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RIVISTA INTERNAZIONALE DI ECONOMIA E TERRITORIO

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SOMMARIO

TRENDS IN THE ITALIAN DUALISM: LABOUR PRODUCTIVITY DYNAMICS AND STRUCTURAL CHANGE

Abstract. *L'andamento del dualismo italiano: dinamica della produttività del lavoro e cambiamento strutturale*. L'articolo propone un'analisi dinamica della produttività del lavoro nelle province Italiane dal 1991 al 2010. I dati evidenziano la riduzione nella dispersione della produttività aggregata e l'emergere di una distribuzione polarizzata. In particolare, le province con livelli di produttività agli estremi della distribuzione convergono verso la media, aggregandosi in due clusters con alta e bassa produttività relativa. Tale processo non ha tuttavia cambiato la dimensione territoriale del Dualismo Italiano, in quanto le province a bassa produttività restano nel Mezzogiorno. Piuttosto, la dinamica della distribuzione ha rafforzato l'omogeneità interna alle due macroregioni. La disaggregazione settoriale mostra che, in media, le province più produttive lo sono anche a livello settoriale, con l'eccezione dei servizi non di mercato. Tuttavia, ciò non è sufficiente a spiegare la polarizzazione aggregata. Occorre infatti considerare che le province in ritardo tendono a specializzarsi in attività la cui produttività è inferiore. Inoltre, il tasso di crescita della produttività nelle province del cluster meno produttivo non è stato sufficiente a colmare il gap iniziale con le province ad alta produttività, situate nel Nord del Paese. Infine, se si considera la performance italiana dal 2000 in poi, evidenti segnali di stagnazione e declino economico sono comuni a tutta la penisola.

Keywords. productivity, distribution dynamics, nonparametric methods, sectoral analysis, structural change

JEL. C14, O11, O40, O47

1. INTRODUCTION

Economic development does not need to include all areas of a country at the same time and in the same way. It is rather that sequence leading persistently away from equilibrium, because "each move in the sequence is induced by a previous disequilibrium and in turns creates a new disequilibrium that requires a further move" (Hirschman 1958, pp 66-67). Nonetheless, the heterogeneity of the Italian economy has historically evolved following a clear geographical pattern, being the wealthiest and richest regions located in the North and in the Center. Among the scholars there is no full agreement on how far in the past are the roots of this territorial divide to be found[1].

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[1] Recent studies tend to reject the hypothesis that the territorial divide was already present before the creation of the Kingdom of Italy in 1861, highlighting rather the backwardness of the peninsula as a whole with respect to the European leaders of that time. However, even if present, the dualism was not yet as sharp as today, since more variation was to be found within than between the two macro-regions (see Felice 2005, Daniele and Malanima 2011, Felice and Vecchi 2012).

However, dualism is a persistent feature of the Italian economic system, as well as the long lasting path of divergence between the South and the North of the country[2].

This paper analyzes the evolution of labour productivity[3] in the Italian provinces in the period 1991-2010, focussing on distribution dynamics (Quah 1996). In particular, I investigate the distribution dynamics of aggregate relative productivity to find out whether any pattern of convergence emerged. Then I disaggregate to the sectoral components to verify whether aggregate dynamics reflect either within-sector gaps or adverse structural composition. Finally I decompose productivity growth to assess whether structural change has been favouring convergence. The scope of the paper is to provide an up to date picture of the productivity trends characterizing the Italian provinces during the period. I find evidence of decreasing dispersion of aggregate labour productivity and of the emergence of a pattern of polarization. In particular, provinces with very low and very high productivity converged towards the Italian mean, clustering in two groups with higher and lower relative productivity. Furthermore, the clusters reinforce and persist overtime. However, this trend did not change the territorial structure of inequality, since less productive provinces are always located in the South.

Rather, such a polarization reinforced the Italian Dualism, increasing within homogeneity both in the South and in the Center North.

Provinces belonging to the low productivity cluster are characterized on average by lower productivity in each sector but non-market services. Furthermore, employment and gross value added shares suggest that specialization in less productive activities, such as non-market services, contributed to the persistence of the Italian Dualism. I find no evidence of convergence in manufacturing, as instead was suggested by previous cross country empirical analysis (McMillian and Rodrik 2011, Rodrik 2013).

Productivity dynamics in market services are consistent with the disappointing European trend (vanArk *et al.*2008, O'Mahoney *et al.* 2010).

