumbent firms.

Measuring reallocation on the extensive margin is somewhat complicated given the substantial amount of industry switches we observe in the data. It is unlikely that these switches are merely the result of noisy data, as the industry classification we employ has been cross-checked by INSEE (the French statistical office) using alternative survey tools on firm activities. However, to be conservative, we separately track “true” industry entries and exits and those entries and exits that are due to firms switching industries. For these two types of entry and exit, we compute flows in terms of number of firms (entering and exiting an industry), assets (created by entrants or destroyed by exiting firms), and jobs (created by entrants or destroyed by exiting firms).

Finally, for each industry-year cell, we use disaggregated National Accounts to obtain total employment (measured as the total number of full-time equivalent workers), average labor cost (measured as the ratio of total labor expenses over total number of full-time equivalent workers), capital stock (measured as total fixed assets), and value added per worker (measured as the ratio of total value added over the total number of full-time equivalent workers).

The summary statistics in Panel A of Table I show that the average firm in our sample has annual sales of about 106 million francs and total assets of about 122 million francs (both expressed in 1980 francs). The average number of full-time-equivalent workers per firm is 192. Average bank debt for the firms in our sample is 46% over the sample period, with averages for the pre- and post-reform period of 48% and 42%, respectively. This change might not appear very large; however, if we sort firms into size and performance quartiles (not reported), we find that the variation in the tails of the distribution is much more pronounced. For example, the firms in the lowest performance quartile realize a drop in leverage from around 55% to 40% before and after reforms. Trade credit comprises 28% of financing while only 26% comes from equity.

Table I
Descriptive Statistics

The sample in Panel A is the firm-level panel data set constructed from the tax files data set (see text for more details.) The sample period is 1978 to 1999. Sample size is 325,928. "Total assets" and "sales" are expressed in 1980 francs. "Employment" is total number of full-time-equivalent workers (in thousands). "ROA" and "ROS" are return on assets and sales, respectively. All financial ratios are calculated as a fraction of total outside financing. "Average wage" is the ratio of total labor expenses (in 1980 francs) over the number of full-time-equivalent workers. "Outsourcing" is defined as the ratio of intermediary inputs over sales. The sample in Panel B contains information for the industry-level panel data set at the two-digit industry level. The sample period is 1978 to 1999. Sample size is 2,016. There are 96 different industries before and after the reforms (industry coding is equivalent to two-digit SIC codes in the U.S. Employment is total number of full-time equivalent workers (in thousands). Capital is the net stock of capital in billion francs. Labor cost is the sum of expenditures on labor in billion francs. All values are expressed in 1980 francs.

	Full Sample		Before 1985		After 1985	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Panel A: Firm-Level Data						
Bank debt	0.46	0.23	0.48	0.22	0.42	0.24
Trade credit	0.28	0.20	0.31	0.21	0.27	0.21
Equity	0.26	0.21	0.20	0.17	0.28	0.22
Capital cost	0.08	0.07	0.07	0.06	0.09	0.06
ROA	0.15	0.21	0.07	0.15	0.17	0.22
ROS	0.12	0.22	0.06	0.15	0.15	0.23
Sales	106.50	142.4	92.6	133.5	112.3	145.6
Total assets	122.10	222.6	95.5	196.8	132.7	230.4
Employment	192.40	210.8	203.6	216.5	188.5	208.4
Average wage	76.12	33.59	67.52	23.92	79.20	28.67
Outsourcing	0.42	0.25	0.44	0.27	0.41	0.24
Panel B: Industry-Level Data						
Employment	389.28	239.46	400.79	234.89	379.35	245.79
Capital	200.31	281.58	158.82	273.53	222.34	297.89
Labor cost	53.72	65.06	39.03	39.07	60.56	81.32
Value added	154.03	113.96	127.86	94.61	163.11	132.41

These leverage levels are much higher than equivalent numbers for the United States.

Panel B provides summary statistics for some of the industry-level variables we construct. There are 96 different industries in our data. The average industry in the sample has about 390,000 employees, a capital stock of about 200 billion francs, and value added of 154 billion francs (all expressed in 1980 francs). Labor costs amount to 54 billion francs annually.

III. Changes in Capital Structure and Banks' Lending Practices

Since the French banking deregulation constitutes an economy-wide shock, we propose to isolate its effect on firm behavior and industry structure by studying differential post-reform changes across sectors, based upon the degree

Table II
Change in Capital Structure Following the Banking Reform

The sample is the firm-level panel data set constructed from the tax files data set (see text for details). The sample period is 1978 to 1999. “Bank debt” is defined as the ratio of all debt excluding trade credit and bonds over total outside financing (debt and book value of equity). “Equity” is the book value of equity divided by total outside financing. “Trade Credit” is the ratio of trade payables over total outside financing. “Capital Cost” is the ratio of interest payments on financial debt over debt. “After” is dummy variable equal to one after 1985 and zero before. “Bankdep” is the average debt at the industry level between 1978 and 1983. “ROA₁” is firm-level average ROA across all years we observe the given firm in our sample. Also included in each regression is the logarithm of lagged total assets. Standard errors are reported in parentheses. Standard errors are corrected for clustering of the error term at the industry level.

Dependent Variable	Bank Debt		Equity		Trade Credit		Capital Cost	
After * Bankdep	−0.344 (0.026)	−0.398 (0.035)	0.031 (0.020)	0.014 (0.026)	0.130 (0.017)	0.146 (0.022)	0.028 (0.007)	0.048 (0.007)
After * Bankdep * ROA ₁		0.155 (0.057)		0.051 (0.030)		−0.059 (0.026)		−0.034 (0.010)
After * ROA ₁		−0.072 (0.024)		0.046 (0.019)		0.012 (0.017)		0.021 (0.013)
Bankdep * ROA ₁		−0.286 (0.073)		0.003 (0.060)		0.126 (0.054)		0.016 (0.005)
Industry-specific trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R ²	0.53	0.53	0.64	0.64	0.70	0.71	0.52	0.58
Number of Obs.	325,928	325,928	325,928	325,928	325,928	325,928	325,928	325,928

to which different sectors were reliant on bank finance prior to the reform. At the center of this empirical strategy is the assumption that industries that were more dependent on bank financing prior to the reform were more exposed to the distorted lending practices, and therefore should be more affected by the banking deregulation. Our primary goal in this section is to provide direct evidence for this identification assumption.¹⁴

