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Abruzzo and Sicily: Catching up and lagging behind



Rodolfo Helg



Giovanni Peri



Gianfranco Viesti

1. Introduction

Would you expect twins to reach different heights? The comparison is perhaps not so accurate, but in the early 1950s Abruzzo and Sicily were economically very similar. Both were “full members” of the underdeveloped Mezzogiorno, with little industry, few natural resources, poor transport infrastructure, high agricultural employment and a low standard of living. Yet, while Abruzzo has managed a substantial catch-up, Sicily has remained a lagging region. Consider regional GDP per capita compared to that in the North of Italy as the single most powerful indicator of this. From the early 1950s to the mid-1990s, Abruzzo increased its relative position by almost 25 percentage points. Over the same period, Sicily managed to climb up by only 2 percentage points relative to the north.

This paper assesses the determinants of the diverging paths between these regions. It is organised as follows. After having provided a broader overview of the development of the Mezzogiorno in the next section, Section 3 focuses in more detail on the performances of Abruzzo and Sicily. Growth accounting exercises will show that the role of total factor productivity growth - technological change - had a much more important role in Abruzzo than it did in Sicily. At the same time, Abruzzo had a much broader based development, including a range of manufacturing activities and market services. Development in Sicily was much more specialised, and relied heavily on investment in a few capital intensive industries. Section 4 discusses the implications of these different development strategies, and tries to identify the role of government policy in the process. Section 5 summarises and concludes.

2. The development of the Mezzogiorno

No discussion of regional performance in Italy can proceed without first putting it in the context of the North-South divide in the country. At the end of WWII, the South, or Mezzogiorno (1), was well behind Italian average development levels. Income per capita was only one-half of the northern Italian average, and with agriculture still accounting for 55% of employment (compared with one-third in the Centre-North), the degree of industrialisation had reached barely one third that of the rest of the country. One quarter of the population was illiterate, and no more than one-quarter of houses were equipped with drinkable water (2). Southern Italy, with a population of 17 million, was the largest underdeveloped area of Western Europe, and the magnitude of this regional imbalance within the original European Community of the Six was a key reason for the establishment of the EIB.

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1) The Mezzogiorno includes 8 regions (Abruzzo, Molise, Campania, Basilicata, Puglia, Calabria, Sicilia and Sardegna). Some parts of the three regions belonging to Centre Italy (Lazio, Marche, Toscana) were also targeted for special development policies.

2) Podbielski (1978), table 25; data for illiteracy refers to the population older than 6.

No discussion of regional performance in Italy can proceed without first putting it in the context of the North-South divide in the country.

Before the creation of modern Italy in 1861, the South was a separate political entity, the Kingdom of Two Sicilies, and the causes of its severe underdevelopment were deeply rooted in geography and history. Southern Italy was poorly endowed with natural resources (such as water or productive land) and far away from the more developed European countries. In addition, the policies of the Bourbon monarchy that reigned before unification did not help the region's development very much.

Nearly all the efforts of the early unified Italy, both during the "liberal" (1861-1913) and the fascist period (1922-1945), were devoted to the industrialisation of the North (Pescosolido, 1998; see also Bevilacqua, 1993, for a the history of Mezzogiorno). Import-substitution development policies (1887-1913) did achieve the industrialisation of north-western regions, but also damaged some export-oriented sections of southern agriculture. One should not think, however, of southern Italy as an homogenous underdeveloped region: large differences existed, for example, between more fertile coastal areas and mountainous inland areas (3), or between the cities and the countryside.

2.1 The first period of Italian regional policy for the Mezzogiorno: 1951 to 1973

The development of the Mezzogiorno was one of the top priorities of the early post-war governments (see D'Antone, 1996). A new policy for development was started with the creation of a special institution, the *Cassa per il Mezzogiorno* (i.e. the Mezzogiorno Fund). This was devoted to "pre-industrialisation", and included spending for public works in agriculture and for infrastructure (such as water canals, railways and roads) (Podbielski, 1978). The total expenditure of the *Cassa per il Mezzogiorno* was around 0.8% of Italian GDP during the 1950s and 1960s (see Table 1).

Table 1. The expenditures of the *Cassa per il Mezzogiorno*, in percent of Italian GNP

Year	
1951-55	0.75
1956-60	0.84
1961-65	0.75
1966-70	0.77
1971-75	1.14

Source: SVIMEZ (based on Istat and *Cassa per il Mezzogiorno* data), as in Podbielski, 1978, Table 5.

These were years of extraordinary development for the Italian economy and in particular for the manufacturing industry, though these developments largely by-passed the Mezzogiorno. During the 1950s, as much as 86% of new fixed gross industrial investment took place in the Centre-North (Cafiero and Padovani, 1989). Employment in the industrial sector rose from 10.0% to 12.3% of the population in the Centre-North, but only from 3.4% to 3.5% in the Mezzogiorno.

In 1958, a second phase of development policies began and a new goal was attributed to the *Cassa per il Mezzogiorno* - the industrialisation of the region. The idea was that, having created the preconditions for development, a direct stimulus for manufacturing was needed. A new system of incentives for industrial investment was introduced, including a capital contribution to the investment of small and medium sized firms (extended in 1959 to all firms). Infrastructure policy also

3) For example Rossi-Doria (1982) made a famous distinction between the "bone" and the "meat". See also Bottazzi (1990).

The idea was that a direct stimulus for manufacturing was needed. State-owned companies were explicitly given this goal.

changed. The effort was also devoted to the creation of industrial parks. By 1962, some 25 such areas had been opened (Wolleb and Wolleb, 1990, p. 253). Moreover, state-owned firms, the *Partecipazioni Statali*, had to locate 40% (4) of their total investment and 60% of their new plants in the Mezzogiorno. These companies (5) were seen as “national champions”, with the mission of endowing the Mezzogiorno with larger, more capital-intensive and technologically advanced factories. It was hoped that these would then act as growth poles for the whole economy, along the lines described by Perroux (1955). Thus, these state-owned companies were explicitly given the goal of pursuing “national utility” over and above their own profits (6). Their political and economic role involved a close control by government in investment decisions.

In addition, industrial investments in the South were also favoured by labour cost advantages. In the 1950s and 1960s, labour costs were substantially lower in the Mezzogiorno (around 55% of the Centre-North in 1951). The wage differential was 10% larger than the productivity differential, so that Mezzogiorno also offered lower unit labour costs. National wage agreements during that period explicitly included different wage levels for southern regions (the so-called *Gabbie salariali*). In the 1960s, both wage and productivity differentials vis-à-vis the Centre-North declined, but a cost advantage remained: at the beginning of the 1970s wages were around 70% of the Centre-North average, while productivity was around 80% (Siracusano *et al.*, 1986).

A large wave of manufacturing investments consequently reached the Mezzogiorno. Some were made by private firms, both Italian and foreign, but the role of public sector firms was particularly important (7). A census in 1977 of all manufacturing plants in the Mezzogiorno with more than 10 employees reported for instance a total employment of 518 000 (Cesan, 1978). Locally-owned firms accounted for 46% of employment, public sector companies for a substantial 28%, and non-local private firms for 26% (of which 7% foreign). However, the location of state-owned companies was strongly biased in favour of Campania, the region of Naples.

New industries were introduced into the area. As a result, employment in agriculture went down from 3.8 million in 1951 to 1.7 million in 1974, but grew substantially in all non-agricultural sectors, and especially in manufacturing (from 0.5 million to 1 million), construction (from 0.4 million to 0.7 million) and market services (from 1 million to 1.5 million).

These investments significantly changed the structure of the manufacturing sector. As transport costs declined and the national market became integrated, industries oriented to local demand, organised mostly on small artisanal production, were largely displaced by imports of industrialised products from the Centre-North (Faini, 1983). For example, the food industry accounted for one-third of southern manufacturing employment in 1951, but only for one-sixth in 1971.

4) This fraction applied after 1964; in 1957-64 the share was 20% (Podbielski, 1978, page 49). Moreover, 20% of all government purchases were reserved for southern firms.

5) The state-owned companies were the following: IRI (a conglomerate born after the banking crisis of the 1930s) and ENI (founded soon after WWII to secure oil procurement). Between 1958 and 1962 three more were founded: Egam (mining), Eagat (thermal resort) and Efim (engineering and railway materials, but subsequently a broader conglomerate).

6) See Barca and Trento (1997).

7) One has to remember that the role of the *Partecipazioni Statali* was very large in the whole Italian economy. In the mid-1970s the Mezzogiorno represented only around one fourth of total *Partecipazioni Statali* employment. A history of the *Partecipazioni Statali* is given in Barca and Trento (1997).

