PATTERNS OF SPECIALIZATION AND CONCENTRATION IN A POLARIZED COUNTRY: THE CASE OF ITALIAN REGIONS

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November 2005
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1. Introduction

This analysis describes some key features of the Italian economic system and assesses if the international framework and changing conditions have had an impact in terms of regional cohesion and patterns of convergence. The statistical indicators will help in entering into the detail of the Italian structural economic panorama and dynamics, in the light of increasing international competition.

Italy’s economic structure is comparable to that of most other advanced OECD economies, with a diminishing primary sector and growing services, which contribute close to two-thirds of gross value added, but apart from tourism and design, it is not internationally competitive in high-tech and in most services sectors. Its main strength relies in manufacturing, especially thanks to small and medium-sized firms specializing in products that require high-quality design and engineering. The economic growth of Italian economy merely reached 1.2% in 2004, compared with 1.8% in 2001 but with 0.3% in 2003; the slower pace of growth is still remarkable among the countries of the Euro area. Economic growth reached 2.6% in the Centre and 0.6% in Mezzogiorno; in the North GDP grew between 0.8% and 1.1%. Enormous differences still exist between regions, the North East being the most dynamic. Despite some progress in certain areas of the so-called Mezzogiorno, the north-south gap is still huge. The main borderline is represented by relative specialization, that has historically been industry in narrow sense in the North and agriculture in Mezzogiorno. According to the most recent estimates by Istat (Istituto Nazionale di Statistica) the underground economy accounts for about 17% of GDP, ranging from 8% in the North to 30% in Calabria. Underground businesses are widespread in agriculture, construction and services.

There are few very large private companies in operation, and those play a major role in the economy. Notwithstanding, the strongest components of the economy are the clusters of small and medium-sized, family-owned companies in so-called industrial districts, mostly in the North East and the Centre of the country. Average Italian firm size is the smallest among EU countries. With the exception of firms in the machine tool industry, most small and medium-sized companies (SMEs) produce high-quality consumer goods, including clothing, furniture, kitchen equipment and white goods. Traditionally export-oriented SMEs face the serious challenge of global economic integration and increased competition. In particular, low price competition from South East Asia has hindered growth and has left some companies vulnerable to acquisition by larger foreign firms seeking to obtain established Italian brands.

Even if world trade recovered globally, Italian exports fell in all sectors in the last decade, weakened by the loss in price competitiveness and by the slow growth in trade partners’ demand; this effect has been stronger for North-West regions. Regions encountered difficulties mainly in the automotive industry and

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1 Italian regions are grouped in larger geographic areas: Piedmont, Valle d’Aosta, Lombardy, Liguria belong to North-West; Trentino Alto – Adige, Veneto, Friuli – Venezia Giulia, Emilia Romagna belong to North – East; Tuscany, Umbria, Marche, Lazio belong to Centre; Abruzzi, Molise, Campania, Puglia, Basilicata, Calabria, Sicily, Sardinia belong to Mezzogiorno (often Sardinia and Sicily are considered separately as “Isole”, that is - Islands).
in the *made in Italy* traditional sectors (textiles, garments, leather and shoes), exposed to growing competition.

Italy’s export share over world exports has fallen, between 1995 and 2002, from 4.5% to 3.6%. In 2002, the contribution of net exports to GDP growth has been of -0.7%; in the last seven years the negative effect has been equal to 2.9%. Compared with other industrial countries, the export share in low technology industries is relevant, mostly for Centre and Northern-East regions.

Sales abroad performed well in the metallic products branch, because of sustained external demand; Mezzogiorno contributed significantly with oil derivatives, because of higher prices of oil in international markets. Italian industry is scarcely represented in the worldwide high tech products market. A common problem is due to the difficulty to keep the pace with innovation of competitors.

Productivity and the rate of occupation are lower in the South. According to regional accounts for 2000 - 2001, in manufacturing (in narrow sense) in Mezzogiorno, value added for a standard unit of labour was 86% of the corresponding figure for the North - Centre. Between 1995 and 2001 also productivity growth has been slower in Mezzogiorno.

The picture that emerges for Italy and its regions in recent years is double - faced: on one side, Italy pays for the structural dualism between North and South, inherited from the past and never really solved by national policies. On the other, Italy is an OECD country that suffers from the dynamics of structural change from a manufacturing – based to a service – based economy. Moreover, increased competition in those (traditional) manufactures that historically represented the success of Italian has slowed further the pace of growth. The various stages of economic integration that involved a growing number of partners for Italy inside the EU had initially the effect to address the specialization of Italy in those sectors where relative comparative advantages could be exploited; but this held true until only countries with similar economic, population and demand characteristics entered the Union. Once the EU started opening her borders to Eastern European countries, a growing competition forced many firms either to change their specialization, to re-orient their exports, till the extreme measure of relocating in those new entrants where typically production costs were lower. While this process characterized the nineties, in our decade a threat for national production was represented by Eastern Asia countries, (mostly China) as long as international trade barriers progressively fell and exposed Italian firms to an unbearable competition, although there is still a gap in the quality of products originating from different countries. This motivates the deterioration of export competitiveness, that damaged relatively more those regions in Italy, North – East and Centre, that relied more on traditional manufacturing sectors. In contrast, North – West and Mezzogiorno found partially some way out of the situation by turning to a more flexible production, further specialization and search for quality.