A. Capital Structure Changes

Table II provides a description of the post-reform capital structure changes for sectors that were more or less reliant on bank financing prior to the reform. The regressions reported in this table follow the basic estimation approach that we use for most of the analysis. Each regression includes firm and year fixed effects, a control for firm size (the logarithm of lagged sales), and an interaction term between the post-reform dummy (post-1985) and the pre-reform level of

¹⁴ As we mention earlier, we also verify the robustness of our main results to using an alternative source of cross-industry variation to proxy for relative exposure to the banking reform. More specifically, we use the U.S.-based measure of external finance dependence proposed by Rajan and Zingales (1998).

bank dependence in the firm's industry. The regressions also allow for differential linear time trends by industry. Standard errors are corrected to allow for clustering of the error terms at the four-digit industry level.

The findings in this table confirm that firms in more bank-dependent sectors observe larger changes in capital structure following deregulation. First, firms in more bank-dependent sectors experience a larger drop in debt after the reform (column 1). Bank debt declines on average by an additional seven percentage points for a firm in an industry that is at the 75th percentile of the pre-reform banking dependence distribution compared to a firm in an industry that is at the 25th percentile of that distribution.¹⁵

This drop in debt finance is compensated only in part by an increase in equity finance (column 3).¹⁶ We find that firms in more bank-dependent sectors experience a statistically significant relative increase in the use of trade credit after the reform (column 5). Trade credit goes up on average by another three percentage points for a firm in an industry that is at the 75th percentile of the pre-reform banking dependence distribution compared to a firm in an industry that is at the 25th percentile of that distribution.

Finally, the effect of the banking reform is also reflected in an increase in the cost of capital in the more bank-dependent sectors (column 7). This last change most likely reflects the reduction in the number of subsidized loans and other forms of directed lending programs. Overall, we see that firms in bank-dependent industries rely less on bank debt after the reform, substituting toward trade credit and, to a more limited extent, equity.

In the even columns of Table II, we investigate whether the changes documented above differ systematically based on firms' operating performance, which we measure as average ROA over the period in which a given firm is in our sample.¹⁷ If banks become more selective in their lending behavior, we should observe the largest changes in capital structure among the worst performing firms. The coefficient of interest in these regressions is that on the triple interaction term *After * Bankdep * ROA*₁. We also include in these regressions the double interaction terms *After * ROA*₁ and *Bankdep * ROA*₁. We find that the reduction in debt is indeed especially pronounced for poorly performing firms in the more bank-dependent sectors (column 2). These firms also experience the largest increase in reliance on trade credit (column 6). This suggests that poorly performing firms may have suffered from more severe capital rationing than better performing firms.¹⁸ Moreover, we also find that the increase in the cost of capital is more pronounced among poorly performing firms (column 8).

¹⁵ Pre-reform banking dependence is 0.37 at the 25th percentile compared to 0.57 at the 75th percentile.

¹⁶ As we discuss before, our sample covers both listed and nonlisted firms. We find that the increase in equity financing in previously more bank-dependent sectors was stronger for the listed firms in these sectors.

¹⁷ We replicate these regressions using base-year ROA as an alternative measure of performance and find qualitatively similar results.

¹⁸ See Petersen and Rajan (1995) for a discussion of the use of trade credit in capital-constrained firms.

Overall, the patterns in Table II confirm that the banking deregulation is associated with a change in the capital structure of French firms, especially those firms in the industries that were most reliant on bank financing prior to the deregulation. However, these results could be driven by changes in the *demand* for bank capital; for instance, due to the increase in the cost of capital (the mid 1980s is a period of sharply increasing rates in France), firms might optimally restructure their financing by relying less on bank loans, independent of any change in the behavior of banks toward stricter monitoring and screening of creditors. In the next section, we turn to a more direct analysis of possible changes in banks' lending behavior.

B. Changes in Bank Lending

To understand in more detail how banks change their lending behavior following the reform, we first look at the correlation between new net bank loans and shocks to firm performance. The hypothesis we investigate is that banks were more willing to "bail out" poorly performing firms prior to the reform, with this behavior dampening after the reform. Second, we analyze whether, conditional on securing new bank loans, firms are more likely to improve their performance after the reform. Reduced distortion in lending and subsequent improvement in banks' monitoring and screening abilities should reduce the provision of credit to firms that subsequently perform poorly.

In Table III, we study firm-level changes in bank debt as a function of firm-level changes in ROA. All the regressions in this table include industry and year fixed effects, and a control for firm size (the logarithm of lagged total assets). The regressions also allow for differential linear time trends by four-digit industry. Standard errors are clustered at the firm level.

In column 1, we regress the change in bank debt on the 1-year lagged change in the rate of return on assets.¹⁹ The estimated coefficient on change in ROA is negative and significant. This indicates that, on average, firms that experience negative shocks to performance receive more net loans. Interestingly, we find that this relationship changes after 1985. Column 2 of Table III indicates that the estimated coefficient for the post-reform period is still negative but not significant. Column 3 shows that the more bank-dependent industries experience a stronger reversal in lending patterns post-reform. The coefficient on the triple interaction term $After * Bankdep * ROA_{t-1}$ is positive and statistically significant.

The results in Table III thus far suggest that banks may have become more conservative in their lending decisions following reform, especially with respect to those sectors that were most reliant on banks prior to the reform. However, increased conservatism by itself is not a sign of better capital allocation, since banks might inefficiently screen out firms that experience transitory negative

¹⁹ Note that the results in this and the following tables are qualitatively similar when we use return on sales and other alternative performance measures as well as when we allow for longer lag structures.

Table III
Change in Firm-Level Bank Debt Following Shock to Firm-Level Performance: before and after the Banking Reform

The sample is the firm-level panel data set constructed from the tax files data set (see text for details). The sample period is 1978 to 1999. “High Performance Firms” (“Low Performance Firms”) are firms whose average ROA over the first 4 years in the sample was in the top (bottom) 25% of the firms in its industry. Also included in each regression is the logarithm of lagged total assets. Also included in column 3 are the two following double interaction terms: “After * Bankdep” and “ $\Delta ROA_{t-1} * Bankdep$.” Standard errors are reported in parentheses. Standard errors are corrected for clustering of the error term at the industry level.

