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# Long Run Loans and Industrial Policy in Italy in the 1960s

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## Abstract

In the II postwar phase of intensive growth, Italian policy makers, controlling banking system, used credit deepening as the leading instrument for policy targets: the industrialization of the country and reduction of regional disparities. This work presents a reconstruction of territorial long run loans to the manufacturing industries, outlining some aspects of the Italian development path summarized by a strategy of industrialization which was different across areas and branches. Moreover, it suggests a positive effect of credit deepening on product per worker in a cross section time series analysis, looking at eleven branches of manufacturing industries in the two Italian macro-regions: the Centre-North and the Mezzogiorno.

**Keywords:** Industrial policy, Credit, Cross-Section Time Series Analysis

**Jel Classification:** N44, N14, E51, H81

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# 1 Introduction

The European post war experience of sustained growth was founded on the mix of favourable institutions and policy activism (Boltho 1989). The activism slowly declined during the 1970s until the first half of the 1990s. After the Maastricht Treaty, the national industrial policies in Europe are actually shrunk by a supranational control. This has meant a loss of sovereignty to implement any strategy of industrialization fitting to the national objectives of policy makers. The new view of industrial policy reflects the main purposes of economic and social cohesion within the European Union and the defense of free competition among firms in the European unified market. The new objectives allow new principal of industrial policy as well as new instruments. The intervention measures were coherently adjusted to have an impact on the whole context rather than on the single firm or industry.

But the most recent economic events -from faster globalization to the downward turning of the Western economy and the deterioration of the world's financial system- have sharply refocused the attention on sector-based issues returning to the earlier decision making policies approach in which the state intervention plays an active part, nevertheless this happens in a climate of cooperation.

From a historical perspective industrial policy was largely used by sovereign states after World War I and its principles were essentially different from the present. Federico and Foreman-Peck (1999) defined industrial policy as “every form of state intervention that affects industry as a distinct part of the economy”. This general definition embraces of course the Italian experience after 1945. The aim of Italian policy makers was to reduce the unemployment rate by industrializing all areas of the country. In the North the productive capacity lost in the war was recovered and empowered; whilst in the south the relative lack of a wide industrialization required a great effort in terms of resources and funding in order to build up a modern industrial structure. Furthermore, industry was considered the royal road to reduce regional disparities. More generally speaking, the phase of intensive growth (1945-1971) required extra-market mechanisms in Europe and a bank-based financial system to raise funds for industrialization (Eichengreen 2007). Italian policies did not differ from the rest of Europe in terms of aims but surely in terms of instruments. This paper goes back to the 1950s and 1960s exploring an intensive phase of state intervention in manufacturing industries focusing on long run credit as a growth device. At a first glance, (the) industrial policy in Italy during the golden age experienced two stages: the 1950s in which the leading instruments were the state-owned enterprises and holdings and the 1960s in which the major channel of growth for the manufacturing industry was the

credit system. In southern Italy the first phase was actually negligible, as the investments of the major state-owned enterprises were gathered in the North. The main goal of state intervention was to create the pre-requisites for industrialization in the South, according to Rosenstein-Rodan's (1949) view of industrialization and the public effort went towards the existing firms preventing change in the production structure which could be able to offer the possibility of rapid growth (Chenery 1962). On the contrary, the 1960s are devoted to boosting national industrial structure in the whole country by credit deepening. As Nardozzi (2004) maintained, the financial way to industrialization depicted the political economy in those years. From this respect, the study of the double goal of Italian industrial policy, boosting industrialization and reducing regional disparities, requires a sector-based and territorial analysis. The relationship between credit and growth, in a broad sense, was analyzed with reference to Italy's post-unification period by the remarkable works of Gerchenkron (1955, 1962), Cameron (1972) and Cohen (1967). For the post World War II, several contributions, limited to national debate, explored the credit-growth relationship for the period 1960-1980 covering Italy as a whole (Pontollillo 1971, 1980 and Ranci 1983). More robust were the contributions to the analysis of subsidized loans broken by region or sectors, but not by both dimensions (Marzano 1979, Pergolesi 1988, Del Monte and Giannola 1997). Other recent contributions focused on the spatial distribution of subsidized loans and grants to the territories of the "Intervento straordinario" (i.e. Spadavecchia 2007). Anyway, what is lacking is a sector perspective and what is neglected is a broad view that includes subsidized loans and market rate loans. A complete inquiry has to also take account for the market loans, since, as it is well recognized, the "Intervento straordinario" was subsidiary of and not supplementary to ordinary state intervention. On the other hand, an analysis of the long run loans to the manufacturing industry by sectors and areas were prevented by the lack of such a data at regional or macro-regional level. Official publication of the Bank of Italy, the *Bollettino*, reports the annual partition by manufacturing branches of the stock of loans for entire Italy. The same source displays regional data on loans for the whole manufacturing industry without a partition by branches. However the economic characteristics of the Italian economy, namely territorial disparities and late comer status, require at least a macro-regional analysis of the intensive growth phase. The intention of this paper is to discuss whether the industrialization strategy of that time followed any criteria and what the impact was of long run credit on the development of industrial branches during *the golden age*. I have tried to address some reflections on these issues that belong to the class of arguments that Crafts and Toniolo (1996) suggested to consider as a part of the explanation

of the European postwar growth experience.