Finally, the analysis of the dynamics of the growth rate of productivity suggests that structural change has been favouring the reduction in dispersion, mainly through the increase in relative productivity of the laggard provinces. However, the trend was not enough to avoid polarization.

The paper is organized as follows. Section 2 proposes a standard convergence analysis. In Section 3 I estimate the dynamics of productivity for the Italian provinces, confirming the emergence of the two clusters. I also show that such a pattern preserves the territorial dualism. Section 4 analyzes productivity dynamics in each sector and provides statistics about output composition and employment shares. Section 5 addresses structural change and productivity growth. Section 6 concludes.

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[2] Excluding the twenty years from 1950 to 1970, in which the Italian economic boom and the activities of the special fund for the development of the Southern areas (Cassa del Mezzogiorno) fostered a period of temporary convergence.

[3] Labour productivity is measured as Gross Value Added (GVA) per worker.

2. CONVERGENCE ANALYSIS

In this section I provide a preliminary assessment of the dynamics of aggregate productivity. Firstly this paper uses two standard tools to verify whether the Italian provinces have been converging in the last two decades.

The analysis is performed both in terms of growth rates and levels. For the latter I proceed by exploring the pattern of the standard deviation of aggregate productivity overtime, applying the standard concept of *sigma*-convergence (Barro and Sala-i-Martin 2004). For the former I depart from the traditional linear *beta* convergence approach to apply non parametric estimation, in order to account for nonlinearities in the data (Fiaschi and Lavezzi 2007, Fiaschi *et al*. 2011). Given the territorial pattern of Italian economic inequalities, the North-South divide and its evolution overtime will be my background benchmark when assessing the dynamics of productivity distribution.

Labour productivity is measured by Gross Value Added (GVA) per worker, using data from Cambridge Econometrics 2012. The unit of observation is the NUTS3 territorial entity according to Eurostat classification, corresponding to the Italian provincial administration. Hence I will be using data on labour productivity for 107 observations, going from 1991 to 2010.

2.1 Convergence in growth rates

Absolute beta convergence is observed when economies with initial lower levels of GDP per capita grow systematically at a faster pace than richer economies. Here I adopt a non parametric approach, in order to highlight nonlinearities in the growth path. In particular, I estimate the following Generalized Additive Model:

$$\overline{prod.gr_i} = a + g\left(rel.prod_{i,1991}\right) \qquad (1)$$

where $\overline{prod.gr_i}$ is the average growth rate of each province for the whole period, g is the smooth term and $rel.prod_{i,1991}$ is the aggregate productivity of province i relative to the Italian mean at the beginning of the period[4]. Figure 1 shows the estimated growth path and its relationship with relative productivity, while Table 1 summarizes the results of the estimation.

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[4] I estimate a GAM regression, using a cubic spline as the smoothing function. For further details see Bowman and Azzalini (1997) and Clark (2013). All tables, figures and statistics of this paper have been obtained in R by using the Cambridge Econometrics 2012 Database.

TABLE 1
Estimation of the growth path (Eq.1)

Growth path estimate (eq. 1)	
Intercept	0.007***
Non parametric coefficient	
Rel prod 1991	3.34***
R.sq (adj)	0.573
GCV score (x 10^3)	0.012
Dev. Explained	58.60%

*** indicates significance at 1%. For the nonparametric estimate, estimated degrees of freedom (EDF) are reported

$Rel.prod_{i,1991}$ is statistically significant, and being the estimated degrees of freedom larger than one, the relationship between initial relative productivity and its average growth rate is nonlinear.

FIGURE 1
Growth path of productivity
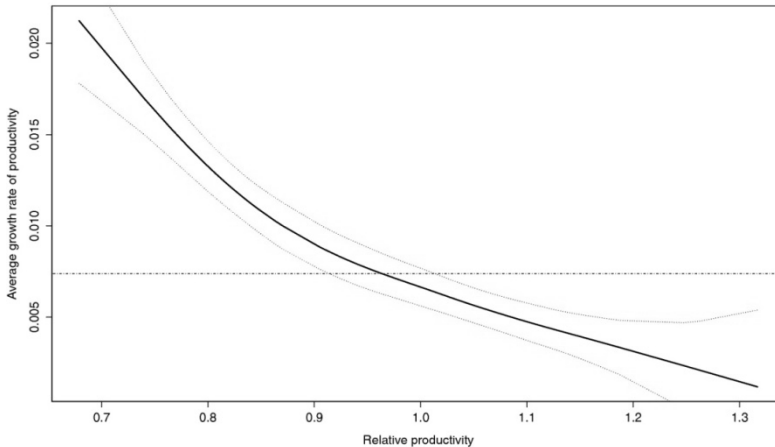
However, the growth path in Figure 1 arises some issues. Indeed, it intersects the average growth rate of the period (the horizontal line, equal to 0.007) in just one point around 1, suggesting that the Italian economy is likely to converge towards the mean and to persist around it. Knowledge about the Italian Dualism would suggest a diverging growth pattern, instead of a process of global convergence. Some further insights are given by the dynamics of the dispersion of productivity overtime.

