How Binding is Low Social Capital for Economic Growth?

Further Lessons from the Italian Regional Divide

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Abstract

Does a persistently low endowment of social capital inevitably imply slow growth and lagging behind? We address this question by considering regional growth in the presence of highly heterogeneous social capital stocks. We maintain that the influence of social capital on growth depends crucially on the institutional set up. In particular, we claim that when the within-country distribution of social capital is highly heterogeneous and policy making is centralized, the local endowments of social capital -- which display their effect mainly on the functioning of local institutions -- plays a weaker role than when policy is decentralized. Our claim is based on a detailed analysis of the Italian regional divide. Italy, the case study par excellence on social capital, is an ideal case because social capital and per capita income are highly and persistently heterogeneous across regions, and because a deep process of decentralization was adopted in the 1970s, after decades of centralized policy making. Our hypothesis is formally defined by means of an endogenous growth model in which social capital affects the accumulation of public capital, and its influence depends crucially on how (de)centralized is policy making. The model is then calibrated on the long run Italian data considering two macro regions: Center-North and South. We show that low social capital exerted an increased negative influence on growth for the South as a consequence of decentralization, causing a sudden halt of a twenty-year strong process of regional convergence.

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1. Introduction and Motivations

Following Acemoglu et al. (2001), a large and growing literature has investigated the possibility that the current, large differences in cross-country economic outcomes reflect long-past historical episodes which, in turn, influence the forms and the functioning of current formal institutions.¹ When dealing with regions rather than countries, within-country persistent differences in economic outcomes cannot be attributed to historical differences in formal institutions, since these are typically homogeneous at this territorial level. However, the capacity of formal institutions to provide essential public goods may not be context-free. The possibility does exist that the quantity and/or the quality of public goods provided by the same formal institution may vary significantly and persistently across regions, as long as these regions differ in same fundamental characteristic. This is where social capital enters the picture:² being a persistent phenomenon itself, social capital is an interesting candidate to explain persistent differences of institutional quality and, as a consequence, of economic performance.³

This key feature of social capital and its role as a powerful explanation of economic gaps across territories were first analysed in depth by Putnam’s classical study of the Italian regions (Putnam, 1993).⁴ Putnam famously suggested that the large variance in the local functioning of identical institutions (and again in economic performances) was due to significant differences in long-past crucial historical events, and that these events were the source of differences in local endowments of social capital -- differences that, once generated, change only at a very slow pace.

Since Putnam’s work, a large empirical literature has confirmed social capital as a key channel through which long-past historical episodes strongly influence current economic outcomes.

Taken as a whole, this important line of research tends to imply a rather strong conclusion – namely that since economic backwardness may originate in a long-past history that has left a

¹ For an alternative viewpoint, in which investment in human capital, rather than history, is what allows a country to develop growth-enhancing institutions, see Glaeser et al. (2004).

² As Guido Tabellini has recently put it, “If individuals lack respect for other members of their community and for the 'res publica,' public good provision is bound to be inadequate, and public administrators are likely to engage in nepotism or outright corruption. This ... acts as a drag on economic development, through the functioning of government institutions and other organizations” (Tabellini, 2010, p. 684).

³ In this paper we adopt the definition, due to Guiso et al. (2010), of social (civic) capital as formed by “those persistent and shared beliefs and values that help a group overcome the free rider problem in the pursuit of socially valuable activities”. This definition is in line with the earlier definition put forward by Putnam (1993), namely “Social capital ... refers to features of social organization, such as trust, norms, and networks, that can improve the efficiency of society by facilitating coordinated actions”.

⁴See also Banfield (1958).
territory with a low level of social capital, then accumulating social capital is the slow, difficult but essential undertaking in order to improve the territory's relative performance.

In this paper we challenge this view. Like many other papers in the field,\(^5\) we go back to the very case supposed to yield a strong empirical support for it, the Italian regional divide.\(^6\) In dealing with this case, the typical paper on the economic effect of social capital focuses on data taken from 1970 onwards, when a stable North-South divide does exist and correlates well with regional stocks of social capital. However, this is not the whole story. As we show below, focusing on the post-1970 period overlooks some previous and very interesting dynamics: for instance, between 1951 and 1971 the South of Italy (the s.c. "Mezzogiorno") went through a long phase of strong convergence (Barro and Sala-i-Martin, 1991),\(^8\) a phase that came suddenly to a halt at the beginning of the 1970s.

This wider picture poses two main questions. First, how come that low social capital endowments are binding in some period and not in others? Second, what caused the halt of convergence?

To answer these questions, we offer an explanation whose validity extends well beyond the specific case of the Italian regions. We claim that the economic effect of social capital depends crucially on some features of the institutional set up. In particular, we argue that when the within-country distribution of social capital is highly heterogeneous and policy making is centralized, the local endowments of social capital -- which display their effect mainly on the functioning of local institutions -- plays a weaker role than when policy is decentralized. So our explanation is that decentralization of policy making (a process that in fact took place in Italy from 1970 onwards) was crucial to halt convergence, and that without it convergence could have continued in spite of the South's persistently low social capital.\(^9\)

\(^5\)See among many others Guiso et al. (2008) and De Blasio and Nuzzo (2009). Tabellini (2010) is based on a sample of 69 regions from 8 European countries within which Italy still matters a lot: “the correlation [between output and culture] is weaker without Italy ... because differences in economic development and in culture are much less pronounced within the other European countries” (p. 690).

\(^6\)The literature on the Mezzogiorno is vast and a review of the literature is beyond the scope of our contribution. Nevertheless, limiting ourselves to the literature focused on the role of institutions we must mention Del Monte and Giannola (1978) and Trigilia, 1992, among many others). Other authors have analyzed the impact of the labor market reform on the Mezzogiorno's economy: Bodo and Sestito (1991), Faini (1994), Boltho et al. (1997), among others.

\(^7\) See Figure 1 in section 2 below. Figure 1 is based on data from Daniele and Malanima (2007).

\(^8\)In analysing this long episode of convergence, Barro and Sala-i-Martin (1991) concluded that “there is nothing surprising in the relative performances of the regions of Northern and Southern Italy. The South of Italy has not yet caught up because it started far behind the north, and the rate of convergence is only about 2 percent a year” (Barro and Sala-i-Martin, 1991, p. 151).

\(^9\) In general, convergence comes to a halt in any neoclassical growth model, so the explanation for the Italian's South could be the standard one. We do not deny a role to these standard mechanisms based on the exhaustion of the economic forces behind convergence (physical and human capital accumulation \textit{in primis}). Nevertheless, some
To assess the quantitative plausibility of our explanation, we develop a growth model and calibrate it using the economic history of the Italian regional divide to assign values to its parameters. Our model is inspired by Barro’s (1990) and Futagami et al. (1993). In particular, Futagami’s model is chosen as a starting point because we focus on public capital accumulation as the key policy factor potentially capable to trigger convergence in the lagging behind regions. In our model social capital affects growth through the effect it exerts on public investment: the latter is more effective the more a society is capable to overcome free riding and rent seeking occurrences. The link between social capital and public investment is modeled as iceberg costs attached to the process by which tax revenues are transformed into new public capital: the lower the social capital, the higher are these costs.