The first part of this paper provides a reconstruction of the annual stock of loans distributed to the manufacturing industry broken by eleven branches for two macro-regions, the Centre-North and the Mezzogiorno. Starting from the accounting identity of bank balances I merge official data from the Bank of Italy and data drawn from selected publications of the Board of the Ministries for the Mezzogiorno in order to obtain the desired partitions. Furthermore, an evaluation of the financing strategy is provided based on the non parametric analysis of distributed loans. In the second part, I test the impact of credit deepening in a time series cross section framework. Both qualitative and quantitative analyses of this class of industrial policy outline some aspects of the Italian development path summarized by a strategy of industrialization diversified by area and branch, and by a positive effect of credit deepening on product per worker.

## 2 The basics of the Italian banking system

It is worth to briefly summarize the basic characteristics of the Italian banking system in the period 1950-1970. The Italian credit structure was organized following the main criterion of functional partition among different subjects involved in banking in order to associate the lending and borrowing length. The banking law (issued in 1936) distinguished between institutes providing short term or long term credit and among institutes involved in different fields such as industry and services, agricultural and land. Focusing on the industrial long term loans, the funds were supplied uniquely by the *Istituti di Credito Speciale per l'industria e le opere pubbliche* (ICSs). At the beginning of 1950s, together with the IMI Bank, the most important institution, other banks started to work in the long run credit industrial system: the special branches of the *Banchi Meridionali* (Banco di Sicilia and Banco di Napoli), the national institutions as Mediobanca, Centrobanca, Efibanca Crediop, Icipu and the special section of Banca Nazionale del Lavoro. The industrial credit system was accomplished between 1950 and 1953 by the implementation of the ICSs with limited territorial jurisdiction as the *Isveimer*, *Irfis* and *Cis* working in the South, and of the *Mediocrediti Regionali* acting as investment banks at for Centre-North regions. The ICS collected savings from various sources and lent them to industries on a long term horizon. As it is largely known, the Italian banking system was essentially public dominated. This characteristic arises from the ownership of the banks and from the origin of the funds provided to the banking system for the lending activity. The funds for the long run credit were provided by the bank bonds placed on

the market, purchased by families and private or public institutions as well, and by the transfers from the state treasury. A further element emphasizing the role covered by the public sector in the lending activity is the favorable credit transferred to industry. From 1950 onward the favorable credit increased and the state was the first provider of resources. It acted by several channels: shares on interest, securities, rotation funds, constitution funds and bank bonds subscriptions. However the ownership of the banks, the origin of the funds and the increasing importance of subsidized credit, having reference indirectly and directly to the State, suggest the strong dependence of the industrial credit system on the public sector. The involvement of the banking system in industrial financing increased along with increasing decentralization of credit institutions. The industrial policy assumed credit as a measure and linked the realization of industrial plans to banking activity. Both the reduction of territorial disparities and the organization of long run banking on the base of regional perspective require a by area analysis at least macro-regional. Moreover, according to the Italian policy makers' view the development should run through the unbalanced path of growth in which resources shift from agriculture to industry and the long run growth is determined by change in branches shares. All these elements together considered address the analysis towards the territorial lending to industry branches.

### 3 The reconstruction of territorial lending to industry by branch

The starting point for a reconstruction of long run loans to industry by branch, missing in the official statistics, is the accounting identity of banks' balances linking the stock of loans at time  $t$ ,  $I_t$ , to the loans existing at time  $t-1$ ,  $I_{t-1}$ , to the loans issued at time  $t$ ,  $E_t$ , to the refunds (the due interests are excluded) of the previous loans effectively paid back at time  $t$ ,  $R_t$ . In summary:

$$I_{tj} = I_{t-1j} + E_{tj} - R_{tj} \quad (1)$$

where  $t=1960$  to  $1970$  and  $j=j$ th branch of the manufacturing industry. The definition of manufacturing industries considers the traditional branches with the exclusion of buildings communications and transportations, and electricity, gas and water production. The available data for  $E_{tj}$  include long run loans at the market rate and at the subsidized rate for the Mezzogiorno. In such data collection, the definition of the Mezzogiorno embraces the eight Italian regions of the South and a group of territories included in the "Inter-