The net impact on the labour market was, however, mixed, and the all time low unemployment rate in 1963 (around 4%), was due to the massive migration of population rather than to job creation. Between 1952 and 1961, some 2 million people left the Mezzogiorno (45% to the Centre-North and 55% abroad). After the mid-1960s, total employment increased slightly, but labour force was also increasing due to a higher participation rate. Unemployment reached 9% in the mid-1970s despite the continuing migratory outflow (Siracusano *et al.*, 1986, Figure 1.3b). Another 2.2 million people left the region between 1962 and 1974 (three-quarters to the Centre-North, especially to the cities of the Italian “industrial triangle” such as Turin, Milan, Genoa).

Nonetheless, the Mezzogiorno was catching up. Per capita income went from one-half that of the Centre-North in 1950 to 60% in 1974 (8), and this happened in a period in which Italian per capita income increased at a rate of about 3.5% per year. The southern investment to GDP ratio went up from 21% in 1950 to around 30% in 1973-74 (9). Social transformation was also massive; peasants and farmers were 55% of the southern population in 1951, but only 19% in 1983, while the share of urban middle classes went up from 22 to 45% (Sylos and Labini, 1985, Table 4).

Industrialisation was very distorted towards capital-intensive industries, and large state-owned firms had acquired a key strategic role.

In spite of this success, the industrial development in the Mezzogiorno was smaller than the government had hoped for. It had overemphasised the potential of industrial mobility among Italian regions (Siracusano *et al.*, 1986). Industrialisation was also very distorted towards primary, capital-intensive industries and to some mechanical engineering, with a consequent influence on the size distribution of plants. Large state-owned firms had acquired a key strategic role. This would prove very important in the subsequent period.

2.2 From 1974 to 1992: After the first oil shock

Things changed in the mid-1970s. The economic recession after the first oil shock hit Italy severely. The crisis had a clear impact on development priorities, giving northern industry the first place on the political agenda. If some 54% of all Italian industrial incentives went to the Mezzogiorno from 1971 to 1979, the Centre-North received 63% of the total over the period from 1980 to 1987 (La Noce, 1989).

Gross fixed investment in industry, that had been soaring at more than 11% per year between 1952 and 1974, decreased at a 15% yearly rate between 1975 and 1978. The overall investment to GDP ratio in the Mezzogiorno went down from around 30% in 1973-74 to 20% in 1984 and never returned to previous levels. Moreover, some of the industries developed in the South went into deep trouble: higher energy prices lowered the competitiveness in the chemical and metallurgy industries, most of which had been located in southern regions. The public sector took the role of rescuing troubled companies in order to prevent their bankruptcy and the subsequent loss of jobs. For example, huge investments made in the Mezzogiorno by private firms such as SIR and Liquichimica (chemicals) proved to be non-profitable; and their plants were taken over by ENI. After 1971, IRI and ENI reported large losses and their indebtedness increased substantially.

8) Siracusano *et al.*, 1986, Figure 1.1. The authors also note, quite interestingly, that the income difference was fluctuating cyclically, being larger in peaks (because manufacturing was concentrated in the North) and smaller in troughs.

9) Investment (in ITL of 1973) per employee in 1961 was 593 000 in the Mezzogiorno and 825 000 in the Centre-North. By 1971, these figures were 1 636 000 for the Mezzogiorno and 804 000 for the Centre-North (Siracusano *et al.*, 1986).

As a result the connection between the public sector (the *Partecipazioni Statali*) and political parties became very close (Barca and Trento, 1997). To quote Sylos-Labini, 1985, p.20: “The worst feature of the system was the rising collusion between administrative and political power on the one side and enterprises supplying goods and services to the state via public procurement on the other side. This rising collusion, not rarely mixed with corruption, brought not only a worsening of political and civil life but also a waste of resources (...). This was the main problem of public policy in the Mezzogiorno”. Also, infrastructure expenditure became progressively less dictated by technical considerations and more by local political necessities.

Public spending fuelled employment, but wages began to be unresponsive to productivity differentials.

Public spending fuelled employment, either directly (public institutions) or indirectly (via an income effect on the demand for non-tradable local services). For example, it has been estimated that the increase in public employment between 1970 and 1989 represented almost two-thirds of the total increase of employment in the South (Bodo and Viesti, 1997). The labour market was deeply influenced by this, and wages began to be unresponsive to productivity differentials. At the beginning of the 1980s, the Mezzogiorno lost its unit cost advantage with respect to the rest of the country (Siracusano *et al.*, 1986). This created no problem for public employment and for sectors with no inter-regional competition, but it was a major obstacle for the development of both private manufacturing and competitive services.

To compensate for this trend a new policy had already started in 1968. Labour costs in the Mezzogiorno were reduced through credits for social contributions (the so called *fiscalizzazione degli oneri sociali*). These *fiscalizzazione* became a major part of the financial flows towards the Mezzogiorno: while they represented 31% of all public expenses for the industrialisation of the Mezzogiorno in 1973, the share had gone up to 78% by 1984 (Siracusano *et al.*, 1986). The result was that most funds were used to defend the jobs of the existing workforce rather than to create new employment.

After the first oil shock, migration also ceased. Only some 200 000 people left the Mezzogiorno between 1975 and 1984 - these flows went essentially to zero after the mid-1980s. Because employment continued to increase less than the labour force, which also grew due to the increased participation of women, the unemployment rate reached 20% at the end of the 1980s.

Thus, for close to two decades the public policy response to the problems of the Mezzogiorno was mostly based on increasing current public spending. This was in line with national policies: throughout the country, public employment boomed, welfare payments increased rapidly, and public debt soared. Rather than creating the condition for an autonomous, market-oriented, development, a large part of the southern economy essentially became dependent on public resources (Trigilia, 1992, and Bodo and Viesti, 1997).

Again, not all the Mezzogiorno experienced the same. Some areas attracted inward investment and industrial development was sustained. In other areas, clusters of locally-owned firms developed, both in manufacturing and in tourism. The regions and provinces that were able to take off with a development process represented, however, a minor part (around 25%) of the whole region (Bodo and Viesti, 1997).

2.3 After 1992: Maastricht and fiscal prudence

Respect of the Maastricht Treaty dramatically changed Italian fiscal policy. The reduction of public funds led to stagnation in the Mezzogiorno.

The whole scenario altered in the early 1990s. Respect of the Maastricht Treaty dramatically changed Italian fiscal policy, and many public companies were privatised. Development policy was restructured as well. The *Cassa per il Mezzogiorno* was suppressed in 1992 and the complete set of policy instruments for regional development was re-designed. For example, incentives for new investments in the Mezzogiorno were substituted by a new scheme covering all “depressed areas” of the country.

The resulting significant reduction in public spending led to a stagnation of the economy of the Mezzogiorno, with an average annual growth rate from 1993 to 1996 of only 0.3%. Because population growth in some regions in the Mezzogiorno exceeded this rate, their per capita income gap relative to the rest of Italy even increased (see Table 2). The cuts in public investment spending also made the investment rate very weak. In 1997, gross fixed investment accounted for only 16.6% of southern GDP, against 21.2% in 1992 (see Figure 1). In the 1980s the investment to GDP ratio had never dropped below 21%.

Labour market performance in the Mezzogiorno continued to deteriorate through the 1990s: between 1993 and 1996, some 330 000 jobs were lost. Even with a labour force participation rate that was 12 percentage points lower than the European average, unemployment was twice the European average.

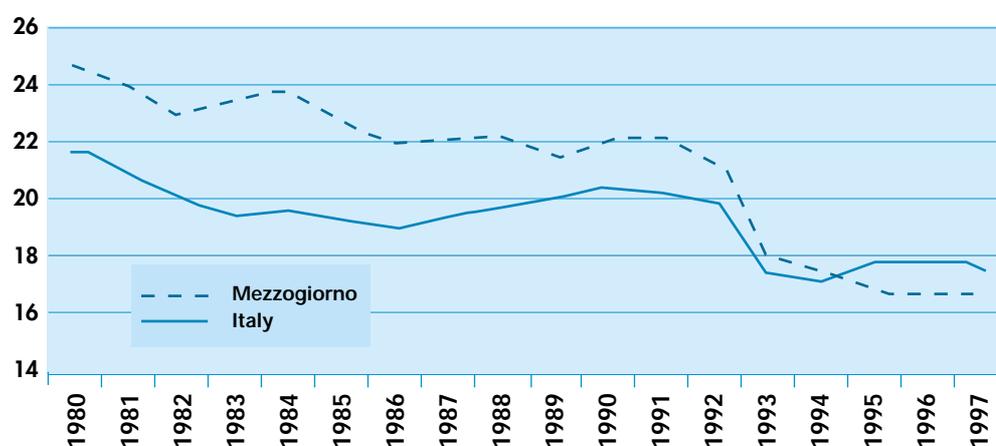
Table 2. GDP per capita, in purchasing power parity

	Average 1988-90 EU-15=100	Average 1994-96 EU-15=100	
Abruzzo	89	90	↑
Molise	79	77	↓
Campania	69	66	↓
Puglia	74	71	↓
Basilicata	64	68	↑
Calabria	58	59	↑
Sicily	67	66	↓
Sardinia	74	74	=
Italy	102	102	=

Source: Eurostat

Fortunately not all the changes in the period were for the worse. Positive signals came from exports which increased from about 5% of the Mezzogiorno GDP in 1992 to over 8% in 1997 (or a doubling of the total value of exports). This strong increase was matched by an important change in export structure. In particular, Mezzogiorno export growth was associated with a significant increase in consumer goods (clothing, footwear, furniture, mainly produced by companies concentrated in some industrial districts) and in the mechanical and transport equipment sectors, i.e. in many of the sectors where there has been success in the North. Internal differences increased significantly, with some areas signalling new positive trends, and others lagging behind.