Decentralization affects these iceberg costs because, as we postulated, local endowments of social capital exert their effect mainly on the functioning of local institutions. In words, the social capital of a small, backward region may have a strong influence on the way a new public infrastructure is built in its territory whenever the investment is designed and managed by institutions located within it. On the contrary, if the project is managed by central government institutions, the institutional process is less exposed to the social capital of the region where the project is located, and the social capital that matters in this case is the one of the whole country (proxied by its average, in our model). Decentralization makes regional policy more permeable to the local level of social capital, with the ensuing impact, positive or negative, on the iceberg costs and therefore on growth.

Our model is also designed to take account of a second institutional shock that took place in Italy at the end of the 1960s, when a uniform national wage rate was adopted. To account for this second institutional change, the labour market in our model is imperfect and combines the monopolistic union model of McDonald and Solow (1981) with a median voter mechanism for the union delegates to define common national wage (Carmeci and Mauro, 2002).

To obtain a first, quantitative assessment of our hypothesis, we calibrate our model by assigning parameter values taken from the economic history of Italy and generate a sequence of steady-state growth and unemployment rates for both the South and the Center-North. The facts do not fit well this approach: first, the halt of convergence took place almost abruptly, in contrast with theory implying smooth transition (see Figure 1 in section 2 below). Second, investment in both human and physical capital increased in the Seventies, while a process of neoclassical convergence would imply it to decrease.

10 Low social capital can influence economic outcomes through a variety of other channels, some of which belong entirely to the private domain of economic action. For instance, low trust makes cooperation between both individuals and firms less likely (Arrow, 1972), and workers may be more likely to shirk (Ichino and Maggi, 2000). These consequences of low trust are unlikely to change significantly and promptly in the presence of a more efficient governmental action.

11 Evidence on this mechanism for the Italian regions is discussed in Golden and Picci (2005).
results of our model simulations closely mimic the sequence of divergence, convergence and again divergence that has characterized the time path of the Italian regional divide from 1861 onwards. Crucially for our proposed explanation, our simulations show that decentralization and its interaction with social capital play a central role in reversing the twenty-year long convergence process between 1950-1971.

Our results highlight a mechanism that may help to explain why social capital seems to act as a key determinant of aggregate economic performances in some periods but not in others,\textsuperscript{12} therefore questioning the too simplistic historical determinism permeating the literature on social capital and growth.

The paper is organized as follow. The next section summarizes and discusses the key historical features of the North-South divide in Italy and the relevant literature. In section 3 our model is developed and discussed. In Section 4 we discuss to what extent our model can generate patterns of the North-South divide similar to those observed in reality.

2. The Italian Regional Divide and its Institutional Innovations

In this section we look at the main phases, events and available explanations of the Italian regional divide. This discussion is meant to provide background information for the development of our model in section 3 and for its calibration in section 4, where the relevant data for each phase are identified and discussed.

The wide economic gap of Italy's South is an anomalous fact within the more advanced countries.\textsuperscript{13} For a while, a strong process of convergence, materialized between 1951 and 1971, seemed to suggest that there was no anomaly, since the area was following the traditional path leading to a positive steady-state implied by a standard neoclassical model of growth.\textsuperscript{14} Several contributions eventually discarded this optimistic view.\textsuperscript{15} As the data from Daniele and Malanima (2007) make clear (Figure 1), convergence did occur within two far less positive phases. In the rest of this section we focus on the three main sub-periods that come out from Figure 1 -- namely, 1861-1951, 1951-1971 and 1971-2004.

\textsuperscript{12} To explain the changing strength of the influence of social capital on economic outcomes, various hypotheses have been put forward. Among them, North (1990) suggests that "as a market economy develops the scope for social capital to reduce transaction costs increases" (De Blasio and Nuzzo, 2010).

\textsuperscript{13}The anomaly of the Italian case is well documented by Iuzzolino (2009), who analyzes the data of 147 regions in 14 countries between 1955 and 2005.

\textsuperscript{14}As Lucas (2000) shows, divergence is a necessary phase before a process of generalized convergence can materialize. Up to the seventies the Italian regional divide seemed to follow Lucas’s prediction.

\textsuperscript{15} See Iuzzolino (2009) for the relevant references.
The first sub-period is characterized by divergence, but not until 1881. This is not surprising considering the sectoral composition of labor force at the time, concentrated everywhere in agriculture, and bearing in mind that the technological opportunities attached to the industrial revolution had not yet reached the northern regions of Italy. In this initial context, a large difference in the regional stocks of human capital was in place but was not yet the source of divergence.\footnote{On the role of human capital in the Italian regional development, see Di Liberto (2008).} Things changed profoundly when industrialization did start. Industrialization caused divergence worldwide (Lucas, 2000) and Italy was no exception. The difference in the regional stocks of human capital was then likely to be among the major sources of divergence, since the pace of technology diffusion depends on the availability of human capital in the lagging region. This important initial divide -- with the Southern literacy rate at roughly 50% of the center-northern one -- does characterize a large part of the period 1861-1951, with some slow improvement for the Mezzogiorno after 1911. Due to the educational public policy,\footnote{One of the reason for this difference is that up to 1911 schools were financed by municipalities and consequently the paucity of resources for Southern schools was extreme (Felice, 2007b). After 1911 schooling started to be financed by the central government, but the coming of World War I set up other budget priorities.} and also to demographic inertia, it was only after World War II that one could observe the literacy rate approaching a value around 60% in the South.\footnote{Gagliardi and Percoco (2010) attribute the initial and long phase of regional divergence to two main factors: the large difference in the stocks of human capital, that made industrialization easier in the Center-North; and protectionism, that "locked-in" the Mezzogiorno's specialization in agriculture.}

It is important to underline that in the 1861-1951 period, fiscal and regional policy were also biased against the Mezzogiorno. Since the fiscal system in place weighted in favor of indirect taxation, it implies \textit{de facto} a higher average tax rate for the poorer Mezzogiorno (Parravicini,
According to other estimates, up to one third of the national tax revenues originated in the South, whose GDP represented, however, only one fourth of the Italian one (Felice, 2007b, p. 30). Despite this large fiscal contribution, the South was not linked to any systematic regional policy aimed at favoring the region's economic development. As for the labor market, it was almost perfectly flexible in the period 1861 to 1900. From 1900 to around 1920, excluding wartime, the Unions' power increased but the labor market was still spatially flexible. Then Fascism rose to power and, with it, a rigid control over wages took place. The mechanism in place, the so-called "tabelle salariali" (wage tables), entailed specific and detailed wage differentiations by sector, geographic area, sex and age. In these tables, wages were up to 50% lower in the South.

