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SOCIAL CAPITAL, INSTITUTIONS AND GROWTH: FURTHER LESSONS FROM THE ITALIAN REGIONAL DIVIDE

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WORKING PAPERS

2011/03

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Titolo: SOCIAL CAPITAL, INSTITUTIONS AND GROWTH: FURTHER LESSONS FROM THE ITALIAN REGIONAL DIVIDE

ISBN: 978 88 84 67 657 3

Prima Edizione: Marzo 2011

Via Is Mirrionis, 1
09123 Cagliari
Tel./Fax 070 291201
www.cuec.it

Social Capital, Institutions and Growth: Further Lessons from the Italian Regional Divide

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Abstract

Since Putnam's work on social capital, the Italian regional case has been a very rich source of both data and theories about the origins of large and persistent differences in local stocks of social capital, and about the impact of such differences on economic performances. The Italian case is widely interpreted as supporting the idea that persistent regional divides are largely explained by local differences in social capital. In this paper we maintain that this interpretation fails to recognize that the current large regional gap in Italy is significantly linked to two policy decisions taken by the central State at the beginning of the 1970s.

In particular, we focus on the possibility that social capital became a binding constraint for the growth of southern Italy's mainly as a consequence of the deep process of governmental decentralization that began in the1970s. We formalize this hypothesis by using an endogenous growth model with public capital. In this model, the accumulation of public capital is characterized by the presence of iceberg costs that depend on social capital. Decentralization affects these costs because the impact of the local stocks of social capital on public investment increases when the latter is managed locally.

To assess the role of decentralization as a trigger of the influence of local social capital on growth, we control for the impact of labor market reforms, a second and almost simultaneous institutional shock that took place in Italy and that made regional labor markets far more rigid than in the previous decades.

In the second part of our paper, we use the large empirical literature on the Italian regions to restrict the values of the parameters of our model in order to perform a simple simulation exercise. In this exercise, the model turns out to be able to account for the major swings in the convergence of southern regions towards the center-northern regions since 1861.

The general lessons we can draw from this further analysis of the Italian regional case are as follows. First, we show that the strength of social capital as a determinant of long-run growth may depend on some well-defined characteristic of the institutional context. Second, our model suggests that the economic success of decentralization policies -- even when the budget constraint is not "soft" -- depends on the local endowment of social capital.

Keywords: Growth, Decentralization, Convergence, Social Capital.
Jel Classification: O4, R5.

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1. Introduction and Motivations

In the empirical literature on economic development, a large amount of research has been devoted to understand why cross-country differences in per capita GDP are so wide and so persistent (Hall and Jones, 1999). Following Acemoglu et al. (2001), several papers have investigated the possibility that the current economic outcomes reflect long-past historical episodes such as the colonial origins of key formal institutions.

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, there are no reasons to assume that the capacity of formal institutions to provide essential public goods is context-free. The possibility does exist that the quantity and/or the quality of public goods provided by the same formal institution varies significantly and persistently across regions, as long as these regions differ in same fundamental characteristic. This is where "social capital" enters the picture:[1]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.[2]

This key feature of social capital and its role as a powerful explanation of economic gaps across territories were first analyzed in depth in Putnam's classical study of the Italian regions (Putnam, 1993). 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

[1]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).

[2] 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".

local social capital endowments -- differences that, once generated, change only at a very slow pace.[3] Since Putnam's work (see also Banfield, 1958), southern Italy or the Italian Mezzogiorno has been a very rich source of both data and thinking about the origin of large and persistent differences in local stocks of social capital, and about the impact of such differences on the economic performance of the poorer regions.[4]

Taken as a whole, this line of research tends to imply a rather strong conclusion concerning economic performance and social capital – namely that economic backwardness may originate in a long-past history that has left a territory with a low level of social capital, and that accumulating social capital is the difficult but essential undertaking to be achieved in order to improve this territory's relative position.

This conclusion is not entirely supported by the empirical evidence. Most of the literature on the economic effects of the Mezzogiorno's social capital focuses on the data covering the period from 1971 until today, when the divide in per capita GDP levels is indeed large and stable.[5] However, in the previous twenty years the South was converging fast, and an explanation is clearly needed of why convergence was occurring in spite of a persistently low endowment of social capital, as well as why it stopped suddenly.

To reconcile Putnam's approach with these contrasting phases of growth one can obviously rely on the standard story of neoclassical convergence, with its market-driven transitional dynamics leading the system to a stationary state which, in turn, reflects the economy's underlying fundamentals (among them capital deepening, structural change, migration, human capital as well as, of course, social capital).

We do not deny a role to all these factors.[6] However, interpreting the post-1970 gap as a market-driven exhaustion of the economic forces

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[3] As De Blasio and Nuzzo (2009) put it, "Putnam's theory can be summarized by two propositions. First, central and northern Italy have developed faster than southern Italy because they have been better endowed with social capital. Second, the endowments of social capital across Italian regions have been highly persistent over the centuries."

[4] Guiso et al. (2005), Tabellini (2010), De Blasio and Nuzzo (2009) are recent examples of papers that yield results consistent with Putnam's propositions.

[5] See Figure 1 in Section 2 below.

[6] In fact, investments in both human and physical capital turn out to be unable to account for the lack of regional convergence. As for migration, which in fact ceased in the 1970s, it probably helps explain the observed convergence in per

behind convergence would ignore a number of well established institutional changes that took place in Italy in those years -- namely, the abolition of regional differentials in wage setting and the administrative and political process of decentralization in favor of the newly born regional governments.[7]

In this paper we propose an explanation of the halt of convergence based on the interaction between social capital and the observed institutional changes. More specifically, we aim to show under what conditions a low endowment of social capital may become a severe constraint for growth mainly *as a consequence* of those institutional shocks.

We develop an endogenous growth model[8] 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 the role of the accumulation of public capital in growth.[9] In fact, the poor endowment of public infrastructure of the southern regions has been considered a major cause of its backwardness in spite of very large flows of grants in public investments (Golden and Picci, 2005).

The main departure from the model of Futagami *et al.* (1993) is given by the fact that we need to take into account the effects of the above-mentioned two institutional shocks. We model an imperfect labor market that combines the monopolistic union model of McDonald and Solow (1981) with a median voter mechanism of the union delegates to define wage (Carmeci and Mauro, 2002). In our model the adoption of a uniform national wage rate, coupled with significant heterogeneity of labor market conditions at the regional level, have a number of negative

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capita income. However, convergence in productivity levels also took place, and these kept converging at least up to the 1980s.