2.2 Sigma convergence

Complementary to equation (1) is the evolution of the standard deviation of (the log of) productivity during the period. The values from 1991 to 2010 are plotted in Figure 2

and a linear regression is superimposed[5]. The figure shows that σ_t is continuously decreasing overtime, at least until 2005, implying that at the end of the period productivity levels are less sparse than in 1991. Together with the results of Figure 1, one could reasonably suspect that a process of convergence is occurring. However, this would be misleading. In the next section the distribution dynamics of productivity are assessed to show that these first impressions are ungrounded.

FIGURE 2
Sigma Convergence
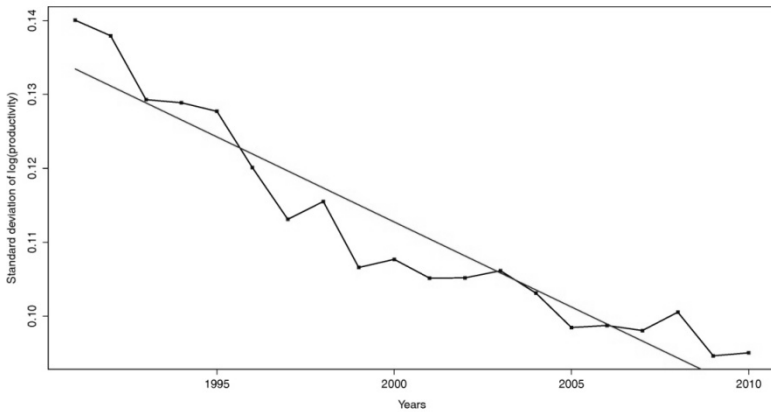
3. DISTRIBUTION ANALYSIS: CONVERGENCE AND POLARIZATION

A more informative picture of the dynamics of aggregate productivity is given by the evolution of its distribution over the period. As pointed out by Quah (1996), traditional convergence analysis mainly informs whether each country is converging to its own steady state, which is likely to differ from that of other economies (conditional convergence). Distribution analysis instead allows researchers to assess how economies are performing relative to each other. Such an approach is able to shed light on the dynamics favouring persistence and stratification, the emergence of convergence clubs and hence the prevailing of non unimodal distributions. This section and the next apply this analysis to the Italian case, firstly investigating aggregate productivity and then accounting for its sectoral determinants. Figure 3 shows the estimated density[6] of aggregate relative productivity in 1991, 2000 and 2010. In 1991 only one mode is clearly emerging around 1.06, nonetheless the distribution is sparse with some

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[5] The standard OLS estimation $\sigma_t = a + \beta t$ gives both coefficients significant at 1%. In particular, $\hat{a} = 4.717$ and $\hat{\beta} = -0.002$.
[6] Densities are estimated using the adaptive kernel method (see Silverman 1986, Bowman and Azzalini 1997).

important mass between 0.6 and 1 and with both tails being fat. In 2000, the reduction in dispersion is already visible: the density is concentrated between 0.8 and 1.2 and one may infer the emergence of a second mode between 0.8 and 1. Finally, in 2010 the distribution is definitely bimodal, with two peaks around 0.9 and 1.05.

