Financing a planned economy.

Institutions and credit allocation in the French Golden age of growth (1954-1974).

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Abstract :

The role of banking and finance in the Golden Age of European growth (1950-1973) is very little known and widely underestimated. This paper studies the French system of economic planning and investment-based strategy that enhanced medium and long term financing (called 'investment credit'). First, I describe the new institutions that were built after WWII to organize credit allocation and especially highlight the role of the central bank. I then use a newly constructed database that matches the amount of credit (that had to be registered at the Banque of France) in 49 sectors to corporate tax sectoral statistics. It shows a significant positive relationship between 'investment credit' and the marginal product of capital. The allocation of medium/long term credit managed to favor the allocation of productive capital across sectors and thus to ensure the catch-up process. Using GMM estimations in order to avoid the endogeneity bias, I find that the effect of 'investment credit' on growth is significant and positive, contrary to short term credit which did not play any role for investment. The new institutions that emerged after WWII were designed to solve a coordination problem that is to finance long term investment although it was not privately beneficial because too risky for banks. Understanding the institutional framework that shaped the mechanisms and success of credit policy in the French mixed economy during the 50s and 60s also helps to understand its failures during the mid 70s.

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There is a financial paradox about the Golden Age of European Growth. How can the era of the highest sustained economic growth ever could have been associated with financial repression? The usual explanations of postwar growth, the catch-up hypothesis or factor reallocation, do not solve the puzzle. Reallocation of factors and technological investments necessarily need to be financed and some financial institutions must channel the funds. While the importance of financial development for growth has been extensively studied and documented by many historians and economists (Rajan and Zingales 1998, Beck, Levine and Loyza 2000, Rousseau 2002, Rousseau and Sylla 2003), it is noteworthy that the recent literature about post-war European economic growth and the catch-up process (Crafts and Toniolo 1996, Eichengreen 2007, Temin 2002, Vonyo 2008) has largely ignored the financial factors and institutions that promoted this tremendous growth. Indeed, scholars have focused on trade openness, productivity gains, human capital, low wages, government expenditures and the rise of consumer society, but have neglected to study how the huge increase of investment was financed, though the size of financial markets remained very small until the 80s and though the reconstructing economies faced credit constraints due to informational problems and destruction of collateral during the war. Some studies focus and how financial repression -especially capital controls- may have hampered growth in postwar Europe (Saint-Paul 1991, Wyplosz 1999, Voth 2003,) but there is still little explanation about the financial institutions and mechanisms that managed to foster growth. This paradox is especially striking for France, a country that featured all the main characteristics of financial repression and had the lower rate of self-financing among western european nations over the period (Hautcoeur 1999). The banking system was forced to hold government bonds to allow the government to finance budget deficits at a low cost ; the development of equity markets was small and discouraged; the banking system faced interest rate ceilings to prevent competition with public sector fund raising ; the regulations included interest rate ceilings, compulsory credit allocation and ceilings, and high reserve requirements, which were also instruments of monetary policy; the government owned or controlled the main domestic banks and financial institutions, and the transfer of assets abroad were

restricted through the imposition of capital control (Wilson 1957, Loriaux 1991, Monnet 2011a, 2011b). Needless to say, these features were common in Western Europe, Japan and East Asia at that time and they are still characterizing many developing countries today.

Political scientists working on the French economy (Hall 1986, Hayward, 1986, Zysman 1986, Loriaux 1991) have highlighted the strong relationships between industrial policy and credit policy in a context of strong government intervention and a very segregated and supervised banking system. They have discussed whether these strong links might have benefited growth[1], but there is still no quantitative evidence on this issue. There have been some fascinations as well as strong criticisms of the French indicative planning, but its financial side remains largely unexplored. In their studies of French growth, Carré, Dubois and Malinvaud (1972) paid no attention to finance, and Sicsic and Wyplosz (1995) only looked at the amount of credit in ten industries for one year only (1956). To answer this question it is clearly insufficient to consider only directed credit from the State to the largest industries. In a dirigist/mixed economy, public intervention exceeds the frontiers of the state. The role of banks (most of them were nationalized) and semi-public credit institutions must be explained and taken into account.

The contribution of this paper is thus to offer a comprehensive study of credit allocation in postwar France. It highlights the importance of the Banque of France in credit allocation, notably through qualitative control (recommendations) and rediscounting (especially of medium term credit). Three main questions will be at the core of the analysis: how the recommendations from the government and the central bank to allocate credit in sectors that deserved priority were enforced? was this allocation of credit efficient? and how financial development evolved over time and affected growth ?

To address these questions I use both archival material from the National Credit

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[1] According to Loriaux, 1991, p.4:"The French state's characteristic ability to promote investment through control over the supply of credit enabled the French to achieve rapid industrial development and industrialization in the 1950s and 1960s. But as the international economic constraints of the 1970s overloaded the state with contradictory demands, interventionism met with fewer and fewer successes."

Council (*Conseil National du Crédit*) and a newly constructed database that matches sectoral characteristics from corporate tax data and the amount of credit by sectors from the Bank of France (*Service central des risques*). It is the first work that matches these two sources in a comprehensive way for the whole period. The data at a sector level had not been used previously because of changes in national accounting, credit data and official definitions of sectors in 1975. The database includes 49 sectors and distinguishes between short term credit and medium or long term credit, then allowing a detailed quantitative account of sectoral credit allocation over this period.

First, I portray the French banking system and its new institutional features after the war. New regulatory institutions and the Planning Office were created to ensure that "credit allocation served national priorities" and that French firms receive enough credit to invest and increase their productivity. In particular, semi-public specialized credit institutions and the Bank of France played a great role in giving priority sectors an access to medium and long term financing instead of only commercial bills. Medium and long term credit were called and registered under the name " investment credit"(*crédits d'investissment*). These new institutions were designed to favor financial development when the economy faced prevalent credit constraints that were not likely to be relaxed without public intervention. I interpret this new system with a strong intervention of the State as an institutional design that solved a coordination problem (Rodrik 1994) and has the property of second-best institutions (Rodrik 2008). It enabled the French economy to finance long term investment which was crucial to approach the technology frontier (Acemoglu, Aghion, Zilibotti 2006).

Such a dirigist economy with an investment-based strategy was thus characterized by selective and directed credit as well as by many information and recommendations issued by the Planning office or the National Credit Council in order to guide banks' behaviors. All these orientations in credit allocation operated at a sectoral level and were reinforced by the segregation of the banking system. Furthermore, monetary policy of the Banque of France also reinforced credit discrimination across sectors through discount ceilings and selective limits on credit expansion.

These complicated interactions between banks, specialized credit institutions, the Planning office and monetary policy make impossible to identify and distinguish precisely the share of credit that was allocated through a pure market process from credit that was allocated through public intervention. Our approach thus addresses the problem at a broad macroeconomic level and use the sectoral database to highlight the main characteristics and effects of credit allocation. I especially focus on the distinction between short term and medium-long term credit. This distinction is important not only because it was recognized as an important issue at that time by policymakers but also because the comparative performance of both types of credit on investment is still an open question in the economic literature (Diamond 1991, Hart and Moore 1994, Diamond and He 2011) .

The characteristics contained in corporate tax statistics allow the calculation of marginal returns of capital (MPK) for each sector over the period 1955-1974. The positive correlation between the MPK and medium and long term credit then shows that this type of credit (*crédit d'investissement*) indeed flowed to the sectors with the higher marginal return, in agreement with the predictions of neoclassical theory. This relation does not hold for short term credit whose role was mainly to support temporary commercial transactions rather than to favor investment. An important result is that this positive correlation is still significant - though smaller - for a sample of the smallest sectors. This simple analysis of the allocation of credit, which has never been done at such a macroeconomic level, thus highlights the efficiency of credit allocation during this period. The correlation between credit and the ratio numbers of workers/turnover by sector is not significant, thus ruling out the argument that the allocation of credit was primarily determined by the willingness to support directly employment for political economy reasons. Furthermore, the correlations do not show any decrease in the 'efficiency' of credit allocation at the beginning of the 70s. So, rents in some industries and credit misallocations seem to be a phenomenon that did not arise before the late 70s, after the oil shocks.