[7]Moreover, and again in contrast with the standard convergence story, the period in which convergence came to a halt was characterized by an increased share of total investment over GDP in the South, due to a strong increase of its public component (on this more below).

[8] The endogenous growth framework allows us to develop a very simple representation of how economic and institutional factors affect (steady-state) growth rates. For our purposes, the use of an exogenous growth setting would not change our results significantly, as long as the institutional factors co-determine the steady-state of our regional economies.

[9]As Helliwell and Putnam (1995) maintain, the main question concerning the Mezzogiorno is why its economic performance is so disappointing "in the face of massive ... transfers payments and other interventions by the central government".

consequences for the South -- among them, higher unemployment and lower private investment as well as lower aggregate productivity growth.

As regards decentralization, in our model social capital affects the economy mainly through public investment, the effectiveness of which requires a society capable to overcame free riding and rent seeking: when social capital is low, public investment projects are more exposed to corruption and misuse of public resources.[10]

This 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 these costs. These iceberg costs therefore depend crucially on the degree of decentralization. A regional policy managed by the central state is also influenced by social capital but the one relevant at that governmental level, which can be thought to be the average social capital of the whole country. When instead decision making is transferred to the local level, the relevant stock of social capital is the one prevailing in the territorial community. In other words, decentralization makes regional policy more permeable to the local level of social capital, with the ensuing impact, positive or negative, on the iceberg costs.

To obtain a first, quantitative assessment of our hypothesis, we run a simulation exercise in which we restrict the main parameters values of our model by using data taken from the vast literature on the economic history of the Italian regional divide. In our simple exercise the model turns out to be able of closely mimicking the sequence of divergence/convergence/divergence that characterizes the main phases of the time path of the Mezzogiorno's economic gap.

A key feature of this story is that social capital affects economic performance mainly through the influence it exerts on the functioning of the government charged with the implementation of regional policies. While this is of course debatable,[11] it can help explaining why social

[10]For a similar approach see Helliwell and Putnam (1995), who noted that "the increased powers of regional governments ... were used more effectively in those regions with more social capital" (p. 295).

[11]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.

capital seems to act as a key determinant of aggregate economic performances in some periods but not in others. In our hypothesis, if a low level of social capital affects economic performance primarily by conditioning the working of the local institutions, this influence might fade away as soon as the government action is taken to a higher level. An institutional switch (a change in the level of government from central to local, in our case) can therefore obtain large, permanent results through the adoption of better/worse managed policies.[12]

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): their book is the result of a long line of research about the North-South divide and on the changing nature of the role and the objectives of the centrally designed regional policy between the 1950s and the early 1970s (see also Viesti, 2003, 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), Carmeci and Mauro (2002), among others. The role of social capital in the area's economic performance has been widely studied, from Putnam (1995) to the recent Guiso et al. (2008), Tabellini (2010), Cannari *et al.* (2009), and De Blasio e Nuzzo (2009).

The paper closer to ours is Helliwell and Putnam (1995), where the idea of decentralization as a factor that negatively affected the process of convergence has been put forward. However, Helliwell and Putnam neither model the mechanism by which decentralization affects growth,

[12] The channel linking social capital to economic outcomes through the functioning of governments can be particularly important in the case of backward economies. As Tabellini (2009) maintains, public good provision is especially important in such cases. Indeed, malfunctioning institutions are now regarded as one of the most powerful factors in the explanation of persistently bad economic performances worldwide (Acemoglu *et al.*, 2001), and therefore a change in governmental efficiency can have a large impact on aggregate outcomes. Moreover, the damage a malfunctioning, captured or corrupted local government can inflict to an economy is not limited to an insufficient provision of public goods. Further damage can be made because it may create an incentive for private entrepreneurs to maximize their profits by rent-seeking activities. As shown by Baumol (1990), this reduces the share of the given stock of local entrepreneurship allocated to productive activities.

nor consider the parallel role played by the labor market reform in halting convergence.[13]

Finally, we believe that the model we develop in this paper can be relevant also for the debate about the growth effects of decentralization and federalism. Although many authors underlined the positive effects of empowering local institutions (Tiebout, 1956, Musgrave, 1959, Oates, 1972, and Klugman, 1994), 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.

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

2. The Mezzogiorno's economic gap over time and its persistence: an overview

In this section we discuss why the Mezzogiorno's case is a rather exceptional one in terms of the size and the persistence of its economic gap, and then we give a brief description of the main phases, events and available explanations of the Italian regional divide.

The persistence of the wide gap against the Mezzogiorno of Italy is still an anomalous – and partly unexplained – fact within the more advanced countries. 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. Back in 1955, six out of 14 countries had over 2% of the population living in regions with a per capita GDP equal or less than 65% of the national average. Among these six nations, Italy

[13] Other hypotheses have been proposed to explain why the role of social capital as a determinant of economic performances seems to vary significantly over time. See for instance North (1990). As De Blasio and Nuzzo (2009) phrase it, "North ... suggests that as a market economy develops the scope for social capital to reduce transaction cost increases, since greater specialization increases the number of transactions between strangers both over time and across space".

had the worst value, 25.5%, followed by Spain with 11, 7%. Fifty years later, only one nation, Italy, still has regions (and the corresponding population) below that GDP threshold. Not only that: the proportion of the population included in the subset "less than 65%" increased compared to 1955: it now amounts to 28.8%. By changing the threshold of reference, this scenario does not change.