Evidently, increased cost competition from new entrants and price competition in international markets is currently requiring a deep restructuring of the Italian economy, that justifies the slower pace of growth and the spread policies that at regional level try to promote innovation and technology transfer, recognized as the future key to growth for all European nations.
2. Stylized facts: evolution of GDP, employment and distribution in space.

Italy experienced strong growth in the decades after the Second World War as the economy caught up with the more advanced economies in Europe. Although growth slowed during the 1980s, Italy continued to record robust growth rates, averaging 2.4% in 1980-89. However, growth was sustained to a large extent by loose fiscal policy as budget deficits widened to an average of almost 11% of GDP in 1980-89. Successive currency devaluations were also used as a means of postponing necessary reform by giving a short-term boost to competitiveness. In the ‘80s and in the early ‘90s industry struggled to remain competitive under a combination of wage increases and a hard exchange-rate policy to fight inflation. In 1992 mounting imbalances led to the suspension of the lira from the exchange-rate mechanism (ERM) and a subsequent sharp depreciation. The pending financial crisis forced the government to tighten fiscal policy in an effort to join EMU\(^2\), in a tightening that contributed to a sharp deterioration in Italy’s growth performance. Between 1995 and 2001 the economy expanded by an annual average rate of 1.9%, compared with 2.4% for the EU as a whole. The poor growth performance since the beginning of the 1990s was due to different contributing factors. The effect on private consumption of the sharp fall in interest income from government securities as a result of interest-rate convergence with the rest of the euro area, the negative impact of the financial crisis in 1997-98, and recently, the inflationary effect of the Euro introduction, depressed significantly private consumption.

Firms’ performance was jeopardized by international competition and deep restructuring requires a re-formulation of policies and strategies for manufacturing, that still accounts for about 25% of GDP and about 90% of total merchandise exports in 2002 (Istat, 2002). The typical North – South gap has remained evident through time under many perspectives. Value added produced in the North has remained stably superior to the same figures for Centre and Mezzogiorno (the groups of regions with a green indicator in the Graph 1).

Figure 1. Value added by groups of regions, constant 1995 prices, millions.

![Graph showing value added by groups of regions](image)

Source: elaboration of ISTAT data

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\(^2\) Recently (March 20, 2005) ECOFIN UE Ministers agreed on easing the convergence criteria contained in the Stability Pact.
The absolute level of valued added is higher for Northern regions, but the dynamics is pretty reversed, as Southern and Central regions performed better than Northern regions in terms of value added percentage growth.

2.1 Cluster analysis

An instrument that allows for an insight in the regional and industrial differences and similarities is the cluster analysis. The cluster methodology implemented here concerns the value added for the 20 Italian regions in 2002. Actually, an implicit cluster analysis is already the three-repartition of Italy into North, Centre and Mezzogiorno, that relies on historical and geographical criterion; here, the choice of the parameter around which build groups, can be either predetermined or randomly chosen as the value added of any region.

The method implemented here, a hierarchical method, is an agglomerative average linkage cluster analysis. Clusters are formed starting from one observation and adding other observations according to similarity, until only one group is formed. In this case there is a starting observation, randomly selected by the software, that virtually represents the first cluster; then one by one, the others are added. The graph that illustrates this clustering method is called dendrogram and gives a clear idea of the concept of grouping observations, where longer vertical lines indicate higher dissimilarity across regions, shorter lines indicate lower dissimilarity.

Figure 2. Dendrogram for groups of regions, value added, 2002.

Source: Elaboration on ISTAT data

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3 The cluster analysis is a wide statistical methodology, with not a single "institutional" way to perform. Whenever a different need or interest emerges, statisticians are free to aggregate their data and sort them according to their tastes and necessity. In this case, this methodology offers another instrument of analysis to determine if there are similarities or discrepancies among Italian regions and similar trends in industrial performance, to back the global scenario.
This analysis, based on the Euclidean distance, highlights that Lombardy represents a group on her own\(^4\), and in this case it can also be said that it is the richest region; the most similar regions are those for which the horizontal line is shorter; so, Emilia is more similar to Veneto, Campania to Sicily, and so on. Southern regions tend to be clustered together, but, a bias is at work as Valle d’Aosta, where the GDP per capita is among the highest in Italy since the population is quite small, is clustered together with Molise and Basilicata, which are Southern and poorer regions. As long as the value added in all sectors increases, other superior groups are formed, until finding Lombardy. The second richest region is Lazio, that hosts in Rome the seat of the national government.