Dependent Variable: 1-Year Change in Bank Debt							
Sample Time Period	All Firms 1978–1999			Low Perf. Firms		High Perf. Firms	
				Pre-85	Post-85	Pre-85	Post-85
ΔROA_{t-1}	–0.003 (0.001)	–0.001 (0.002)	0.027 (0.011)	–0.005 (0.002)	0.038 (0.024)	0.002 (0.003)	–0.002 (0.001)
After * ΔROA_{t-1}		–0.002 (0.002)	–0.026 (0.013)				
After * Bankdep* ΔROA_{t-1}			0.057 (0.030)				
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-specific trends	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.02	0.03	0.03	0.01	0.01	0.02	0.02
Number of Obs.	245,137	245,137	245,137	18,384	42,898	18,384	42,898

shocks but are profitable in the long run. To address this issue, we separately estimate the relationship between new loans and lagged change in performance for firms that have higher performance on average versus those that have lower performance. Banks should be willing to finance well performing firms that face temporary negative shocks, but should be unwilling to do the same for poorly performing firms.

We define a firm as a high (low) performer if its average ROA over its first 4 years in our sample falls within the top (bottom) 25th percentile of the firms in its industry over that period.²⁰ Columns 4 and 5 focus on lower performance firms, while columns 6 and 7 focus on higher performance firms. Columns 4 and 6 correspond to the pre-reform period (before 1985), columns 5 and 7 correspond to the post-reform period (after 1985).

We find striking evidence that the change in lending behavior is much more pronounced for poorly performing firms. This suggests that while banks were willing to lend more to poorly performing firms when they experienced negative shocks in the pre-reform period (the estimated coefficient on lagged change in ROA is negative and significant in column 4), they are no longer willing to do so in the post-reform period (column 5). However, we find the opposite effect

²⁰ We also repeat these tests measuring performance based on average performance over the entire sample period. The results are qualitatively similar.

Table IV
Change in Firm-Level Debt and Subsequent Firm Performance:
before and after the Banking Reform

The sample is the firm-level panel data set constructed from the tax files data set (see text for details). The sample period is 1978 to 1999. “ $\Delta \text{Residual Debt}_{t-1}$ ” is the residual from a regression of change in firm-level bank debt between t and $t - 1$ on a vector of observable firm characteristics: the logarithm of total assets, the logarithm of total employment, ROA, industry fixed effects, and a dummy for whether a firm is public or private. “ ΔDebt_{t-1} ” is the change in actual firm debt between year t and $t - 1$. “ ΔROA_{t+2} ” is the change in ROA between $t + 2$ and t . Also included in each regression is the logarithm of lagged total assets. Standard errors are reported in parentheses. Standard errors are corrected for clustering of the error term at the industry level.

Dependent Variable: ΔROA_{t+2}						
$\Delta \text{Residual Debt}_{t-1}$	0.040 (0.005)	-0.026 (0.013)	0.138 (0.076)			
$\Delta \text{Residual Debt}_{t-1} * \text{After}$		0.078 (0.015)	-0.124 (0.082)			
$\Delta \text{Residual Debt}_{t-1} * \text{After} * \text{Bankdep}$			0.510 (0.195)			
$\text{After} * \text{Bankdep}$			-0.398 (0.179)			
$\Delta \text{Residual Debt}_{t-1} * \text{Bankdep}$			-0.493 (0.069)			
ΔDebt_{t-1}				0.201 (0.020)	0.049 (0.066)	0.345 (0.201)
$\Delta \text{Debt}_{t-1} * \text{After}$					0.168 (0.072)	-0.217 (0.226)
$\Delta \text{Debt}_{t-1} * \text{After} * \text{Bankdep}$						0.992 (0.493)
$\text{After} * \text{Bankdep}$						-0.751 (0.456)
$\Delta \text{Debt}_{t-1} * \text{Bankdep}$						-0.428 (0.076)
Industry-specific trends	Yes	Yes	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.06	0.06	0.07	0.05	0.06	0.06
Number of Obs.	171,435	171,435	171,435	171,435	171,435	171,435

for firms that are higher performers. These firms receive increased bank debt after the reforms if they experience negative shocks to performance.

As a further step to understand changes in banks' lending practices, we analyze whether, subsequent to reform, there is a closer relation between banks' new net lending and *future* firm performance. If banks improved their screening and monitoring practices, we would expect that firms receiving new net bank loans would display more systematic improvement in future performance after the reform. We undertake this analysis in Table IV.

For this purpose, we first compute a measure of residual annual changes in bank debt at the firm level. We regress firm-level 1-year change in debt (as a

fraction of total assets) on observable firm characteristics (lagged ROA, lagged total assets, lagged employment, lagged fraction of tangible assets, whether a firm is public or private, and industry fixed effects). We use the residual from this regression as a measure of firm-level changes in bank debt that cannot be explained by observable firm characteristics. We also repeat this analysis without taking out the part of the debt that can be explained by changes in observable characteristics.

In column 1 of Table IV, we first regress future change in firm performance (between year $t + 3$ and year t) on the residual change in firm-level bank dependence (between year t and year $t - 1$).²¹ The regression includes controls for firm size, industry and year fixed effects, and industry-specific linear time trends. Standard errors are corrected for clustering of the error term at the firm level. The estimated coefficient on the change in debt is positive and significant over the entire period, indicating that, on average, firms that receive new net bank loans improve their performance in the following periods.

In column 2, we allow the change in the future performance/new net loans relationship to differ between the pre- and post-reform periods. We find that the positive effect in column 1 is entirely driven by the post-reform period. In fact, prior to the banking reform, we find a *negative* relationship between new bank loans and subsequent change in ROA. This seems to indicate that, prior to the reform, banks were lending to firms that subsequently did not improve their performance, while the opposite pattern emerges following reform. Columns 4 and 5 replicate columns 1 and 2, respectively, but consider the 1-year change in actual bank debt (rather than the residual change). We find qualitatively similar results, even though the pre-reform effect is now statistically insignificant (with a positive point estimate). Finally, in columns 3 and 6, we reexamine this relationship between new net loans and subsequent performance allowing for differential effects based on the pre-reform banking dependence in the firm's industrial sector. As expected, we find that the changes in lending patterns are more pronounced among the more bank-dependent sectors.