The Italian case is therefore unique because of the magnitude of the gap between the poorest areas and the rest of the country, because of the size of the population living in backward regions, in both absolute and relative terms, and because of the temporal persistence of the gap.[14]

In spite of this, for a long period many scholars shared an optimistic view about the Mezzogiorno. The likely reason for this is that two decades of fast convergence across Italian regions took place between 1951 and 1971. For a while, this seemed to support the idea that the area was following the traditional path leading to a positive steady-state implied by a standard neoclassical model of growth.[15]

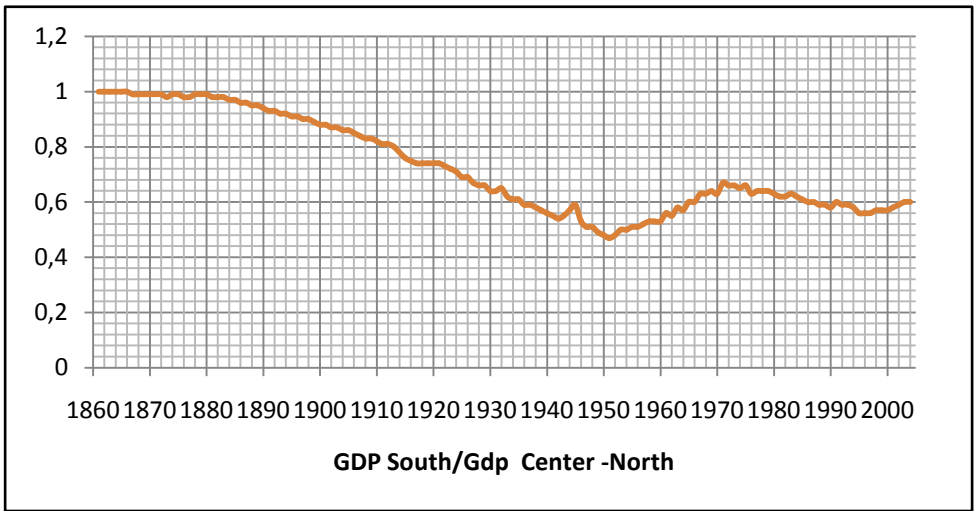
Several contributions eventually discarded this optimistic view.[16] For instance, Daniele and Malanima (2007) confirmed the persistent nature of the Italian divide but in a very long run perspective, having computed the time path of the Mezzogiorno's gap since the unification of Italy in 1861. Figure 1 is based on their data.

[14]Further information can be obtained from a direct comparison between the pattern of regional differences in the two European countries most affected by the phenomenon, Italy and Spain. According to Eurostat (2009) data, while the Italian gap oscillates around 60% between 1995 and 2006, the Spanish one is within the 72-75% range: if the Spanish gap is also a steady-state, is a very different one.

[15]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. Similarly, Barro and Sala-i-Martin (1991) optimistically 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).

[16]See Paci e Saba (1998) and Iuzzolino (2009) for surveys and further evidence

Figure 1. Per capita GDP, Mezzogiorno/Center-North, 1860-2004



Source: Daniele and Malanima (2007)

As Figure 1 makes clear, after the first two decades since the Italian unification in 1861, a long period of divergence follows. This period ends in 1950, the beginning of a twenty-year phase during which the southern economy grew very fast, faster than Center-northern regions. Afterward the divide slowly started to widen again and the progress made earlier gradually disappeared.

Table 1. Per capita GDP growth rates, 1861-2004

	North	South	Difference
1861-1951	1.26	0.43	0.83
1951-71	4.41	6.01	-1.60
1971-2004	2.06	1.90	0.15

Source: Daniele and Malanima (2007)

These three main phases, and the attached growth rates, are shown in Table 1. Taken together, they offer quite a clear illustration that something went wrong with the Mezzogiorno's economy – and that it went wrong in a well defined period. In fact, a promising convergence

path ended abruptly in 1971, giving way to a long period characterized by a regional divergence process that reverted the Italian per capita GDP divide to 40 percentage points, almost post war levels.

To better understand the factors behind these ups and downs of the Mezzogiorno's economy, in the rest of this section we briefly review the key characteristics of each of the sub-periods shown in Table 1.

As for the period 1861-1951 it is worth noticing that divergence did not materialize until 1881. This is not surprising considering the homogenous sectoral composition of labor force, 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, the large difference in the regional stocks of human capital, that was already in place in Italy in 1861, was not yet the source of divergence.[17] Things changed profoundly when industrialization did start. With industrialization, divergence is expected to set in motion (Lucas, 2000) and Italy is not an exception. The difference in the regional stocks of human capital was then likely to be among the major sources of divergence: as Nelson and Phelps (1966) show, technology diffusion is not instantaneous, and its pace 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 centre-northern one -- does characterize a large part of the period 1861-1951, with some slow improvement for the Mezzogiorno after 1911 (Table 2).[18] Due also to demographic inertia, it was only after World War II that one observes the literacy rate approaching a value around 60% in the South -- a critical value to start industrialization, according to Felice (2007).[19]

[17]On the role of human capital in the Italian regional development, see Di Liberto (2008).

[18]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, 2007). After 1911 schooling started to be financed by the central government, but the coming of World War I set up other budget priorities.

[19] 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.

Table 2. Literacy rates, 1871-2001

Literacy rate												
	1871		1891		1911		1951		1971		2001	
	%	Italia=1	%	Italia=1	%	Italia=1	%	Italia=1	%	Italia=1	%	Italia=1
South	15,9	0,510	25,21	0,558	41,44	0,664	75,84	0,869	89,33	0,942	97,13	0,986
Center_North	40,96	1,313	58,34	1,291	75,09	1,204	93,65	1,073	97,62	1,030	99,34	1,008
ITALY	31,2	1,000	45,20	1,000	62,38	1,000	87,26	1,000	94,78	1,000	98,55	1,000

Source: Gagliardi and Percoco (2011)

Also, it can be said that fiscal and regional policy in the 1861-1951 period were somehow biased against the Mezzogiorno. The fiscal system in place weighted in favor of indirect taxation, implying *de facto* a higher average tax rate for the poorer Mezzogiorno (Parravicini, 1986; see also Fortunato, 1973). According to other estimates, one third of the national tax revenues originated in the South, whose GDP represented only one fourth of the Italian one (Felice, 2007b, p. 30). The large contribution of the South was not linked to a regional policy aimed at favoring the region's economic development. Quite the contrary. 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 (e.g., Nitti, 1958).[20]

As for the labor market, it was almost perfectly flexible in the period 1861 to 1900. From 1900 to around 1920 the Unions' power increased but the labor market was still spatially flexible.[21] Then Fascism took place and with it a rigid control over wages was imposed. 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 comes to an end and convergence begins as the result of the interaction between market and policy factors. At the time, market forces were at work favoring

[20] The Fascist regime did not represent a radical change of the former policy with some exception for the metropolitan area of Napoli (Castronovo,1976).