vento straordinario". The first step is to split the amount of loans distributed to these territories isolating the amount for the eight Italian regions of the South in order to get a set of data comparable with other variables. An employed method (Del Monte and Giannola 1997) uses the share of public funding as capital expenditure of each region to compute the relative weight then applied to obtain the amount of loans distributed to each region. However there are three reasons for not following this procedure. First, comparing the amount of the public funding as capital expenditure and the distribution of loans to industry as a whole broken down by regions, the former could overestimate the weight of territories of *Intervent Straordinario* outside the eight traditional regions of 'Historical Mezzogiorno'. Secondly, referring to the latter set of data the value share of those territories varied greatly across the market rate and subsidized loans. Finally, public funding as capital expenditure was introduced in 1957 and started to work in 1958; so the data cannot be related to any information before that date. The best available distribution broken down by region and sector able to capture information before 1960 comes from data about the granted not already distributed loans. The partition distinguishes between the market rate and subsidized loans and it relates to the overall period 1950-1966. A slight bias is appreciated when I compare the partition to the regional loans for the whole period 1950-1960. Anyway other statistical sources could produce much more bias as would be the case with the granted not already distributed loans for the period 1950-1964 since they do not discriminate between market rate and soft loans. The second step is the computation of the effectively paid back refunds (the paid interests are excluded) of the previous loans. This involves the amortization schedule of loans. For the soft loans, the amortization time varied across the incentivizing rules. In the period 1950-1960 I assume a ten year amortization time for market rate and soft loans, since the rules providing a larger amortization time did not work then. From 1960 to 1970 the amortization time for subsidized loans is established at thirteen years. For the market rate loans, over the entire considered period, a ten year amortization time will be applied. A further consideration attains to the loans issued before 1954. My data broken by branches are cumulative for the period 1950-1954. The problem is how to partition the cumulated values by year. My choice is to use the annual distribution of subsidized loans to the Southern industry for the period 1950-1954 drawn from a data collection of the Svimez. Backcasting throughout the annual growth rate and assuming the strong hypothesis of not significant variation of the weights of each branch over 1950-1954, the annual partition by branch for the eight southern regions is obtained. Unfortunately values of loans estimated for 1950-1954 do not account for the loans issued before 1950 and for the corresponding refunds. Assuming a ten year

amortization time for the loans issued before 1950, their effect disappear on bank balances between 1959 and 1960. In this respect, it is worth concluding that the estimated values are representative of the loans' stock of the southern regions starting from 1960. The total sum of the estimated values are reported in the Table 1 and compared to official values drawn from the Bank of Italy (*Bollettino*, various issues).

Table 1: Estimated and official value of the loans distributed to the 'Historical Mezzogiorno' by the ICSs. Millions of current lire.

Years	Estimated	Official
1960	195236	265864
1961	269968	337268
1962	418054	511306
1963	600758	707642
1964	740379	997802
1965	840871	1154710
1966	1012694	1262200
1967	1145265	1576300
1968	1327898	1705669
1969	1585216	1908049
1970	1881990	2157566

Source: Bank of Italy for Official and my calculation for Estimated

The two time series are not obviously equal in absolute value since the official series accounted for the loans under the ten year term. Since my goal is to provide a feasible reconstruction of loans broken by regions and industrial branches I just need to check the robustness of the aggregated series and then to use the estimated branches' weights to split the official values under the main hypothesis that the loans below the ten year term follow the same distribution of loans above the ten year term. The robustness of estimation is checked by a non-parametric test of correlation between the estimated and official values. The results (Table 2) of the tests indicate that estimated loans in crude value and their annual growth rate are strongly correlated to the official ones. The non parametric correlation test of Spearman also suggests the non independence of the official and estimated series at 90%.

Finally the computed weight of each branch from my estimations are applied to official values of the total loans obtaining the estimation by branches for the Mezzogiorno and then, subtracting from the national data for each branches, the correspondent partition for the Centre-North is obtained. The results are reported in Tables 6 and 7 in the Appendix A.

Table 2: Correlation tests

	simple correlation	Spearman's Rho	Prob>  t  Spearman's Rho
<i>Absolute values</i>		1.0000	0.0000
<i>Annual percentage changes</i>	0.77	0.6121	0.0600