Figure 1. Gross fixed investment as a percentage of GDP



Source: Istat

The choice of a winning region is straightforward: Abruzzo has been the fastest growing Italian region. Although not the worst Italian region, Sicily highlights many of the key features of a typical southern performance.

3. The performance of Abruzzo and Sicily

In fact, we have already noted that diversity has existed in the Mezzogiorno for decades. In this section we explore these different performance records in more detail with two case studies. The choice of a winning region to highlight this diversity is relatively straightforward: Abruzzo has been the fastest growing Italian region, with an average annual growth of GDP of 4.3% from 1970 to 1995. In fact, it was the first region in the European Union to lose its “Objective 1” status (i.e. an administrative term used for regions with a per capita income lower than 75% of the EU average), despite starting off from a very low position. Although not the worst Italian region, we have chosen Sicily to illustrate poor performance. It recorded an average annual growth of GDP of 3.0% from 1970-95, close to the average for the Mezzogiorno. Indeed, Sicily highlights many of the key features of a typical southern performance.

More detail of the two regions are given in Boxes 1 and 2.

3.1 Diverging performances

Just how differently did these two regions perform? Figure 2 illustrates the growth rates of GDP in Abruzzo and Sicily, as compared to the average of the Mezzogiorno and of the Centre-North. In the 1960s, Sicily was doing even better than Abruzzo, and was catching up with the rest of Italy. However, over the following three decades, the performance of Sicily has steadily worsened. In 1951, Abruzzo’s per capita income was 53% of the northern Italian one, while Sicily’s was 56%. In 1971 this percentage had become 65% for Abruzzo, and 61% for Sicily. In 1994, while Abruzzo had grown to a respectable 76% of the average northern Italian per capita income, Sicily had regressed to only 58%.

An important difference is that the employment rate has grown much more in Abruzzo than in Sicily. Figure 3 clearly shows that the percentage of the population that is in work in Abruzzo converges towards the average northern level, while the figure for Sicily is stuck at the average southern Italian level. This implies that in spite of a similar level of labour productivity between the two regions

Box 1. Abruzzo

Abruzzo is the northernmost region in the Italian Mezzogiorno. It shares borders with Lazio (to the west), Marche (to the north) and Molise (to the south). Its eastern border is the Adriatic sea. The coastal area is plain while its central and western areas are mountainous. Some 30% of its whole area is a wilderness, protected as a national park. It is connected via motorways running along the eastern seaboard, and across the country to the rest of Italy. There are no major urban areas.

Area: 10 794 km²

Population: 1 249 054 inhabitants

Population density: 115.7 inhabitants per km²

Largest cities : 1. Pescara (246 155 inhabitants); 2. L'Aquila (156 565 inhabitants);

3. Teramo (111 953 inhabitants).

Abruzzo has the highest per capita GDP among the Italian Mezzogiorno regions, and it has consistently been the best performing region in income per capita growth in Italy for almost three decades. In 1996 it recorded a per capita income of 20 973 euro (in PPS terms), i.e. about 10% lower than Italy's average standard of living.

In addition, Abruzzo has the highest participation rate in the Italian Mezzogiorno, and an unemployment rate that is close to the national average. Migration rates are, as in the rest of Italy, very low. Although the region has a share of agricultural employment that exceeds the Italian average, this share is converging towards the mean. The manufacturing sector is not extremely specialised, and includes mechanical products and some fashion industries.

Average growth rate of real per capita GDP: 1% (1990-1996)

Agriculture: 8.9% of total employment (1997)

Industry: 32.5% of total employment (1997)

Services: 58.7% of total employment (1997)

Participation rate: 45% (1999) (men: 59%, women: 32.1%)

Unemployment rate: 9.5% (1998)

Educational attainment of population aged 25-29 (1997): less than high school degree 55%; with a high school degree 35%; with a college degree 9%.

throughout much of the 1950-1990 period (see Figure 4), the per capita GDP of Abruzzo has been diverging from that of Sicily (see Figure 5).

The success of Abruzzo has been based on putting a greater share of its population to work.

Thus, the success of Abruzzo has been based on putting a greater share of its population to work. Box 3 shows that this is mainly due to job creation rather than demographics. Indeed, over the considered time span (1970-90) there has actually been net migration into Abruzzo, putting further pressure on the job market. Conversely, in Sicily emigration has contributed one-third of the modest increase in the employment rate (10).

10) Figure 2 shows that this was a period of relatively stable trends in the employment rate.

Box 2. Sicily

Sicily is an island at the southernmost tip of the Italian peninsula. It has coastal plains, with a major mountain (the volcano Etna) in the area of Catania. It is endowed with a wealth of historical and archaeological sites and has many beaches. Its main connection with the mainland is by ferry across the Straits of Messina.

Surface: 25 706 km²

Population: 4 966 386 inhabitants

Population density: 193.19 inhabitants per km²

Largest cities: 1. Palermo (818 356); 2. Catania (608 249); 3. Messina (236 183)

Per capita GDP in Sicily is the third lowest in Italy (only Calabria and Campania performed worse in 1996), and it has been stagnating for most of the last two decades. GDP per capita stood at 15 399 euro in 1996 (in PPS terms), implying that the standard of living in Sicily was roughly 25% lower than the one achieved in Abruzzo, and approximately 35% lower than the average Italian one.

Sicily still has a large share of employment in the agricultural sector. The manufacturing sector is not very dynamic nor developed, and is very specialised in industries characterised by large sunk costs, such as ship-building and petrochemicals. The service sector is predominantly made of personal and public services.

Average growth rate of real per capita GDP: 0.1% (1990-1996)

Agriculture: 12% of total employment (1997)

Industry: 20.1% of total employment (1997)

Services: 67.9% of total employment (1997)

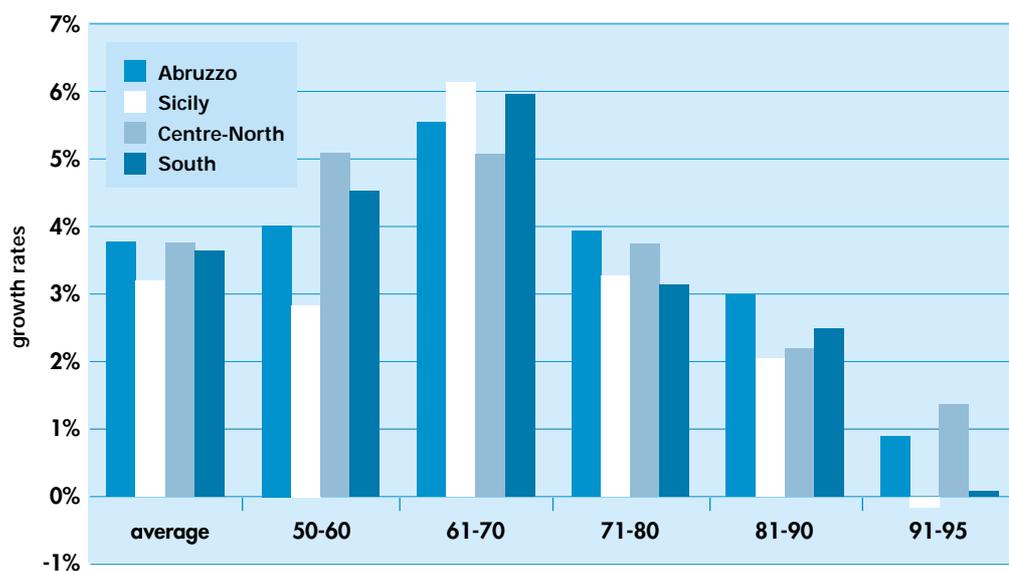
The participation rate in Sicily is very low, especially among women. The unemployment rate is among the highest in Italy and Europe. There is still a tendency towards positive out-migration.