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

convergence all over Europe. Temple (2001) identifies the period 1950-1973 as the "Golden Age" of economic growth in Europe. In those years Europe as a whole grew at rates never achieved in the following decades. This was made possible by the decreasing returns of cumulative inputs and deep structural change that has led many workers to move from (an often poor) agriculture towards higher productivity sectors – a process that benefits the poorest economies more than proportionally. Once the physiological dimension of the agricultural sector is reached, Temple maintains, "the TFP bonus of structural change" has effectively exhausted its potential and this has resulted in an overall reduction of growth rates.[22]

In the Mezzogiorno, this general process was enhanced by three factors. First, the gap in productivity had significantly diminished in relative terms, due to the improvements in the Mezzogiorno's stock of human capital (Table 2). In fact, by 1951 the illiteracy rate, a key barrier to growth, had reached its lower level since the birth of the Italian state.

Second, wages were still allowed to be set at lower levels in the backward areas. The so-called "gabbie salariali" a sort of re-edition of the "tabelle salariali" 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 labour cost in the industrial was estimated to be around 80% of the Centre-North's one (Boltho et al., 1997) but larger differentials were in place e.g. in construction and agriculture.

Third, and very importantly, 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.[23] A central role was initially played by the national specialist Agency "Cassa per 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

[22]While Temple's evidence is based on data at the country level, there exist robust evidence that a similar mechanism has also worked within countries, at a regional level (for Italy, Paci and Pigliaru, 1999; similar evidence also exists for the US: Caselli and Coleman, 2001).

[23]The national bureau "Cassa per il Mezzogiorno" was responsible for the creation of a stock of public infrastructures in the Mezzogiorno.

generally regarded as a successful one (Rossi-Doria, 1989; Felice, 2005; D'Antone, 2001; Barca, 1999; Bevilacqua, 1993). Immediately after, the Italian Parliament adopted a sequence of laws aimed at significantly weakening the independence of the Agency (Felice, 2005). 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).

Taken together, these labor market institutions and regional policies favored the exploitation of the "bonus of structural change" and its associated potential for convergence, resulting in a closing gap between North and South.

The picture changed again at the end of the Sixties, when convergence suddenly ended. A number of changes took place at the beginning of the 1970s -- some of them positive for the Mezzogiorno's growth perspectives, other negative. We start with the former. The gap in productivity was lower in 1971 than in 1951. In fact, some convergence had materialized not only in per capita GDP, but also in TFP, as Di Liberto et al. (2007) have recently shown.

However, two significant institutional changes 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 more 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

[24]The new set of rules has been blamed for introducing a lot of rigidity in the firing-hiring costs. In facts many economists (Bertola 2006) emphasized 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.

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 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 dramatically, from below 80% of the northern wage in 1970 to 95% ten years later. 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.[26] No estimates of indirect labor costs due to more worker protection and limits to hiring and firing are available. At the same time, migration flows from the Mezzogiorno towards the northern regions halted, and in the South unemployment started to increase whereas investment in machinery and equipment fell sharply (Faini, 1994).

It is therefore not surprising that the regional unemployment rates started to diverge, as it is evident from a glance at Figure 2.

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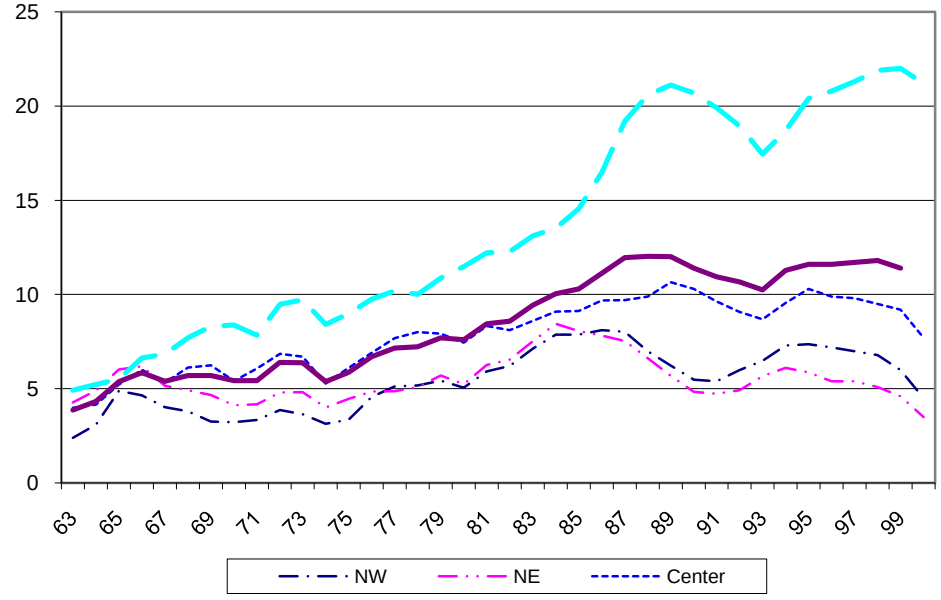
[25] Interestingly, Germany is another case in which the adoption of a nation-wide wage-setting institution was detrimental to the convergence of the poorer (Eastern) regions. This initial choice was later partially abandoned and a higher degree of flexibility in the labor market was allowed. As a consequence, the Eastern regions entered a convergence path. As Carlin (2010) puts it, "The most well-known example of institutional transfer to East Germany was the recruitment of East German workers by West German unions and the participation of the Treuhandanstalt in wage-setting. Combined with the extension of social security entitlements, this placed a high floor under the wage. This rendered unprofitable much of the capital stock, producing the rapid deindustrialization of East Germany and
raised the bar for the required productivity level of new projects if they were to be profitable. ...This led to important changes in policy and institutions in the Federal Republic as a whole, culminating in the Hartz IV welfare reforms" (p. 10-11).

[26] 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 "gabbies alariali" see also Attanasio and Padoa Schioppa(1991); Faini(1994); Daniele and Malanima(2007); Iuzzolino(2009).

Figure 2. Unemployment rates



Source: Mauro and Carmeci, 2002

As legislation was passed and unemployment started rising, regional policy was intensively used to fight unemployment and to foster the private investment otherwise discouraged by the rise of labor costs caused by the reform. Transfers and subsidies were generously funded, this time with tax revenues collected in the Centre-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

[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, the latter 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).

percentage of the Italian GDP, from an average of 0.70% before the 1970 to an average of 0.90% in the 1971-1980 decade.[28] More generally, the transfers of resources from the rest of the country to the Mezzogiorno have been kept at a very high level since: recent calculations show that they are equal to 16% of the area's GDP and to 5% of the Italian GDP.[29]

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, this did not happen and since then the Mezzogiorno's gap settled at the high level described above.[30]

One possibility is that the wage shock was too strong to be compensated even by an 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 possibility.