FIGURE 3
Estimated density of Aggregate Relative Productivity
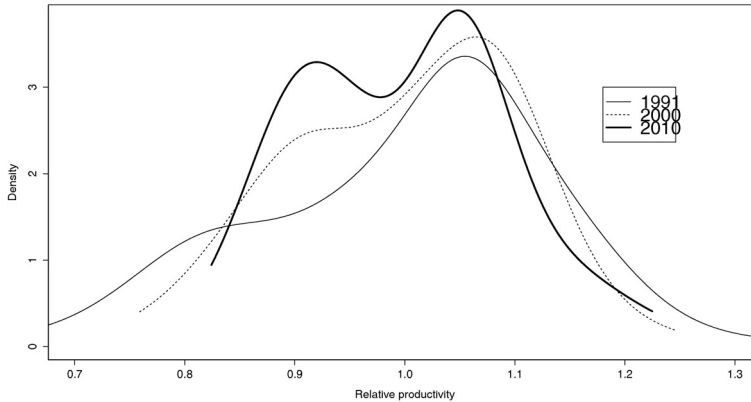
Observing the distribution dynamics helps explaining the growth path of Figure 1. Indeed, the estimated densities in 1991 and 2000 reveal that the main feature of the Nineties is the significant reduction in the degree of dispersion. This causes the movement of the mass towards the mean and in principle could have determined the emergence of a single peak. However, the distribution in 2010 shows that this was not the case and that two peaks eventually emerged. Convergence occurred, but the overall result is a polarized economy[7].

A useful tool to investigate the underlying process driving distribution dynamics is the nonparametric estimation of the stochastic kernel and the corresponding ergodic distribution, as proposed by Quah (1997)[8]. The stochastic Kernel for the whole period is represented in Figure 4, using a time lag equal to 10. It indicates the probability distribution at time $t+n$ for each level of productivity at time t[9]. The 45° line is the locus of points in which the relative productivity in t is unchanged in t+10. Hence, observations lying above the bisector suffered a decline in relative productivity, while those below enjoyed an increase. Contours indicate probability mass. It is possible to observe the aggregation of observations around 0.9 and 1.05. Moreover, the bold curve is the median line, which crosses the bisector in one point and is tangent to it in proximity of the lower mass. Standard errors for the median line are also reported.

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[7] Polarization is already clear in 2006. See Fiaschi *et al.* (2011).
[8] See also Johnson (2005) and Feyrer (2008).
[9] See Silverman (1986) and Quah (1997) for further details.

FIGURE 4
Stochastic Kernel 1991-2010
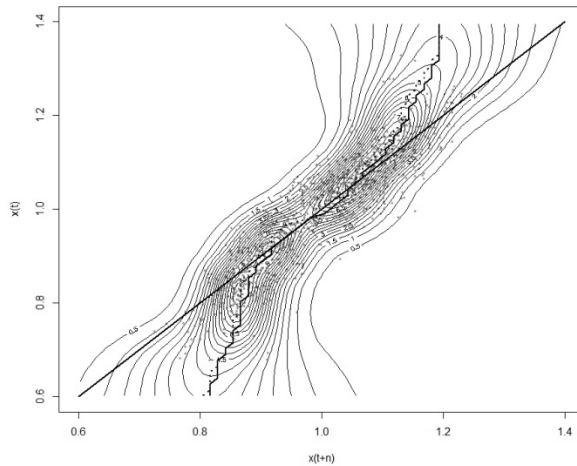
Overall, the stochastic kernel suggests that two clusters are likely to emerge. Finally, Figure 5 shows the ergodic distribution for the whole period, representing the distribution dynamics of the underlying process as time goes to infinite. If the ergodic distribution does not significantly differ from the density estimate of the last year, then no future radical distributional changes are likely to occur. The ergodic distribution is clearly bimodal, moreover it is shrinking around the two peaks. Hence, polarization should persist in the long run.

FIGURE 5
Ergodic distribution 1991-2010
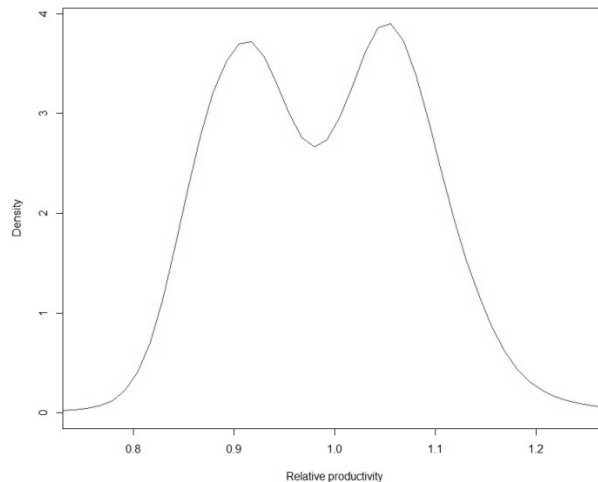
Persistency is preserved if the underlying process does not change, that is if 'structural change' does not occur. If this is not the case, two different processes characterizing the two periods should be observed. In Figure 6 the sub-periods 1991-2000 and 2001-2010 are analyzed separately. The left panel shows the ergodic distribution (top) and the stochastic kernel (bottom) of the first sub-period, in the right panel the same is done for the last ten years. Observing the left hand side of the picture, one may argue that if the distribution dynamics of the Nineties had persisted, then a (very!) fat unimodal distribution would have eventually realized in the long run. However, the underlying process in the last ten years has drastically changed and it is consistent with the polarized ergodic distribution of the whole period. The stochastic kernels of the two sub-periods confirms these results, displaying a significant mass in the range $0.8 - 1.1$ for 1991-2000 and two poles around 0.9 and 1.05 for 2001-2010.