## 4 The Italian industrialization strategy

During the 1960s public intervention turned out to be concerned about a reduction in the territorial disparities, using, among other instruments, the direct and indirect control over the ICSs. The loan flows increased in the South and their stock relative to the overall mass of national industrial loans came through the threshold of 40%, below which the resources might be not efficient. The 40% threshold was recognized by several laws and by policy makers as the minimum limit. The intention of raising the capital stock of the southern manufacturing industry is clearer if the stock of loans is corrected for the value added for each branch for which data are available. I construct in table 3 an index of credit intensity defined as the ratio between the stock of loans by branches and the correspondent value added. In all the branches the index for the South is greater testifying the large transfer of resources to southern manufacturing industries. In the Centre-North indexes were below 0.5 in all the branches, except for the metallurgy industry, while in the south indexes varied widely across sectors. The highest was for the textiles and wearing industry but this was strongly influenced by its relative size over the entire national textiles production and by its lower capital intensity in the South. Here the typical textile firm had low capital intensity and was characterized by low average productivity. In 1961 47.9% of all textile productive units were in the South, but they counted for only 12.23% of the total value added in the textiles. Furthermore, in the South the highest values are associated with the usual capital intensive branches such as chemicals, rubber and metallurgy.

There are several signs of a discretionary and strategic criterion of public power in the resources transferring process from the credit system to branches of manufacturing industries. Many of these signs are drawn from the reading of the industrial policy Acts. The Act of 1957 about the “Intervento straordinario” established that projects to be financed were evaluated by governmental technical advisories, the Ministry of Industry and the Board of Ministries for the Mezzogiorno; the law of 1959 discriminated firms depending on their size. More clearly the Act of 1965 reforming the “Intervento straordinario” introduced an economic plan upon which the sub-

Table 3: Credit Intensity Index (Average 1960-1970)

Branches	Centre-North	Mezzogiorno
Food and Beverage	0.149471	0.374086
Paper and printing	0.433046	3.236243
Chemicals	0.155449	2.607224
Mining and quarrying	0.44435	0.178715
Rubber	0.170862	1.982409
Woods	0.089922	0.190665
Mechanicals	0.181194	0.512609
Metallurgy	0.581492	2.678918
Non-metallous Minerals	0.103356	0.937383
Leather	0.178824	0.023096
Textiles and wearing	0.131618	5.608587
others	0.048700	1.211415

Source: See text

sidized loans were granted. The plan indicated the branches and the areas to be subsidized. The favorite sectors were the basic industry (metallurgy and chemicals industries) for its capacity to create scale economies and to promote the growth of collateral branches, according to the scheme of unbalanced growth (Hirschmann 1958). Many contributions at national level suggest that from the second half of the 1960s basic industry (metallurgy and chemicals) received much more attention throughout the country (i.e. Ranci 1983); other scholars include the food industry and mechanicals as strategic sectors that were strongly subsidized (i.e. Pontolillo 1971). I develop a comparative analysis of the distributed loans by branches and areas in order to appreciate if different outlines were followed by public intervention. Using the non parametric test of Kolmogorov and Smirnov for the equality of distribution, the attempt is to compare the distribution of the annual credit intensity index (of each branch) for the Centre-North and the South (Table 4).

Before performing the test I manipulate the data through a standardization of the annual observations. If the two distributions are statistically similar I conclude that over the period the credit (and industrial) policy was the same in the Centre-North and in the South. In reverse, if they are different two statuses are possible either the credit intensity was relatively low in one area or the credit intensity was relatively high in the other. In order to solve this problem I simply look at the regional share over the national credit by branches. I discuss the results of the test for broad categories.

Table 4: Kolmogorov-Smirnov test on the distribution of credit intensity index

	D Statistics	P-value	P-value corrected
Food and Beverage	0.2727	0.808	0.719
Paper and printing	0.6364*	0.023	0.011
Chemicals	0.5455*	0.076	0.042
Quarrying and mining	0.3636	0.461	0.349
Rubber	0.5455*	0.076	0.042
Mechanicals	0.3636	0.461	0.349
Leather	0.5455*	0.076	0.042
Metallurgy	0.5455*	0.076	0.042
Woods	0.2727	0.808	0.719
Non metallic minerals	0.5455*	0.076	0.042
Textiles and wearing	0.5455*	0.076	0.042

\* Significant at 5%

*Progressive sectors.* The 'fly wheels' of Italian manufacturing industry over the 1955-1970 were the chemical and mechanical industries. They were the progressive branches, in the sense that they pushed the Italian economic system towards the long run path of industrialization. From a technological perspective these two branches are not always progressive. Unfortunately, the available data on credit loans are collected for broad categories of productions. So in the mechanical industry, the more progressive and less progressive sub-branches are collected together. Several sub-branches of the mechanical industry are science based, highly involved in technological progress, others are scale intensive sector (such as the Motor Vehicle industry) with vertically integrated firms, others are specialized suppliers in which innovation is derived from the upstream industry. In the chemical industry the story is not different. The Kolmogorov-Smirnov test shows that the mechanical industry in each area benefited from a quite similar credit deepening. This lead to argue that industrial policy do not altered the location of such industry which remained a strong point for the Centre-North manufacturing industry. In fact, its relevance was higher in the North as is shown by the share of the loans over the total credit in this area. On the contrary, different distributions are appreciated in the chemical industry. The credit strength is higher in the Mezzogiorno where more than one third of the stock of loans is yearly attributed to the chemical industry.