Then I use the within estimator in a dynamic panel framework to estimate the determinants of the amount of credit within each sector over the period. Short

term and medium/long term credit both increase with the turnover of the sector, but mid-term credit increases when the sector becomes more capital intensive while the effect is the opposite for short term credit. I also estimate the impact of monetary policy on credit using an index of credit control (monetary restrictions) I constructed in a previous paper based on archival material (Monnet 2011b). Credit control affects both type of credit in a comparable way but this effect differs strongly for the biggest sectors. Indeed, monetary policy had no significant impact on credit in the 10 biggest sectors which were also the more officially protected by the instructions of the Planning office and the National credit council (mettalurgy, siderurgy, oil, transports, electricity etc.). It confirms quantitatively how credit control was used by the Bank of France as a device to credit selectivity. Finally, I estimate the effect of credit on investment and turnover with panel data using GMM (Arellano and Bond 1991) following classical analysis of the consequences of financial development on growth (notably as in Beck, Levine Loyaza 2000). This method is designed to avoid the endogeneity bias. I find that medium and long term credit had a significant positive impact on investment and turnover. This result confirms how decisive was the *crédit d'investissement* for growth. This type of credit had first been mainly granted by semi-public credit institutions and the Bank of France (through rediscounting) before commercial banks also started to lend at a longer term by the end of the 50s.

1 The "nationalization of credit"

After WWII, French politicians faced two political and economic priorities: the need for investment and the "nationalization of credit" (Loriaux 1991, Margairaz 1992, Andrieu 1991, Feiertag 2006). The first one was essential to reconstruct the economy, and will then become a constant claim of the 50s and 60s to favor a new birth of industry. The second one was a political consideration that built on a large consensus among policymakers from the left to the right, and was especially supported by the center right, the dominant political force of the IVth Republic. The "nationalization of credit" was not an exact synonym of the nationalization

of the banking system even though the four major commercial banks as well as the central bank were nationalized in December 1945. This expression meant that the State had to organize a network of public, private institutions and supervisory agencies that would guarantee that credit would finance the national economic and social priorities. It was an essential feature of France's New Deal (Nord 2011).

A consensus was built about the quest for growth and the compelling sense of French economic backwardness. In the words of Richard Kuisel, 'By 1945 French public authorities had developed a keen sense of economic retardation and accepted the need for expanding and making more use of the nation's economic potential" (p.277). These views were shared both by neoliberal and technocrats reformers from the right and the center right and by socialists-syndicalists who had already developed the idea of "nationalization of credit" during the 30s (Andrieu 1991, Monnet 2011a). They shared the idea that the private sector, and especially the banks have failed to provide French economy with the level of productivity and financial development that it deserved. The influential economist Alfred Sauvy was a prominent figure to denounce French economic and demographic malthusianism in the interwar period[2]. .

This climate of change also gave birth to indicative planning (Wilson 1957, Andrieu 1991, Monnet 2011a). The institution that supported indicative planning was the Planning Office and the Ministry of Finance. The main institution that supported the "nationalization of credit" was the Banque de France, and especially two new supervisory agencies within the Banque: the *Conseil National du Crédit* (CNN, National Credit Council) and the *Commission de Control des Banques* (CCB, Commission of Banking control). The latter was in charge of banking supervision while the first one was in charge of the allocation of credit, that is to set and monitor the rules about credit that applied to banks and credit institutions and to organize the main credit policy orientations. The CNN also developed an important service of statistics (*Service central des risques*) that recorded the amount of credit by sectors.

A simple graphical representation of the French financial system (Figure 1) shows

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[2]Alfred Sauvy, *Chances de l'économie française*, 1946, pp.242-251
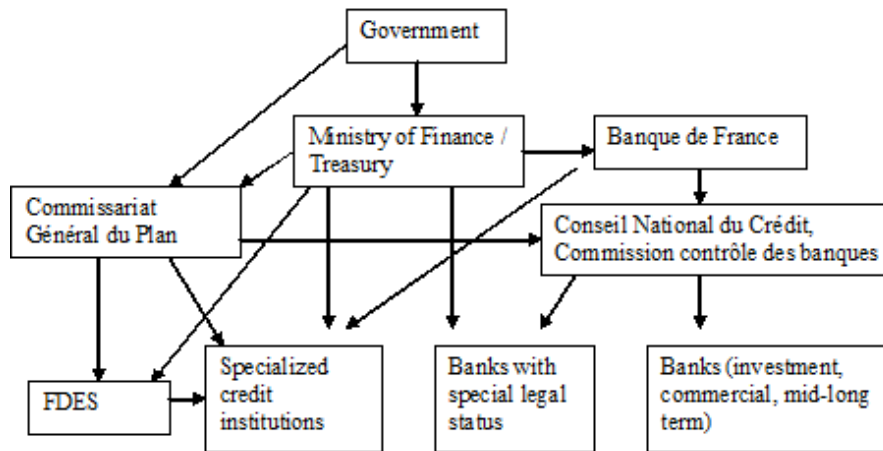
how these institutions were interconnected.

Figure 1: French planning and banking and credit supervision

2 Priority to medium and long term credit : the *crédit d'investissement.*

Among the distinctive properties of the new system, there was a strong focus on the development of medium and long term financing of firms. Before WWII French banks usually did not lend at a long maturity. The commercial bill (escompte) was still the predominant form of banking activity. Big firms could raise funds at a longer term on the stock market. This predominance of short term credit was considered as an essential weakness of the French financial system and much effort were devoted to solve this problem[3]. Institutions were created or reformed to finance the French economy at a longer term. The public long term loans from the Treasury were increased through the FDES (Fonds de développement économique et social). More power and new attributions were given to the semi-public credit institutions (Credit National, Crédit Foncier, Caisse des dépôts, Banque française du commerce extérieure) whose role had always been to provide long term financing. These reforms increased credit financed by the fiscal side, what was then called the 'Treasury circuit' (Margairaz 1992, Quenouelle-Corre 2005). But there was also important reforms on the monetary side: the Banque de France started to rediscount medium term bills. This new policy, which was potentially very inflationary, was much more than only symbolic. It completely changed the activities of French banks since they were allowed to lend between 1 year and 5 years with the guarantee of the central bank.

These medium and long term credit were registered in the CNC statistics as *Credit d'investissement* ('investment credit').

One fundamental characteristic of the French economy after WWII is that the usual tools of financial repression were associated with an active credit policy in order to increase financial development and investment. Financial repression was not an isolated policy deemed to increase seignoriage but a set of protectionist

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[3]Feiertag (2006) highlights the role of Wilfrid Baumgartner, director of the Credit National (1936-1949), then Governor of the Banque de France and finally Minister of Finance (1960-1962), in the way credit policy had been implemented.

rules aimed to favor domestic financial development (especially long-term financing) (Loriaux 1991).

The system was organized is such a way that the authorities kept control on the allocation of credit and issued guidelines to banks following the recommendations of the indicative planning. Nevertheless it is extremely difficult to identify and evaluate the strength of the constraint on banks. Except for the loans of the FDES which were granted by the Plan and the Treasury, most of the French loans were granted in an autonomous way by bankers. The main constraint was the threat that the Banque de France would not rediscount the medium term bills if it was granted in a way that obviously differed from the main recommendations of the CNC. The functioning of the system must be evaluated as a whole rather than looking at a specific type of credit since there were probably a lot of substitution mechanisms (for example, the FDES investments were substitutes to credit from banks or credit institution when the latter was not considered as sufficient by the Treasury).

The distinction between short and medium/long term credit is not so well documented in the economic literature. From a theoretical point of view, following the Modigliani-Miller theorem, there is no difference for a firm between financing at a short maturity (and rollover the loan or ask for a new one), and financing at a long maturity. A influential model that include idiosyncratic risks (Meyers 1977) shows that it is better for the firm to get shorter loans because long term loans can cause a debt overhang and underinvestment. A recent paper by Diamond and He (2011) challenged this idea and shows that short term debt can also create a great overhang where the risk of default is severe. Short-term debt with the possibility of default can impose even greater overhang, simply because there is less uncertainty resolved over the shorter time until it matures, and as a result most of the first part of any initial increase in value (due to investment or bailout to avoid default) will not result in any payoff to equity. It explains why short term debt is often involved in recessions.