2.2 Changes in unemployment

The previous discussion on the marked and persistent differences between regions matches well with the unemployment data dynamics. Since the beginning of the 1990s the number of people employed in manufacturing has fallen rapidly as a result of a process of industrial restructuring that is still under way, and was down to 31.8% of the labour force in 2002. The increase in the number of employed has been higher in the Centre (2.5%), because of the role of services, and secondarily, of constructions. As in most developed countries, the number of workers employed in the services sector has increased almost inexorably, accounting for 63.2% of the total workforce in 2002. The rate of unemployment in 2004 was 8.0%, 0.4 percentage points less than 2003; the fall of unemployment in the Mezzogiorno regions has been partially balanced by the rise in the North, although the difference in absolute values is still remarkable. This positive trend is largely attributable to employment growth, helped by a gradual labour market reform since 1998, particularly the introduction of measures favoring the use of part-time, fixed term and other forms of flexible contracts. In 2004 a new statistical method to compute employment and unemployment data allowed for an increase of the importance of part time work, especially for dependent workers, and of underemployed (that is, people who work less than the average 40 hours per week of a full time worker). Unemployment data for groups of regions is reported in Figure 3.

The observed patterns in valued added and employment suggest that, notwithstanding the poor performance of the economy as a whole, structural reforms undertaken by the national governments, particularly in the labour market, help decisively in decreasing the unemployment rate.

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\(^4\) A shortcoming of this analysis is given by the value added variable, which is available in absolute terms and not per capita in the ISTA dataset.
The permanence of a deep difference among groups of regions through time indicates that subsequent phases of European integration, at least in the considered decade, did not have strong influences on the performance of regions and on structural change. Only slight changes in the type of production structure in different regions can be attributable to higher international competitive pressure and new EU standards and codes, and to some extent to a delocalization effect of firms that moved form costly productions sites to lower costs countries.

What can be inferred about cohesion amidst Italian regions? The available data allows for computing the standard deviation of GDP at regional level per unit of labour in 1995 – 2003. the results are shown in figure 3.

The trend shows a growth of 5% in 1995 – 2003. A t-test of the average of the 1995 data against the 2003 rejects the null hypothesis of equal means. As a conclusion, the dispersion of regional GDP per unit of labour has been growing, so, to a first extent, no sign of growing cohesion, as a result, emerges.

In contrast, a pattern of increasing dispersion in the revenue per capita has characterized the years 2000 - 2004. This empirical evidence suggests how the cited structural reforms in the labour market were not sufficient measures for the goal of increasing social and economic cohesion, but new structural interventions seem to be necessary, especially in the field of industrial policies.
3. Key policy characteristics

Economic policy in the past 20-30 years, until 1992, was characterized by sound monetary policy conducted by Banca d’Italia. This stable policy contrasted with the more erratic fiscal policy pursued by weak governments. In 1992-97, when participation in economic and monetary union (EMU) was seen as a national imperative, consensus was achieved on narrowing the budget deficit and public debt, both by reducing spending and increasing revenue. Once EMU membership had been confirmed, priorities other than fiscal consolidation were emphasized, most notably cuts to unemployment and taxation, and investment in infrastructure.

A key feature of the monetary effects of the Euro introduction is that in 2002 inflation in Italy boomed, especially for consumer products (food and textiles).

The recent trend in fiscal policy has seen a period of austerity in the perspective of entering the EMU, followed by a softer budget policy (essentially made of a rebalancing between the mix of direct and indirect taxes). As a consequence, the budget deficit grew more rapidly and the government was recently invited by the EU Commission to adjust their targets.

| Table 1. Summary of general government finances, 2002 - 2004 (% of GDP) |
|---------------------|---------------------|---------------------|
|                     | 2002               | 2004               |
| Revenue             | 45.3               | 45.2               |
| Current expenditure | 48.1               | 48.5               |
| Balance             | -2.8               | -3.3               |
| Interest payments   | 5.1                | 5.8                |
| Primary balance     | 3.0                | 1.8                |
| Debt (year-end)     | 108.3              | 106.6              |


Over the past decade there has been a very considerable reduction in the role of the state in the economy. The Istituto di Ricostruzione Industriale (IRI), the ENI, Istituto Nazionale delle Assicurazioni (INA) and Ente Nazionale per l’Energia Elettrica (ENEL), were transformed into joint stock companies; the two major IRI-owned commercial banks were floated on the stock exchange: Credito Italiano in 1993 and Banca Commerciale Italiana in 1994.

Subsequently, also Telecom Italia and Società Autostrade5, the motorway operator, were partially privatized. Since 2000 the privatization program has slowed; the government sold its controlling stakes in Finmeccanica, the Rome airport services company, Aeroporti di Roma and residual stakes in several banks, including Banco di Napoli. In February 2001 the Treasury sold further tranches of ENI, Telecom Italia and Ente Tabacchi Italiano (ETI), which controls about 25% of the domestic cigarette market.

5 Società Autostrade is the company that holds and manages the majority of Italy’s highways.
All these waves of privatizations served theoretically to increased competition and enable market access to new entrants; all this should guarantee better market conditions for the consumers. Unfortunately, this was not always the case. The lack of transparency of many new entrants in offering, typically, their services to the former state’s customers did not lead to increased efficiency but to higher prices for the final consumer and to a difficulty in the selection of suppliers\textsuperscript{6}.