FIGURE 6
Ergodic distributions and stochastic kernels for the sub-periods 1991-2000 and 2001-2010
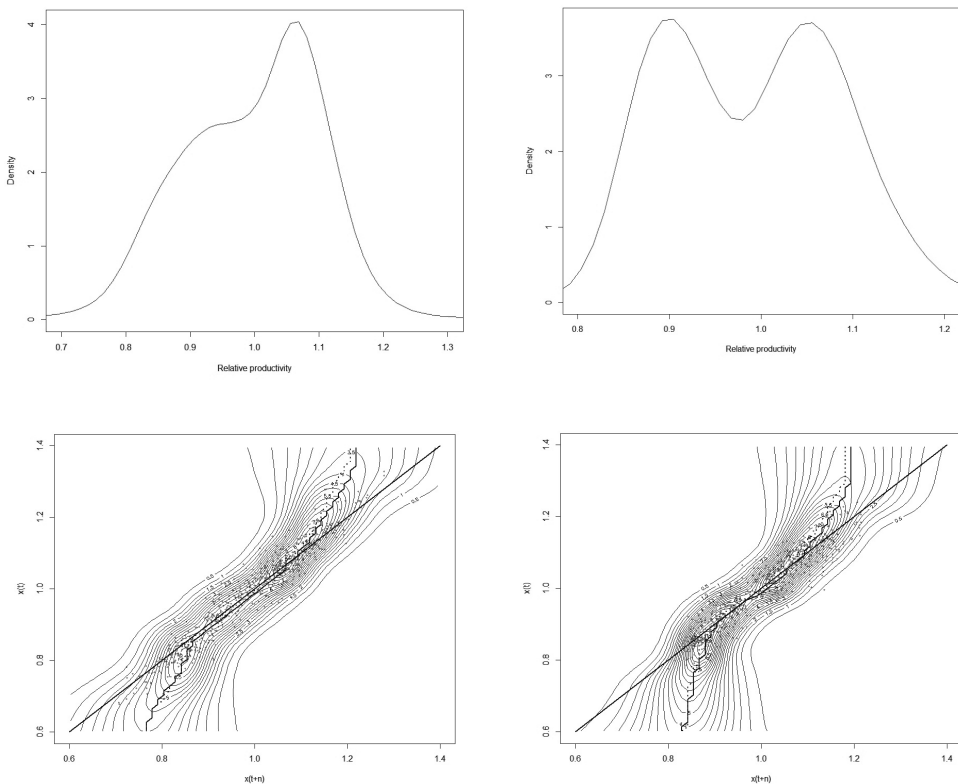
Finally I can proceed in identifying the two clusters. In Figure 7 the growth path of the second sub-period is plotted together with the ergodic distribution for the entire time

span. The growth path intersects the average growth rate (the horizontal line) in three points: 0.9, 0.98 and about 1.05 However, the shape of the curve implies that observations with relative productivity between 0.8 and about 0.98 will converge towards 0.9, while observations whose productivity is larger than 0.98 will converge to 1.05. These points correspond to the tangency and the intersection between the median curve and the bisector in the stochastic kernel in Figure 4. There is enough evidence supporting bipolarization in the dynamics of aggregate productivity for the Italian provinces. Given the shape of the modes, I add and subtract 0.05 points to 0.9 and 1.05 to define the two clusters. The low productivity cluster is hence included in the range [0.85, 0.95], while provinces with relative productivity within [1, 1.1] belong to the high cluster.