*Metallurgy industry.* Special attention was given to the financing of the primary metal industries. Such branches assumed great importance in both

areas but the distribution of loans is gathered for the Mezzogiorno in the second half of the 1960s and in the Centre-North in the first half, almost as if the implementation of the industry was realized in a two step strategy. Indeed, the test shows different industrial policy followed by the government, mainly due to the different timing.

*Traditional sectors.* Among the traditional sectors I focus on food, beverage, and tobacco, and on textiles (including wearing). In the former branch the distribution of the loans relative to value added is the same in both areas but I observe a kind of redistribution of the funding between the two areas. In the second branches there are several above-mentioned differences. At the beginning of the 1960s the textiles industry (including wearing) was gathered in the Centre-North and relatively missing in the South. The different distribution over time reveals the purpose of strengthening these branches in the North, as it is drawn from the time trend of the share of loans.

The summary analysis by branches and areas depicts an industrialization model coherent to the constraints imposed by the stage of development of Italy at the beginning of the “economic miracle”. The implementation of the metallurgy and chemicals industries looked to be compulsory in order to fully industrialize Italy. As a consequence, the Italian industry was devoted to a model of innovation based on the adaptive imitation and the passive adoption of olden technologies rather than on the production of novel technologies. This fits in the late comer status of the Italian economy. The last argument and the statistical evidence on the loans distributed suggest that the industrialization governed by public power was strategically oriented to a by sector approach. The pillars were the metallurgy industry in both areas (though realization timing was different) and the progressive sectors, the chemical and mechanical industry. Chemical industry was gathered in the South whilst the mechanical industry remained a strong point of the Centre-North. Anyway, the annual stock of loans and the credit intensity index show a great effort to implement the mechanicals also in the Mezzogiorno, but the attempt was confined essentially to the motor vehicle industry. From the previous discussion, it arises that Italian policy makers, by means of control over industrial credit, tended to realize a model of industrialization diversified by branches and areas. The credit intensity and the strategy of industrialization support the interpretation advanced by economic historiography which stressed the financial based development of the Italian economy during the *golden age* (i.e. Nardozi 2004).

## 5 A quantitative analysis of the Italian industrial policy

The non parametric analysis of the previous sections outlined the qualitative aspects of the Italian industrial policy of the 1960s from which a well suited strategy related to sectors and areas arose. However, the qualitative analysis provides us with just a limited view of the impact of industrial policy. For this reason in this section I try to implement a quantitative analysis of the long run loans to manufacturing industries in the considered period. The impact of credit, largely controlled by policy makers, is evaluated with regard to eleven industrial sectors in the two broad areas of Italy, the Centre-North and the Mezzogiorno over the period 1960-1970. The most widely accepted models to capture the size and magnitude of the credit effect on productivity or on other growth indicators are based on the pooled cross-section approach taking account of a convergence parameter. These models are estimated, for example, in the pioneer work of King and Levine (1993) for a large group of countries over the period 1960-1988. Alternatively the empirical research of Rajan and Zingales (1998) focused on cross section data for American industries exploring channels through which finance in a broad sense affects the size and profit rate of firms. The model estimated in my work actually uses all available informations across space and time and so forth it belongs to the class of Cross-Section Time Series models.

The main theoretical underpinning is based on the effect of credit (CREDIT) over the average product per worker. The extensive investments in the 1950s and the 1960 are devoted to enlarging the disposable equipment for the scale-intensive production and to the acquisition of knowledge (technologies) from abroad. The transmission channel is via the capital labor ratio enhanced by credit deepening. The more the long run credit, the higher the capital labor ratio, the larger the average product per worker is. In this respect, the impact of loans is almost direct on the capital labor ratio and on the average product. What is uncertain is the time passing between the distributed loans and the effective results on the average product. For this reason I can consider that the credit affects currently and with one lag average product per worker (respectively variables CREDIT and Lagged CREDIT in the models). Moreover other variables are inserted as control variables in the estimation. First, I have considered the role of foreign trade by means of two variables, the sector terms of trade (TOT) and the nominal effective exchange rate (NER). The Sector terms of trade, defined as the ratio between the export and import price index, capture sectors competitiveness on foreign markets based on qualitative elements such as market power or technological advantages