Coming to regional policy, as cited above the most problematic issue in Italy has always been the Mezzogiorno issue. A large gap in productivity, employment, and infrastructure represented historically a specific feature of the area, calling for continuous interventions that actually did neither fill gap with the rest of Central and Northern regions nor helped to give a significant change in the southern economy structure.

A main criticism addressed to past governments, was about the type of aids and sustain given: instead of being project – specific, funds were generically made available to local administration without specific goals, so that they were also called “rain interventions”. Another typical instrument of intervention took the form of fiscal or social security contributions exemption.

In 1994 the European Commission condemned the traditional system of government subsidy through social security exemptions to firms in Mezzogiorno as a breach of EU competition law. In January 1995 Italy agreed to a gradual phasing out of these exemptions, potentially increasing labour costs in Mezzogiorno by an estimated 20% and highlighting the need for wage differentiation with the north. However, Mezzogiorno is eligible for investment incentives from the EU Regional Development Fund and the Italian government, and in 1998 the European Commission agreed to ease restrictions on tax and social security exemptions.

The key to future growth and development widely shared by the recent debates about stagnation and competitiveness is innovation and technological transfer.

Innovation has become a priority for all EU governments, not only at national but also at regional level. Digital technologies and ICT require more and more investments by enterprises in training of workforce and research activity. According to the European Innovation Scoreboard\textsuperscript{7}, Italy ranks under the average of EU countries for the main indicators of innovative capacity. For both high technology patents and R&D expenditure, Lombardy and Piedmont, regions for which indicators are highest, show a certain delay with respect to the most advanced European regions:

\textsuperscript{6} See for example, the case for the liberalization of the telephone information services.

\textsuperscript{7} The European Innovation Scoreboard is an annual assessment of innovation performance in the individual Member States of the European Union. It was an explicit request of the European Council meeting in Lisbon in March 2000.
Table 2. Local innovation leaders per country.

<table>
<thead>
<tr>
<th>Country</th>
<th>No of regions</th>
<th>% regions &gt; country mean</th>
<th>Leading regions (RSII)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>9</td>
<td>11%</td>
<td>Wien (.57)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Steiermark (0.43)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tirol (0.40)</td>
</tr>
<tr>
<td>Belgium</td>
<td>3</td>
<td>67%</td>
<td>Brussels (.42)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vlaams Gewest (.41)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Région Wallonne (.34)</td>
</tr>
<tr>
<td>Germany</td>
<td>40</td>
<td>33%</td>
<td>Oberbayern (.91)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Stuttgart (.79)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Karlsruhe (.73)</td>
</tr>
<tr>
<td>Greece</td>
<td>13</td>
<td>15%</td>
<td>Attiki (.21)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Keryki Makedonia (.15)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Voreio Aigaio (.09)</td>
</tr>
<tr>
<td>Spain</td>
<td>18</td>
<td>28%</td>
<td>Comunidad De Madrid (.45)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>País Vasco (.38)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Comunidad Foral De Navarra (.37)</td>
</tr>
<tr>
<td>France</td>
<td>23</td>
<td>13%</td>
<td>Ile de France (.64)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Midi-Pyrénées (.49)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Rhône-Alpes (.45)</td>
</tr>
<tr>
<td>Finland</td>
<td>6</td>
<td>17%</td>
<td>Uusimaa (souralae) (.95)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Etelä-Suomi (.63)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Pohjois-Suomi (.62)</td>
</tr>
<tr>
<td>Ireland</td>
<td>2</td>
<td>50%</td>
<td>Southern and Eastern (.48)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Border, Midland and Western (.31)</td>
</tr>
<tr>
<td>Italy</td>
<td>20</td>
<td>25%</td>
<td>Lazio (.40)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Piemonte (.37)</td>
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<td></td>
<td></td>
<td></td>
<td>Friuli-Venezia Giulia (.36)</td>
</tr>
<tr>
<td>Netherlands</td>
<td>12</td>
<td>33%</td>
<td>Noord-Brabant (.80)</td>
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<td></td>
<td></td>
<td></td>
<td>Flevoland (.64)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Utrecht (.57)</td>
</tr>
<tr>
<td>Portugal</td>
<td>7</td>
<td>14%</td>
<td>Lisboa e Vale do Tejo (.21)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Centro (.14)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Alentejo (.12)</td>
</tr>
<tr>
<td>Sweden</td>
<td>8</td>
<td>50%</td>
<td>Stockholm (1.00)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Västsverige (.77)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Södsverige (.75)</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>12</td>
<td>33%</td>
<td>South East (.73)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eastern (.68)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>South West (.59)</td>
</tr>
</tbody>
</table>


The calculation of a “Regional Summary Innovation Index” (RSII) shows that, in most countries, less than one third of the regions perform above the country mean. This confirms that national innovative capabilities tend to be concentrated in a few regions. In Italy, only one fourth of regions perform over the country mean.

In Italy, the percentage of innovating firms with at least 10 employees has barely reached 38% in 1998 - 2000: the lowest figure after Spain among European countries for which results are available, against 60% in Germany and about 50% in Finland, United Kingdom and Portugal.

The percentage of industrial innovating firms is 41% in Northern Italy, while it is of 36,5% in the Centre and 25% in Mezzogiorno.