Participation rate: 41.9% (1999) (men: 60.6%, women: 24.9%)

Unemployment rate: 25.6% (1998)

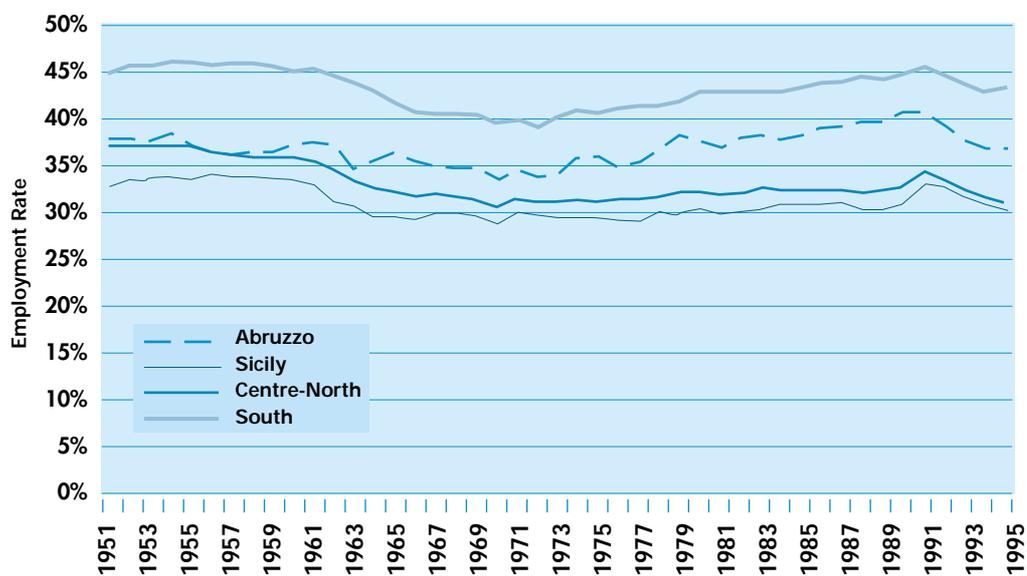
Educational attainment of population aged 25-29 (1997): less than high school degree: 64%; with a high school degree: 28%; with a college degree: 8%.

Figure 2. GDP growth rates



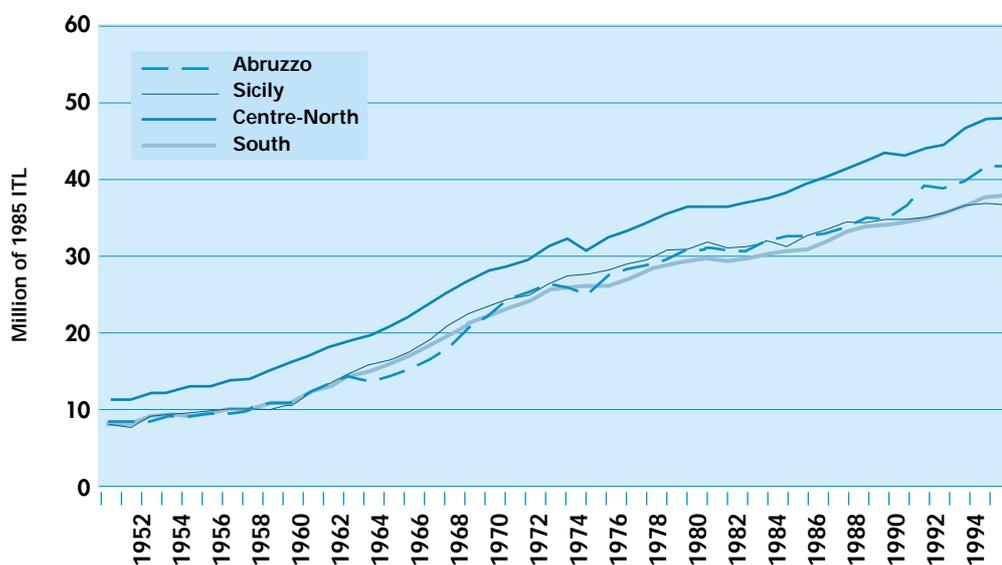
Source: calculations by the authors based on data from Istat, *Conti economici Regionali* and *Annuario statistico Italiano*, various years, and Tagliacarne (1999).

Figure 3. The employment rate



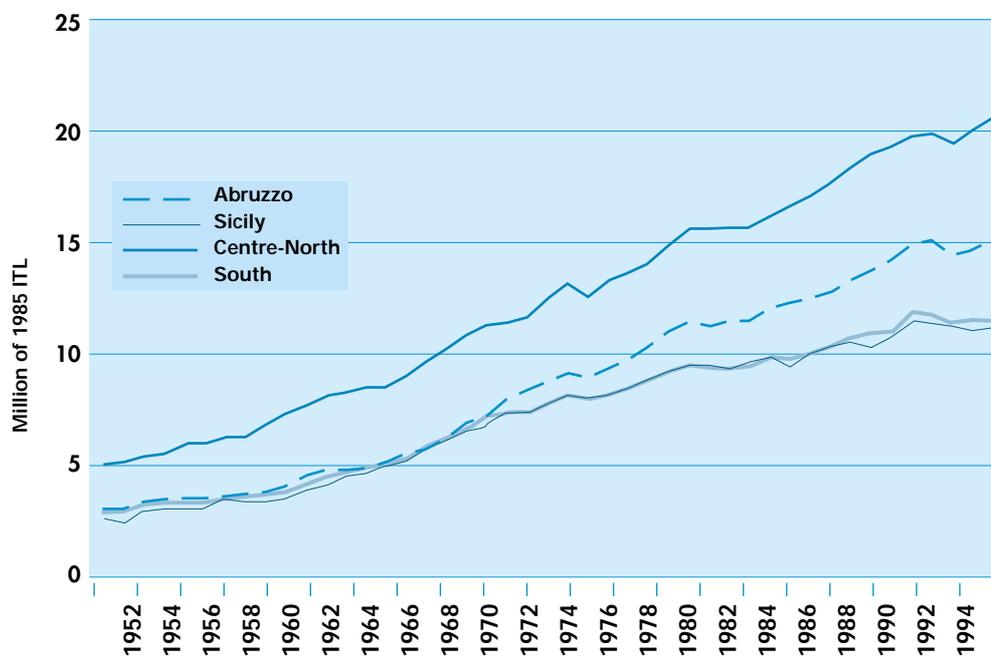
Source: calculations by the authors based on data from Istat, *Conti economici Regionali* and *Annuario statistico Italiano*, various years, and Tagliacarne (1999).

Figure 4. GDP per worker



Source: calculations by the authors based on data from Istat, *Conti economici Regionali* and *Annuario statistico Italiano*, various years, and Tagliacarne (1999).

Figure 5. GDP per capita



Source: calculations by the authors based on data from Istat, *Conti economici Regionali* and *Annuario statistico Italiano*, various years, and Tagliacarne (1999).

Table 3 shows the sectoral composition of employment in the two regions in 1997. Employment growth in Abruzzo has been mainly due to employment in services, but the industrial sector has also made a significant contribution. In Sicily, industry was severely effected in the 1980s and 1990s, and employment in that sector has shrunk. This has been compensated with a large shift to employment in services. In particular, the public administration (non-market services) in Sicily has been an important source of new jobs. Box 3 shows this decomposition in more detail.

Table 3. Employment shares by sector, percentage, 1997

	Agriculture	Industry	Services
Abruzzo	8.9	32.5	58.7
Sicily	12.0	20.1	67.9
Italy	6.5	31.7	61.8

Source: EC (1999).

Sicily has not been able to generate sufficient employment in competitive sectors.

In short, this broad overview tells a rather clear cut story about the two case study regions. Abruzzo, an excellent performer in GDP growth relative to the other Italian regions, has enjoyed a strong industrial sector and a very good performance of its employment growth. Sicily, on the contrary, after promising performance in the 1960s, has not been able to generate sufficient employment in competitive sectors.