We believe that a second, well known institutional shock was responsible for this diminished capacity to foster aggregate growth through public investment. Until 1970 the local regional governments were absent as 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

[28]Cannari et al., 2009.

[29] The data refer to the period 2004-2006 and are computed by us on the basis of Saterini e Vadalà (2009), Table 2. Clearly, identifying the causes of the persistent relative backwardness of the Mezzogiorno is crucial for Italy as a whole. The large transfer of public money in favor of the area's economy and the failure to trigger a sustainable convergence path generated much of Italy's current huge stock of public debt.

[30]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 southern southern regions, 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 occurs since 1980. Optimistic views about the Italian divide are therefore out of place (Mauro, 2004).

seen, in the 1951-70 period central government and national bureaux 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 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 semipublic social agencies' " (p. 296). Decentralization, in other words, was a key feature of regional policy from 1970 onwards and an outstanding difference with respect to the previous period.

Decentralization can have a strong impact on a territory's economic performance if the functioning of local governments, in charge with providing essential public goods, is influenced by the level of social capital existing in the territorial community. In other words, decentralization can make regional policies more permeable to the influence of local social capital than the centrally controlled ones (similar views are maintained by Helliwell and Putnam, 1995, Felice, 2007a,b, and by Leonardi, 1995, among others).[31] Highly decentralized (and highly discretionary) policies are therefore particularly risky when social capital is low.[32]

This is of course the case of the Mezzogiorno. A paper by Golden and Picci (2005) shows that the functioning of local institutions providing new public infrastructures is strongly affected by social capital existing in each region. Figure 3 summarizes their findings. They 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 result of this exercise is remarkable. All southern regions present a gap between the capital implied by the investment flows and the actual capital. Had the

[31]For recent, detailed evidence on regional heterogeneities in the functioning of local governments, see Bancad'Italia, 2009.

[32] Public investment necessitates of a highly coordinated action among the various interest groups forming society to overcome oppositions and free rider problems or avoid rent seeking activity. With low social capital public investment projects are especially exposed to corruption and misuse of public resources (Bardhan, 2002).

Mezzogiorno not wasted the public resources, its stock of public capital would now be far above the Italian average (equal to 100 in Figure 3).[33]

So, decentralization might be the reason why a persistent low endowment of social capital seems to have become binding for the Mezzogiorno's economic performance from 1970 onwards (and a component of the halt of convergence),[34]while it was apparently not so in the previous two decades.

In the model that will be developed in the next section, we will define social capital as the source of iceberg costs in the process leading to the creation of local public capital. As we will see, the change in the pre- and post-1970 policy regimes will be modeled as a shift in these iceberg costs. In our view, the so-defined iceberg costs were lower in the pre-1970 phase because regional policy was not heavily influenced by the low endowments of social capital of the target region. In fact, in those years central government and national bureaux were mostly in charge of development policies and of public investments, so that the social capital that mattered for policy was the one characterizing Italy as a whole. On the contrary, the local endowments in the southern regions were crucial in the post-1970 phase, when the public support to the Mezzogiorno's economy became less automatic and far more decentralized.

To our knowledge, this 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 a "spatial" rigidity of the labor market.

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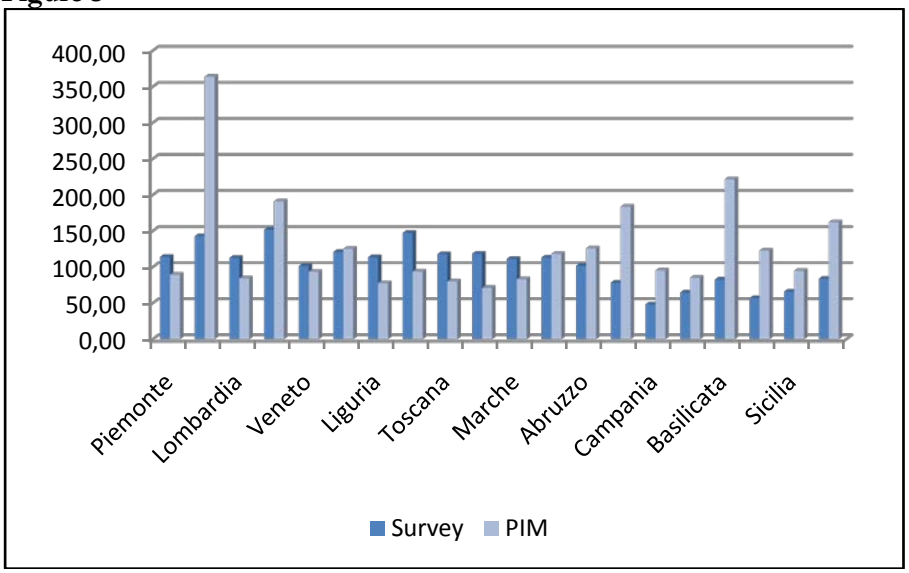
[33]As Leonardi (1995) puts it, "It is clear that when large amounts of funds are made available without operative oversight, accounting, and evaluation criteria the opportunities for abuse and corruption are great. In the case of southern Italy the criminal organizations were able to operate under conditions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

[34]In an interesting novel approach to regional policy, in the 1990s an attempt was made by the central State to design "place-based" policies in which the scarcity of social capital was taken in careful consideration. For a number of reasons that cannot be reviewed here, this attempt did not manage to allow the Mezzogiorno to enter a new path of convergence. Details and assessments can be found in Barca (2006), Cannari et al. (2009), Franzini and Giunta (2008), Pigliaru (2009). See also Rossi (2005) for an unsympathetic viewpoint.

Figure 3



Source: Golden and Picci (2005)

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, however, 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.

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 H:

$$(1) \quad y = Hk^{\alpha}l^{1-\alpha}p^{1-\alpha},$$

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

Unemployment has an obvious short run effect on output (see eq. **(1)**) as well as a more important long run growth effects.[35] 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) $\dot{p} = (\tau + t)Sy, \quad 0 \leq \tau \leq 1, \quad 0 \leq t \leq 1, \quad 0 \leq S \leq 1$.

In equation (2) τ 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, 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 (*t*) 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* equals one implies high efficiency so that all

[35] 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. As Mauro (2004) shows, with labor market imperfection growth is a negative function of equilibrium unemployment, e.g. : $g = \beta(y(k^*, u^*) - y_0) + g_a$

taxation and transfers turn into net public capital investment, while 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.[36] 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.[37]In particular, public investment necessitates of 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 (Golden and Picci, 2005; Tabellini, 2009).