FIGURE 7
Growth path of the second period and overall ergodic distribution
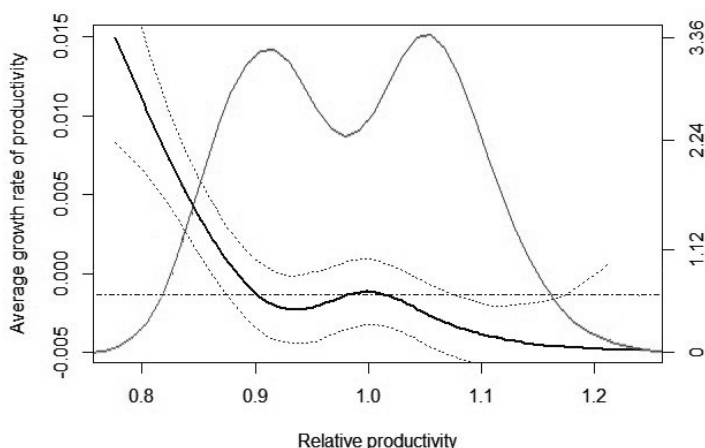
The two clusters are characterized by two main features: 1) they are becoming increasingly important along the period; 2) there is persistence overtime. Table 2 shows the composition of the two clusters in1991, 2000 and 2010. The share of provinces belonging to them substantially increases overtime, going from 44% in 1991 to 69% in 2010. The main driver of this trend is the Low cluster, which almost triples the number of provinces, from 12 in 1991 to 35 in 2010. Once again, this is consistent with the density analysis, confirming that the process of polarization has been mainly caused by the reduction in dispersion, in particular with provinces from the low part of the distribution converging towards the lowest peak.

The top part of Table 3 summarizes the transition probabilities between the clusters, confirming the feature of persistence[10]. Indeed, for provinces in cluster Low in 1991,

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[10] Probabilities do not sum up to 1 since I am considering just the probability of moving between the clusters. Hence, observations moving from one of them to somewhere else in the distribution are not considered in computing the transition probabilities.

the probability of being in the same cluster in 2010 is 67%. For those in cluster High, the probability is 60%. To add more support to the idea of the two poles as attractors, the bottom part of Table 3 shows the transition probabilities between cluster H and the group of Leaders, defined as those provinces with aggregate relative probability larger than 1.1. For those who were leaders in 1991, the probability to switch to cluster H – that is, worsening their relative performance – in 2010 is 48%. At the same time, the probability to become leaders in 2010 is just 9% [11]. Similarly, provinces with relative productivity below 0.85 (laggards in Table 3) have 77% probability to move to cluster Low.

TABLE 2
Composition of the two clusters

	1991		2000		2010	
Clusters	n	n / Total	n	n / Total	n	n / Total
LOW	12	0,11	28	0,26	35	0,33
HIGH	35	0,33	36	0,34	39	0,36
Total	47	0,44	64	0,60	74	0,69

TABLE 3
Transition probabilities

		2010	
		LOW	HIGH
	LOW	0,67	0,17
	HIGH	0,11	0,60
		LAGGARDS	LOW
1991	LAGGARDS	0,091	0,773
	LOW	0	0,667
		LEADERS	HIGH
	LEADERS	0,44	0,48
	HIGH	0,09	0,60

3.1 Who is where? Clusters and the Italian Dualism

The long lasting Questione Meridionale (the Southern Issue) reminds us that the Italian Dualism is characterized by a clear territorial divide, with the Northern regions richer and wealthier, while the Southern ones have been lagging behind for the last 151 years (Felice 2005, Daniele and Malanima 2007; 2011, Iuzzolino *et al.* 2011, Felice and Vecchi 2012). Hence, a natural question would consist in asking how well the two clusters respect the North-South divide. Moreover, dealing with subregional observations has the comfortable side effect of uncovering, if any, local exceptions to the dualistic rule. Table 4 provides some descriptive statistics for the first comparison between the two cleavages: South-Centre North and cluster Low-cluster H.

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[11] The probability to become leaders in 2010, belonging to cluster L in 1991, is 0.