In summary, the analysis we conduct in this section suggests that banks altered their lending practices after the deregulation. These changes are consistent with an improvement in banks' screening and/or monitoring functions after the reform. This likely reflects both a change in the explicit objective functions of banks, which now put more emphasis on the credit quality of borrowers when determining loan size and interest rates, and a switch from an environment in which banks operated in a market plagued by distorted interest rates to a more market-oriented environment. This analysis also confirms that the industrial sectors that were more reliant on bank financing prior to the reform were most affected by the changes in lending practices post-reform. We now move to the central part of our analysis and ask whether this new banking environment resulted in changes in firm behavior and industrial structure in the nonfinancial sectors of the economy.

²¹ We experiment with a shorter time frame for the future earnings response (between year $t + 2$ and year t). The results are unaffected.

IV. Real Effects of the Banking Reform

Our analysis of the real effects of the banking reform consists of two parts. First, we ask whether the stricter post-reform lending practices generated pressure on firms to engage in more cost-cutting and restructuring activities. Such a response would be expected if firms face stronger incentives to strengthen their credit rating. Second, we investigate the hypothesis that the banking reform improved the dynamics and competitiveness of product markets, and possibly enhanced allocative efficiency within these sectors. This hypothesis captures the idea that the pre-reform practice of bailing out low performing incumbents is an implicit barrier to entry for prospective new firms. Based on our analysis in the previous section, our primary identification strategy in all the tests we present below relies on studying differential post-reform changes in behavior across sectors that relied on banks to various degrees prior to the reform.

A. Firms' Restructuring Activities

Table V studies firm-level restructuring activities. All the regressions in this table include firm and year fixed effects, industry specific time trends, as well as a control for firm size. The inclusion of industry-specific time trends is especially important here, as it implies that our identification relies on a break in trend around the time the banking reform was implemented. Standard errors in all regressions are clustered at the industry level.

The first variable we consider is the logarithm of average wage, where average wage is measured as the total wage bill divided by the total number of employees. We find that average wages increase substantially less in the more bank-dependent sectors after the reform (column 1). The magnitude of this effect is quite large, indicating a 4% relative drop in wages among industries at the 75th percentile of the pre-reform banking dependence distribution compared to industries at the 25th percentile of that distribution.²² Somewhat surprisingly, column 2 shows that this decline in average wage is stronger for the better performing firms in these sectors (with performance being measured as the average ROA over the entire sample period).

Another cost driver for firms is the decision to outsource part of their operations to other firms. Outsourcing is measured as expenditures on intermediary inputs relative to total sales. We do not find significantly more outsourcing, on average, in the more bank-dependent sectors after the reform (column 3). However, worse performing firms in these sectors do appear to outsource more following the reform (column 4).

The dependent variable in columns 5 and 6 is the logarithm of total assets. The point estimate in column 5 suggests that firms in more bank-dependent sectors grow at a significantly slower rate after the reform. Total assets are down by about 6% on average in industries at the 75th percentile of the

²² Note that because our wage measure is average wage per worker, we cannot distinguish between changes in average wage for a given worker or given skill set and changes in the composition of the worker pool (i.e., a move toward a less-skilled workforce).

Table V
Banking Reform and Firms' Restructuring Activities

The sample is the firm-level panel data set constructed from the tax files data set (see text for details). The sample period is 1978 to 1999. "Average wage" is the ratio of total labor expenses (in 1980 francs) over the number of full-time-equivalent workers. Outsourcing is defined as the ratio of intermediary inputs over sales. "ROA₁" is firm-level average ROA over the entire sample period. Also included in each regression is the logarithm of lagged sales. Standard errors are reported in parentheses. Standard errors are corrected for clustering of the error term at the industry level.

Dependent Variable	Log(Average Wage)	Outsourcing	Log(Assets)	Assets/Employee	ROA
After * Bankdep	-0.198 (0.028)	0.059 (0.025)	-0.300 (0.110)	-0.399 (0.143)	0.326 (0.069)
After * Bankdep * ROA ₁	-0.498 (0.077)	-0.084 (0.044)	0.541 (0.264)	0.065 (0.180)	0.537 (0.211)
After * ROA ₁	0.191 (0.031)	0.73 (0.018)	0.033 (0.056)	-0.121 (0.410)	-0.687 (0.104)
Bankdep * ROA ₁	0.187 (0.097)	0.084 (0.073)	0.384 (0.504)	-0.196 (0.439)	-0.676 (0.303)
Firm F.E.	Yes	Yes	Yes	Yes	Yes
Industry-specific trends	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
Adjusted R ²	0.84	0.84	0.89	0.85	0.44
Number of Obs.	325,928	325,928	325,928	325,928	325,928

pre-reform banking dependence distribution compared to industries at the 25th percentile. Column 6 shows that this relative drop in total assets is more pronounced among poorly performing firms. Our earlier evidence suggests that French firms had access to cheap credit in the pre-reform period, which might have led to overinvestment. We also show that the cost of capital increased most significantly among poorly performing firms. Hence, the findings in columns 5 and 6 may indicate that the tightening of bank lending reduced overinvestment of poorly performing firms in the more bank-dependent industries, but had a less significant impact on the firms with better credit within these industries. Again, this would be consistent with improved post-reform efficiency in bank lending.²³ Similarly, we find a relative decline after reform in the asset-to-employment ratio at firms in the more bank-dependent sectors (columns 7 and 8). The magnitude of this decline is comparable to that observed for total assets.

Finally, we examine changes in firm-level return on assets. Column 9 of Table V shows a significant relative increase in ROA in the bank-dependent industries after the reform. The coefficient on *After*Bankdep* is 0.326 with a standard error of 0.069. Hence, on average, ROA goes up by about 6.5 percentage points for a firm in an industry that is at the 75th percentile of the pre-reform banking dependence distribution compared to a firm in an industry at the 25th percentile of that distribution. While this is an economically large amount, it is not unrealistic given the observed variation in ROA in our data: A one-standard deviation increase in bank dependence translates into a relative post-reform increase in ROA that is equivalent to about one third of a standard deviation.