[36]The idea that aggregate economic outcomes are affected by social capital mainly through the channel of governmental performance has an implication worth mentioning – 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.

[37]As Knack (2002) summarizes (see also Boix and Posner, 1998), social capital affects governmental performance (and hence the provision of essential public goods) by two main channels. First, social capital makes governmental accountability easier and stronger, because being more involved in active participation in community life "makes citizens sophisticated consumers of politics'" (Boix and Posner, 1998, p. 690). In this context, rent seeking practices are more costly politically and become less frequent. Second, citizens' preferences depends -- among other things -- on social capital. With high social capital, "demands on government which are to everyone's benefit rather than helping some members at the expense of others" increase. In such a context, governments might find it easier to adopt public projects which pay dividends in terms of development in the long-run (ib., p.691). Finally, with low social capital individual workers in the local institutions are more likely to act opportunistically, and monitoring costs required to reduce such behavior can be high (ib., p. 692).

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:

(3) $w = y_l(1-\tau)$

(4) $r = y_k(1-\tau)$

While the capital market is assumed to be perfectly competitive, the labor market is not. The departure from perfect competition is modeled building on Solow and McDonald (1981). A monopolistic and myopic labor union assumed to maximize the expected utility of its members[38]:

(5) $U(w)l(w) + \big(1 - l(w)\big)U(\overline{w})$,

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

(6) $l(w) = H^{\frac{1}{\alpha}}k(1-\alpha)p^{\frac{1-\alpha}{\alpha}}w^{-\frac{1}{\alpha}}(1-\tau)^{\frac{1}{\alpha}}$.

The utility of each union's member is defined as:

(7) $U(w) = \frac{1}{1-\theta}w^{1-\theta}$.

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

(8) $w = \big(1-\alpha(1-\theta)\big)^{\frac{-1}{1-\theta}}\overline{w} = \varphi'\overline{w}$.

Following Bean (1994),[39]the reservation wage among other things can be thought to be a function of per capita consumption level. Therefore equation (8) becomes:

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[38] In alternative to the myopic assumption, the union can be thought to be 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.

[39] 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 it is straightforward to obtain that the reservation wage

(9) $w = \vartheta\, c$.

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

(10) $$w = \left(1 - \alpha(1-\theta)\right)^{\frac{-1}{1-\theta}} \overline{w}_m = \vartheta' \overline{w}_m ,$$

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

(11) $$w = \vartheta' c_m = \vartheta' \frac{c_m}{c}\, c = \varphi\, c .$$

Equation (11)models the mark-up φ 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 heterogenous 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 overrepresented (i.e., if their workers are more numerous and more unionized, as in the case of Italian labor market,[40] the wage will be set close to the equilibrium value defined in terms of the productivity levels of the advanced regions -- a level that in the less advanced regions might be much higher than the (equilibrium) value that would prevail under a decentralized bargaining regime.[41]

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becomes a linear function of the level of per capita consumption (see Bean, 1994), footnote 2, p. 527).

[40]See Mauro and Carmeci (2002).

[41]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.

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:

(12) $$l = H^{\frac{1}{\alpha}}\left(\frac{1-\alpha}{\varphi}\right)^{\frac{1}{\alpha}} k'^{-\frac{1}{\alpha}} c'(1-\tau)^{\frac{1}{\alpha}},$$

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 isoelestic utility function:

(13) $Max \int_0^{\infty} \frac{1}{1-\theta} c^{1-\theta}\, dt$

subject to:

(14) $\dot{k} = (1-\tau)(rk + wl) - c = (1-\tau)y - c$.

Solving the problem yields the standard Euler condition

(15) $\dot{c} = \frac{c}{\theta}(r-\rho)$.

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:

(16) $\frac{\dot{p}}{p} = (\tau + t)HSk'^{\alpha} l^{1-\alpha}$

(17) $\frac{\dot{c}'}{c'} = \frac{1}{\theta}\left(\alpha k'^{\alpha-1} l^{1-\alpha}(1-\tau)H - \rho\right) - \frac{\dot{p}}{p}$

(18) $\frac{\dot{k}'}{k'} = k'^{\alpha-1} l^{1-\alpha}(1-\tau)H - \frac{c'}{k'} - \frac{\dot{p}}{p}$

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:

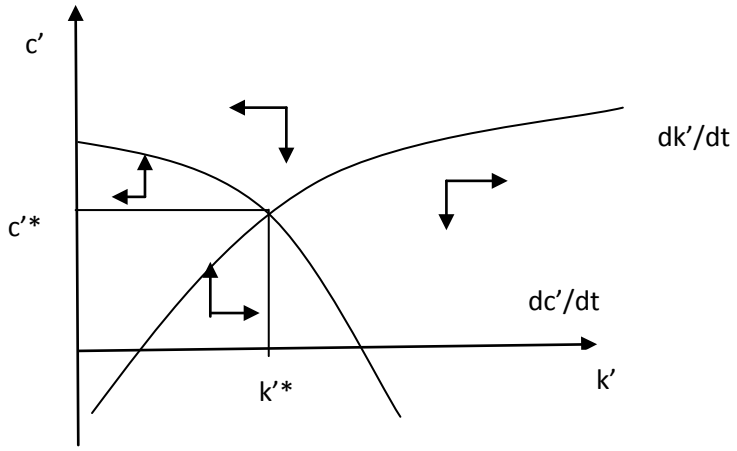
(19) $\frac{\dot{k}'}{k'} = 0, \;\; c' = \left(\frac{1-\alpha}{\varphi}\right)^{\alpha(1-\alpha)} k'^{\alpha} H(1-\tau)^{1-\alpha}[(1-\tau) - (\tau + t)Sk]^{\alpha}$

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

(20) $\frac{\dot{c}'}{c'} = 0, \;\; c' = \left(\frac{\rho}{\theta}\right)^{\frac{\alpha}{\alpha-1}} \left(\frac{1-\alpha}{\varphi}\right)(1-\tau) H^{\frac{1}{1-\alpha}} \left[\frac{\alpha}{\theta}(1-\tau) - (\tau + t)Sk'\right]^{\frac{\alpha}{1-\alpha}}$

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

Figure 4. 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 τ on *c'** and *k'** shifts downward both zero growth curves. As a consequence, while *c'** univocally lowers as τ rises, *k'** can either rise or lower depending upon the relative downward shift of capital zero growth curve:

$$\frac{\partial c'^{*}}{\partial \tau} < 0 \; ; \; \frac{\partial k'^{*}}{\partial \tau} \lesseqgtr 0$$

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 the agents lower private investment when the net returns of private capital decrease as expected.