Hart and Moore (1994) take a different view and state that the difference between

short term financing and long term financing arises because of the threat of a renegotiation/liquidation. If the creditor cannot credibly commit not to repudiate again in the future, then the debtor may liquidate even though gross returns exceed liquidation value. Short term debt may give too much control to the creditor and lead to premature liquidation. Long term debt then work as a protection for the debtor. Without this protection, firms may hesitate to invest in equipments that brings a long term return. It explains why Hart and Moore notice that 'long-term loans are usually used for fixed-asset acquisition, of property, leasehold improvements, machinery and the like. Short-term loans, on the other hand, tend to be used for working capital purposes - e.g for payroll needs, for financing inventory, for smoothing seasonal imbalances." (1994, p.864) From a planner point of view that wants to maximize investment in the economy, medium term and long credit is better when there is a sufficient risk such that a firm with only short term bills would never invest in long term equipment. This simple consideration justifies why in growth model, the assumption is made that long term investment contribute more to productivity growth (Acemoglu et al. 2006, Acemoglu et al. 2010), and why investment-based strategy focus on long term subsidies (Acemoglu and Zilibotti 1997, Acemoglu et al. 2006).

The French financial system was thus organized to solve an agency problem: offering the guarantee that the State will be responsible for long term loans and the guarantee that the Banque of France will rediscount medium term loans. These guarantees of course had their drawbacks : too much default could have led to a fiscal crisis or to a monetary crisis. The credibility of the governement and the central bank, as well as the conviction that growth was ongoing and sustained, were thus fundamental pillars of these guarantees. Bank's short term views and attitudes in the interwar period were accused to have prevented long term investments. The *crédit d'investissement* was supposed not only to increase investment but also to foster the specialization of industries. Technology specialization is normally a consequence of well functioning financial markets : finance contributes to growth by facilitating a greater division of labor (Saint-Paul, 1992). The French postwar financial institutions were reformed to accomplish this specialization. The

banking system was thus very segregated with many banks specialized in a specific sector (Wilson 1957).

The drawbacks of such an organization of the allocation of credit is that it can create rents and channel credit to inefficient firms and sectors because of bad information, path dependency or political pressures (capture of the bureaucrats or rent-seeking). In the late 1970s, these rents were widely recognized (Dutailly 1981) by policymakers and entrepreneurs likewise and they may have been a cause of the stagflation of the 70s and 80s as famously explained by Olson (1982). Betrand, Schoar and Thesmar (2005) have shown that the French banking liberalization of the early 80s eliminated many inefficient firms from the economy. Nevertheless, from the early 50s to the early 70s, the support of investment through medium and long term credit might have played a great role in the catch-up growth. Good information about the sectors that deserved priority, the control of financial disintermediation and the credibility of disinflationnist policies were essential elements to ensure a good allocation of credit in the French dirigist economy.

In a paper about postwar growth in Taiwan and Korea, Dani Rodrik (1994) highlighted the role of investment-based policies that worked either through direct subsidies or through the coordination of information. The institutions and policies in these two countries were quite similar to French postwar institutions. Rodrik interprets these institutions as solving a coordination failure : while the rate of return to coordinated investments was high, the rate of return to individual investments remained low (p.78). Interestingly enough, the conditions described by Rodrik for government intervention to work are very relevant in the French context: first the country must be ready for economic take-off (that is there must be other good institutions, sufficient human capital etc.) and second, the government must be able to undertake the measures needed to override the coordination failure. The first condition was met because, despite the war, the French economy had inherited good institutions (education, property rights, fiscal centralization, parliaments etc.) For the second condition to hold, we must be sure that the government intervention is not moved primarily by rent-seeking private interests. As I have previously discussed and as it has been highlighted by many studies (Kuisel

1982,Olson 1982, Margairaz 1992, Nord 2010), the war had shut down many private interests and rent-seeking expressions. This was a crucial condition for the functioning of the 'nationalization of credit'. The composition of the National credit council was in itself very symbolic since it was conceived as a little parliament within the Banque of France with some representatives of the main sectors, of the main ministries (agriculture, industry, finance, foreign trade), of private and public banks as well as semi-public credit institutions (Monnet 2010a).

2.1 Instruments and criteria of credit selectivity.

The instruments of credit selectivity were numerous. It would not be exaggerated to say that every public measure or intervention in the banking and financial sector in this period was aimed to direct credit to specific sectors. The most obvious instrument to direct credit in agreement to government's goals is to make the government, or the central bank, the creditor. Then the selection is made straightforward. This was done trough the creation of the FDES, an investment fund which was financed by the government and granted long term loans to some public firms. Even though the FDES funds had been important for some public sectors (gaz, electricity), they remained limited compared to the total amount of credit in the economy. Most of these funds were deemed as a sequel to the Marshall plan investments and they took place in the 50s only. Most important was the role of the Bank of France in rediscounting medium term loans. In so doing, the central bank had the ability to select which sectors needed credit. But the Bank actually did not refuse many times mid-term credit rediscounting. They attempted to influence ex ante selection rather than ex post selection. That is they attempted to influence selection directly at the stage of the loan from the bank to the firm rather than at the discount window. The goal of this policy was to avoid loans to inefficient sectors as a whole, not to preserve the central bank's balance sheet from bad quality loans. This was a important change compared to the tradition of rediscounting/discounting at the central bank before WWII.

Most of the efforts were actually devoted to influence directly the choices of banks. This was done first through providing many information, recommendations and non compulsory guidelines to banks. At the macroeconomic level, the Planning office announced the sectors which oughted to be given priority, thus providing the broad objectives of the economy. At a micro and local level, the National Credit Council and the branches of the Bank of France did the job. Each month, every branch of the Banque sent a report on the economic activity and credit conditions of their district. The National Credit Council summed up these reports, compared them to the monthly/quarterly data by sectors at the national level and draw conclusions about the need for loans in some specific sectors and in some specific regions. These conclusions and information were sent to banks through two channels. When there were only local preoccupations, the Banque's branches were in charge to share these information and recommandations with the local banks. When it dealt with national preoccupations, the National Credit Council sent letters to banks or issued official guidelines. These qualitative instruments were not compulsory or enforced by sanctions even though it was widely understood that following these guidelines was a guarantee for banks to benefit from rediscounting at the central bank.

But the Banque also sometimes choose to set official targets or to make the guidelines compulsory. It was especially the case for agriculture or other sectors with price controls. Each year the Banque released the type of credit and the maximum amount that it would rediscount for some agricultural products. The CNC also had the power to force banks to restrict their lending to some firms when it was deemed inefficient or dangerous.

Another powerful instrument to favor a sector was to create legally a specific type of loan in order to increase medium or long term financing in this sector. Hence the decision of the Banque de France to rediscount 7 years loans for housing credit starting 1965. It was obviously intended to help providing long term financing to the construction of housing, a sector which has been neglected in the 50s and that received a high level of attention in the 60s.

Finally, the central bank also used exemptions during episodes of restrictive monetary policy (through quantitative credit controls) to favor indirectly some sectors. The permanent exemptions of credit to exports from any measure of restrictive monetary policy during the period was thus an important help to sectors that rely on exports as well as an incentive to increase exports as a whole.

Two questions must be now addressed in order to discuss whether the 'nationalization of credit' have been a successful institutional design: was there misallocation of credit ? did investment credit contributed to sectoral growth ?

2.2 Data sources

To answer these questions, we use the sectoral data on credit computed by the statistics of the CNC. This quarterly source is very rich and original. To our best knowledge no equivalent statistics have been used to investigate the sources of the postwar European growth in another country. Contrary to most of today's sectoral data about credit that rely on firm's indebtedness (Rajan and Zingales 1998, Beck et al. 2000, Arellano et al. 2010), this source really allows us to study the allocation of banking and public credit. Given the uniqueness of this source and the peculiarity of the postwar economy, the focus of this paper is not on the effects of external finance or leverage but about lending decisions from banks, the state or semi-public credit institutions. It is relevant since the stock market played almost no role in financing the economy during this period.