Table 5: Cross-sectional time series FGLS regressions

*Dependent variable: growth rates of value added per worker*

	Model I	Model II	Model III	Model IV
Credit	-0.0050 (0.0170)	0.0018 (0.0172)	-0.0002 (0.0167)	0.0055 (0.01676)
Lagged Credit	0.0455*** (0.0171)	0.0504*** (0.0173)	0.0488*** (0.0169)	0.0552*** (0.0171)
Nominal wages	-0.0432* (0.0239)	-0.0481* (0.0246)		
Lagged Nominal wages	-0.0332 (0.0271)	-0.0408 (0.0281)		
REGIO	0.0069** (0.0031)	0.0072** (0.0032)	0.0055* (0.0033)	0.0059* (0.0034)
NER	0.4014** (0.1714)	0.3379* (0.1790)	0.5365*** (0.1608)	0.4792*** (0.1686)
Terms of trade	0.00001*** (0.000003)		0.00001*** (3.42E-06)	
Real wages			-0.0099 (0.02575)	0.0135 (0.0281)
Lagged real wages			0.0081 (0.0335)	0.0034 (0.0347)
C	0.0285*** (0.0044)	0.0294*** (0.0046)	0.0210*** (0.0036)	0.0213*** (0.0037)

Standard error in parentheses. Panel heteroskedastic and panel specific AR(1) correlation. Obs: 198, groups: 22, time period 9 (1961-1970)

\*\*\* significant at 1%, \*\* at 5%, \* at 10%

while the nominal effective exchange rate captures the pure price competitiveness. Secondly, I introduce the sectoral nominal and real wages. In a pure competitive economy the marginal labor productivity and real wages move together in the same direction and the causal relationship is from the former towards the latter. Many circumstances could lead to a disease of this mechanism. The prevalence of imperfect competition or of monopoly rules out the direct relation between productivity and real wages. Moreover, well organized labor unions and industrial associations could prevent that real wages are fixed according to productivity. Furthermore, there is a lot of evidence that unions are concerned about nominal wage rather than real wage in the bargaining. On the other hand, nominal wages are naturally perceived from industrials as a cost. This is what economic theory predicts. However, historical context is binding to determine the actual relationship between labor and capital. In several epochs and regions, the bargaining is about nominal wages. In the context of Italian economic history during the golden age, the tacit agreement between labor and capital prioritized capital accumulation in order to promote future growth. In this respect, nominal wage is a variable exogenously fixed at consistent level to foster investments. Therefore, the model specification includes real and nominal wages in principle to take account of the possible effect on productivity under the reliable hypothesis that nominal wages were exogenously determined. Thirdly, I consider whether the sectors are located in the southern regions or not. For this purpose I used a dummy variable (1 if the sector is located in the south, 0 otherwise). The proper model for policy analysis is a cross section time series (CSTS) commonly used in the social science literature. Before the results of the estimated model are presented, attention is given to the model specification. The pooled OLS estimators for a CSTS model are likely to be unbiased, inefficient or inconsistent for several problems related to serial correlations of residuals, heteroskedasticity, contemporaneous correlation or causal heterogeneity across section and time. A more correct specification is addressed by the fact that pooled OLS produces residuals that suffer from many of the problems outlined above. Most recently the SUR regression has received great attention as it is able to overcome those problems providing at the same time cross specific coefficients for the explanatory variables. Notwithstanding, it is not possible to estimate the model if cross section elements are larger than observed periods as in this case. So I run different models that take account of the most relevant matters as well. Table 5 presents various versions of feasible GLS estimation of contemporaneous correlation considering both autocorrelation and heteroskedasticity of error terms, and moreover the correlation is supposed to be panel specific in the form of autoregressive process of order one. The specification of the models

involves all the variables in year percentage variations. The results of all the models of Table 5 are robust to different hypothesis about the methods to compute autocorrelation. All the versions suggest a positive and significant effect of credit percentage variation at lag one on the percentage variation of average product per worker. Though the contemporaneous association of the two variables is not significant, the lagged effect of credit is verified. This means that the positive change of distributed loans affects the capital labor ratio with some retard since at least one year is needed to new capital influencing average product. It is due to the time required to actually realize investments or to adjust human capital. This outcome is also plausible in front of the nature of the data I used. The long run loans are actually suspected to be likely productive investments either enhancing the quantity and quality of capital readily inserted into production. In this phase gains in product per worker are possible together with a reduction in the unemployment rate in all areas of the country. I did not prove the direct effect of credit on employment or unemployment levels, but one could argue that since branches of the manufacturing industry absorbed a large part of labor excess even in the presence of increasing product per worker, the industrial policy achieved the targets of the government. The REGIO dummy variable is significant and positive in all the models. It captures the fact that branches working in the southern regions have experimented a higher growth rate of product per worker. The outcome is consistent with the decreasing marginal returns of production factors. However, I tend to give more importance to the advantages of backwardness especially for what attains to the incorporation of more recent technologies and organizational systems. The hypothesis of decreasing returns in factor productivity does not hold in the phase of extensive growth (Eichengreen and Vazquez, 1999) but the emulation of best practice allow to achieve more gains in productivity, the larger the distance from the frontier is. Moreover, I stress what is likely to have influenced average product over this period and what did not. One of the most leading explanations of Italian growth is the export based view (Kindleberger and Graziani) captured in my models by both sector terms of trade and nominal effective exchange rate. They respectively describe two different ways of competition in foreign markets. The pure price competition, interpreted by NER is positive and statistically significant in all the specifications. The technological and organizational competitiveness explained by sector terms of trade is significant but the coefficient is however small. Real wages and average product per worker are not linked, as expected, throughout any relation. On the contrary, the elasticity of average product to change in nominal wage verifies the working of the tacit agreement between labor and capital in the industrial relationship in Italy. Since the production factors cooperated