We also verify that this increase in ROA is not driven only by the previously reported decrease in assets. When we use the profit level as an alternative performance measure (results not reported), we again find a statistically significant and positive increase for firms in bank-dependent industries after reform. Column 10 shows that this improvement in ROA is stronger for firms that were already better performers at the beginning of the sample period.

In summary, we find evidence that firms in the more bank-dependent industries responded to the reform by engaging in more cost-cutting and restructuring activities. These firms also experienced larger improvements in performance. While one might conjecture that poorly performing firms faced the strongest pressures to restructure and improve performance, interestingly, our results suggest that those firms that were already performing better were those that displayed the strongest increase in performance after the banking reform. This lack of a strong performance response among poorer performers leads to the hypothesis that part of the real adjustment to the reforms may have taken place on the extensive margin, with poorly performing firms being forced to exit. We investigate such industry dynamics effects in the remaining part of the paper.

²³ We find qualitatively similar results when we look at capital expenditures. However, this variable is measured with much more noise in our data.

However, before proceeding further, we first discuss several additional tests we perform to assess the robustness of our findings so far to possible alternative interpretations.

B. Robustness Checks

At the basis of our empirical strategy is the idea that any changes in firm behavior after the banking reform should be more pronounced in those sectors that were most reliant on banks prior to the reform. As Section III shows, we find that indeed those sectors experienced the largest changes in capital structure after the reform. However, one may be concerned that the cross-sectional variation in pre-reform banking dependence may proxy for other sources of cross-sectional variation in the data besides relative exposure to the banking reform.

We implement several tests to address this source of concern. We report results for some of these tests in Tables VI–VII and discuss others in the text. In Table VI, we replicate our analysis of post-reform firm-level restructuring activities using the U.S. financial dependence index developed by Rajan and Zingales (1998). The correlation between this measure of bank dependence and the measure based on the French banking data is about 40%.²⁴ Using a U.S.-based measure of financial dependence addresses the concern that the French-based measure we employ may be capturing other industry characteristics beyond their financial dependence. For example, one may be worried that the French industries that were more dependent on banks prior to the reform may also be those industries that were most affected by the economic recession that lasted until the mid-1980s: If this were the case, the heightened restructuring activities we document in those sectors may signal in part that these sectors were economically weaker to begin with, that is, that they needed to restructure more. While the Rajan–Zingales measure might suffer from the fact that it is constructed based on large, publicly traded firms, it is less likely to depend on such short-term variation in economic health and it certainly does not depend on the specific shocks that may have hit the French economy in the early 1980s. As one can see from Table VI, our findings are qualitatively robust to using the Rajan–Zingales measure as an alternative source of cross-sectional variation in the expected intensity of exposure to the banking reform. The difference in the financial dependence index between an industry at the 75th percentile of the distribution compared to an industry at the 25th percentile is about 0.6. This implies that the magnitudes of effects in Table VI are quite comparable to the magnitudes observed in Table V.²⁵

In Table VII, we investigate whether our results are robust to allowing the level of restructuring activities after 1985 to differ across an additional set of

²⁴ We construct the financial dependence index from Compustat over the 1979 to 1984 period to be consistent with the time period in our paper.

²⁵ We replicate all tests using the Rajan–Zingales measure and find consistent results throughout the analysis. We report only the restructuring results due to space considerations.

Table VI
Banking Reform and Firms' Restructuring Activities—Rajan–Zingales Measure

The sample is the firm-level panel data set constructed from the tax files data set (see text for details). The sample period is 1978 to 1999. “Bankdep” is the measure of external financing dependence constructed along the lines of Rajan and Zingales (1998). It is measured as the fraction of capital expenditures not financed with cash flows from operations using COMPUSTAT data. “Average wage” is the ratio of total labor expenses (in 1980 francs) over the number of full-time-equivalent workers. “Outsourcing” is defined as the ratio of intermediary inputs over sales. “ROA₁” is firm-level average ROA over the entire sample period. Also included in each regression is the logarithm of lagged sales. Standard errors are reported in parentheses. Standard errors are corrected for clustering of the error term at the industry level.

Dependent Variable	Log(Average Wage)	Outsourcing	Log(Assets)	Assets/Employee	ROA
Bankdep * After	-0.036 (0.009)	0.027 (0.007)	-0.094 (0.019)	-0.044 (0.003)	-0.373 (0.019)
After * Bankdep * ROA ₁	-0.053 (0.012)	-0.057 (0.008)	0.053 (0.005)	-0.251 (0.027)	-0.269 (0.017)
After * ROA ₁	-0.029 (0.018)	0.041 (0.013)	0.585 (0.068)	0.443 (0.048)	0.108 (0.047)
Bankdep * ROA ₁	0.007 (0.005)	0.502 (0.004)	0.613 (0.086)	-0.272 (0.076)	-0.106 (0.058)
Firm F.E.	Yes	Yes	Yes	Yes	Yes
Industry-specific trends	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
Adjusted R ²	0.84	0.84	0.89	0.85	0.43
Number of Obs.	325,928	325,928	325,928	325,928	325,928

Table VII
Banking Reform and Firms' Restructuring Activities
Plus Industry Controls

The sample is the firm-level panel data set constructed from the tax files data set (see text for details). The sample period is 1978 to 1999. "Bankdep" is the average debt at the industry level between 1978 and 1983. "Capitalintens" is the industry average ratio of assets to employment between 1978 and 1983. "Firmsize" is the log of the average size of firm assets at the industry level between 1978 and 1983. "Wagelevel" is the log of the average wage per worker at the industry level between 1978 and 1983. "Average wage" is the ratio of total labor expenses (in 1980 francs) over the number of full-time-equivalent workers. "Outsourcing" is defined as the ratio of intermediary inputs over sales. Also included in each regression is the logarithm of lagged sales. Standard errors are reported in parentheses. Standard errors are corrected for clustering of the error term at the industry level.