The statistics are very detailed and include 100 sectors. For some sectors, there are sub sectors which are reported. The numbers that are reported are stocks (that is the total amount of credit to each sector at a certain date), and not the new loans. Despite its richness, this source raises three problems.

First there was a lower limit on credit that had to be declared by banks (50 000 francs). But this very small amount is a minor issue that is not likely to concern medium and long term credit.

Second, this statistics relied on declarations by bankers themselves. For some years (especially during credit control episodes), they may have misreported some numbers to escape the ceilings imposed by the Banque of France. But these misre-

ports may affect the level of credit reported and not their allocation. Furthermore, the were controls by the Banque of France and sanctions in case of cheating. One problem, well-known by the Banque de France at that time, was that banks tended to under report credit on the last quarter of one year and to report the numbers on the first quarter of the following year. The use of yearly data will diminish this problem.

Third, the duration of the loans are not specified. We only know the total amount of credit at each quarter. It is impossible to calculate exactly the new flows. Hopefully the data are quarterly and distinguish between 3 months commercial bills and other short term credit. The main problem is about short term credit between 3 months and one year. I will present in the description of the variables (section 3-2) the way I dealt with this problem.

Finally, the last issue is that the statistics of the CNC only include credit and not any other information on sectors. Hopefully the tax administration used some definitions of sectors that were very close to CNC's categories. I match the statistics on credit from the CNC with the corporate tax statistics by sector. Such a matching between statistics produced by two different administrations obviously comes at a cost since some categories are not the same or are not continuous. This is especially true for small and not well defined sectors. I thus have to restrict the sample to the years 1954 -1974 and to 49 sectors. In 1968, the Banque of France and the Ministry of Finance decided to match the two databases. I was thus able to use the 1968 conversion table to recover some categories. But it is impossible to recover all of them. Most of the sectors that are lost are either very small and specific sectors (as toys, theatre or music instruments), big public sectors that did not receive credit from banks (as the defense industry, the army and the public cultural industry). Unfortunately, data on the banking sector could not be recovered because of many categories that overlapped. In 1971, the INSEE (National Institute of Economics and Statistics)and the Ministry of Finance decided to implement a new nomenclature that radically changed the way the economy was considered : sectors were then defined by their function rather by the kind of activity (Desrosieres 1972). In 1975, the tax and the CNC statistics were com-

pletely changed and there is no way to recover the ancient categories except at a high level of aggregation (10 categories).

The 49 sectors in my sample amount to 58% of turnovers in the economy, 50% of firms, 69% of the wages, 76% of investment and 65% of credit.

The corporate tax statistics are not complete before 1954 since only the number of firms and the turnover is reported. There are two regimes in the French corporate tax system : 'forfait' and 'bénéfices réels' . The firms in the first category are small and pay a fixed amount while the firms in the second category pay a proportion of their benefit. The benefits of the first category are not reported. The information available over the period are : number of firms, number of employees, inventories, investment, wages and turnover. Starting the mid 1960s, much more information are available including debt, depreciation ('amortissement') and purchases.

3   The allocation of credit

3.1   The marginal product of capital and credit allocation

The standard neoclassical theory states that an efficiency allocation of credit should equalize the marginal product of capital (MPK) across sectors. When there is a high return in one sector, capital and investment flow toward this sector. Then the MPK in this sector will decrease respectively to other sectors and its value will converge to others. Financial intermediation promotes growth in the way that it allows this mechanism to work efficiently and then to allocate capital in sectors marginally more productive (Greenwood, Jovanovic, 1990). The allocation of capital and labor is thus favored by the credit market through investment. Following the work of Lucas (1990) and Caselli and Feyrer (2007) on capital flows across countries, I simply calculate the MPKs for each sector of the French economy and then compare them to the sectoral amount of loans.

Using a standard Cobb-Douglas function, the MPK is defined as real return to capital $R = \alpha Y / K$, with α, the capital share. There many difficulties to calculate this number. A good measure of capital is illusory. But from data on investment,

it is possible to recover an approximation of the capital stock with the simple formula : $K_{t+1} = (1 - \delta)K_t + I_t$.

The calculations of the capital/labor share is also subject to many caveats. I had no better choice than to calculate α and δ from the data of the early 70s (which are more reliable and complete) and to suppose them constant from 1954 to 1974. Values of these parameters for the whole time span were either impossible to obtain (for depreciation), or highly implausible (for the capital/labor share) due to some imprecisions in the wages and the inability to take into account the purchases. This assumption of constant parameters is strong but not so harmful since the sample start in 1954, after the immediate reconstruction of the economy. I prefer to calculate a value of α for each sector despite the inevitable imprecision rather than to assume that $\alpha = 0.3$ as it is done in many studies. Regarding the initial capital stock, I make the standard assumption (Beck et al. 2000, following Harberger 1978 among others) that capital was at its steady state at the beginning of the sample. It is more realistic than to assume that the initial capital stock was equal to zero. The details of the construction of the credit variables are presented in the next section (3-2).

An efficient allocation of credit is characterized by a positive relationship between MPK and the amount of loans by sector. Figure 1 and Figure 2 show that it was the case for the medium and long term credit but not for short term credit. The 'investment credit' thus fulfilled its purpose, that is to finance the industries with higher return and then to promote an efficient -marginally productive- allocation of capital. On the contrary short term credit is either non significantly or negatively correlated to the MPK. The interpretation of this result is twofold : first short term credit is much more intended to furnish liquidity and has no relationship with investment and capital allocation and, second, short term credit is used by firms that are poorly productive with a small MPK and have no access to long term financing. While the graphical relationships may seem to be driven only by the biggest sectors, the table n°1 displays the correlations (and their significance) for a sample with or without the biggest sectors (in terms of turnover). These

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sectors amount to 1/6 of the total of sectors. There are chemical, iron (mining), electricity supply, gas supply, siderurgy, oil production, railways, construction, automotive, paper, foundry and aeronautics. The correlations in Table 1 show that the positive correlation between MPK and investment credit is still significant, although smaller, for the smallest sectors (it is still statistically significant for half of the sectors). The fact that the relation MPK/short term credit is significatively negative tend to confirm that there were substitution between the two types of credit in the big sectors.
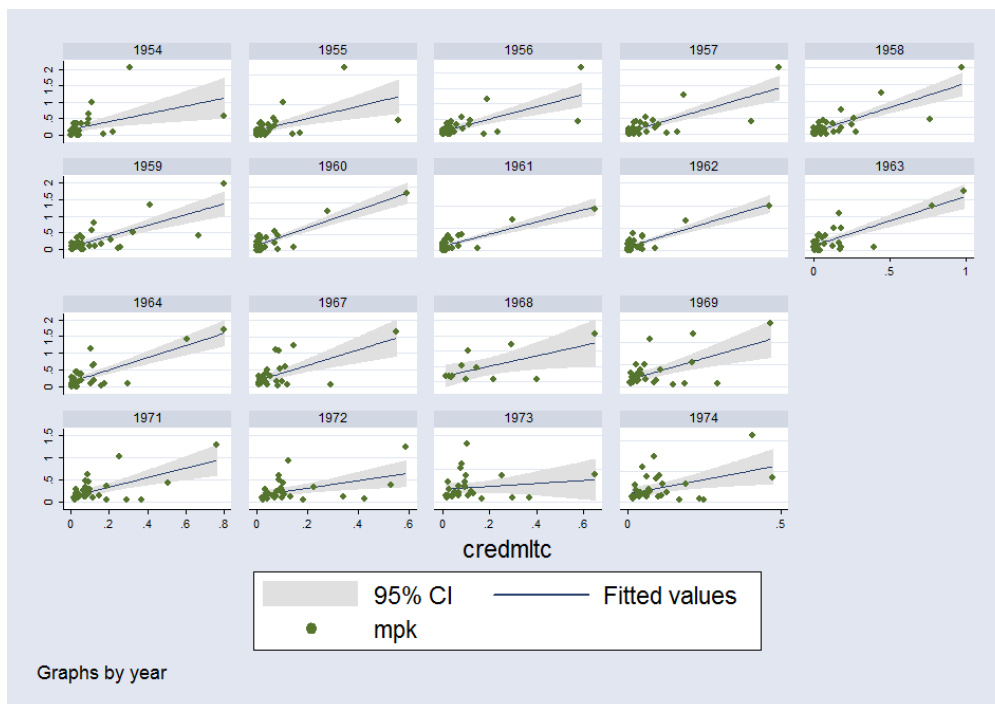

Figure 2: Mid-long term vs MPK

	Total	Other sectors (5/6)	Biggest sectors (1/6)
Short term credit	**- 0.07** ***(0.00)	**0.02** (0.55)	**- 0.10** ***(0.00)
Investment credit	**0.32** ***(0.00)	**0.12** ***(0.00)	**0.31** ***(0.00)

Note: p-values in parenthesis.