In 1951, the long phase of divergence came to an end and convergence began as the result of the interaction between market and policy factors. For sure, at the time, market forces were at work favoring convergence all over Europe. In the Mezzogiorno, this general process was enhanced by three factors. First, the gap of the Mezzogiorno's stock of human capital had significantly diminished in relative terms. Second, wages were still allowed to be set at lower levels in the backward areas. In fact, after a short period of formal suspension, the "tabelle salariali" of the fascist era became the so-called "gabbie salariali" (wage cages) which allowed wage settings to reflect lower cost of living and, to some extent at least, local labor market conditions. On average, during this period the Mezzogiorno's unit labor cost in the industrial sector was estimated to be around 80% of the Center-North's, while in other sectors differentials were larger (Boltho et al., 1997). Third, fiscal policy changed, at last, in favour of the Mezzogiorno. In fact, after World War II, for the first time the Southern regions became the beneficiaries of large flows of public funds from other regions. These flows were used and managed by the central State mainly to improve the locally available stocks of physical infrastructures. A central role was initially played by the national special Agency "Cassa per il Mezzogiorno".

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19 In fact, the period was characterized by a State policy aimed at promoting a faster accumulation of public capital in the North, the most promising area in terms of development. Indeed, in this early period of the Italian monarchy, the state intervention in the Southern area was very weak (Castronovo, 1976; Zamagni, 1981). In a classical study on the Italian fiscal policy at the beginning of the XIX Century, Nitti maintained that resources were systematically drained from the South to finance public investment in the northern regions. The Fascist regime did not represent a radical change of the former policy with some exception for the metropolitan area of Napoli (Castronovo, 1976).

20 One should exclude wartime from this time span. In war time strike right was forbidden and price and wages controlled.

21 Temple (2001) identifies the period 1950-1973 as the "Golden Age" of economic growth in Europe, based on what the author defines as "the TFP bonus of structural change". Temple's evidence is based on data at the country level. Robust evidence that a similar mechanism has also worked within countries also exists: for Italy, see Paci and Pigliaru (1997).

22 The national bureau "Cassa per il Mezzogiorno" was responsible for the creation of a stock of public infrastructures in the Mezzogiorno.
il Mezzogiorno” (Felice, 2010; Zamagni, 1981). This central Agency was initially designed to be independent from political influences at all levels of government. During its initial phase of activity (1950-1958), the Agency focused on augmenting the stock of public infrastructures in the Southern regions. This phase is generally regarded as a successful one (Felice, 2007a; D’Antone, 2001). Immediately afterward, the Italian Parliament adopted a sequence of laws aimed at significantly weakening the independence of the Agency (Felice, 2007a). At the same time, the emphasis was shifted from building infrastructures to more active intervention aimed at favoring industrialization in the area (1958-1965). To this aim, the State imposed a large part of the new investments undertaken by large State-controlled manufacturing firms to be located in the South: in 1970 the share in investment and machinery in GDP was 30% higher in the South than in the rest of the country (Boltho et al., 1997).

This mix of labor market institutions and regional policies, centrally managed, appeared to favor convergence between North and South.23 The picture, however, changed again at the end of the Sixties, when convergence suddenly ended. A number of permanent changes characterized this phase, especially the above-mentioned two significant institutional changes that took place after 1970. The first major change concerned the wage-setting institution: the “gabbie salariali” were abolished and new labor legislation, the “Statuto dei Lavoratori”, was adopted. The new rules dictated the sudden equalization of wage levels across areas and regions,24 whatever the differences in the cost of living and local labor market conditions. A sort of “spatial wage rigidity” was thus created by law at the beginning of the 1970s and wage determination became independent from local labor market condition.

The impact of this institutional change was remarkable for the Mezzogiorno’s economy. Since the majority of highly unionized workers lived in the North of Italy, the North was overrepresented in the resulting bargaining process. The set of rules and rights were suited to the more advanced North and the minimum national wage was set too high with respect to the labor market condition of the less developed regions (Mauro and Carmeci, 2002). This was a large shock for the competitiveness of the industrial sector of the Mezzogiorno.25 Boltho et al. (1997) estimated that direct unit labor costs in the Southern area increased

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23 Some convergence had materialized not only in per capita GDP, but also in TFP, as Di Liberto et al. (2007) have recently shown.

24 The new set of rules has been blamed for introducing a lot of rigidity in the firing-hiring costs. In fact many economists (Bertola 2006) name this type of rigidity as the major cause of Italian unemployment. We believe that although these types of rigidity are indeed important, the bulk of Italian unemployment is caused by spatial rigidity as suggested by its extraordinary spatial heterogeneity.

25 Interestingly, Germany is another case in which the adoption of a nation-wide wage-setting institution was detrimental to the convergence of the poorer (Eastern) regions. This initial choice was later partially abandoned and a higher degree of flexibility in the labor market was allowed. As a consequence, the Eastern regions entered a convergence path. See Carlin (2010).
dramatically, from below 80% of the northern wage in 1970 to 95% ten years later.26 At the same time, migration flows from the Mezzogiorno towards the northern regions almost halted, partly as a consequence of the wage rate equalization across regions (Faini, 1994). All in all it is not very surprising that the regional unemployment rates started to diverge dramatically, from 8.2% in 1969 to 19.6 thirty years later (compared with a shift from 4.8% to 6.7% in the Center-North) (Svimez, 2011, Tab. 7, 466-469).

Regional policy was then intensively used to fight this increased unemployment. Transfers and subsidies to foster private investments were generously funded, this time with tax revenues collected in the Center-Northern regions. As a consequence, public expenditure in the South increased significantly from 1970 onwards.27 In particular, the funds made available by the central State for regional policy in the Southern regions increased, as a percentage of the Italian GDP, from an average of 0.70% before 1970 to an average of 0.90% in the 1971-1980 decade.28

In theory, such an increase in public spending should have helped the South to overcome the shock created by the suddenly imposed rigidity in the local labor markets. For some reason, however, this did not happen and since then the Mezzogiorno’s gap settled at the high level described above.29

One possibility is that the wage shock was too strong to be compensated by the enhanced regional policy. Another is that some factor weakened the capacity of public spending to sustain the area’s employment and convergence. In the following, we focus on this latter possibility and in particular on whether the second institutional shock – decentralization –

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26 Similar calculations are reported in Bodo and Sestito (1991), who also show that measures designed by the State to limit the impact of the new collective bargaining rules on labor costs in the South were rather ineffective. In particular, Bodo and Sestito calculate that the increase in unit labor cost was only partially offset by the law that allowed – in the Southern regions – for the reduction of the social security costs that fall on the employer. On the impact on the Mezzogiorno’s economy of the abolition of the “gabbie salariali” see also Faini (1994); Daniele and Malanima (2007); Iuzzolino (2009).

27 These increased, large transfers of public money in favor of the South were made possible by an important reform in the Italian tax system. In 1973, taxation became more direct and progressive – a shift that created a large North-South divide in the “fiscal capacity” of the Italian regions. As a result, large transfers from North to South were regarded as necessary in order to offer a uniform quantity of essential public goods (health, education, security) to all Italian citizens, wherever they lived. The poor growth performance of the South implied a stable “fiscal dependence” which has had an important role in the accumulation of Italian National Debt (Mauro, 2004).