Turning our attention to the long run growth 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:

$$(21)\ \frac{\dot{p}}{p} = (\tau + t)HSk'^{*\alpha}l^{*1-\alpha} = (\tau + t)H^{1-\alpha}Sk'^{*}\left(\frac{1-\alpha}{\varphi}\right)^{\frac{1}{\alpha}}c^{*'\frac{\alpha-1}{\alpha}}(1-\tau)^{\frac{1-\alpha}{\alpha}}$$

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 asses them. Table 3 shows that, there is a positive relationship between τ and long run growth 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 φ, H, S are as expected (see Table 3 for all the intervals of plausible values). From the numerical simulations any increase in labor market rigidity, φ, lowers the long run growth rate of the economy whereas higher H and higher S foster growth. Not surprisingly an increase of t , the transfer rate, is also positively linked to growth.

Table 3: Numerical Simulation of long run growth rates [42]

	φ	α	τ	S	ρ	θ	H	t
Range	1-3	0.3-0.5	0.1-0.4	0.1-1	.01-.04	1-3	0.1-2	(-0.1)-0.2
$\frac{dg/g}{d.}$	-	+	+	+	-	-	+	+

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

[42] The simulations are performed using the program Mathematica. Results and programs are available upon request.

where the aim is to account for the stylized facts of the Mezzogiorno's development process, leaving the normative analysis in the background.

4. A simulation exercise

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 identified and discussed.

In this section we do some preliminary assessment of the capability of the model to mimic the long run path of the Italian regional divide. This assessment takes the form of a simulation exercise. To this aim we use the information we have gathered in Section 2 above to obtain values that can be reasonably attached to the parameters of equation (21)--namely, values about productivity (H), the flexibility of the labor market (φ), the tax rate (τ), the interregional transfers of public funds (t), and the endowments of social capital (S). For all these parameters we need values covering the two macro regions and all the sub-periods shown in Table 1 above.

As regards H, we use the data on literacy rates in Table 2,[43] as well as direct estimates of regional TFP levels when available. Consequently, in the first sub-period the value of H in the Center-North turns out to be about twice that of the Mezzogiorno (in our exercise we use the 1911 values in Table 2). In 1951-1970 the regional gap in literacy rates was significantly smaller. On average its value suggests that the Center-North productivity was higher than the southern one by a factor of about 1.2.[44] As for the final sub-period, some further convergence had materialized not only the literacy rates shown in Table 2, but also in TFP. As for literacy rates, in 1971 the Center-northern index was higher by a factor of about 1.1. More direct estimates of TFP are generally higher than this and are close to 1.5.[45]

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[43]In the following we assume that of H is mainly affected by the existing stock of human capital. As widely recognized in the literature on economic growth, human capital is a key variable for technology adoption: low levels of education in the population explain why an economy's TFP can stagnate far away from the technology frontier (Nelson and Phelps, 1966). Among other things, H can also reflect the impact of social capital on economic performance not channeled through its effect on the functioning of government institutions. See the introductory section.

[44] Similar values can be obtained from Table 2 in Di Liberto (2001).

[45] See Di Liberto et al. (2007), Table 5, Column "Initial Period", p. 361, in which the corresponding value is 1.3.

As regards τ, 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 are set at 0.20 and 0.25 respectively and are based on data discussed in Ceriani *et al.* (1992) .

We do not have direct estimates of *t*, 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 negative value of *t* 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 of interregional flows of public funds do exist. They estimate at around 16% of the Mezzogiorno's GDP the total value of the public resources transferred to the area in 2004-2006 and not funded with tax revenues raised in the southern regions. Moreover, we know from Cannari et al. (2009) that the funds for regional policy available in the South increased, as a percentage of the Italian GDP, by a factor of 1.3 between the 1960s and the two subsequent decades. In our simulation we assume that the same factor applies to the overall funds transferred to the Mezzogiorno by the Italian state. As a consequence, in our simulation *t* will be equal to 12% in the Mezzogiorno and to -4% in the Center-North, in 1951-1970;[46] and to 16% and -5%%, respectively, in 1971-2004.

Labor market flexibility (φ) was high and uniform across regions and stayed high until 1969, when the labor reform of 1969 turned a decentralized bargaining system into a centralized one. In our model, the evolution of the labor market spatial rigidity is captured by a rising value of φ. This parameter is proxied by the ratio of the average wage to per capita consumption, so we normalize to one the highest level of flexibility while higher values imply more rigidity. We set φ equal to 1.2 for both the South and the North in the first sub-period, and to 1.5 in the second one. After 1970, the termination of the "wage cages" implied a nominal increase of the southern wages of about 25%. In fact, an increase of that magnitude did materialize rapidly in the data on labor cost at the regional level, as shown by Bodo and Sestito (1991). As a consequence, φ is set equal to 2.0 in the South, while is kept at 1.5 in the Center-North.

[46]The Center-North's GDP is on average three times larger than the South's GDP.

As regards social capital, following Putnam et al. (1995) 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 unique estimate of this factor and assume that its northern/southern ratio is constant for the whole period we observe. Our estimates are based on Golden and Picci (2005), whose index of corruption is strongly correlated with Putnam's indexes of social capital and, moreover, is computed in a way that makes it consistent with our iceberg cost.[47] Their calculations imply that, setting the Italian average equal to 1, the index is 1.26 and 0.6 for the Center-North and for the South respectively. Being an iceberg cost, S in our model ranges in the interval zero-one. Assuming that iceberg costs are not zero even in the Center-North, we pin down the value for S in this area at 0.8 and at 0.4 in the South. Taking population in the two areas into account, this in turn implies that the average index for Italy as a whole is about 0.7.

As far as the other parameters are concerned – namely, a, θ and ϱ, the values we assumed are those standard in the growth literature: 0.3, 0.03 and 2.0 respectively.

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 H concerns its relative (Center-North/South) value rather than absolute values, 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 repeat the main purpose of our exercise, we wish to assess whether the use of realistic values for the parameters in equation (21) allows our model to generate the sequence of convergence and its halt observed in the time path of the Mezzogiorno's relative performance after 1950.