Innovating ability grows with firm’s size. According to the Banca d’Italia survey on industrial firms, the percentage of innovating firms reaches 78% for firms with at least 200 employees and 65% for those with 50 -199 employees.

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8 The Revealed Regional Summary Innovation Index tries to take into account both a region’s innovative performance relative to the EU mean and a region’s relative performance within the country. The RSII is thus calculated as the average of the following two indexes (using rescaled values of the two composite indicators) 1) The average of the re-scaled indicator values using only regions within each particular country (RNSII: regional national summary innovation index). 2) The average of the re-scaled indicator values using all regions within the EU (REUSII: regional European summary innovation index). (cf. Technical Paper No 3).
As R&D is concerned, the weak presence of high tech industries in Italy and the sluggish innovative process is also due to a lack of resources, public and private, devoted to research and development. Based on Istat information, in 2000 R&D expenditure has been in Italy slight below 12,5 billions of Euros, 1,1,% of GDP, against 1,9% of EU countries average (OECD estimates). In North - Western countries and in the Centre the expenditure as a percentage of GDP has been respectively of 1,3% and 1,4%; in North East and in Mezzogiorno 0,8%.

Lombardy is the Italian region that performs better in terms of R&D expenditure and share of patents at the European Patent Office. Moreover, Lombardy’s recent regional policy has made a dramatic change as long as innovation and technology is concerned. Together with Baden-Wurttemberg, Generalitat de Catalunya and Rhone-Alpes, Lombardy has formed a workgroup called “Four Engines for Europe”, whose aim is to propose regions as the real source of institutional principles for the EU, as the economic and political progress depend on their local policies.

Italy has been historically polarized also in regional innovation policies: while in Mezzogiorno the first move had to made by national centralized interventions, in the North private firms and universities took much more own initiatives. Where, in the nineties there was, anyway, a wide margin to increase efficiency in the innovation and technology diffusion process, is the networking among stakeholders of innovation and knowledge creation: actually the Northern regions progressed more rapidly in this direction. Of course, unless also Southern and Central regions do not adopt new innovation policies, more inspired by a systemic logic, the gap between the two realities is due to increase. A broader convergence in policies is indeed necessary to bring all regions to similar competitiveness levels as their other most competitive European neighbours.
4. Integration and Structural Change: descriptive statistics

4.1 Regional openness to internationalization and changes in the production structure.

The two main real indicators for internationalization help with the specialization and concentration analysis as the composition of trade and the attractiveness of specific sectors for foreign investors may indicate a change in the features of the economic system through time.

Italy has been put through a difficult phase in terms of exports. After two consecutive years of decrease, merchandise exports grew in 2004 by 6.1% in value (1.7% in quantity), reflecting to a small extent a surge in world demand.

But the Italian share in world exports has been diminishing in the past ten years, from the 4.6% in 1995 to the 3.1% in 2004 (ICE Report, 2005). Apart from the common problem of the emerging countries, and of the Euro depreciation, Italy’s manufactures competitiveness fell because of the cost of labour for unit of product. Considering this component of cost, the price competitiveness of Italian products worsened by more than 25% during the last four years.

Italy shows a deficit in the current account, principally due to imports of oil derivatives; the manufacturing sectors shows a surplus instead, as well as the services sectors. In the manufacturing area, machinery and mechanical products, together with traditional textile items, a surplus has been registered in the last three years, but a negative sign is attributable to all the other manufacturing sectors.

Almost half of growth in exports in 2004 was due to mechanical and metallurgic sectors, while consumer’s goods decreased. A sharp increase in prices of traditional sectors’ exports was observed, maybe due to quality gains.

North-East (but Veneto) and Mezzogiorno were the areas where exports grew more rapidly in 2004. Mezzogiorno performed well after 2000 thanks to economies of scale sectors and research intensive sectors. When the system of districts is considered, the best results were obtained by those specialized in machinery at the base of the chain value, while traditionally-specialized districts were hit heavily by the crisis.

Regional exports’ specialization by sector indicates the prevailing manufacturing industry in each area and the relative main comparative advantages.

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9 See the Rapporto ICE 2004 – 2005 for methodology.
The specialization index for exports tells some interesting facts. First, Northern regions appear less specialized than Centre and South regions. Moreover, Centre is actually the most specialized in textiles and clothing, whose share in exports fell in quantity but rose in value. The entry of mechanical products, where also high tech products should be computed, is only relevant for the North as a whole, while is almost zero for Mezzogiorno. This pattern is a further proof of the structural gap in the production and specialization structure of Italian regions, as Mezzogiorno seems more specialized in traditional industries (high value added, high production cost, search for high quality) and in the automotive sector, while the sector specialization for Northern areas is less marked, as an index for a more dispersed industrial structure.