28 Cannari et al., 2009.

29 In fact, things went wrong for the Mezzogiorno well beyond what one can see in Figure 1. What Figure 1 does not show is the post-1970 relative performance of productivity (i.e., per worker GDP). The path of aggregate productivity differs significantly from the path of per capita GDP, in that productivity kept on converging. This evidence has been often interpreted as showing that the Mezzogiorno problem was mainly due the malfunctioning of the labor market, rather than to a wider problem concerning the determinants of productivity. However this view neglects the heavy weight of the public sector in the South, which biases the GDP per worker as a measure of productivity. When only the private sector is considered, its productivity time path reveals that here too divergence has been occurring since 1980. Optimistic views about the Italian divide are therefore out of place (Mauro, 2004).
was responsible for this diminished capacity to foster aggregate growth through public investment. Until 1970 the local regional governments were not major players in the implementation of regional policies, with the relevant but limited exception of the “Statuto Speciale” regions (Valle d’Aosta, Trentino-Alto Adige, Sardinia and Sicily). As we have seen, in the 1951-70 period the central government and national bureau were strictly in charge of development policies and public investments. This setting changed significantly in the 1970s. As Helliwell and Putnam (1995) (see also Felice, 2007b) maintain, "in mid-1975 ... a law [was passed] authorizing the decentralization of important new functions to the regions. By mid-1977 agreements were reached that '... dismantled and transferred to the regions 20,000 offices from the national bureaucracy ... as well as hundreds of semi-public social agencies' " (p. 296). Decentralization, in other words, was a key feature of regional policy from 1970 onwards and a significant institutional difference with respect to the previous period.

As we explain in section 3, decentralization can have a strong impact on a territory’s economic performance if the performance of local institutions differs significantly from the one of more centralized institutions. Similar views are not new in the literature on the Mezzogiorno: see for instance Helliwell and Putnam (1995), Felice (2007a,b), and Leonardi (1995), among others. However, to our knowledge, this paper is the first systematic attempt to offer an explanation of the dynamics of the Mezzogiorno’s gap based on the interaction between high public spending in the area and the continuous presence of low local endowments of social capital in the same area, in conjunction with an increased “spatial” rigidity of the labor market.

3. The model

In this section the basic mechanisms described above – the institutional shocks and their interaction with social capital – are analyzed within an endogenous growth model that builds on Futagami et al. (1993). We do innovate on their models in two aspects that are essential for our purposes: first, social capital affects the process that transforms public money into public capital; second, the labor market is imperfect and the level of employment depends on the degree of spatial rigidity implied by the existing labor market institutions. In the following, we first describe our model and then show under what conditions it generates aggregate outcomes compatible with those observed in the two main phases of the Mezzogiorno’s recent economic history.

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30 For recent, detailed evidence on regional heterogeneities in the functioning of local governments, see Banca d’Italia, 2009.
Consider an economy populated by $N$ infinitely-lived individuals, each endowed with one unit of time inelastically supplied to $N$ firms. Output is produced using a labor, private and public capital services and an efficiency parameter $A$:

\[(1) \quad y = Ak^{1-a}p^{1-a},\]

where all variables are implicitly a function of time. Normalizing $N$ to one, equation (1) is to be interpreted as a technology linking per capita output to the employment rate and to per capita private and public capital.

In this formulation, public capital $p$ is "labor augmenting", and the sum of the coefficients of the two forms of capital $k$ and $p$ (private and public, respectively) is equal to one, as in Barro (1990). Finally, in case of full employment equation (1) would match the formulation used both in Barro (1990) and in Futagami et al. (1993), namely $y = Ak(p/k)^{1-a}$.

Unemployment has an obvious short run effect on output (see eq. (1)) as well as a more important long run growth effects.\(^{31}\) Equation (1) is also characterized by the role assigned to public capital, whose productivity is assumed to be so high as to allow endogenous growth. By assuming this, we make public intervention potentially very effective as a determinant of growth.

Tax revenues accruing from activities located both within and outside the economy are used to increase public capital $p$ according to the following technology:

\[(2) \quad \dot{p} = (\tau + \upsilon)Sy, \quad 0 \leq \tau \leq 1, \quad 0 \leq \upsilon \leq 1, \quad 0 \leq S \leq 1.\]

In equation (2) $\tau$ is the tax rate applied to local incomes and assumed to be constant; in addition to this internal source of public resources, we allow for the possibility of other resources ($\upsilon$) funded by tax revenues collected elsewhere. These extra resources are made available to the economy by the decision of an external institution such as a central government willing to sustain the development of a backward region. We assume that these resources too are proportional to the region’s GDP (on this more below).

The process of accumulation of public capital described by eq. (2) also depends on a parameter $S$ -- a measure of social capital. As in the iceberg cost approach, an $S$ equal to one implies high efficiency so that all taxation and transfers turn into net public capital investment, while

\(^{31}\) Clearly this result depends on the endogenous growth nature of our model. However, this effect can be regarded as an approximation of a similar effect that could be obtained along the transitional path of an exogenous growth model. In the latter set up, the transitional growth rate is proportional to the distance from the steady states. It is trivial to show (e.g. Mauro, 2004), with labor market imperfection growth turns out a negative function of equilibrium unemployment: $g = \beta(y(k^*,u^*) - y_0) + g_\omega$. 

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a lower $S$ would imply some inefficiency in the process transforming public revenues in public resources.

By modeling the role of social capital in the terms of eq. (2), we are adopting the idea that social capital affects economic performance mainly through the influence it exerts on the functioning of the governmental level in charge with the provision of public capital.\textsuperscript{32} Putnam (1993) was among the first to underline the importance of this mechanism. While the availability of high quality public goods – both material and immaterial – is crucial in the fight against economic backwardness, public goods can be lacking in quality and quantity when social capital is low. In particular, public investment necessitates a highly coordinated action among the various interest groups to overcome oppositions and free-rider problems (Guiso, Sapienza e Zingales, 2010). Available evidence support the view that when an economy is low in trust, this kind of coordination is hard to attain so that public investment projects are often at risk of being exposed to corruption and misuse of public resources (Bardhan, 2002; Golden and Picci, 2005; Tabellini, 2010).

Let now turn to the labor market of our economy. Firms operating in a competitive set up are assumed to equalize after tax marginal factor productivity to their cost:

\begin{align}
& (3) \quad w = y_l(1 - \tau) \\
& (4) \quad r = y_k(1 - \tau)
\end{align}

While the capital market is assumed to be perfectly competitive,\textsuperscript{33} the labor market is not. The departure from perfect competition is modelled building on McDonald and Solow (1981). A monopolistic and myopic labor union assumed to maximize the expected utility of its members.\textsuperscript{34}

\begin{align}
& (5) \quad U(w)l(w) + (1 - l(w))U(\bar{w}),
\end{align}

where barred $w$ is the reservation wage. The employment rate, from one (1) and (3) is:

\begin{align}
& (6) \quad l(w) = \frac{1}{A^2}k(1 - \alpha)p^{\frac{1 - \alpha}{\alpha}}w^{\frac{1}{\gamma}}(1 - \tau)^{\frac{1}{\gamma}}.
\end{align}

\textsuperscript{32} The idea that aggregate economic outcomes are affected by social capital mainly through the channel of governmental performance has an implication worth underlining – namely, that under this assumption exogenous changes in the governmental organization can improve economic performance even in the presence of unchanged (low) endowment of social capital.