Table 1: **Correlations between MPK and credit**
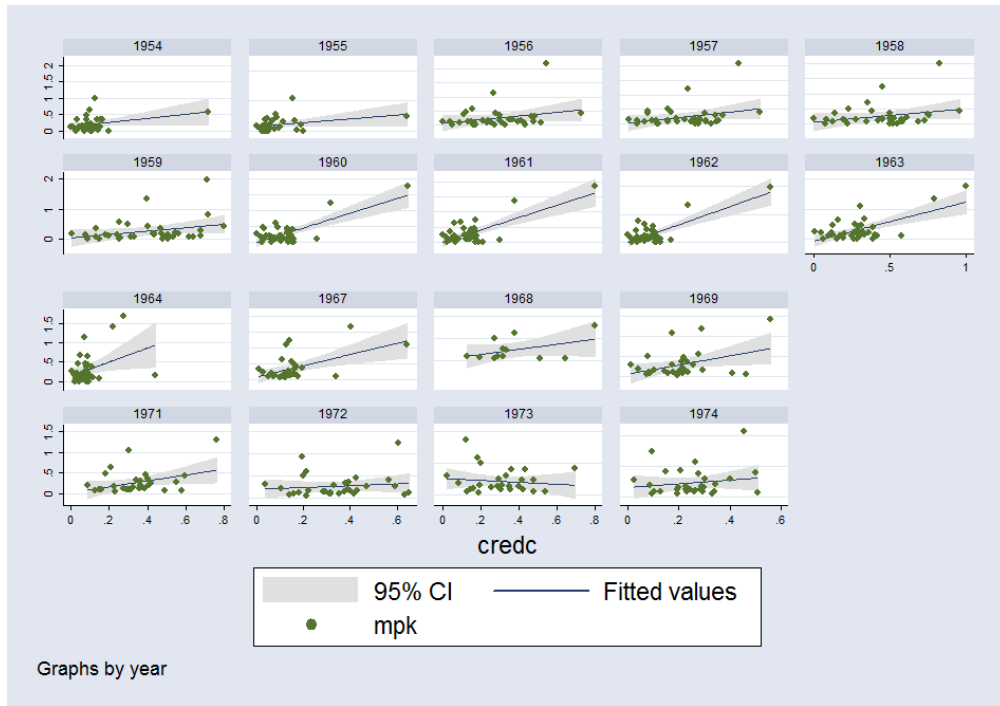
Figure 3: Short term/ca vs MPK

20

Figure 4: Credit vs MPK

Table 2 shows that these correlations are true for the MPK but not for the number of employees. A political economy argument that would explain the allocation of credit in the dirigist French economy by the willingness to maintain a high level of employment and to finance rents would then miss the point[4]. The 'investment credit' was not directed toward sectors with more employees.

	Total	Biggest sectors (1/6)	Other sectors (5/6)
Short term credit	**0.62** ***(0.00)	**0.67** ***(0.00)	**.40***(0.01)
Investment credit	**0.87** (0.49)	**0.26** (0.63)	**0.43** (0.38)
	Note: p-values in parenthesis.		

Table 2: **Correlations between number of employees and credit**

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[4]This was suggested by Crafts (1992) and by Sicsic and Wyplosz (1995) about France but without quantitative evidence.

3.2 Credit within sectors

Why was credit useful ? and for what purpose firms were asking for loans ? To answer these question, I run simple panel regressions that show the variables that were associated with each type of credit. Panel data estimations with fixed effects are well suited to investigate the determinant of credit over time within a sector.

The variables used in the regression are constructed as follows:

- *Investment* and *Turnover* come from the tax record. I add the two regimes ('forfait' and 'bénéfices réels'). To obtain real values, I divide the nominal values by a price index. I use ten official price indices released by INSEE (National Institute of Statistics and Economic Studies) and I match each sector to the activity price index to which it corresponds.

- *Short term credit.* In the CNC statistics, there are two types of short term credit available: 'escompte' (3 months commercial bills) and 'other short term credit'. The original data are quarterly. To obtain the annual total amount of 'escompte', I simply add the quarterly values. It may bias the total amount upward since the same 3 months bill can be registered in two subsequent quarters. This might not be a problem for the estimations of the impact of credit on growth within a sector as long as the seasonality of commercial bills is relatively similar over years. The other short-term loans usually lasted between 3 months and one year. I use two alternative methods to compute their total annual stock : I pick the higher quarter value or the mean of the four quarters. The two methods actually do not differ very much since the amount of these loans is quite stable over the year. The estimations results that will be reported use the second method but there is no important qualitative difference when using the first method.

  The total amount is then divided by a sectoral price index. The variable *Short-term credit / T* simply divides the amount of credit by the turnover

of the sector. It is thus a measure of credit development.

- *Investment credit.* I simply pick the last quarter value of what is named 'Credit d'investissement' in the CNC statistics. It includes all types of medium term credit (including rediscountable credit) and of long term credit (including the FDES loans). The total amount is then divided by a sectoral price index. The variable *Investment credit / T* simply divides the amount of credit by the turnover of the sector ; it is a measure of credit development.

- *Credit control* is a measure of monetary policy whose construction is derived in Monnet (2011b). Monetary policy worked through quantitative credit controls all over the period rather than through interest rates. In Monnet (2011b) , I follow a narrative approach to identify the months when monetary policy was restrictive. The yearly variable *Credit control* just compute the number of months when the policy had been restrictive during the year. This variable takes a different value when dealing only with investment credit since there have been some restrictive episodes with exemptions of control on medium and long term credit (especially in 1969). Otherwise, I use the general measure.

- The three variables *Investment/wages*, *STC/MLTC* and *Turnover/nb firms* are intended to account for sectoral characteristics that may vary overtime and thus not be taken into account in the fixed effects. *Investment/wages* measures the capital intensity of the sector. When it takes high value, the sector has a high capital intensity. *STC/MLTC* (short term credit / medium and long term credit) measures the propensity to use preferably one type of credit relative to the other. Finally *Turnover/nb firms* (Turnover/ number of firms) is a rough proxy of the concentration of the sector.

I run the regressions for the whole sample and then distinguish between the biggest sectors and the others (Tables 3, 4 and 5).

The results show a positive relationships between current credit and the past values of credit, investment and turnovers. The ratio *investment/wages* is positively correlated with 'investment credit' but negatively correlated with 'short term credit'. This result clearly confirms that medium and long term credit is used by more capital intensive sector where investment is prevalent. The fact that the ratio $STC/MLTC$ is negatively correlated with 'investment credit' illustrates that there is a substitution between the two types of credit: longer term loans are associated with a shift from short term to long term financing. When a sector have access to more 'investment credit', its demand for short term credit decrease relatively to its demand for medium/long term credit.

The impact of monetary policy on credit shows two interesting results: first, as a whole, monetary policy impacts both types of credit in a very similar way (the coefficients have very close values, around 0.01) and second, the biggest sectors are more protected from monetary restrictions. It means that 'investment credit' was not protected, in itself, against restrictive monetary policy, but that some sectors were isolated (for reasons independent of the type of credit they used). It can be explained either by a credit channel effect as studies by Gertler and Gilchrist (1991) or by the fact that the biggest sectors were given priority according to the Plan.