3.2 Growth accounting

It is natural to ask what are the factors behind the relative growth of competitive sectors. Relying on the well known techniques of growth accounting we will decompose the growth in productivity per worker in these sectors into the contribution of investment and of technological change (total factor productivity growth, TFPG). The decomposition is as follows:

$$\ln \left(\frac{Q_t}{L_t} \right) - \ln \left(\frac{Q_{t-1}}{L_{t-1}} \right) = \theta_K \left[\ln \left(\frac{K_t}{L_t} \right) - \ln \left(\frac{K_{t-1}}{L_{t-1}} \right) \right] + \text{TFPG}_{t-1, t}$$

where Q_t is aggregate value added in a particular sector in year t , K_t is the aggregate physical capital input, L_t is the aggregate labour input, and $\text{TFPG}_{t-1, t}$ is total factor productivity growth. Consequently, Q/L denotes labour productivity while K/L is the capital-labour ratio, and the differences in their logs are equivalent to their rates of growth. The weighting coefficient, θ_K , is the average share of capital in sector i .

Let us first note, however, that in aggregate terms there is not a large difference in investment rates in Abruzzo and Sicily (see Table 4). After 1970, Abruzzo maintains an aggregate investment rate slightly above the southern average, while Sicily falls slightly below this figure.

Table 4. Investment as a percentage of GDP

Period	Abruzzo	Sicily	Centre-North	South
1960-1970	29%	29%	27%	32%
1971-1980	32%	30%	22%	31%
1981-1993	25%	23%	20%	24%

Box 3. Decomposing growth and employment generation

Job creation versus demographics and migration

The increase in the employment rate in a region could be due to three components: employment may have increased, or the population may have decreased due to natural demographics, or there may have been out-migration. The contribution of each of these components can be decomposed as follows:

$$\frac{\Delta(E/Pop)}{E/Pop} \cong \frac{\Delta E}{E} - \frac{\Delta Pop_{demo}}{Pop} + \frac{NetOutMigration}{Pop}$$

where E is employment, Pop is total population, ΔPop_{demo} is the variation of population due to demographic factors, and "net out migration" is the net contribution of migration. Applying this formula to data for the period from 1970 to 1990 we get the following results:

	Yearly employment growth	=	contribution of job growth	=	contribution of demographics	=	contribution of migration
Abruzzo	1.0%	=	1.2%	=	-0.1%	=	-0.1%
Sicily	0.3%	=	0.6%	=	-0.4%	=	+0.1%

This shows that the employment rate has grown much faster in Abruzzo than in Sicily, though part of the explanation is that demographic pressures have been greater in Sicily. However, while outward migration (+) from Sicily has contributed positively to the employment ratio of that region, there has actually been migration (-) into Abruzzo.

Sectoral shifts

Which sectors have been at the source of employment growth? This can also be decomposed into the contribution from agriculture, industry, market services, and non-market services. The formula is as follows:

$$g^Y = sh_{Agr} g_{Agr}^Y + sh_{Ind} g_{Ind}^Y + sh_{MS} g_{MS}^Y + sh_{NMS} g_{NMS}^Y$$

where g^Y is the total regional growth rate of employment, g_i^Y is the growth rate of employment in sector i, and sh_i is the share of that sector in total regional employment. Clearly, a sector may also give a negative contribution if its employment has decreased. The results of this exercise with data from 1950 to 1993 are:

	Yearly employment growth (1950-93)	=	contribution of agriculture	contribution of industry	contribution of market services	contribution of non-market services
Abruzzo	0.2%	=	-0.80%	+0.16%	+0.65%	+0.19 %
Sicily	0.07%	=	-0.48%	- 0.04%	+0.46%	+0.13 %

A similar exercise, decomposing of the growth rate of total GDP into the contribution from each sector, yields:

	Yearly GDP growth (1960-93)	=	contribution of agriculture	contribution of industry	contribution of market services	contribution of non-market services
Abruzzo	4.1%	=	+0.12%	+1.40%	+2.09%	+0.49%
Sicily	3.9%	=	+0.28%	+0.78%	+2.10%	+0.74%

Thus, both regions show substantial job destruction in agriculture. The major difference comes from the role of the industrial sector versus non-market services in creating alternative jobs and growth. In Abruzzo the industrial sector is an important contributor to growth (one-third of the growth of GDP) and has provided significant new jobs. Non-market services have given a much smaller contribution to growth (11% of total growth) and has not created more jobs than the industrial sector. On the other hand, the industrial sector in Sicily has destroyed jobs and provided a much smaller contribution to GDP growth (20% of the total). Non-market services have been an important net creator of jobs and has given a contribution to GDP growth of the same magnitude as the industrial sector.

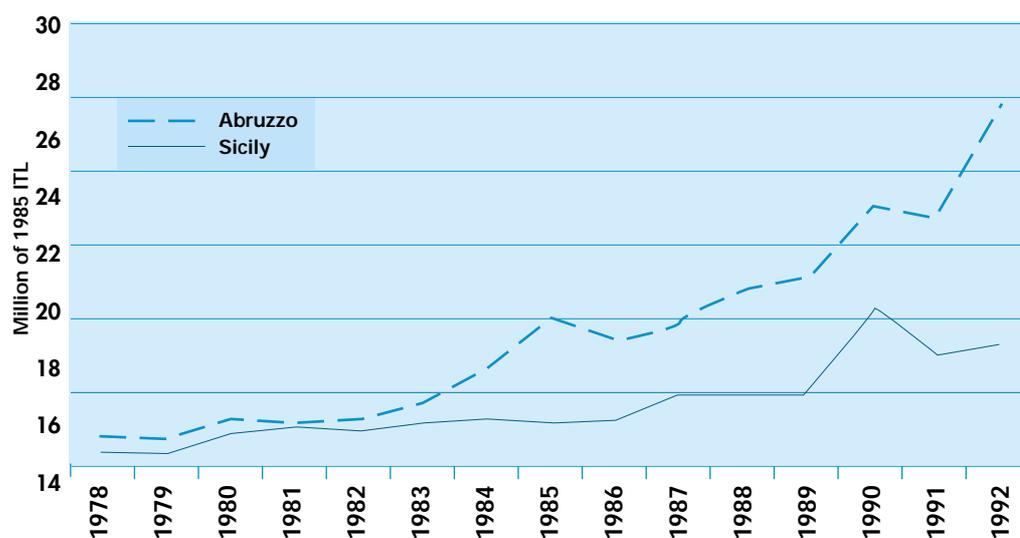
The results of the growth accounting exercise are given in Tables 5 and 6. Table 5 shows the growth rate in labour productivity in the manufacturing sector, together with the relative contribution of capital and of total factor productivity growth (TFPG). Table 6 shows the same information for market services. Three facts emerge from this analysis:

- 1) For the manufacturing sector we clearly see that the contribution of capital to labour productivity growth is large in both regions, at between 1.5% and 1.7% per annum from 1970-1994. This is much above the figure seen in more advanced regions. For example, over the same period, the contribution of capital to labour productivity growth is 0.7% per year in Veneto and 0.6% in Lombardia.
- 2) Nevertheless, the role of total factor productivity growth is much larger in Abruzzo than in Sicily. Abruzzo is not only investing capital, but is also improving its technological frontier. However, it still lags regions like Veneto and Lombardia, in which most growth comes from increases in TFP (2.7% a year and 2.6% per year, respectively).
- 3) Finally, looking at market services, we see a similar picture to that for manufacturing. An important contribution to labour productivity comes from an increase in the capital stock in both regions. However, over time (except for the recession in 1981-85) Abruzzo has been able to offset a decrease in the growth of capital with TFP growth. Sicily has been less able to do this, suffering as a consequence lower growth rates of labour productivity.

Total factor productivity growth is much larger in Abruzzo than in Sicily.

The second and third results above are suggestive of the important role that technological progress and enhanced human capital (both captured as TFP in this analysis) may play in the growth of Abruzzo. Figure 6 indeed shows that R&D spending per industrial worker has been increasing much faster in Abruzzo than in Sicily, especially after the mid-1980s. As regards to human capital, in 1997, 35% of the population aged 25-29 in Abruzzo was holding a high school diploma (and 9% graduated from college), compared with only 28% in the same Sicilian age-group (8% for college graduation).

Figure 6. Spending on research and development per industrial worker



Source: Istat, *Conti economici Regionali* and *Annuario statistico Italiano*, various years.