When we look at the trade openness measure, we notice instead that a positive correlation can be found between regional GDP and exports (as wealthier regions also export more in absolute terms) but not between specialization and exports. This indicates the presence of more substantive relative comparative advantages in the poorest Southern regions, if compared with richer and exports leaders in the North.
Italy does not have a good record of attractiveness for foreign investors; FDI inward decreased steadily in the past years, leading Italy to fall from the seventh to the eighth position in Europe as host for investment from abroad. Moreover, the sectors preferred by foreign investors are still the traditional sectors and the public utilities (because of the waves of privatization). This trend does help in remarking the prevalence of a traditional production structure in the country; on the other hand, a possible reason for the disappointing performance as a host for FDI is the small size of firms and the fragmentation of the markets. In this case, another implication follows straight: investment in innovation and R&D are usually financed by the largest multinational companies all over the world. Since large multinational firms do not find it interesting to invest in Italy because of the fragmented market and of the absence of technology based districts, or high tech clusters of firms, the technology transfer inflow from inward FDI is likely to be limited, leaving the country into a position of backwardness with respect to the main EU partners. An important contribution to a consistent change in the production structure from a manufacturing – based to a technology – based is, simply, missing.

Moreover, the persistence of an uncompetitive production structure clearly emerges in the related literature. Empirical evidence on differences among Italian regions’ production structure is widely available (Bollino and Signorelli, 2003) and the previous picture on internationalization already gave an idea of the historical gap between North ans South. In a historical perspective, empirical assessments stressed the differences in the production functions existing across different geographic areas, interacting perversely with an inadequate and centralized institutional framework, contributing to the persistence and worsening of regional differences in economic competitiveness and employment performance. While until the seventies a certain degree of convergence was observable, from eighties onward divergence has become the rule. Strong forces due to relocation, closer international linkages, and favorable initial
conditions led to a concentration of investment, output and human capital in the North – West\textsuperscript{10} (Dunford, 2001) so to make this area the real engine of growth for the entire Italy in the eighties and first nineties. Specific studies (Marrocu, Paci, Pala, 2000; Istituto Tagliacarne, 2001) highlighted how the North – South gap among Italian regions is persistent, notwithstanding further EU enlargements and intervention of regional economic policies by means of Structural Funds. Moreover, Southern regions were affected by the negative impact of agglomeration economies that led many large industrial firms to re-locate in Central Europe rather than in peripheral areas to serve an integrated market that has been expanding towards East.

4.2 Specialization of regions: indexes and interpretation.

The statistical concept of specialization allows us to assess which region has developed a particular advantage with respect to others, by means of the evaluation of the dimension of industries, as measured by valued added or employment. This advantage, which is intended as a marked presence of one or more industries with respect to others, can be absolute or relative. In the following, separate statistics for absolute and relative specialization for Italian regions are provided, allowing for further comments to the previous statements about the production structure and regional gap.

4.2.1 Specialization indexes and dynamics of change.

A commonly used index of absolute specialization in the Herfindal Index of Regional Specialization. It sums up the squares of industry shares in the total activity in the region. It takes values between zero and one and is positively related to regional specialization. Given its absolute nature, the sum of the squares of shares is biased towards larger regions.

It is defined as\textsuperscript{11}:

\[
H^S_j = \sum_i (s^S_{ij})^2 \quad s = \text{shares, } j = \text{region, } i = \text{industry (sector, branch)}
\]

where \(s^S_{ij}\) = the share of employment in industry \(i\) in region \(j\) in total employment of region \(j\).

Figure 7 shows the Herfindal Index of absolute specialization for Italian regions in 2002.

\textsuperscript{10}Bagnasco (1977) advanced the hypothesis of “Three Italies” because of the stunning cultural and economic different conditions between North West and North East.

\textsuperscript{11}See Traistaru and Iara (2002) for a compendium of indexes definition and sources.
Figure 7. Herfindal index of absolute specialization, 2002.

The first lesson we can draw from the picture above, virtually representing the absolute specialization of Italian regions, is that the dualism between North and Mezzogiorno is self-evident, though a quite peculiar situation also interests the Centre. Southern regions appear heavily specialized, while Northern regions rely less on specific industries. Regions as Emilia Romagna, Veneto, Marche, Abruzzi and Umbria seem to have a balanced industrial structure if compared with the rest of Italy. The result was expected both from the initial discussion about the different degrees of regional development and from the discussion on the different export dynamics. Southern regions are much more tied to specific industries that might have recently represented a critical factor of relative success.

Calabria is the region with the highest coefficient of absolute specialization. Calabria relies heavily on agriculture with respect to the other Italian regions and moreover Gioia Tauro, near Reggio Calabria, is a blossoming port that scores important commercial activities as a haven in the Mediterranean Sea. Lazio ranks second: this can be explained by the massive presence of public administration activities that concern the national government and related institutions. Liguria ranks third, probably because of the Genova maritime commercial traffic; Sicily, Sardinia and Puglia are traditionally specialized in tourism and agriculture.
A further proof of the basically static industrial panorama is given in Figure 8, where the Krugman index is plotted for 1995 and 2002. In eight years, the index has almost remained stable.