VARIABLES	(1) CRED (total)	(2) CRED (short term)	(3) CRED (medium and long term)
CRED Lag_1	0.851***	0.548***	0.792***
	(0.0271)	(0.0369)	(0.0254)
Turnover_1	-0.0208	0.227***	0.168**
	(0.0576)	(0.0724)	(0.0814)
Investment_1	0.0956**	0.208***	0.113*
	(0.0447)	(0.0586)	(0.0621)
Turnover/nb firms	-5.42e-06	-2.11e-05	-3.98e-05
	(2.57e-05)	(3.36e-05)	(3.65e-05)
Investment/wages	0.0132**	-0.0128*	0.0198***
	(0.00572)	(0.00761)	(0.00759)
STC/MLTC	-8.71e-05	0.000929	-0.00689***
	(0.000725)	(0.000955)	(0.00109)
Credit control_1	-0.0112***	-0.0109***	-0.0155***
	(0.00191)	(0.00252)	(0.00284)
Observations	402	402	440
R-squared	0.911	0.784	0.932
Number of sectors	49	49	49

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 3: The determinants of credit (all sample)

	(1)	(2)	(3)
VARIABLES	CRED (total)	CRED (short term)	CRED (medium and long term)
CRED Lag_1	0.795***	0.399***	0.810***
	(0.048)	(0.062)	(0.039)
Turnover_1	0.16	0.131	0.239*
	(0.116)	(0.377)	(0.134)
Investment_1	0.007	0.341***	0.12
	(0.095)	(0.124)	(0.107)
Turnover/nb firms	-0.001	0.001	0.001
	(0.00)	(0.00)	(0.00)
Investment/wages	0.008	-0.03**	0.020**
	(0.009)	(0.004)	(0.009)
STC/MLTC	0.004**	0.005*	-0.007**
	(0.002)	(0.003)	(0.002)
Credit control_1	-0.004	-0.001	-0.005
	(0.004)	(0.00252)	(0.005)
Observations	402	402	440
R-squared	0.911	0.784	0.932
Number of sectors	15	15	15

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4: The determinants of credit (big sectors)

	(1)	(2)	(3)
VARIABLES	CRED (total)	CRED (short term)	CRED (medium and long term)
CRED Lag_1	0.806***	0.817***	0.783***
	(0.048)	(0.0311)	(0.023)
Turnover_1	0.090	0.003	0.100
	(0.079)	(0.05)	(0.085)
Investment_1	0.076*	0.122***	0.183*
	(0.041)	(0.042)	(0.063)
Turnover/nb firms	-0.001	0.001	0.001
	(0.001	0.001	0.001
Investment/wages	0.006	0.012*	0.017*
	(0.007)	(0.007)	(0.010)
STC/MLTC	-0.001	0.001	-0.006***
	(0.000)	(0.000)	(0.001)
Credit control_1	-0.010***	-0.011***	-0.016***
	(0.002)	(0.002)	(0.0028)
Observations	402	402	440
R-squared	0.911	0.784	0.932
Number of sectors	49	49	49

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: The determinants of credit (small sectors)

4 The effects of credit on growth

The previous sections have shown that the allocation of 'investment credit' across sectors meets the criteria of efficiency of the neoclassical theory. A positive significant relationship between the MPK and credit means that the banking sector lend to the sectors that needed it most in order to invest and then realize an efficient allocation of factors. If the neoclassical theory is correct and if financial intermediation really favors the allocation of factors (Greenwood and Jovanovic 1990, Saint-Paul 1992, Acemoglu and Zilibotti 1999) , then we should also observe a positive impact of 'investment credit' on investment growth and on production growth within each sector. Crafts (1992) estimates that the contribution of capital accumulation to growth in France over the period 1960-1973 was 2.4 while the contribution of labour inputs was 0.3 and TFP 2.34. If 'investment credit' really increased investment and the capital accumulation, then its effect on growth must be important.

In this section, I use a dynamic panel approach with GMM to measure the effects of credit on investment and turnovers. Such a method is designed to avoid the well-known endogeneity bias that is inherent to the relationship between credit development and growth. By using a panel data set we have sufficient degrees of freedom (which allows us to test the impact of several dependent variables) and we can investigate whether financial development within a sector have an effect on growth. The equation to be estimated is

$$\pi_{i,t} = \eta_i + \alpha' X_{i,t} + \epsilon_{i,t}$$

where π is the growth rate of investment or turnover and X are variables that can influence these two dependent variables; especially credit development, that is the ratios *short term credit/turnover* and *investment credit/turnover*. Panel estimations can control for the unobserved sector-specific effects. It is crucial since the information about each sector is limited only to tax data.

$$\pi_{i,t} - \pi_{i,t-1} = \eta_i + \alpha'(X_{i,t} - X_{i,t-1}) + \epsilon_{i,t}$$

But the equation above suffers from a well-known endogeneity problem. The

amount of credit is influenced by turnover and investment, that is there is correlation between the variables in X and the residuals ϵ. There is no available instrumental variable that would influence credit to each sector without being correlated to other sector-specific characteristics (and especially the growth rate of investment and incomes). Following classical papers investigating the link between finance and growth with panel data (as Beck, Levine, Loyza 2000), I solve the endogeneity problem using a GMM estimator that uses internal instruments, defined as instruments based on previous realization of the explanatory variables. This method relies on the work of Arellano and Bond (1991). The regression is first differenced to eliminate the country-specific effect

$$\pi_{i,t} - \pi_{i,t-1} = \alpha'(X_{i,t} - X_{i,t-1}) + (\epsilon_{i,t} - \epsilon_{i,t-1})$$

The endogeneity problem is then obvious since the lagged dependent variable $\pi_{i,t-1} - \pi_{i,t-2}$ will be correlated with $\epsilon_{i,t} - \epsilon_{i,t-1}$. Arellano et Bond (1991)'s strategy is to instrument the difference $X_{i,t-1} - X_{i,t-2}$ by the lagged values of the explanotory variables in levels, $X_{i,t-2}, ...X_{i,t-n}$ which, by definition, are not correlated to $\epsilon_{i,t} - \epsilon_{i,t-1}$. The estimation is thus not biased under the assumptions that

$$E\left[\pi_{i,t-s}(\epsilon_{i,t} - \epsilon_{i,t-1}\right] = 0 \text{ for } s \geq 2, t = 3, ..., T$$

$$E\left[X_{i,t-s}(\epsilon_{i,t} - \epsilon_{i,t-1}\right] = 0 \text{ for } s \geq 2, t = 3, ..., T$$

It means first that the error terms ϵ_t should not be correlated and second, that the explanatory variables X_t must be weakly exogenous (i.e not correlated with the future innovations of ϵ_t). This last assumption does not mean that the explanatory variables cannot be correlated with anticipated values of investment or turnover' growth rate. It only means that future unanticipated shocks to the sectors' growth rate does not influence the current level of credit granted to each of this sector. In other words, the estimation is robust as long as the decision to lend is influenced only by current and anticipated (and not by unanticipated) values of sectors' growth rate. It thus assumes that lending decisions are rational.

The model is estimated in a two-step GMM procedure and the standard errors are clustered at the sector level to allow for the correlation of errors within a sector (cf Petersen 2009). The validity of the instruments is tested through the Sargan test of over-identifying restrictions. P-values of the test are reported in the regression table. A large p-value means that the validity of instruments cannot be rejected. [5]

The estimation (Table 6) shows a positive and significant impact of 'investment credit' development (measured as the total of investment credit on turnover) on growth (of investment and turnovers) within a sector. Once we control for other time-varying sectoral characteristics, the impact on investment and turnover is very similar (0.272 and 0.258 respectively). This effect is important but not huge: if the ratio *investment credit/turnover* increases by 5%, the annual growth rate of investment will be increased by 1.5%. Interestingly enough, the impact of short-term credit is negatively significant on investment growth but not significant on turnover growth. It means that the development of short-term credit, conditional on the development of investment credit hampered investments because it reflected a lack of access to financing at a longer term. But this effect is not significant enough for the turnover as short term credit could be used for other purposes than investment that may affect turnover in other ways.