\textsuperscript{33} Capital mobility is ruled out for the sake of simplicity. More on this in section 4 below (see footnote 45).

\textsuperscript{34} In alternative to the myopic assumption, the union can be depicted as very ideological, as it has been the case in Italy up to the eighties. In those years wages were thought to be a social variable not a market variable; in that context high mark-ups over reservation wage were perfectly justified by “class fight” and not linked to supply and demand of labor.
The utility of each union’s member is defined as:

\[ U(w) = \frac{1}{1-\theta} w^{1-\theta}. \]

Labor Union sets the wage as a mark-up over the reservation wage:

\[ w = \left(1 - \alpha(1 - \theta)\right)^{1-\theta} \bar{w} = \varphi \bar{w}. \]

Following Bean (1994), the reservation wage among other things can be thought to be a function of per capita consumption level. Therefore equation (8) becomes:

\[ w = \vartheta c. \]

Following Mauro and Carmeci (2002), the labor union is assumed to be an elective institution where elected delegates display single peaked preferences on wage thus equation (8) becomes:

\[ w = \left(1 - \alpha(1 - \theta)\right)^{1-\theta} \bar{w}_m = \vartheta \bar{w}_m, \]

where the subscript \( m \) stands for the median voter. In order to allow for the possibility of relaxing the assumption of homogeneity of agents, it is convenient to modify equation (9) as follows:

\[ w = \vartheta' c_m = \vartheta' \frac{c_m}{c} c = \varphi c. \]

Equation (11) models the mark-up \( \varphi \) as a function of the median voter delegate consumption relative to the average per capita consumption.

Under decentralized bargaining the wage in each region is set by the delegates of that same region. In terms of our model (and its underlying assumptions), a likely outcome is that in this case \( c_m/c \) will turn out to be equal or close to unity. In a centralized bargaining set up, delegates come from several regions with heterogeneous per capita consumption levels. In this case, the resulting \( c_m/c \) ratio is likely to be different from one, and its value will depend on the distribution of the delegates’ per capita consumption levels. If the richer regions are

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\[^{35}\] In Bean (1994) the reservation wage should include not only the unemployment benefits but also the marginal utility of leisure. The author shows that assuming a standard isoelastic utility function that includes leisure and consumption, the reservation wage becomes a linear function of the level of per capita consumption (see Bean, 1994), footnote 2, p. 527). As an example, using a Cobb-Douglas utility function of the kind: 
\[ U(h, c) = h^{\alpha} c^{1-\alpha} \] where \( h \) is the time endowment and \( h \) the labor time, the standard equilibrium condition \( (U_P) = U_c / (U_h) \) implies that 
\[ \bar{w} = (1 - \alpha) h / \alpha \] (Bean, 1994, footnote 2, pg. 527). In the model we retain Bean’s insights without considering explicitly the labor leisure choice.
overrepresented (i.e., if Northern workers are more numerous and more unionized\textsuperscript{36}) the mark-up as well as the wage will be set very high. As a consequence, in the less advanced regions it is much higher than the (equilibrium) value that would prevail under a decentralized bargaining regime.\textsuperscript{37}

Equations (6) and (9) define the equilibrium rate of employment/unemployment implied by each level of private and public capital and by the level of the tax rate. Substituting into eq. (6) we find:

\begin{equation}
l = A^\frac{1}{\alpha} \left( \frac{1-\alpha}{\psi} \right)^{\frac{1}{\alpha}} k' c^{-\frac{1}{\alpha}} (1 - \tau)^{\frac{1}{\psi}},
\end{equation}

where $k'$ is the private to public capital ratio, $k/p$ and $c'$ is the consumption to public capital ratio, $c/p$.

As far as the savings-investment decision of agents is concerned, each agent is assumed to solve a standard intertemporal maximization problem where agents’ preferences are proxied by a standard isoelastic utility function:

\begin{equation}
\begin{aligned}
\text{Max} & \int_0^\infty \frac{1}{1-\theta} c^{1-\theta} e^{-\rho t} dt \\
\text{subject to:} & \\
\dot{k} & = (1 - \tau)(r k + w l) - c = (1 - \tau) y - c.
\end{aligned}
\end{equation}

Solving the problem yields the standard Euler condition

\begin{equation}
\dot{c} = \frac{\xi}{\theta} (r - \rho).
\end{equation}

Therefore the whole dynamics of the model is defined by equations (14),(15), (12) and (2). It is quite convenient to express the model using private to public capital ratio, $k'$ and consumption to public capital ratio, $c'$. Using (4) the entire model is summarized by:

\begin{equation}
\frac{\dot{p}}{p} = (\tau + v) A S k'^{1-\alpha}
\end{equation}

\begin{equation}
\frac{\dot{c}}{c^\prime} = \frac{1}{\theta} \left( ak'^{\alpha-1} l^{1-\alpha} (1 - \tau) A - \rho \right) - \frac{\dot{p}}{p}
\end{equation}

\textsuperscript{36}See Mauro and Carmeci (2002).

\textsuperscript{37}The reverse is also possible when poor regions are overrepresented instead. In this case poor regions would moderate the wage rate in the richer regions boosting private investment and growth in the latter ones. Thus the growth effect of centralized bargaining is not univocally defined in sign but depends on the political equilibrium and the type of institutions regulating regional unions.
\[ \frac{k'}{k'} = k^{\alpha-1} l^{1-a} (1 - \tau) A - \frac{c'}{k'} - \frac{\beta}{p} \]

and (12).

After substituting for \( l \) and the growth rate of \( p \) it is possible to analyze the dynamic system qualitatively using the phase diagram in the plane \( k' \) and \( c' \). The zero growth curves for \( k' \) and \( c' \) are:

\[ \frac{k'}{k'} = 0, \quad c' = \left( \frac{1-a}{\varphi} \right)^{\alpha(1-a)} k^{\alpha} A (1 - \tau) \left[ (1 - \tau) - (\tau + v) Sk \right]^\alpha \]

with \( \frac{\partial c'}{\partial k'} > 0; \frac{\partial^2 c'}{\partial k'^2} < 0 \) if \( k' > \frac{\tau}{1-\tau} S \)

\[ \frac{\dot{c'}}{c'} = 0, \quad c' = \left( \frac{\beta}{\delta} \right)^{\alpha-1} \left( \frac{1-a}{\varphi} \right)^{\alpha(1-a)} (1 - \tau) A \left[ \frac{1}{\iota} (1 - \tau) - (\tau + v) Sk \right]^{1-a} \]

with \( \frac{\partial c'}{\partial k'} < 0; \frac{\partial^2 c'}{\partial k'^2} > 0 \) if \( \left( \frac{\alpha}{\beta} - \frac{\tau}{1-\tau} S k' \right) > 0 \)

**Figure 2. Phase diagram**

It is straightforward to show that a stable arm exists and also the steady state values of \( c' \) and \( k' \). Let us now analyze the growth effects associated to changes in the parameter values. A rise in the tax parameter \( \tau \) on \( c' \) and \( k' \) shifts downward both zero growth curves. As a consequence, while \( c' \) univocally lowers as \( \tau \) rises, \( k' \) can either rise or lower depending upon the relative downward shift of capital zero growth curve:

\[ \frac{\partial c'}{\partial \tau} < 0; \frac{\partial k'}{\partial \tau} \leq 0 \]
However, for a plausible range of the parameters identifying the model, the numerical analysis shows that $k'$ lowers in response of tax rate increases, implying that agents lower private investment when the net returns of private capital decrease as expected.