The parameter values and the corresponding results are shown in Table 4. In particular, the bottom two rows in Table 4 show the actual and the simulated growth rates of the Mezzogiorno relative to the Center-North in the three sub-periods.[48]

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[47] Other estimates for S can be obtained from Sabattini (2005). Weighting Sabattini's estimates for the Italian regions with their population, the Center-North/South ratio turns out to be equal to 5.2. This in turn implies that the Italian average index is about 3.6 times higher that the Mezzogiorno's one.

[48]The simulation is performed using Mathematica vers. 8, the program available upon request first finds the solution for c' and k' then solves for growth rate from equation (21)

Table 4. Parameter values and real vs simulated growth rates

	1861-1951	-	1951-1971	-	1971-2004	-
	South	North	*South*	North	*South*	North
α	*0.3*	0.3	*0.3*	0.3	*0.3*	0.3
ρ	*0.03*	0.03	*0.03*	0.03	*0.03*	0.03
θ	*2.0*	2.0	*2.0*	2.0	*2.0*	2.0
φ	*1.2*	1.2	*1.5*	1.5	*2.0*	1.5
τ	*0.14*	0.14	*0.2*	0.2	*0.25*	0.25
t	*-0.03*	0.01	*0.12*	-0.04	*0.15*	-0.05
S	*0.7*	0.7	*0.7*	0.7	*0.4*	0.8
H	*0.1*	0.2	*0.2*	0.3	*0.3*	0.35
Actual Growth %	*0.43*	1.26	*6.00*	4.40	*1.90*	2.05
Simul. Growth %	*0.47*	1.44	*4.58*	2.04	*2.80*	3.91
Relative growth (Mezzogiorno/C-N)	*0.34*		*1.36*		*0.93*	
Simulated relative Growth (M/C-N)	*0.33*		*2.24*		*0.72*	

As it can be seen from Table 4, the divergence/ convergence/divergence sequence observed in the actual data is closely mirrored by the growth rates simulated by our model. In the first sub-period, the faster growth of the Center-North is largely attributed to the difference in productivity uncompensated by fiscal policy. In the second sub-period, when convergence occurs, the main role is taken by the large amount of resources transferred to the South by the central State and used to foster public investment. The third sub-period reflects a more complex scenario, with wage bargaining reform and decentralization both entering the scene. 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.

Interestingly, in terms of our model and the parameter values used in Table 4, by itself the wage bargaining reform would not have been

enough to halt convergence: in the absence of the decentralization effect, convergence would have taken place anyway. Clearly, this result is not independent of our technology assumptions, in particular the very high productivity of public capital designed in our model. Assessing the robustness of the results of our simulation exercise, however, goes beyond the main purpose of this paper and leaves scope for further research.

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. From the viewpoint of empirical research, therefore, our model implies that social capital is an important additional conditional variable when assessing the economic consequences of decentralization.

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 hard to achieve until more social capital is accumulated, which, in turn, is a very difficult task to accomplish.

Starting with Putnam (1993), this idea is largely based on several influential analyses of an important case-study: the large and persistent Italian regional divide. We have gone back to this very case focusing on the role played by two institutional shocks that took place almost simultaneously with the halt of the Italian regional convergence at the beginning of the 1970s: the labor market reform named "*statuto dei lavoratori*" and the institution of Regions.

In a nutshell, we have put forward the hypothesis that the Mezzogiorno's low endowment of social capital may have become a binding constraint for its growth – and may have determined the halt of convergence – mostly *as a consequence* of the strong decentralization of governmental functions started in the 1970s. We have explored formally this hypothesis by means of a growth model in which the labor market is imperfect and social capital affects the economy through its influence on the effectiveness of local government institutions in providing public capital. We have modeled this latter channel as iceberg costs attached to the process by which tax revenues are transformed into new public capital. Decentralization affects these costs because the impact of local

stocks of social capital on the provision of public capital increases when the latter is in the hand of local governments.

The institutional shock of the labor market implied by this is modeled building on Mauro and Carmeci (2002) and is based on a median voter unions delegate scheme. In the model, higher rigidity in the regional labor markets has long run growth consequences, as it causes higher equilibrium unemployment and weakens private investment.

In our model these two shocks harm the growth perspectives of a backward region with low endowments of social capital.

In the second part of our paper, we use the vast empirical literature on the Italian regions to restrict the values of the parameters of our model, in order to obtain a preliminary assessment of the model's capability to mimic the divergence/convergence/divergence pattern that characterizes the Italian divide between 1861 and 2004. This simple simulation exercise yields results that are consistent with the observed pattern of long-run regional growth in Italy and supports the idea that decentralization has been an important determinant of the halt of convergence.

A further lesson to be learnt from the Mezzogiorno's case, therefore, is that the existence of low levels of social capital is not necessarily the source of an unavoidable backwardness. As Baumol wrote in his seminal paper on entrepreneurship (a sentence that applies equally well to our case): "The overall moral, then, is that we do not have to wait patiently for slow cultural change in order to redirect the flow of entrepreneurial activity towards more productive goals. ... It may be possible to change the rules in ways that help to offset undesired institutional influences or that supplement other influences that are taken to work in beneficial directions" (Baumol, 1990, p. 919).

Lastly, our results have some implications for the debate about growth and fiscal decentralization. In our model, the growth effect of decentralization can range from very positive to very negative, depending on the local endowments of social capital. Clearly, the relevance of this mechanism is higher with greater heterogeneity in social capital across the involved territories. This conclusion about decentralization might also apply to a proper fiscal federalism, in which fiscal responsibility is strictly designed and implemented with no room for "soft budgeting" (in our model this case is obtained by setting the transfer parameter t to zero). In our framework, fiscal federalism would fail to be growth enhancing since the inefficiencies described in this paper, and

determined by low levels of social capital, would still be at work.[49] This result appears to be in line with some of the existing empirical literature (Feld, Zimmermann and Döring, 2004; Rodriguez-Pose and Kroijer, 2009), which reports ambiguous results about the relationship between decentralization and growth. Our results suggest that in the empirical analysis the degree of heterogeneity of social capital within countries should be considered as a possible, further dimension to control for.

[49] One way things might improve in the longer run is if fiscal responsibility makes the accumulation of local social capital accelerate, as suggested by De Mello (2010).

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Finito di stampare nel mese di Aprile 2011
Presso **studiografico&stampadigitale Copy Right**
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07100 Sassari

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ISBN 978-88-84-67-657-3