**Figure 8. Herfindal index of absolute specialization, 1995 and 2002.**

Source: Elaboration on ISTAT data

A relative specialization index considers a constant comparison across all regions or areas, rather than evaluating characteristics in absolute terms. The parallelism with Ricardo’s absolute and comparative trade advantages is straightforward: while the index of absolute specialization allows for a ranking of regions, a relative indicator measures an ideal distance from an average or referring point. The Krugman specialization index was first used by Krugman (1991), comparing industrial structures of the US and Europe. It sums up the absolute difference of the industrial structure of two regions, k and l:

\[
K_{jl} = \frac{1}{2} \sum_{i} |s_{ik} - s_{jl}|
\]

The index is zero if the two regions compared have the same industrial structure. Its maximum value is 1\(^{12}\), reached if the two regions do not have common industries. In this case each region's economic structure was compared with Italy's economic structure; that is, each region is compared with the "whole" structure of the economy. Results are reported in Figure 9.

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\(^{12}\) Another version of the index does not include the \(\frac{1}{2}\) before the sum so that it ranges from zero to 1.
The more intuitive way to interpret this index is to think of a distance: the higher the values in the histogram, the more different is a region’s industrial structure from the others. Relative specialization is not extremely high, as the largest value does not reach 0.5. Regions are ranked according to decreasing relative specialization. The interesting difference with respect to the results found for the Herfindal absolute index is that, rather than the dualism between north and south, here a dimensional threshold emerges. On the right side we find relatively smaller regions (and interestingly, special administratively autonomous regions) and on the right side larger regions. A possible interpretation is that the effect of a predominant industry in the region (agriculture, port activities, public administration), already emerged in the previous analysis could be combined with a size effect. It could be that the most extreme – left regions, Valle d'Aosta, Calabria and Basilicata, have little in common with the other regions, on average, while Umbria and Abruzzo correspond to a hypothetic average industrial structure in terms of employment, in that their distance from Italy as a whole is minimal. More interestingly, the most distant regions are, apart from Valle d'Aosta (which is one of the richest regions with a very small population) in the South and Islands: the physical distance from a theoretical "centre" also can explain the marked value of the index.

Plotting the index in 1995 against 2002 (Figure 10) just confirms the substantial stability of the occupation structure, but for those regions on the right – end side of the graph, where a certain gap is detectable
between 1995 and 2002. It appears that relative specialization has slightly decreased for those Southern regions, among which, moreover, the second - most relatively specialized region is found. This common trend, although a difference remains between region in North – Centre and Mezzogiorno, may be interpreted as an approaching of the south’s production features to an hypothetical average during these years. For the other regions, the index is almost stable.

4.3 Concentration of Industries: indexes and interpretation.

Concentration indexes give some information on the weights of some industries with respect to the others and as in the case of specialization, two different indexes will be computed: an absolute and a relative index. Of course, since the aggregation works per sector and not per region, at a first glance the regional information will be lost, as the result apply to the country as a whole. The analysis was carried at the maximum level of dis-aggregation available for the occupation data in 2002.

4.3.1 Concentration indexes and dynamics of change

Absolute concentration takes into account the absolute number of employees per region and per country. A commonly adopted measure of absolute concentration is the Herfindal Concentration Index:

$$H^C_i = \sum_j (s^C_{ij})^2$$

$s = \text{shares}, j = \text{region}, i = \text{industry (sector, branch)}$

It is calculated as the sum of the regions' shares in national employment in a particular industry: it is positively related with the geographical concentration of industries. Being computed as the square of a share, it ranges between zero and one (Figure 11).

**Figure 11. Herfindal's index of Absolute concentration, 2002.**

Source: Elaboration on ISTAT data
The outcome in Figure 11 is quite predictable, as manufacturing and industry as a whole appear more concentrated than services. The index does not reach 20% for the most concentrated sector, that is the set of oil related activities. This industry being characterized by consistent scale economies, is quite obviously at top of the ranking. On the other hand, employment in agriculture is matched increasingly by capital intensive technologies, so that occupation in the sector is more and more dispersed. This leads to very low concentration of employees. It is interesting to note the most concentrated service and the less concentrated industry sector. The first is the financial intermediation branch. These last years in Europe have been characterized by an increasing degree of concentration among banks and financial institutions, both at national and international level, as required by the rules of international competition. If also the process of acquisition of East European bank by West European financial institutions is considered, the process becomes even more evident. The other element is constructions. It is the less concentrated as the typical size of these businesses in Italy is quite small, even represented by a single worker in many cases. There are few large construction companies, but it seems that this activity is still very embedded in the territory and proximity and trust elements still play a role is determining the related demand. If the indexes in 1995 and 2002 are compared, a substantial stability, as already seen for the specialization pattern, emerges (Figure 12)

Figure 12. Herfindal’s index of Absolute concentration, 1995 and 2002.

A basically static distribution of employment also let conjecture the existence of strong barriers for workers that wish to change their sector of activity.

A measure of relative concentration of industries is the Dissimilarity Index of Geographical Concentration (DCR), which sums up the absolute differences between the regional and the national -level values of shares in total employment in a particular industry, which applies the national level share of an industry in total employment as the norm to which regional level values are related. As seen above for specialization, this is indeed a distance measure.

\[ \text{DCR}_i = \sum_j |s_j^C - s_j| \]
where \( s_{ij}^C \) = the share of employment in industry \( i \) in region \( j \) in total employment of industry \( i \)

The index is zero in case of equal distribution of the particular industry across regions and increases the more the respective industry is concentrated in a few regions. Results for the DCR are shown in Figure 14. This index should be interpreted as follows: the longer the segment, the less concentrated the sector, in that the share of employment in a given sector is quite far from the national average.