While some interesting transitional dynamics exists in the model, leaving scope for further research, in present paper we focus on the balanced growth path of the economy. In steady state $c, k$ and $p$ grow at the same rate since $c'$ and $k'$ are constant so that the long run growth rate of the economy can be analyzed using the equation of motion of public capital only:

\[
\frac{d}{dt} = (\tau + v)A\bar{K}'a \bar{A}^1-a = (\tau + v)A1-a\bar{S}k' \left(\frac{1-a}{\varphi}\right) \bar{c} \bar{A}^1-a(1-\tau)^{1-a}.
\]

Since a closed form of $c'$ and $k'$ cannot be derived, the signs of the derivatives with respect to parameters cannot be easily obtained and we must rely again on numerical simulation analysis to assess them. Table 1 shows that, there is a positive relationship between and long run growth $g$ up to a value of the tax rate around 40%. For greater values the two zero growth lines of the phase diagram do not cross each other and there is no solution. The signs of the derivatives with respect to $\varphi, A, S$ are as expected (see Table 1 for all the intervals of plausible values). From the numerical simulations any increase in labor market rigidity, $\varphi$, lowers the long run growth rate of the economy whereas both a higher $A$ and a higher $S$ foster growth. Not surprisingly an increase of $v$, the transfer rate, is also positively linked to growth.

### Table 1. Numerical Simulation of long run growth rates

<table>
<thead>
<tr>
<th></th>
<th>$\varphi$</th>
<th>$\alpha$</th>
<th>$\tau$</th>
<th>$S$</th>
<th>$\rho$</th>
<th>$\theta$</th>
<th>$A$</th>
<th>$v$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>1-3</td>
<td>0.3-0.5</td>
<td>0.1-0.4</td>
<td>0.1-1</td>
<td>.01-.04</td>
<td>1-3</td>
<td>0.1-2</td>
<td>(-0.1)-0.2</td>
</tr>
<tr>
<td>$dg/g$</td>
<td>$d.$</td>
<td>+</td>
<td>$d.$</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

In Futagami et al. (1993) the authors, following Barro (1990), analyze the normative implication of their model with respect to tax policy. In the present model, instead, we will follow a more a positive approach for the aim is to account for the stylized facts of the Mezzogiorno's development process, leaving the normative analysis in the background.

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38 The simulations are performed using the program Mathematica 8. Results and programs are available upon request.
4. Calibration and model results

In the previous section, we have developed a model in which a number of likely circumstances behind the sudden standstill of the Mezzogiorno’s convergence are defined and formally analyzed.

In this section we calibrate our model to assess its quantitative plausibility with respect to the long run growth path of the two macro areas of Italy. To this aim we go back to the empirical literature on the Italian regional economic divide, this time to search for the data needed to assign values to the parameters of equation (21) for each of the main phases in which we have split the 1861-2004 period. To remind you, these parameters are: productivity (\(A\)), the index of labor market flexibility (\(\varphi\)), the tax rate (\(\tau\)), the interregional transfers of public funds (\(t\)), and the endowments of social capital (\(S\)). The other parameters—namely, \(a\), \(\theta\) and \(\rho\)—are given values in line with those widely used in the literature on economic growth (see Table 2 below).

As regards \(A\), we parameterize it by relying on data on human capital. In particular, we use the data on literacy rates from Gagliardi and Percoco (2010). In the first sub-period, 1861-1951, the value of \(A\) in the Center-North was about twice that of the Mezzogiorno. In 1951-1970 the regional gap in literacy rates was virtually closed.\(^{39}\) As for the absolute values of the parameter, we calibrate its initial value for the Mezzogiorno using as our target the area’s average growth rate in that period (0.49%). The implied value is 0.09, so that the initial value for the Center-North is set to 0.18. In the subsequent periods, the values of \(A\) are set taking account of the North-South ratios defined above.

As regards \(\tau\), values for the initial period are taken from Zamagni (1998), who reports a value of 14% for both areas. For the two other sub-periods, the values increase constantly and are higher in the Center-North due to the growing weight of the progressive income tax (Ceriani et al., 1992). We set \(\tau\) equal to 0.23 and 0.30 for the South in the two periods, and to 0.32 and 0.34 for the Center-North).

We do not have direct estimates of \(v\), but historians agree with Nitti (1900) that the flow of transfers was from the South to the North rather the other way round, implying a small negative value of \(v\) (-0.03) for the Mezzogiorno. From 1951 onwards things changed significantly and the South became for the first time the beneficiary of large flows of public funds accruing from other regions. While again we do not have data on \(t\) for this second sub-period, recent data on interregional flows of public funds estimate at around 16-18% of the Mezzogiorno’s GDP the total value of the public resources transferred to the area in 2004-2006.

\(^{39}\) Similar values can be obtained from Table 2 in Di Liberto (2001).
and not funded with tax revenues raised in the Southern regions.\textsuperscript{40} Moreover, we know from Cannari \textit{et al.} (2009) that the funds for regional policy available in the South increased significantly, as a percentage of the Italian GDP, between the 1960s and the two subsequent decades. In our simulation $v$ is set equal to 11\% in the Mezzogiorno and to -3\% in the Center-North, in 1951-1970;\textsuperscript{41} and to 18\% and -7\%, respectively, in 1971-2004.

As regards $\varphi$, our parameter for flexibility in the labor market, a number of significant changes took place between 1861 and today. From 1861 to 1900, the Italian labor market was definitely very flexible: strikes as well as Unions became legal only in 1900. From 1900 onward Italian Unions became increasingly powerful, but all rights were suspended during World War I. In the fascist period, from about 1925 onward, prices and wages went under state control, with Unions as well as strikes severely forbidden. The central control did however allow for spatial flexibility. The so called “tabelle salariali” defined different daily wages varying by gender, age, sector and provinces, with differences in wages across provinces up to fifty percent for similar tasks. After WWII, Unions became legal again and workers were granted their legal right to strike. Union power grew very strong, especially in the Northern regions. In the late Forties the fascist heritage of “tabelle salariali” was dismissed but soon afterwards the Unions agreed to a sort of wage differentiation among provinces with wage differences up to 40-30\% depending on sectors (CGIL, 2004). This system (the so called "gabbe salariali") lasted until 1969, when a major labor reform turned a decentralized bargaining system into a centralized one (CGIL, 2004).