Table 5. The decomposition of the growth of labour productivity in manufacturing

Abruzzo	Average yearly growth of labour productivity	Contribution of capital per worker	Total factor productivity growth
1970-94	2.9%	1.5%	1.4%
1970-75	0.6%	1.1%	-0.5%
1976-80	4.7%	1.1%	3.6%
1981-85	3.7%	2.2%	1.5%
1986-90	1.9%	1.1%	0.7%
1991-94	3.1%	2.0%	1.0%
Sicily	Average yearly growth of labour productivity	Contribution of capital per worker	Total factor productivity growth
1970-94	2.3%	1.7%	0.6%
1970-75	3.1%	2.3%	0.7%
1976-80	1.3%	1.2%	0.1%
1981-85	0.8%	1.7%	-0.9%
1986-90	5.6%	1.9%	3.7%
1991-94	1.1%	0.9%	0.1%

Table 6. The decomposition of the growth of labour productivity in market services

Abruzzo	Average yearly growth of labour productivity in market services	Contribution of capital per worker	Total factor productivity growth
1970-94	2.0%	1.0%	1.0%
1970-75	2.2%	1.2%	1.0%
1976-80	2.9%	1.0%	1.9%
1981-85	-0.2%	1.4%	-1.6%
1986-90	4.2%	0.8%	2.4%
1991-93	2.6%	0.5%	2.1%

Sicily	Average yearly growth of labour productivity in market services	Contribution of capital per worker	Total factor productivity growth
1970-94	1.6%	1.0%	0.6%
1970-75	2.4%	1.7%	0.7%
1976-80	2.9%	0.9%	1.9%
1981-85	-1.1%	0.8%	-0.2%
1986-90	2.5%	0.7%	1.8%
1991-93	1.1%	0.5%	0.6%

3.3 The evolution of production structures

The lack of technological progress in Sicily is also suggested by economic structures.

The lack of technological progress in Sicily is also suggested by economic structures. The detailed distribution of employment for the two regions is reported in Tables 7 and 8. Abruzzo turns out to be more similar to the Italian average than Sicily. This is captured by the higher rank correlation between the employment structure in Abruzzo and Italy (0.94), than between Sicily and Italy (0.86) (11).

The higher specialisation of the production structure in Sicily can be observed in Table 8 where a single sector (retail distribution) accounts for 23% of total employment. Two other non-industrial sectors have shares higher than 10% (building and civil engineering: 13%, and transport services: 11%). In fact the construction industry is one of the few sectors to show growth in employment share over the last few decades. While the retail distribution sector is also the largest in Abruzzo (16% of employment), it has been steadily declining in importance since the 1960s. Conversely, the employment share of mechanical industry has passed from 5% in 1951 to 15% in 1991.

A notable feature in Sicily is the decline in importance of food, beverages and tobacco (from 11% to under 5%), footwear and clothing (from 8% to under 2%), and wood and furniture (from 6% to 2%). These are sectors (sometimes called *Made in Italy* products) where there has been international specialisation in Italy (see, for example, Iapadre, 1996, and Brasili *et al.*, 1999). Thus, Sicily appears weak in those sectors where Italy is normally strong.

11) The Spearman rank correlation coefficient has been computed on the basis of the 33 sectors that represent the lowest level of aggregation in the tables.

This is also reflected in the exports from Italy that originate in each region. In 1998, Abruzzo accounted for 2% of total Italian merchandise exports and Sicily for 1.6%. However, during the 1990s, Abruzzo's share has increased (from 1.3% to 1.9%) while that of Sicily has declined (from 1.9% to 1.6%). At a more detailed level, Abruzzo accounts for approximately 7.5% of Italian car exports, 3% of other transport equipment, 2.8% of plastic and rubber products, and 2.6% of precision machinery exports. Sicily's contribution to Italian exports is concentrated in the transformation of natural resources, and it has a share of more than 45% of Italian exports of refined petroleum products. Its share of manufactured exports products is relatively limited: it generates 2% of car exports, 5% of exports of other transport equipment, and 2% of the exports of chemicals products. Clearly, this bias is mainly the result of investment by publicly-owned companies in the region.

To sum up, Abruzzo has been able to create more jobs in the industrial sector and in market services through generating steady productivity improvements. This ability, due at least in part to increasing schooling, has constituted the foundation for a sustained period of growth. Sicily, on the other hand, although with similar initial conditions, has not been able to develop a diversified, private base of the economy. It has relied on giving workers more and more capital in selected sectors to support growth.

4. Regional policies in Abruzzo and Sicily

How did this come about? First one has to disregard the suggestion that initial conditions were some how different. In the early 1950s, Abruzzo was, like Sicily, a "full member" of the underdeveloped Mezzogiorno. It had few natural resources, no large cities, and poor transport infrastructure. GDP per capita was low (essentially the same as Sicily's), agriculture was poor (the territory of the region is mostly covered with mountains), but accounted for a very large share of employment. In brief, there were no basic differences in development between the two regions.

Differences in performance emerged in the 1970s. What happens after appears as a continuation of the trend started in that decade. Three main factors appear to have been key for the economic development of Abruzzo:

- 1) There were inflows of investment, paralleled by the development of clusters of local firms (12).
- 2) Infrastructure was able to increase overall productivity of manufacturing through significantly reducing transport costs.
- 3) Better performing social institutions seem to have been important.

Let us consider each of these in turn.

4.1 Industrial development

Our data show that the development of a competitive and dynamic manufacturing industry is at the heart of the regional development of Abruzzo. Investment incentives appear to have been more successful in supporting this in Abruzzo than in Sicily. For example, in the 1970s payments to Abruzzo in terms of incentives per head of population were 55% more than Mezzogiorno average, while in Sicily they were 43% smaller (Malfatti, 1987, Table 2). Moreover, investments in Abruzzo covered a larger range of industries than in Sicily, spanning mechanical engineering, *Made in Italy*

Investment incentives appear to have been more successful in Abruzzo than in Sicily.

12) See Mutti (1994), page 452; Felice (1996); Costantini and Felice (2000).

consumer goods and building materials (13). Table 9 shows the distribution of investment benefiting from incentives by region. From 1987 to 1990, almost one third of this investment in the Mezzogiorno went to Abruzzo.

Table 7. Employment by sector in Abruzzo, percentage of total

	1951	1961	1971	1981	1991
Food and beverages	11.5	6.5	4.6	3.9	5.4
Tobacco	1.6	0.2	0.4	0.2	0.3
Leather and leathers goods industries	0.1	0.1	0.8	1.2	1.4
Textiles	1.9	1.7	1.5	1.5	1.6
Footwear and clothing	9.5	7.6	7.4	8.2	9.1
° Clothing	na	5.8	6.5	7.4	8.2
° Footwear	na	1.8	1.0	0.8	0.9
Wood and furniture	5.6	4.8	3.9	3.2	2.7
Paper, printing and publishing	0.8	1.5	1.2	1.5	1.8
Photographic and cinematographic laboratories	0.2	0.2	0.2	0.2	0.1
Manufacture of metal articles	0.0	0.2	0.5	0.7	0.7
Mechanical industry	5.0	5.6	8.8	13.4	14.8
° Non-electrical machinery	na	1.0	1.8	3.1	4.6
° Electrical machinery	na	0.1	2.6	4.2	3.5
° Instrument engineering, office machinery	na	0.1	0.1	0.3	0.7
° Repairs of mechanical goods	na	4.2	4.1	3.8	3.2
° Manufacture of means of transport	na	0.3	0.3	1.9	2.8
Manufacture of non-metallic mineral products	4.2	5.6	6.2	4.9	3.8
Petrochemical industry	1.7	0.9	1.1	1.3	1.3
° Chemical industry	na	0.9	1.0	1.2	1.1
° Petroleum refining	na	0.0	0.1	0.0	0.1
° Man-made fibres and cellulose for textile	na	0.0	0.0	0.0	0.0
Processing of rubber	0.1	0.2	0.1	0.6	0.4
Processing of plastics and other manufacturing products	0.3	0.7	0.5	1.2	1.3
° Processing of plastics	na	0.0	0.4	0.9	0.7
° Other manufacturing products	na	0.7	0.1	0.4	0.6
Building and civil engineering	13.7	12.3	15.2	13.3	13.2
Production and distribution of electricity and gas	1.1	1.0	1.4	1.3	1.1
Water supply	0.2	0.3	0.2	0.1	0.0
Wholesale distribution	2.8	4.9	4.1	4.2	3.5
Retail distribution	19.7	25.0	22.4	18.7	15.8
Hotels and catering	5.6	5.2	5.1	5.7	4.9
Transport	6.0	9.3	7.8	7.5	7.5
Banking and finance	1.1	1.1	1.2	1.6	2.1
Insurance	0.1	0.2	0.5	0.6	0.9
Services for firms	1.5	1.3	1.2	1.1	1.9
Recreational services	0.6	0.5	0.3	0.7	0.4
Sanitary services and administration of cemeteries	2.2	2.8	3.3	3.0	3.8
Total	100	100	100	100	100

Source: ISTAT Census. Various years

13) The main inward investments were those of Siemens (electronics) and SIV (glass) in the 1960s; three FIAT plants in the 1970s; Italtel and Texas Instruments in the 1980s (see Mutti, 1994, and Piattoni, 1999).