to realize the target of boosting industrialization, nominal wages were settled at the lowest level consistent with intensive capital accumulation. As compensation, industrials overinvested to absorb unemployment. The negative coefficient of nominal wage captures the possible causal relation from the reduction of wages, to the realization of high profit, to higher investments and finally a higher growth rate of average product per worker. Identifying the future outcomes of this agreement is not the aim of this paper; the key point is that nominal wages are to be inserted in the model specification to control for this variable as well in determining direct linkage from credit to growth of product per worker. A fact that was not unusual in postwar Europe, as maintained by Eichengreen and Vazquez (1999): “Wage moderation stimulated investment by enhancing its profitability and making available the resources to finance it”.

## Concluding remarks

The most relevant outcomes from previous sections support the view of Italian development over the 1960s driven and influenced by credit deepening. The direct or indirect public control of credit market allowed for a strategy of development centered on industrial credit as a primary policy in that period. Public power addressed the configuration of the Italian industrial structure, influencing the realization of metallurgy and chemical industry in the South and of metallurgy and mechanical industry in the Centre-North. Moreover, the quantitative analysis of section four clarifies the overall influence of credit deepening on product per worker in eleven branches of the manufacturing industries in the two Italian macro-regions showing a positive and robust correlation between growth and long run loans in the 1960s. Such analysis could be useful to interpret the change in the Italian economy of subsequent decades. The effects of the Italian strategy of industrialization are crucial to understanding both the quality of territorial development and the subsequent slowdown of the 1970s. The initial gathering of chemicals and metallurgy industry in the South rose both productivity and employment. The by-product of that strategy was a concentration of monopolistic and oligopolistic markets in the South <sup>1</sup>. In the Centre-North the financing of the mechanical industry, altogheter with the metallurgy industry, led to a more diversified and balanced industrial structure, mixing firms devoted to absorbing the excess of labor and firms engaged in tech intensive production. In this area the contestability degree was higher in many branches either in

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<sup>1</sup>It has been shown that the leading sectors were dominated by few industries, as maintained by Giannetti and Vasta 2004

the textiles or in some sub-branches of light mechanicals, though large sectors were strongly affected by monopolistic positions as well (rubber, transport equipment or motor vehicle). A further by-product of the Italian strategy of industrialization is the polarization of southern development around the big state-owned or private companies while the SMEs system relied on a marginal position. In the Centre-North the landscape is different: the big firms and the small and medium firms, widely diffused or gathered in the districts, independent from or integrated to the cycle of big firms, cohabit. The organizational and productive structure suited by the industrialization strategy showed its weakness from the end of the 1960s. The change in labor, raw materials and energy goods prices are differently absorbed by the two areas since the outcomes of industrial policy of 1960s were different. Because of the rigidity of the big firms, the southern economy failed to react to change in the relative prices, and thanks to the flexibility of SMEs system, the Centre-North seemed to better fit the new macroeconomic environment. When at the end of the 1960s the common market was completed, the Italian economy is almost fully integrated into Europe and when at the start of the 1970s the Bretton Woods system disappeared, SMEs system was ready to exploit the new phase of the Italian industrial policy based on competitive devaluation. As has been shown in the models outlined in section four the average product per worker was yet strongly influenced by change in nominal effective exchange rate. The slump of Bretton Woods facilitate the use of competitive devaluation which benefited the firms of Centre-North, because of their organization and production composition, widening the distance from the South in terms of productivity. This represents a substitution of policy perspective shifting from the activism of the 1960s (planning in the broad sense) to intervention based on pure price competitiveness to finally reaching a free market trust in the 1980s. This interpretation is consistent with Desmet' suggestion (2002) of a harmful change, from investment incentives to income support in public policy during the 1970s, quite similar to Boltho et al.'s argument (1997). Along this path the Italian economy lost its propulsive capacity but the South suffered more for the transformation of its economic structure, which started in the 1950s, boosted in the 1960s and suddenly interrupted at the beginning of the 1970s.