The impact of monetary policy is significant and quite important: one more month of credit restriction will lead to a decrease of 0.4 % and a whole year of credit restriction will result in a loss of 4% of investment growth.

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[5]without clustering the sd, it appears that all the coefficients are always significant, which confirms the presence of strong correlation of errors at the sector level. It is not surprising with sectoral data since shocks to one specific sector are very likely to be correlated over years. If not controlled, this correlation biased seriously the result.

| | (1) | (2) | (3) | (4) |
| VARIABLES | Investment | Investment | Turnover | Turnover |
VARIABLES	(% growth)	(% growth)	(% growth)	(% growth)
Investment (% growth)			0.244*	0.328***
			(0.135)	(0.147)
Turnover(% growth)			0.493***	0.579***
			(0.137)	(0.101)
Short-term credit / T	-1.242**	-1.263***	-0.589	-0.212
	(0.644)	(0.392)	(0.199)	(0.233)
Investment credit / T	0.389*	0.272*	0.269**	0.258**
	(0.234)	(0.168)	(0.152	(0.135)
Credit control	-0.006***	-0.004***	-0.001*	-0.001*
	(0.001)	(0.001)	(0.001)	(0.001)
Investment/wages		0.081**		-0.030**
		(0.032)		(0.012)
STC/MLTC		0.002		0.001
		(0.002)		(0.001)
Turnover/nb firms		-0.001		0.001
		(0.001)		(0.001)
Sargan test (p-values)	0.55	0.69		0.91
	1.00			
Number of sect	49	49	49	49

Arellano-Bond estimation. Two-step results

Standard errors adjusted for clustering on sectors

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 6: The effect of credit. GMM estimations.

5 Financial development across sectors

The data on credit can also be used to characterize how the financial development process differed across sectors over the period. The evolution of the ratio short term credit/ medium-long term credit shows a very different pattern across sectors (Figures 5,6 and 7), but finally convergence occurred by the late 60s. For the biggest sectors that receives priority at the beginning of the period, during the reconstructing phase soon after WWII, this ratio is almost constant over the period, meaning that they received enough "crédit d'investissement" (relatively to short term credit) as soon as the early 50s. The story was very different with the smallest sectors as well as with agriculture. Indeed their ratio shows a distinctive decreasing pattern; that is they first lacked medium and long term credit relatively to short term, but their access to this kind of credit increased overtime.

The catch-up process of the smallest sectors starting the end of the 50s is associated with a sharp increase of the volume of medium and short term credit granted by banks relative to semi-public specialized credit institutions (Figures 9 and 10). Such an evolution gives a better picture of the process of financial development during the French Golden Age: during the phase of reconstruction after the war, the State gave priority to long term credit supporting investment in some sectors. These priority sectors were also the more concentrated and capital intensive. As long as the economy grew, the access to this kind of credit became less constrained, notably because the commercial banks relieved semi-public specialized credit institutions and started to lend at a longer term. After an initial push by the State in the priority industries, the access to medium and long term credit spread across other sectors in the 60s. The second phase of financial development thus helped small firms while the first phase had benefited mainly to the biggest firms in the more concentrated sectors.
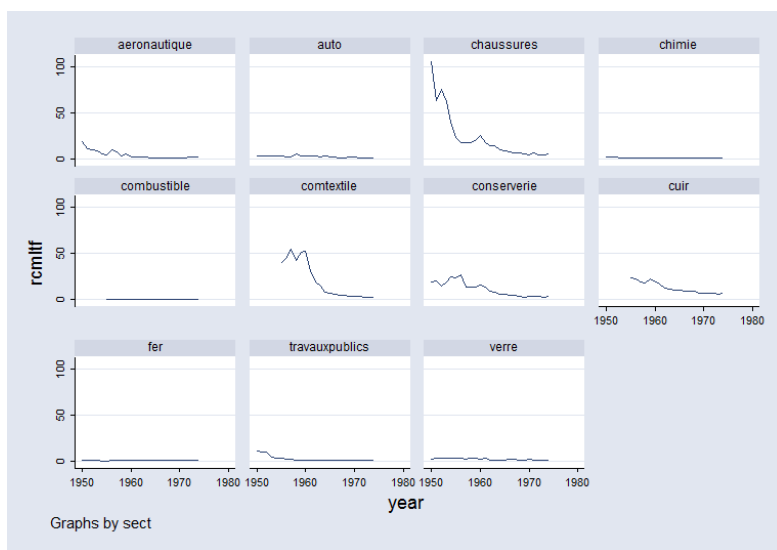
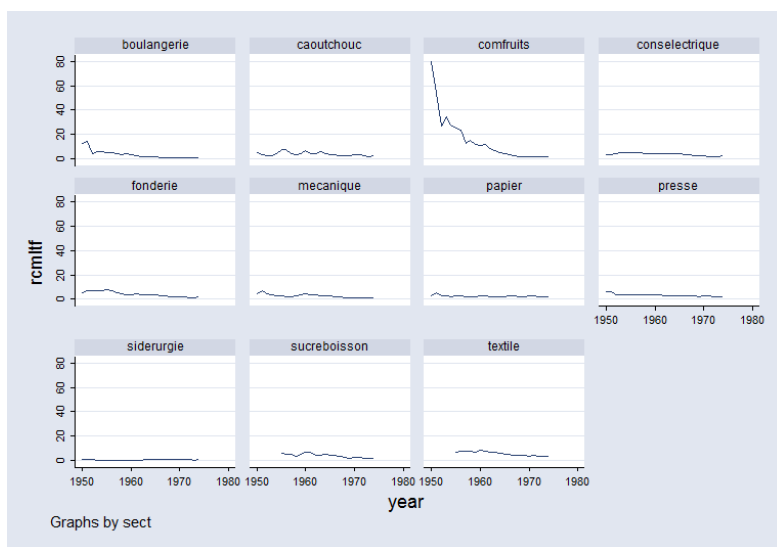Figure 5: Ratio 'crédit court terme' / 'crédit moyen-long terme' par secteur

Figure 6: Ratio 'crédit court terme' / 'crédit moyen-long terme' par secteur
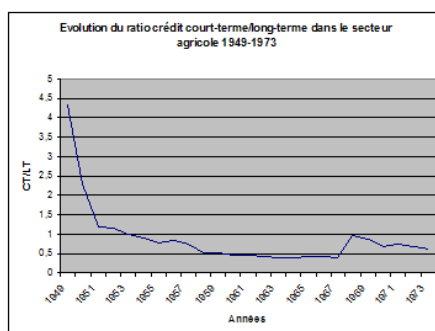
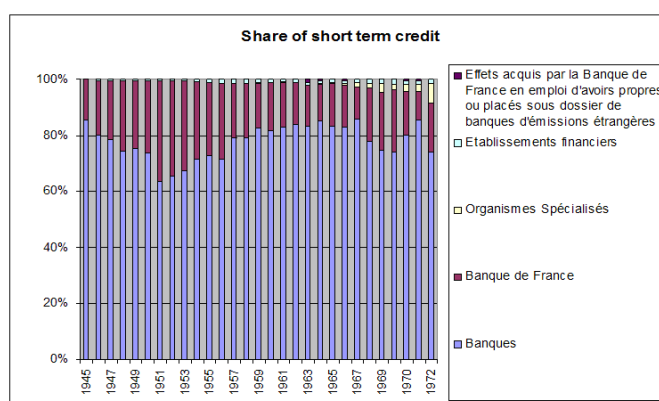Figure 7: Ratio 'crédit court terme' / 'crédit moyen-long terme' par secteur

Figure 8:

6 Conclusion

The results and interpretations of this paper highlight an important factor of French growth in the 50s and 60s that have been previously neglected in the literature about the European Golden Age : new institutions that favored the development and the efficient allocation of medium and long term credit (called 'investment credit'). The importance of this factor is complementary to previous studies, especially those which focused on the catch-up process, the destruction of capital (Vonyo 2008) and on the new institutions that favored a coordinated capitalism (Eichengreen 2007) . The credit policy and the new institutions implemented by the Banque de France and the Treasury solved a coordination problem (Rodrik 2004). The reasons why they had been successful and did not create
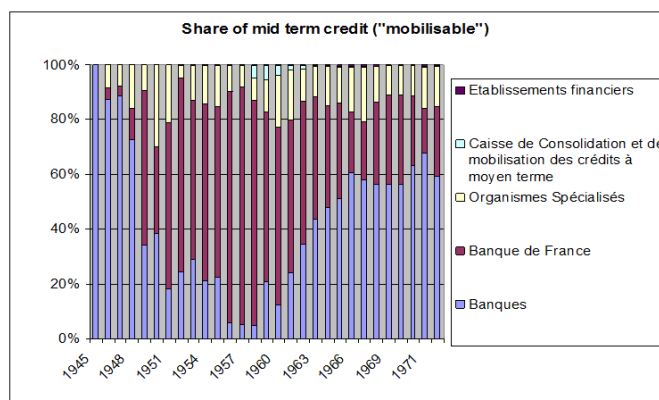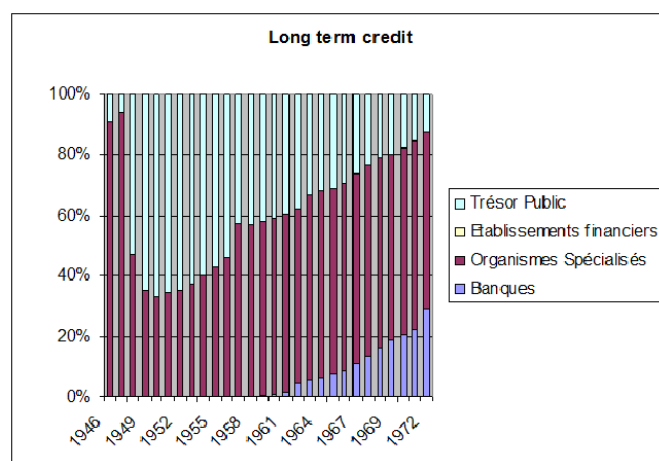
Figure 9:

Figure 10:

major misallocation of capital were partly due to the fact that the economy was reconstructing and in a catch-up process. The catch-up process favored information and consensus building: it was easier to know on which sectors credit policy had to focus. This development process is very similar to the one described in the model of Acemoglu, Aghion and Zilibotti (2006) (countries in a catch-up process pursue an investment-based strategy, which relies on existing firms and managers to maximize investment but sacrifices selection) but also highlights that this investment-based strategy does not necessarily sacrifices selection when the allocation of credit is organized such that there is a positive relationship between

MPK and 'investment credit'. The fact that the economy was reconstructing and some former groups of interest have lost their power probably impeded rent seeking and misallocation (Rodrik 1994).

But the new credit policy ('nationalization of credit') also built on old institutions; especially the network of the Banque de France and the tradition of rediscounting commercial bills, and the semi-public credit institutions (Credit Foncier, Credit National, Caisse des dépôts et consignations). Institutional complementarity between monetary policy, capital control and the Treasury was also a key to the success.

This institutional framework may explain why - from the end of WWII to the 1970s- financial repression in France coincided with financial deepening and high growth of investment. But the strengths of such a planned financial system - that is its ability to provide long term credit alongside an investment-based strategy - could have became its weakness later on. When the economy faces large adverse supply shocks as in the 1970s, long term credit creates a debt overhang (as in Meyers 1977). When the economy approach the technology frontier, investment based policies may create an disincentive for selection and innovation (as in Acemoglu et al. 2006). And in an economy that is characterized by a second-best equilibrium and inevitably create rents, groups of interest may progressively capture politicians and detract rents creation from the collective interest. Understanding why the 'nationalization of credit ' was successful in the 50s and 60s then also gives some clues to understand the failures of the 70s, when capital allocation served declining sectors and rents.

Secteurs (french name)	Sectors	Turnover	Investment	Investment credit	Short-term credit	Number of firms
aeronautique	aeronautics	5 773,67	3 251,29	1 642,27	623,06	206
agriculture	agriculture	79,99	96,00	1 162,73	2 410,12	320
assurances	insurance	14 200,00	4 324,27	91,51	54,30	3 055
automobile	automotive	32 100,00	12 300,00	5 203,64	1 341,57	40 303
batiment	construction	48 300,00	8 143,18	5 889,76	766,84	208 294
boulangerie	bakery	6 752,12	1 490,66	389,85	125,57	50 291
caoutchouc	rubber	5 835,95	3 338,53	2 112,51	322,96	1 402
chaussures	shoes	3 382,14	827,20	1 135,78	44,14	24 846
chimie	chemicals	21 600,00	15 100,00	6 155,08	1 861,98	2 300
combustible	fuel	4 667,90	11 700,00	1 000,59	1 499,52	111
commerce du charbon	coal (trade)	5 669,57	773,31	1 674,04	54,64	5 196
commerce de fruits	fruits (trade)	6 993,61	375,67	417,94	79,30	8 103
commerce de métaux	metal (trade)	8 330,49	526,96	4 167,22	87,82	683
commerce textile	textile (trade)	21 900,00	2 889,23	3 690,27	210,72	74 818
commerce de viande	meat (trade)	14 700,00	889,86	413,60	32,53	60 392
construction electrique	electricity (construction)	22 700,00	7 563,11	7 310,93	1 223,47	8 806
conserverie	canning industry	5 567,54	1 338,51	1 714,51	153,20	1 748
cuir	leather	2 464,66	592,52	1 103,91	40,11	10 071
electricite	electricity (supply)	9 699,59	42 800,00	227,77	7 141,55	259
elevage	livestock	302,39	85,08	385,50	301,39	918
fer	iron (mining)	564,87	1 524,81	70,70	49,25	62
fonderie	foundry	16 300,00	6 316,67	5 414,09	776,03	6 701
forets	forest	972,04	295,51	365,05	34,24	4 767
gaz	gas (supply)	2 641,09	5 805,80	134,56	764,58	27
horlogerie	watchmaking	7 569,61	4 010,01	1 571,30	369,50	12 367
hotellerie	hotel business	7 204,01	4 050,51	179,08	743,35	133 151
mecanique	engineering	8 189,99	2 970,75	1 718,73	365,04	49 455
metalurgie générale	metallurgy	3 905,75	3 690,20	1 568,02	557,74	46
transformation des metaux	metal transformation	3 672,14	2 409,76	833,07	367,69	134
mines	mining	2 153,01	1 998,33	676,44	165,79	4 361
construction navale	shipbuilding	2 935,52	1 385,69	876,72	637,83	1 058
papier	paper	9 052,23	7 162,79	4 170,87	502,62	2 163
peche	fishing	561,01	578,06	117,41	112,99	2 817
petrole	oil	17 200,00	4 997,04	2 646,39	888,12	25
presse	media	12 400,00	4 140,72	1 931,67	250,35	17 500
sante	health	8 421,38	3 292,81	267,53	1 015,65	19 659
scieries	sawmill	2 203,08	448,22	724,15	33,97	10 638
siderurgie	siderurgy	13 100,00	14 700,00	2 685,95	2 863,40	53
stockage	storage	396,70	55,02	3 147,97	364,88	105
sucres et boissons	sweets and drinks	10 400,00	6 083,58	3 394,86	698,06	6 613
sucreries	sugar production	3 785,79	1 866,26	1 125,22	172,21	121
tabac	tobacco	6 531,57	711,21	20,23	86,73	137 876
textile	textile	17 400,00	8 795,47	6 229,21	505,21	7 188
transport des metaux	metal (transportation)	7 931,08	3 619,00	2 936,52	416,08	557
transport maritime	shipping	3 667,25	7 610,92	160,15	1 107,84	308
transport routier	road transport	10 200,00	8 734,77	1 195,93	552,86	46 789
transport ferroviaire	railroad	11 100,00	23 100,00	353,42	1 961,03	1 372
travaux publics	publicwork	14 700,00	7 566,46	3 144,19	2 007,61	4 424
verre	glass	2 828,33	1 529,01	923,34	242,83	1 440

Table 7: Names of the sectors and average values of the main variables, 1954-1974

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