Dependent Variable	Log(Average Wage)	Outsourcing	Log(Assets)	Assets/Employee	ROA
Bankdebt * After	-0.243 (0.029)	0.064 (0.019)	-0.327 (0.119)	-0.323 (0.113)	0.031 (0.070)
Capitalintens * After	0.008 (0.001)	0.001 (0.001)	0.004 (0.001)	0.003 (0.001)	0.001 (0.000)
Firmsize * After	0.001 (0.000)	-0.007 (0.002)	-0.004 (0.000)	-0.004 (0.001)	0.002 (0.000)
Wagelevel * After	-0.003 (0.002)	0.002 (0.001)	0.001 (0.000)	0.000 (0.000)	-0.007 (0.001)
Firm F.E.	Yes	Yes	Yes	Yes	Yes
Industry-specific trends	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.85	0.78	0.88	0.85	0.44
Number of Obs.	325,928	325,928	325,928	325,928	325,928

industry characteristics (besides banking dependence). The idea behind this test is to assess whether other industry characteristics (that are possibly correlated with banking dependence) are responsible for our findings. Specifically, we replicate the specifications of Table V but add a set of interaction terms between the *After* dummy variable and the following industry characteristics (all measured over the 1978 to 1983 period): average firm size, average capital intensiveness, and average wage.²⁶ The first and second variables should control for, among other things, the exposure of each industry to a number of stock market reforms that also occurred in France around the mid-1980s (see Section I).²⁷ Average pre-reform wage by industry should capture some of the industry-specific exposure to regulatory changes in the French labor market

²⁶ Capital intensiveness is defined as the ratio of assets to the number of full-time employees; average wage is defined as the ratio of the total wage bill to the number of full-time employees.

²⁷ We also experiment with adding an interaction term between the *After* dummy and the fraction of publicly traded assets by industry in the pre-reform period. The addition of this interaction term does not qualitatively affect our main findings on the interaction term between the *After* dummy and the pre-reform banking dependence measure.

over the 1980s.²⁸ As one can infer from a comparison of Table V and Table VII, our findings are remarkably robust (both in terms of statistical significance and economic magnitude) to adding these additional interaction terms.²⁹

An alternative approach to assessing whether the stock market reforms are driving our findings, at least in part, is to drop from the sample all firms that were publicly traded prior to the reforms. Our results on restructuring activities are if anything economically and statistically stronger if we restrict our sample to the set of private firms (not reported). This is difficult to reconcile with the idea that the stock market reforms are driving most of the real effects we have uncovered.³⁰

Finally, we also attempt to establish a more direct link between the timing of changes in capital structure documented in Section II and the timing of the restructuring activities documented in Table V. While the regressions presented in Table V can be viewed as reduced-form regressions, we estimate the complementary two-stage regressions in which we instrument firm-level bank debt with the variable *After * bankdep*. This two-stage approach allows us to assess whether the timing of the changes in capital structure (as predicted by the first-stage regression) coincides with the timing of the restructuring activities documented in Table V. Consistent with our interpretation of the reduced-form regressions, we find that a drop in *predicted* bank debt (from the first-stage regression) is associated with lower wages, more outsourcing, lower total assets and asset to employment ratio, and higher ROA.³¹

Overall, while we acknowledge that the nature of our experimental design leaves open the possibility that we might be capturing the impact of other economic changes or reforms in the French economy over this time period, we show that our results in Table V are remarkably robust to a series of robustness tests aimed at directly confronting any such alternative interpretation.

C. Industry Dynamics and Product Market Concentration

We now turn to an analysis of the effects of the banking reform on the rate of asset and job reallocation at the industry level, as well as on the concentration of

²⁸ In 1981, the socialist government increased the minimum wage by 5% and reduced the working week to 39 hours (Crépon and Kramarz (2002)). In 1986, the newly elected conservative government removed many of the administrative restrictions to hiring under fixed-term contracts (Givord and Maurin (2004)).

²⁹ Some of the industry characteristics included in Table VII are potentially endogenous to the distortions in the banking sector pre-reform, which is why we choose not to include them in our main specifications.

³⁰ We also experiment with dropping from the sample all firms that were ever public and find similar patterns.

³¹ We prefer not to rely more broadly on this two-stage strategy since we do not believe that the banking reform solely affected the level of bank debt but also (as we discuss earlier) other aspects of banks' lending behavior. We also replicate our results using dummies for each year after the deregulation. We find that the changes documented in Table V are particularly strong in the first 5 years after the deregulation. In a related test, we also repeat the analysis of Table V using a set of "placebo" event dates and do not find significant effects around these placebo event dates.

product markets. If poorly performing incumbents no longer receive easy access to cheap bank loans after the deregulation, they should have reduced chances of survival, which in turn should lower the barriers to entry for prospective new entrants.

We start by investigating changes in industry-level gross capital and job flows after the banking reform. Our empirical approach to identifying the effect of the banking reform is, as before, to look at differential post-reform changes for industries that were most reliant on banking finance in the pre-reform period. The results of this analysis are reported in Table VIII.

As described in Section II, we construct industry-level time series of gross asset, job, and firm flows based on *all* firms included in the original tax files data. More specifically, for each industry-year cell, we compute the following variables: number of entering firms, number of exiting firms, creation of assets (jobs) by incumbent firms, creation of assets (jobs) due to entry, destruction of assets (jobs) by incumbent firms, and destruction of assets (jobs) due to exit. When measuring asset-flows due to entry and exit, we also distinguish between two categories: true entries and exits, and entries and exits due to firms switching industries.

Table VIII
Banking Reform and Industry-Level Reallocation Flows

The sample is the industry-level panel. The sample period is 1978 to 1999. The dependent variables are industry-year measures of asset, employment, and firm flows. These measures were computed based on all firms in the French tax files. All of these variables are measured in logarithms; see text for details. Each cell in the table corresponds to a separate regression. Reported in each cell is the estimated coefficient on the interaction term "After*Bankdep." Also included in each regression are industry and year fixed effects and a control for the logarithm of the relevant stock (assets in column 1, employment in column 2, number of firms in column 3) in that industry-year cell. Full results can be obtained from the authors upon request. Standard errors are in parentheses. Standard errors are corrected for clustering of the error term at the industry level.