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## Appendix A Data and sources

Territorial values added is current values and workers engaged by industrial branches are from the old time series provided by the *Istituto centrale di statistica* published in the *Consiglio Nazionale dell'economia e del Lavoro* (1980). Current values are converted in the real values using the implicit deflators of value added by sectors for Italy as a whole reported in the *Annuario di contabilit nazionale* edited by the *Istituto Centrale di Statistica* (1980). National data for the long run loans by branches and territorial data for long run loans to manufacturing industry as a whole, come from Banca d'Italia, *Bollettino*, various issues. Nominal effective exchange rate is from the International Monetary System Statistics. Nominal wages by sectors and areas are minimum contractual wage for workers of second class. There were six classes of workers according to their skills. The main source is the *Annuario di Statistiche del lavoro e dell'emigrazione* published by the *Istituto centrale di statistica* for the period 1960-1967. From 1968 to 1970 the source is another *Istituto centrale di statistica* publication, the *Annuario di statistiche industriali*. The territorial price indexes used to build real wages come from the *Annuario di Statistiche del lavoro e dell'emigrazione* (1960-1971). Sector terms of trade are constructed as the ratio between the index number of exported goods and the index number of imported goods of the same category. The statistical source is the *Statistica annuale del commercio con l'estero*, published by *Istituto centrale di statistica* for the years 1960-1970. The main source to collect data on the long run loans to the manufacturing industry in the territories of the "Intervento straordinario" is the annual report to the parliament of the Board of Ministries for the Mezzogiorno and depressed areas of the Centre-North. In the report of 1967, the 1950-1954 cumulated loans and annual loans over 1955-1960 by branches to the territories of the "Intervento Straordinario" are collected. For the period 1961-1970 I used the same source (however the title changes slightly) presented to Parliament in the year 1969, 1970 and 1971. The annual growth rate of subsidized loans to southern regions used to split cumulated data for 1950-1954 are from Svimez (1956), *Notizie sull'economia del Mezzogiorno*.

Table 6: Loans by branches to the Mezzogiorno (market rate and subsidized loans). Millions of current Lire.

Branches	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
mining and quarrying	11041	9809	9484	9065	10699	12138	11397	21695	20898	21483	32644
food and beverage	45335	55911	66012	81430	101466	115862	118640	131233	150961	152153	153825
wood	5887	6514	8239	14123	19181	19655	22448	28520	28801	28859	30014
non metallic minerals	30190	34241	55135	80366	124114	143486	132046	145659	144898	142300	158801
metallurgy	32398	28600	49683	97038	173133	187771	195773	261282	265367	312184	340588
mechanicals	26291	38355	57063	76993	109733	127809	133428	159528	158278	193958	255127
chemicals	74059	111933	184066	243109	308203	381679	433983	580521	688933	805640	914400
rubber	1177	1821	3382	5360	13048	13152	13430	18241	17543	15094	15525
paper	9425	14838	34623	42336	58356	60242	76153	90690	82757	82732	75061
leather	1868	1655	2296	3573	4696	4726	4471	5345	5033	6658	6688
textile and wearing	20127	22708	24117	29792	40740	52941	58449	65631	67489	75497	83682
others	8066	10883	17207	24458	34433	35248	61982	67956	74712	71491	91211
Total	265864	337268	511306	707642	997802	1154710	1262200	1576301	1705669	1908049	2157566

Source: see text

Table 7: Loans by branches to the Centre-North (market rate and subsidized loans). Millions of current Lire.

Branches	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
mining and quarrying	55841	62030	61546	74534	77616	75791	79291	82743	92181	94249	76433
food and beverage	23618	42851	58108	73435	81014	85209	124167	179348	210742	235591	194554
wood	7824	13562	21149	24746	27798	31022	39526	42672	63551	86128	88323
non metallic minerals	14998	23764	22503	21953	15606	21295	40656	80688	99838	123387	113444
metallurgy	6038	156599	177541	201335	297724	312128	391181	419010	469433	420485	503871
chemicals	205029	251294	332952	399397	430524	469630	505425	545900	671949	860266	1054254
mechanicals	94963	116079	125431	163070	120003	109539	99642	128755	186436	257361	300700
rubber	1756	3712	5860	12338	32942	37209	40430	28796	34940	52739	57056
paper	18760	20822	27003	55391	80868	99398	104814	110936	147893	143143	147495
leather	1894	5078	7031	7448	12191	13494	11960	19144	26455	28785	28984
textiles and wearing	45079	75018	112312	134370	134161	138135	176215	237694	274977	324035	324908
others	9004	12345	26299	37641	17754	26182	3727	11095	18170	32759	31772
total	614804	783154	977736	1205659	1328201	1419031	1617034	1886781	2296566	2658928	2921794

Source: see text