**Figure 13. Dissimilarity Concentration Index (DCR), 2002.**

Source: Elaboration on ISTAT data
The results show how trade is the relatively less concentrated industry, while the leather manufacturing sector appears the relatively most concentrated. While for trade, which is spread across the country in different forms and organizations it is intuitive the concentration should be really minimal, it is interesting to consider as the leather manufacturers are usually concentrated in districts (e.g., around Florence or near the Garda lake) that actually require substantive investment as for huge quantities of water are needed to treat leather. That is, it is a high – economies of scale sector so that high concentration follows. The same reasoning can be done for the oil derivatives sector, which is a high economies of scale sector, and that emerged as one of the most concentrated sectors already in the absolute concentration index. In a inter-temporal perspective, the DCR index in 1995 and 2002 is reported in Figure 14.

Figure 14. DCR relative concentration index, 1995 and 2002.

Source: Elaboration on ISTAT data

The index remains stable in the period considered; the only noticeable change concerns the service sector, where the trade industry becomes less concentrated and the hotels and restaurants industry becomes instead more concentrated. This last movement can be explained by the increasing interest shown by multinational companies during the last years in managing whole sets and chains of hotels and resorts in those countries for which tourism is a comparative advantage.

5. Conclusions

The objective of this paper was to give a picture of Italy's main economic and structural characteristics in the first part, and to provide an insight of specialization and concentration by sectors and by regions.
The similarity with the majority of OECD countries was underlined, as well as the same economic trends as the rest of the EU. In particular, a global slowdown of economic activities characterized the beginning of the new millennium, sluggish economic growth, and, after the introduction of the Euro, persistent inflation.

Italian economy is characterized by a growing tertiary sector and by a retrenching secondary sector, while the primary sector share in GDP has globally remained stable. Its main strength has traditionally been in manufacturing, especially thanks to small and medium-sized firms specializing in products that require high-quality design and engineering.

Despite being traditionally export-oriented, SMEs face the serious challenge of global economic integration and increased competition. In particular, the unwillingness to go public to finance expansion has hindered growth and has left some vulnerable to acquisition by larger foreign firms seeking to obtain established Italian brands.

The global assessment took into consideration the large gap that still exists between North and South, in terms of productivity, employment and wealth; the main statements on the country's policy concern a problematic fiscal policy.

The statistical assessment on specialization and concentration depicts a country increasingly specialized in services, as well as most OECD countries; at the same time, concentration also emerges in some services sectors: the main findings stemming from the specialization analysis concern again the gap between Northern and Southern regions. Calabria, Sicily and Lazio are the most specialized regions in absolute terms. Looking at relative specialization (in terms of "distance" from a theoretical average) we see that some Southern regions as Valle d’Aosta, Calabria, and Basilicata are the most specialized, that is, the most distant from an hypothetical national average structure that should be well reflected by something between Lombardy and Puglia. Concentration analysis presents a picture where services are relatively less concentrated than manufacturing, but for some sectors, as financial intermediation, that are going through a progressive phase of aggregation of companies. Those manufacturing sectors whose processes are characterized by high economies of scale (as the leather industry) are relatively more concentrated.

Were these findings used to address issue of growing integration and cohesion among Italian regions, the result would be questionable.

Indeed, it does not seem that further waves of integration in the EU have had a specific impact in terms of ameliorating the degree of cohesion, but on the contrary, clear signals of an inverse process can be detected: in the recent years, specialization of regions and concentration of industries have not changed significantly, but exports fell and official employment rose only thanks to the accounting of the “employed” population by the new definitions of part time and innovative contracts.

Traditional workplaces became a rare item in the labour market, while a restructuring phase in the manufacturing sector has forced many individuals to adapt to new changing market conditions.
Firms hit by a new fierce international competition were forced to find new strategies for survival and success, as concentrating in niche markets, on high quality products, till relocating abroad in cost competitive countries.

Those Mezzogiorno regions that still lag behind in terms of economic development were probably the most elastic in responding to the new stances of international competition, beating relatively the performance of Northern regions in terms of recent exports records; the key to success for some of the companies located in the South would probably be the exploitation of the relative higher specialization to concentrate on specific categories of products, transforming a relative disadvantage of the skewed industrial structure into a comparative advantage.

To conclude, for a polarized country as Italy, the EU enlargement has not had deep effects by now in terms of structural change (relative weight of valued added and employment by sector) and higher cohesion. The economic structure has been subjected to some change only in recent years, and probably more as an answer to the tertiarization process under way all over the world than as a reaction to EU enlargement. By the way, cohesion in terms of convergence to similar level of GDP per capita does not seem to increase, but a rather the opposite: also here, it is difficult to attribute this trend to EU integration alone or to a global higher international competition.
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