In our model, the evolution of the labor market rigidity is captured by a rising value of $\varphi$. This parameter is defined by equation (11). Using the values we assigned to $\alpha$ and $\theta$, $\delta'$ turns out to be around one. Setting the $c_m/c$ the median to the mean consumption ratio in the range of 1-1.5 (with the latter value referring to the centralized system in which the workers from the richer regions set the wage rate for the whole country), the range for the $\varphi$ values is defined: one is its minimum value, with maximum territorial flexibility, and 1.9 is its maximum value obtained in the presence of centralized bargaining dominated by the Northern delegates. Therefore, we set $\varphi$ equal to 1.0, the value for maximum flexibility, for both the South and the North in the first sub-period, to 1.75 in the second one, and 1.84 after 1970, when the abolition of the "wage cages" allowed for a highly centralized wage setting.

As regards social capital, following Putnam (1993) and the large literature that points to the high persistence in time of the initial differences in the local stocks of social capital, we use a

\textsuperscript{40} This estimate is based on data obtained from Staderini e Vadàlà (2009), Table 2.

\textsuperscript{41} The Center-North's GDP is on average about three times larger than the South's GDP.
unique estimate of this factor and assume that its Northern/Southern ratio is constant for the whole period we observe. The values for the iceberg costs for the two regions and for Italy as a whole are taken from Golden and Picci (2005), a paper which yields a direct estimate of those costs at the regional level. In particular, the authors compute the difference between the actual regional public capital levels measured in 2000 by an empirical survey and the capital that one gets with the standard method of permanent inventory. The results of this exercise are remarkable. All Southern regions present a gap between the public capital implied by the investment flows and the actual public capital. Had the Mezzogiorno not wasted the public resources, its stock of public capital would now be far above the Italian average. Moreover, the index computed by Golden and Picci (2005) turns out to be strongly correlated with Putnam’s indexes of social capital. Their calculations imply that, setting the Italian average equal to 1, the index in the Center-North is about twice the one recorded in the South. Being an iceberg cost, $S$ in our model ranges within the zero-one interval.

Assuming that iceberg costs are not zero even in the Center-North, we pin down the value for $S$ in this area at 0.7 and at 0.4 in the South whereas its value for Italy as a whole is set to 0.6. We use these restrictions on the parameter values of equation (21) in order to compute steady-state growth rates for each of the three sub-periods. Since the information we have about $A$ concerns its relative (Center-North/South) rather than absolute value, we choose those absolute values that allow us to get as close as possible to the actual growth rates observed in the first sub-period.

To reiterate, the main purpose of our exercise is to assess whether the use of realistic values for the parameters in equation (21) allows our model to generate the sequence of progress and halt in convergence observed in the Mezzogiorno’s relative performance after 1950.

The parameter values are shown in Table 2. In this table, the parameters under the label "technology/utility" are those assumed to be unaffected by regional policy, so that their values are kept constant across time and geography. "Policy" parameters are those that in our model are influenced by regional policy. Among the latter are policy parameters in the strict sense, such as $\varphi$, $\tau$ and $v$, as well as $A$, assumed to depend on investment in education, and $S$, assumed to depend on the level of decentralization adopted by the State.

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42 As Leonardi (1995) puts it, "It is clear that when large amounts of funds are made available without operative oversight, accounting, and evaluation criteria the opportunities for abuse and corruption are great. In the case of Southern Italy the criminal organizations were able to operate under conditions where controls were lax and the tolerance of corruption high." (p. 174).
Table 2. Parameter values

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>CN</td>
</tr>
<tr>
<td>Tecnology/Utility</td>
<td></td>
</tr>
<tr>
<td>$\alpha$</td>
<td>0.25</td>
</tr>
<tr>
<td>$\rho$</td>
<td>0.018</td>
</tr>
<tr>
<td>$\theta$</td>
<td>1.7</td>
</tr>
<tr>
<td>Policy</td>
<td></td>
</tr>
<tr>
<td>$\varphi$</td>
<td>1.0</td>
</tr>
<tr>
<td>$\tau$</td>
<td>0.14</td>
</tr>
<tr>
<td>$\nu$</td>
<td>-0.03</td>
</tr>
<tr>
<td>$S$</td>
<td>0.61</td>
</tr>
<tr>
<td>$A$</td>
<td>0.09</td>
</tr>
</tbody>
</table>

M: Mezzogiorno; CN: Center-North.

Results. When we use Table 2 to parameterize our model, we obtain the steady-state per capita GDP growth rates shown in Table 3 below. In particular, the two bottom rows in Table 3 show the actual growth rates of the Mezzogiorno relative to the Center-North and the simulated ones under our parameterization, for each of the three sub-periods (as noticed above, the South’s growth rate for 1861-1951 is our calibration target).43

Table 3. Actual and simulated outcomes: growth rates and unemployment

<table>
<thead>
<tr>
<th>Average annual growth rates, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
</tr>
<tr>
<td>Actual Growth</td>
</tr>
<tr>
<td>Simulated steady-state Growth</td>
</tr>
<tr>
<td>Actual Unemployment</td>
</tr>
<tr>
<td>Simulated Unemployment</td>
</tr>
</tbody>
</table>

M: Mezzogiorno; CN: Center-North.

Table 3 shows that the estimated growth rates follow closely the pattern of the actual ones. In the first sub-period, the Center-North grows faster due to the significant difference in productivity uncompensated by fiscal policy. In the second sub-period, our model does generate the Mezzogiorno’s strong convergence observed in the real data, with the main role in this process taken by the large amount of resources transferred to the South by the central State and used (with relative efficiency) to foster public investment. In the model, convergence is based on growth rates smaller than those actually observed. This is perhaps not surprising, since we do not allow for changes in the number of people actively

43 The simulation is performed using Mathematica 8. The program first finds the solution for $c'$ and $k'$, then solves for the balanced growth rate defined by equation (21). The simulation results are available upon request.
participating in the labor market, nor for the fast migration from agriculture to higher productivity sectors in a context characterized by the opening up of international markets -- two factors known to have yielded additional support to the Mezzogiorno's performance in this sub-period.\footnote{In particular, the growth-enhancing effect of changes in the sectoral mix has been quantified by Paci and Pigliaru (1997).}

The third sub-period reflects a more complex scenario, with both the wage bargaining reform and decentralization entering the scene. As expected, their combined effect offsets the positive impact exerted on the Mezzogiorno’s growth rate by the increased amount of public resources. As a result of this offsetting mechanism, convergence comes to a halt and divergence takes place again. Interestingly, our simulation shows that, in terms of our model, the wage bargaining reform by itself would not have been enough to halt convergence: in the absence of the decentralization effect, convergence – although a weakened one – would have taken place anyway. To offset the strong growth-enhancing effect of taxation implied by the steady-state solutions of our model (see eq. (21) above), the gap in the regional endowments of social capital turns out to be the only one with the appropriate magnitude to reverse the convergence process.\footnote{As regards the assumption of no capital mobility, the latter would be a problem for our results if it yielded an alternative explanation of why convergence came to a halt after 1971. However, in our simulations (i) returns on capital turns out to be higher in the South than in the Center-North in 1951-71; and (ii), this gap further increases after 1971 once we control for the process of decentralization. So, in the absence of decentralization, we would expect capital still flowing from Center-North to South even after 1971 and this of course would not yield an explanation for the halt of convergence.}