Dependent Variable	Asset Flows	Job Flows	Firm Flows
Creation through entries	1.35 (0.58)	0.67 (0.45)	0.41 (0.20)
Creation through true entries	1.33 (0.60)	0.68 (0.45)	0.36 (0.21)
Creation through industry switches	0.70 (0.85)	0.75 (0.77)	0.65 (0.28)
Destruction through exits	0.68 (0.74)	1.12 (0.52)	0.67 (0.20)
Destruction through true exits	1.36 (0.54)	1.25 (0.53)	0.56 (0.20)
Destruction through industry switches	1.29 (0.96)	0.78 (0.64)	1.30 (0.27)
Creation by incumbent firms	-0.37 (0.39)	-0.04 (0.34)	-
Destruction by incumbent firms	0.41 (0.48)	0.52 (0.36)	-

The findings in Table VIII are based upon regressions of logarithms of the above flow measures on year and industry fixed effects and an interaction of the post-reform dummy with the pre-reform industry-level banking dependence. Also included in each regression is the logarithm of the relevant stock variable (assets, employment, or number of firms) in that industry-year cell. Each cell in this table corresponds to a different regression and contains the estimated coefficient on the interaction term. Standard errors are clustered at the industry level. The first column of Table VIII focuses on asset flows, the second column on job flows, and the last column on firm flows (exit and entry).

In row 1 of column 1, we study the creation of assets through entries into the industry. The coefficient is positive and significant, indicating a relatively higher rate of entry following reform in the more bank-dependent sectors, increasing by about 26% in an industry at the 75th percentile of the pre-reform banking dependence distribution compared to an industry at the 25th percentile of that distribution. When we break down these asset flows into newly created firms (row 2) and industry switchers (row 3), we find that most of the economic impact comes from newly created firms.

In row 4, we study the destruction of assets through exits. The estimated coefficient on the interaction term is positive but not statistically significant. Again, we divide firm exits into true firm exits (row 5) and industry switches (row 6). We find a positive and statistically significant increase in true exits in the more bank-dependent sectors. The magnitude of this effect is about the same as that observed on the creation margin.

Finally, the last two rows focus on investment and disinvestment by incumbent firms. The estimated coefficients are statistically insignificant and much smaller in economic magnitude, indicating lower changes in asset flows on the intensive margin. We obtain qualitatively similar results when we focus on job flows (in column 2) and firm flows (column 3).

In summary, the results in Table VIII point strongly toward a differential increase in reallocation rates (of assets and jobs) in the more bank-dependent sectors after the reform. This increase in reallocation is mainly driven by changes on the extensive margin. After the reform, a higher fraction of assets are created and destroyed by the entry of new firms and the exit of incumbent firms. These results are consistent with the view that pre-reform distortions in lending may have created effective barriers to entry in the real sectors of the economy.

If increased resource reallocation and firm exit and entry rates are indeed symptomatic of more dynamic and competitive industry structures, we might also expect market concentration to decrease after the banking reform, especially in the more bank dependent sectors. To determine the extent to which this was the case, we construct two different measures of concentration, namely, a Herfindahl index and a measure of the market share of the five largest firms in each industry-year cell. We compute these two measures based on the three firm-level variables: sales, total assets, and employment. All regressions in Table IX include industry and year fixed effects. As usual, the coefficient of interest is that on the interaction term between the post-reform dummy and

Table IX
Banking Reform and Industry-Level Concentration

The sample is the industry-level panel. The sample period is 1978 to 1999. The dependent variables are annual measures of industry concentration computed from all firms in the French tax files; see text for details. Standard errors are in parentheses. Standard errors are corrected for clustering of the error term at the industry level.

Dependent Variable	Sales-Based		Asset-Based		Employment-Based	
	Herfindhal	% of Largest	Herfindhal	% of Largest	Herfindhal	% of Largest
After * Bankdep	-0.11 (0.06)	-0.13 (0.07)	-0.15 (0.06)	-0.16 (0.08)	-0.16 (0.06)	-0.20 (0.07)
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.76	0.74	0.74	0.72	0.79	0.76

our industry-level measure of bank dependence. Standard errors are corrected for clustering of the error term at the industry level.

The results indicate a reduction in product market concentration in the more bank-dependent sectors after the reform. This is true whether we use Herfindahl indices (columns 1, 3, and 5) or concentration measures based on the market share of the largest firms (columns 2, 4, and 6). We find consistent results whether we use sales (columns 1 and 2), total assets (columns 3 and 4), or employment (columns 5 and 6) to construct these concentration measures. The Herfindahl index declines following reform by between 0.02 and 0.03 post-reform for an industry at the 75th percentile of the pre-reform banking dependence distribution compared to an industry at the 25th percentile of that distribution. Similarly, the market share of the five largest firms declines by three to four percentage points for an industry at the 75th percentile compared to an industry at the 25th percentile.

D. Allocative Efficiency

Higher reallocation rates are often interpreted as a sign of a more competitive and efficient business environment. This view goes back to Schumpeter's idea of a "creative destruction" process (Schumpeter (1934)). However, an increase in the turnover rate of firms need not imply higher efficiency if firms are wrongly forced to exit.³² To investigate whether the post-reform increase in asset reallocation is symptomatic of an increase in allocative efficiency, we go back to the firm-level data, and ask two different questions.

³² For example, the credit channel literature highlights mechanisms whereby frictions in the banking sector can amplify negative macroeconomic shocks through changes in the cost of capital and lead to inefficient turnover of firms. See, for example, Kashyap and Stein (1994) or Holmström and Tirole (1997).

Table X

Firm Exits and Market Share: before and after the Banking Reform

Sample is the firm-level panel data set constructed from the tax files data set (see text for details). The sample period is 1978 to 1999. "Exit" is a dummy variable that equals one if the current year is the last year the firm is in existence and zero otherwise. " ROA_{t-1} " is return on assets 1 year before the current year. "Market Share" is the firm's market share in its industry in that year (sales-based measure). Also included in each regression is the logarithm of lagged total assets. Standard errors are reported in parentheses. Standard errors are corrected for clustering of the error term at the industry level.