Table 8. Employment by sector in Sicily, percentage of total

	1951	1961	1971	1981	1991
Food and beverages	10.1	5.9	4.2	3.0	5.4
Tobacco	0.4	0.2	0.1	0.1	0.1
Leather and leather goods industries	0.3	0.1	0.1	0.1	0.1
Textiles	0.6	0.9	1.0	0.7	0.4
Footwear and clothing	8.3	5.8	4.0	2.4	1.4
° Clothing	na	3.6	2.9	1.9	1.2
° Footwear	na	2.2	1.0	0.6	0.2
Wood and furniture	5.5	4.3	3.0	2.6	2.1
Paper, printing and publishing	0.7	0.9	0.9	1.0	1.0
Photographic and cinematographic laboratories	0.2	0.3	0.3	0.3	0.3
Manufacture of metal articles	0.1	0.1	0.2	0.3	0.3
Mechanical industry	6.1	6.9	9.7	11.7	11.1
° Non-electrical machinery	na	0.7	1.8	2.6	2.9
° Electrical machinery	na	0.4	1.0	1.7	1.3
° Instrument engineering, office machinery	na	0.2	0.2	0.3	0.6
° Repairs of mechanical goods	na	4.4	5.2	5.5	5.3
° Manufacture of means of transport	na	1.3	1.5	1.6	0.9
Manufacture of non-metallic mineral products	2.6	3.7	3.0	2.8	2.5
Petrochemical industry	1.5	2.2	3.4	3.2	2.4
° Chemical industry	na	1.9	2.5	2.0	1.3
° Petroleum refining	na	0.3	0.9	1.1	1.2
° Man-made fibres and cellulose for textile	na	0.0	0.0	0.0	0.0
Processing of rubber	0.0	0.1	0.5	0.4	0.2
Processing of plastics and other manufacturing products	0.1	0.1	0.3	0.5	0.7
Processing of plastics	na	0.0	0.3	0.4	0.4
° Other manufacturing products	na	0.1	0.1	0.1	0.3
Building and civil engineering	7.8	8.9	9.6	10.2	13.2
Production and distribution of electricity and gas	1.2	1.4	1.8	1.7	1.7
Water supply	0.4	0.5	0.4	0.4	0.4
Wholesale distribution	4.3	3.9	4.4	5.6	5.1
Retail distribution	23.9	27.4	27.0	25.5	23.2
Hotels and catering	4.3	4.8	4.5	5.0	4.9
Transport	9.2	11.8	11.4	11.5	11.0
Banking and finance	2.1	2.5	2.9	3.2	3.9
Insurance	0.1	0.2	0.5	0.7	1.0
Services for firms	2.4	1.9	1.6	1.9	2.5
Recreational services	0.9	0.8	0.6	1.3	0.6
Sanitary services and administration of cemeteries	4.4	4.4	4.5	3.9	4.6
Total	100	100	100	100	100

Source: Istat, Census. Various years

Table 9. Incentive induced investment in manufacturing, yearly average per period in constant 1990 ITL

	Abruzzo	Sicily	Mezzogiorno	Abruzzo as a percentage of the Mezzogiorno
1970-79	328.2	546.2	4235	8
1980-83	340.4	322.2	2209	15
1984-86	318.6	229.8	1857	17
1987-90	1047.0	274.9	3369	31

Source: SVIMEZ, as in Servidio (1992)

The incentives to invest in the Mezzogiorno, coupled with the increased transport costs of going further south, produced a strong concentration of investment close to the northern border of the assisted areas.

Certainly, Abruzzo had an important geographical advantage. The incentives to invest in the Mezzogiorno, coupled with the increased transport costs of going further South, produced a strong concentration of investment close to the northern border of the assisted areas. This is exactly where Abruzzo is located. Importantly, investments from state-owned firms were mainly concentrated in mechanical engineering and telecommunications since the lack of large ports in Abruzzo impeded the building of large petrochemical and steel plants.

So, in the 1960s, when Italian business was rapidly increasing production capacity and investment in the Mezzogiorno was strongly favoured by legislation, Abruzzo proved to be a suitable location for new plants. In the 1970s, labour disputes became widespread in the Northwest, especially in larger factories. Moreover, the demand for *Made in Italy* products became more volatile as a consequence of the oil shocks, creating problems for larger less flexible firms. Economies of scale at the plant level became less relevant. This favoured the relocation and sub-contracting of production, especially from north-western firms. The overall pattern of Italian industrialisation changed, and the development of small and medium sized locally-owned firms in north-eastern and central Italy, often in *Made in Italy* sectors, became much more important. Abruzzo and Puglia were the only regions of the Mezzogiorno to follow this trend. For example, in Abruzzo clothing and furniture firms grew up mostly as subcontractors. They clustered in selected areas, especially along the coast and close to motorways. These new companies replaced a declining textile industry that was producing traditional and poorer quality goods. Thus, the "Adriatic Belt of development", starting from Friuli and Veneto, extended to Abruzzo (Viesti, 2000).

The result was that Abruzzo developed a dualistic industrial structure, with large factories mostly in mechanical engineering, transport equipment and telecommunications, together with small locally owned plants, often subcontractors of northern companies.

As suggested by economic geography models, industrial development reached a critical mass and became self-sustaining. Local clusters of firms developed Marshallian "external economies", via the division of labour, backward and forward linkages, and technological spillovers. New investment was now attracted not only by government incentives, but also by local conditions, such as the skills of the workforce or the availability of subcontractors. This created a cumulative effect, as local incomes grew and fuelled consumption. When Italian public spending increased substantially in the late 1970s and 1980s, Abruzzo reacted differently from most other southern regions - since a local supply industry existed, the increased demand did not simply induce imports from the North.

Investment in Sicily had been heavily biased in favour chemicals and refinery products. These large plants did not induce the development of local subcontractors.

By comparison, the picture of what happened in Sicily looks much like the sketch of the Mezzogiorno presented in Section 2. Investment in Sicily had been heavily biased in favour chemicals and refinery products. As of the mid-1970s, these products represented around one fourth of regional industrial production, and most employment was concentrated in four large plants (Malfatti, 1987). These large plants did not induce the development of local subcontractors (14). Other investments in Sicily were aimed at the local market: private firms found Sicily less attractive as a location for investment for re-exporting also due to its distance from major markets vis-à-vis other southern regions. Local resources, such as the natural and cultural attractions for tourism and agriculture, were rarely exploited. Most local entrepreneurship was either involved with small firms in the food sector or in manufactured products for the construction industry (Busetta-Rosa, 1995; Mazzola and Asmundo, 1999). As of the mid-1980s, there was only one locally-owned firm with more than 500 employees, producing concrete (Malfatti, 1987, Table 1).

The response of local and national government to the crises of the 1970s made things worse. Most policies, especially by state-owned companies, were geared towards defending factories. When the employment situation worsened, public policy directly created thousands of assisted jobs. The inflow of public funds sustained local incomes. However, the increase in demand generated more imports than local production. The construction industry and non-tradable services were the only areas in which production and employment grew. As in most of the Mezzogiorno, one crucial fact was that endogenous industrial development was prevented also by high labour costs. The lack of manufacturing meant there was no development of a business services industry, and services to households became much more important.

The dramatic weakness of Sicilian economy became evident after the change of Italian fiscal policy at the beginning of the 1990s, when Sicily experienced a prolonged period of recession. Some signs of recovery, such as the growth of a semiconductor cluster in Catania (see Russo, 1997), have only just appeared at the end of the decade.

4.2 Infrastructure

The role of physical infrastructure in Abruzzo was crucial. With the help of the *Cassa per il Mezzogiorno* substantial improvements to transport, water and energy infrastructure were made. A motorway connecting Rome with the northern and the central areas of Abruzzo was built, as was the Adriatic motorway, linking south-east Italy with Bologna and the northern motorway network. These motorways were well connected within the region through a dispersed local road network. As a result, transport costs decreased substantially, especially towards Rome and the North. From L'Aquila one can be in the centre of Rome in one hour; from Pescara it takes a little more than one hour to reach Ancona, and three hours to be in Bologna.

But it was not only a matter of transport infrastructure. The first University of Abruzzo was created in L'Aquila in 1952 and three others followed in Pescara, Teramo and Chieti. Similarly, numerous hospitals were built. Abruzzo was fifteenth in the ranking of Italian regions in terms of hospital beds per person in 1954, but ranked third in 1990 (Mutti, 1994, Table 17).