The model is also able to generate equilibrium unemployment values together with equilibrium growth rates. Even though the working of the labor market was not the main focus of our analysis (for instance, the imperfect labor market depicted in our formal model is a very simplified one), the calibration exercise does imply plausible results for unemployment in the two areas. While in terms of absolute values only the simulated results for the 1951-71 period are close to the real ones (for 1861-1951 the actual labor market data are not available),\footnote{Besides data availability, a word of caution is necessary. The model does not allow any change in the labor force participation rate since population and labor forces coincide. Nevertheless, the activity rate changed significantly and asymmetrically among regions in the period and the impact of discouraged workers has been relevant in the Southern regions, again affecting the activity rate. These caveats suggest that simulated unemployment rates and actual ones should be compared with care and more emphasis should be put on the path of the unemployment differentials between the two regions.} nevertheless our simulations do capture the long run trend of relative unemployment, with unemployment in the South growing -- as expected -- much higher than in the Center-North as the result of the post-1971 increased rigidity in wage bargaining.

Overall, our model generates quantitatively plausible results. In particular, the divergence-convergence-divergence sequence observed in the actual data is clearly mirrored by the...
simulated pattern of growth, as well as the time pattern of unemployment in the two areas. These results are quite remarkable especially if one considers the large number of parameter values (both absolute and relative) that, in our simulation exercise, are grounded on the historical data of two different economies. Indeed, our simulation exercise is subject to more bindings constraints on parameters than a standard exercise of a standard single economy growth model.

Finally, a note of caution. While our simulation does generate the reversal of convergence that took place after 1971, the simulated growth rates of the two areas are however significantly larger than the observed ones. This problem stems from the need to keep our analysis simple. In particular, the model we have developed is a closed economy one, in which taxation has a strong positive effect on steady-state growth, and shocks from the international marketplace are not accounted for. From the Nineties onward, two important growth-hampering factors took place in Italy. The first was the need to use part of the national tax revenue to cut the high public debt in order to join the Euro area, rather than funding further public investment. The second was the shock caused by globalization on the Italian exports. Both factors played a role in lowering the two regions’ growth rates and both of them are beyond the reach of our simplified model.

More generally, our results suggest that decentralization or even a stricter fiscal federalism (i.e., $t = 0$) could have uncertain consequences in terms of growth, depending on the degree of heterogeneity of the levels of social capital across the territories involved in the process of decentralization. In this respect, the model we develop in this paper can be relevant also for the debate about the growth effects of decentralization and fiscal federalism. Although many authors underlined the positive effects of empowering local institutions (Tiebout, 1956, Musgrave, 1959, Oates, 1972), some recent empirical contributions are less optimistic (Feld, Zimmermann and Döring, 2004; Rodriguez-Pose and Kroijer, 2009). Our model entails a possible reason for these empirical findings, in that it suggests an important additional conditional variable: social capital. A low level of social capital has a negative impact on the functioning of local government institutions, and the existence of this link can offset the theoretical positive effects attributed to decentralization. When however one consider decentralization in the more ample sense encompassing also input markets, the model implies a positive relationship between economic growth and the decentralization, specifically of the wage bargaining.
5. Conclusion

In this paper we have challenged the idea that whenever a long-past history has left a territory with a low level of social capital, then development is very hard to achieve since social capital is a highly persistent phenomenon.

To develop our alternative viewpoint, we have focused on how institutional change can modify the relationship between social capital and within-country growth rates. To study this possibility we have focused on the Italian regional divide, the often-quoted case supposed to yield strong support to the idea that social capital exerts a persistent effect on economic outcomes. To a careful inspection, however, this case turns out to be characterized by a large variety of regional growth performances and of institutional changes. In particular, two episodes are worth underlining: first, despite their persistently low social capital, and after a long period of divergence started in 1881, the Southern regions grew faster than the Centre-Northern ones for more than twenty years, from 1950 to 1971; second, at the beginning of the 1970s this convergence came suddenly to a halt and has never recovered since, in spite of the large flows of transfers of public funding from the rest of the country aimed to support the Mezzogiorno development. These growth episodes took place in concurrence with two major reforms at the beginning of the 1970s: a process of decentralization of policy making and a reform of the labor market.

This paper offers an explanation of how these reforms may have been the source of the halt of convergence. In particular, we describe a mechanism by which the Southern regions’ low endowment of social capital may have become a binding constraint for economic growth as a consequence of the process of decentralization of governmental functions started in the 1970s.

Our hypothesis is described formally by means of a growth model in which social capital affects the economy through its influence on the effectiveness of government institutions in providing public capital. We have modelled this latter channel as iceberg costs attached to the process by which tax revenues and grants are transformed into new public capital.

In particular, since social capital displays its influence mainly on the functioning of local institutions, decentralization amplifies the negative effect of a low local endowment of social capital on the provision of public capital and, consequently on growth. We think that the validity of this mechanism extends well beyond the specific case of the Italian regions.

To better identify the impact of decentralization on the Italian regions’ economic performance, our model is also designed to take account of a second institutional shock that took place in Italy at the end of the 1960s, when a uniform national wage rate was adopted. To account for this second institutional change, the labour market in our model is imperfect and combines
the monopolistic union model of McDonald and Solow (1981) with a median voter mechanism for the union delegates to define common national wage (Carmeci and Mauro, 2002). In the model, higher spatial rigidity in the regional labor markets has long run growth consequences, as it causes higher equilibrium unemployment and weakens private investment.

To test our theory, we use the vast empirical literature on the Italian economic history to restrict the values of the parameters in our model, in order to obtain an assessment of the model's capability to mimic the divergence/convergence/divergence pattern that characterizes the Italian divide between 1861 and 2004. Our model calibration yields results that are consistent with the observed pattern of long-run regional growth in Italy and unemployment rates. Moreover, and importantly, they strongly support the idea that decentralization has been the key determinant of the halt of convergence.

Finally, our results have implications for the debate on growth and fiscal decentralization. In particular, our model has the clear-cut implication that decentralization can be the source of within-country economic divergence in the presence of large heterogeneity of social capital. Less clear-cut are the implications concerning the effect of decentralization on the whole country's growth rate. Additional research is needed here.47 One interesting possibility, however, is that by adequately controlling for social capital, some light might be shed to explain the ambiguous empirical results recently reported on the effects of fiscal federalism on cross-country growth rates (Feld, Zimmermann and Döring, 2004; Rodriguez-Pose and Kroijer, 2009).

47 Using a panel dataset from waves of international PISA tests in 42 countries, Hanushek et al. (2011) find that "decentralization of decision-making ... may be conducive to student achievement in well-developed systems but detrimental in low-performing systems". The mechanism proposed in the present paper, with its emphasis on the within-country distribution of social capital as a key factor to shape the aggregate effects of decentralization, could help explain this interesting cross-country evidence on schooling achievements.
Acknowledgements

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