Dependent Variable	Exit				Market Share	
ROA_{t-1}	-0.007 (0.001)	-0.006 (0.001)	-0.003 (0.001)	-0.001 (0.001)		
After * Bankdep		0.003 (0.001)		0.007 (0.011)	-0.056 (0.158)	
After * ROA_{t-1}			-0.006 (0.001)	0.009 (0.005)	0.025 (0.005)	0.025 (0.006)
After * Bankdep * ROA_{t-1}				-0.016 (0.007)		0.293 (0.091)
Bankdep * ROA_{t-1}				-0.005 (0.008)		0.062 (0.040)
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Industry-specific trends	Yes	Yes	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.08	0.08	0.08	0.08	0.79	0.79
Number of Obs.	325,928	325,928	325,928	325,928	325,928	325,928

First, we ask whether exit decisions are more closely related to firm performance after the banking reform. We present the results of this test in columns 1 to 4 of Table X. The dependent variable in these columns is a dummy variable that equals one if this is the last year the firm is present in the data, and zero otherwise. All regressions include industry and year effects and allow for differential linear trends by industry.

Column 1 regresses the exit dummy on firm ROA in the prior year. On average, we find that worse performing firms are more likely to exit. Column 2 confirms the industry-level results of Table VIII in that it suggests that higher post-reform exit probabilities correspond to the more bank-dependent sectors. Interestingly, column 3 shows that the (negative) sensitivity of exit to performance is three times as large after 1985 as it is before 1985. In column 4, we allow for post-reform differential sensitivity of exit to performance in more and less bank-dependent industries. The coefficient on the triple interaction term *After * Bankdep * ROA_{t-1}* indicates that the increased sensitivity of exit to performance after 1985 is especially pronounced in the more bank-dependent sectors. After reform, the (negative) sensitivity of exit to performance increases by close to 50% (compared to the base sensitivity in column 1) for firms in industries at the 75th percentile of the pre-reform banking dependence compared to those at the 25th percentile of that distribution.

Table XI
Industry-Level Changes Following the Banking Reform

The sample is the industry-level panel data set (see text for details). The sample period is 1978 to 1999. "Employment" is defined as the total number of full-time-equivalent workers in the industry. "Average Wage" is the ratio of total expenditure on labor divided by the total number of full-time-equivalent workers in the industry. "Capital" is defined as total stock of fixed assets in the industry (measured in 1995 francs). "VA per worker" is total value added divided by total number of full-time-equivalent workers in the industry. Standard errors are reported in parentheses. Standard errors are corrected for clustering of the error term at the industry level.

Dependent Variable	Log(Employment)	Average Wage	Log(Capital)	VA per Worker
After * Bankdep	1.137 (0.494)	-4.65 (2.86)	0.306 (0.375)	12.11 (7.79)
Industry F.E.	Yes	Yes	Yes	Yes
Year F.E.	Yes	Yes	Yes	Yes
Adjusted R^2	0.33	0.65	0.47	0.12
Number of Obs.	11,210	11,210	11,210	11,210

Second, we ask whether better performing firms have higher market shares within their respective industry after the banking reform. If prior to the reform some firms were given access to financial resources despite their poor performance, we would not expect a close relationship between firm performance and market share in the pre-reform period. However, this relationship should become stronger in the post-reform period, especially in the more bank-dependent sectors. The findings in columns 5 and 6 of Table X confirm this hypothesis. We regress a firm's market share in a given year on that firm's ROA in the prior period.³³ In column 5, we find a stronger positive correlation between market share and average ROA in the post-reform period. In column 6, we investigate whether this pattern is especially strong in the more bank-dependent sectors. The coefficient on the triple interaction term $After * Bankdep * ROA_{t-1}$ is positive and statistically significant.

We also look directly at several measures of efficiency and cost structure at the industry level. The regressions in Table XI follow the same structure as in Table IX; each regression includes industry and year fixed effects. The coefficient of interest is that on the interaction term between the post-reform dummy and our industry-level banking dependence measure. The dependent variable in column 1 is the logarithm of total industry employment. Interestingly, we find that more bank-dependent sectors grew relatively more rapidly after the banking reform. This employment effect is complemented by slower wage growth. However, we find no evidence of differential asset growth in these sectors (column 3). This contrast between the employment and asset-based industry size measures may be (again) symptomatic of excessive physical investment in the pre-reform period due to distortions in bank lending. Finally,

³³ We also replicate the results using average ROA over the entire sample period and find qualitatively similar patterns.

column 4 investigates possible industry-level productivity effects. We use industry value added per worker as a productivity measure. The point estimate in column 4 suggests overall relative post-reform improvement in labor productivity in the more bank-dependent sectors, even though this effect is somewhat noisily estimated.

V. Conclusion

In this paper, we study the economic consequences of a reduction in governmental intervention in the French banking industry after 1985. The richness of the available firm-level data allows us to undertake a unique analysis of the effects of this reform for firm behavior and industry structure.

We first document sharp changes in capital structure and bank lending decisions after the reform, which we argue are consistent with increased efficiency in bank lending decisions. Among other things, we find that worse performing firms experienced a significantly higher increase in cost of capital after the reform as well as reduced access to new bank loans. We also present evidence that suggests banks improved their monitoring and/or screening functions after the reform.

We then show that the banking reform was associated with changes in firm behavior such as a lowering of average wages and an increase in the amount of outsourcing. While the reform was consistent with an overall improvement in firm-level return on assets, such improvement was mostly concentrated among firms that were already good performers. On the other hand, the worst performing firms became more likely to exit after the banking reform. Hence, any disciplining effect of the banking reform appears to have been strongest on the extensive margin. Our industry-level analysis of reallocation rates confirms this finding, as we find that most of the post-reform increase in reallocation arose from higher entry and exit rates of firms. Finally, we show that the industrial sectors that were most reliant on bank financing prior to 1985 became relatively less concentrated and experienced relatively more employment growth after the banking reform.

Overall, our findings suggest that a well-functioning banking sector may play an important role in fostering a Schumpeterian process of creative destruction. The soft incentives in the banking sector prior to the reform may have created artificial barriers to entry by unduly protecting incumbents and thereby dampening the efficiency-inducing effects typically associated with a more competitive environment.

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