14) An analysis of factors determining the intensity of backward and forward linkages with large firms in Italy is given by Florio and Capriati (1986).

The role of infrastructure in Abruzzo was crucial.

It is very difficult to reconstruct the total financial flows for infrastructure. One needs to sum up the expenditures of the *Cassa per il Mezzogiorno*, of different Ministries, and of a range of public institutions (such as *Anas* for roads or *Enel* for electric power). However, data on total public expenditure per capita continue to show that both Abruzzo and Sicily (and the rest of the South) receive fewer funds than the national average (for example, in 1997 total public spending was ITL 19.2 million per capita in Abruzzo, ITL 17.4 million in Sicily and ITL 22.1 million in Italy on average). Data from the Ministry of Treasury on the composition of public expenditure do, however, hint at different regional priorities. Though data for only one year must be read with caution, the figures in Table 10 are striking. In Abruzzo, capital expenditure represents more than 17% of all public expenditure in 1997, as compared to a Mezzogiorno average of 14%, and to 11% in Sicily.

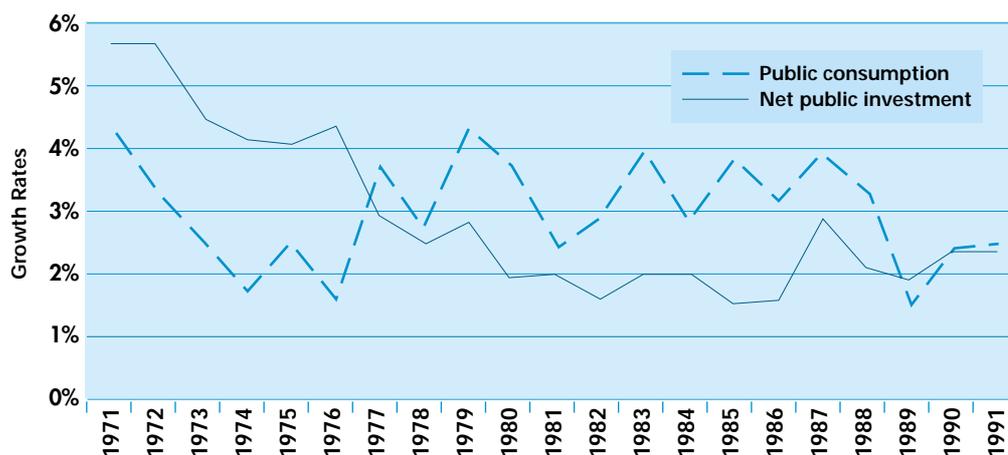
Table 10. Public expenditure, percentage distribution, 1997

	Abruzzo	Sicily	North	Centre	Mezzogiorno	Italy
Public employees	20.7	22.2	20.7	20.9	21.5	21.0
Purchase of goods and services	14.0	16.6	15.5	17.7	15.7	16.0
Transfers	27.9	29.1	30.3	27.0	27.1	28.6
Passive interests	15.8	16.6	17.7	19.4	16.3	17.7
Other	4.2	4.5	5.6	5.2	5.0	5.4
Current expenditure	82.6	89.0	89.8	90.2	85.6	88.6
Capital expenditure	17.4	11.0	10.2	9.8	14.4	11.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

Source: Ministry of Treasury, unpublished data

Figure 7 clearly shows that the rate of growth of public consumption in Sicily overtook the rate of growth of net public investment in the mid-1970s (15). And from 1977 until 1989 the rate of growth of public consumption was extremely high, at between 3 and 4% in real terms. Figure 8 shows similar data for Abruzzo and the relatively closer movement of public investment and public consumption trends.

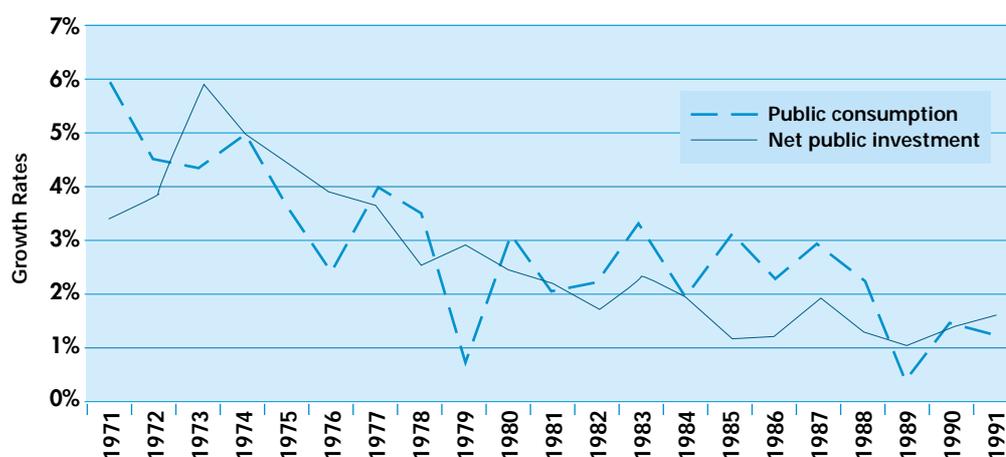
Figure 7. Public consumption and investment, Sicily



Source: Authors' calculation from Istat, *Conti economici regionali*, *Annuario statistico Italiano*, and *Le regioni in cifre*, various years.

15) Computed as: the change in the gross public capital stock, net of depreciation.

Figure 8. Public consumption and investment, Abruzzo, per annum growth rates



Source: Authors' calculation from Istat, *Conti economici regionali*, *Annuario statistico Italiano*, and *Le regioni in cifre*, various years.

4.3 Social capital

Social conditions, though often very difficult to measure, are also a basic ingredient for economic development. Institutions and social capital may determine a quite different economic performance for different regions (see North, 1990, and Coleman, 1990). For example, our analysis would seem to suggest better social capital in Abruzzo than in Sicily.

Unfortunately, no discussion of Sicily can avoid a mention of crime and the Mafia.

Unfortunately, no discussion of Sicily can avoid a mention of crime and the Mafia (16). In 1995, the number of murders per 100 000 persons was 7 in Sicily compared with 1.6 in Abruzzo (and the national average of 2.5), though the rates of robbery and theft were more similar (2 129 per 100 000 persons in Sicily and 1 981 in Abruzzo, compared to the national average of 3 190). Reported family violence was again significantly higher in Sicily (6.3 incidents per 100 000 in Sicily, 3.3 in Abruzzo, and 4.0 in Italy on average), suggesting greater social problems and a more violent environment.

While Abruzzo has always been one of the Italian regions with the lowest crime rate, the role of organised crime in Sicily has remained important. With the flow of public resources, organised crime penetrated the construction industry and controlled much public procurement. The Mafia had a role in discouraging private entrepreneurs through extortion and protection rackets.

5. Conclusions

In this essay we have presented the experience of two regions that had initially almost identical economic indicators. Nonetheless, they realised different growth paths: while Abruzzo has managed to catch-up with the Italian average, Sicily has remained a lagging region.

A closer look at both region's development strategies may explain at least part of the puzzle. The forces driving divergence seem largely related to changes in the industrial fabric, the accumulation

16) A history of mafia is provided by Lupo (1993).

of knowledge capital, and misallocation of public funds. In addition, geographic factors may have intensified the process to some extent.

To be more precise, we have documented five major differences in the diverging development of Abruzzo and Sicily after the first oil-shock:

- Employment growth in Abruzzo was primarily realised in the industrial and market service sectors. The development of a dynamic and competitive manufacturing industry played a major role in Abruzzo's success. As a result, this region was able to generate substantial gains in total factor productivity (technological change) so that productivity growth could be translated into more jobs.
- In addition, compared to Sicily, a larger fraction of the Abruzzean work force became skilled, more resources were spent on research and development activities, and the region became attractive for investors due to its network of suppliers. A critical mass was reached and development took on a self-sustaining process.
- Admittedly, Abruzzo had a geographic advantage over Sicily. The incentives provided to invest in the Mezzogiorno, coupled with the increased transportation costs of going further south, produced a strong concentration of investment closer to the northern border of the assisted areas. Consequently, Abruzzo benefited from a border effect, which was not present in Sicily.
- As in most of the Mezzogiorno, investment in Sicily became focused on high capital intensive industries, but these did not lead to the development of locally linked subcontractors. As a result, Sicily was not able to develop a diversified economic fabric. Moreover, the industrial sector in Sicily - which was severely hit by the oil shocks - created less job openings than it destroyed. The public sector (i.e. non-market services and public works) became an institution to absorb the otherwise unemployed.
- In Sicily, most public spending went to consumption rather than investment. In addition, rent seeking activities and crime thrived.

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