TABLE 4
Aggregate relative productivity. South-North (left) and cluster L-cluster H (right)

Total Relative Productivity					
	1991	2010		1991	2010
South	0,874	0,906	Low Cluster	0,912	0,901
- Minimum	0,679	0,838	- Minimum	0,862	0,851
- Maximum	1,072	0,995	- Maximum	0,943	0,945
Centre-North	1,075	1,056	High Cluster	1,052	1,052
- Minimum	0,862	0,89	- Minimum	1,007	1,003
- Maximum	1,317	1,211	- Maximum	1,1	1,098

Once again, there is further evidence supporting the polarization process. Observing values for 1991, Southern provinces result more sparsely distributed, some of them with very low relative productivity (the minimum is 0.679) but with also some good performers belonging to cluster H, as the maximum of 1.072 suggests. The same holds for the Northern provinces: at least a bad performer, but all the Leaders belong to the Centre-North. When moving to 2010, the polarization process is striking. Almost all of the Southern provinces belong to cluster Low, none to cluster High and some in between. Northern provinces are on average in the 'good' cluster, still with some in the 'wrong' one, as Pordenone. Figure 8 provides a geographical mapping of the two clusters.

FIGURE 8
Maps of aggregate productivity in 1991 (left) and 2010 (right)
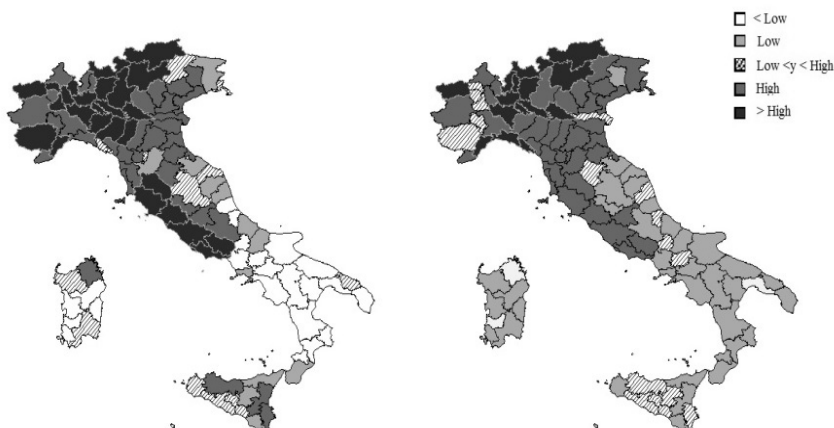
The persistence of the Italian Dualism is clearly confirmed. Furthermore, its territorial dimension is also reinforced. Indeed, homogeneity within the two macro-areas increases overtime, as the map clearly shows for 2010: almost all Southern provinces belong to cluster Low. Moreover, provinces belonging to cluster High in 1991 in Sicily and Sardinia suffered a decline in relative productivity (they are Palermo,

Catania, Siracusa and Olbia-Tempio). No Southern province belongs to cluster High at the end of the period.

4. SECTORAL DRIVERS OF AGGREGATE PRODUCTIVITY

Total labour productivity is the outcome of the aggregation of sectoral GVA per worker. It follows that in order to understand the dynamics of labour productivity, one should investigate its sectoral composition. There is a fair amount of literature on the subject. Paci and Pigliaru (1997a) analyze the sectoral structure of the European regional economies to explain heterogeneity in performances, since sectors differ in terms of productivity, innovation capabilities and degree of scale economies. They find that structural change, defined as the shift of labour from low to high productivity activities, is an important determinant of convergence in Europe. More recent studies work on the concept of structural composition and change. O'Mahoney et al. (2010) and van Ark et al. (2008) find that the productivity differentials between the US and the European Union are driven mainly by the higher productivity levels in services. Also McMillian and Rodrik (2011) and Rodrik (2013) find evidence of absolute convergence in the manufacturing sector using observations at the country level. Then, the lack of convergence is due to the excessive specialisation in sectors whose productivity is lower than manufacturing, as services.

In this section I study sectoral productivities in the two clusters to provide an explanation of the emergence of the bimodal distribution. In the data, aggregate productivity is decomposed in six sectors: manufacturing and energy, agriculture, financial and other market services, non-market services, transport and communication, construction. In particular, the distribution analysis of sectoral relative productivity[12] will be performed. Then I will show that the provinces in cluster Low are characterized by lower levels of productivity in all sectors but non-market services. Finally, in the last section, following Paci and Pigliaru (1997a)[13], I provide data about the dynamics of average productivity, employment and GVA shares in each sector, to understand whether growth enhancing structural change has been occurring (Rodrik 2013).

4.1 Manufacturing and energy

Figure 9 shows the estimated densities of the manufacturing and energy sector in 1991, 2000 and 2010. The distribution dynamics are showing a decreasing degree of dispersion and the shift of the emerging mode towards low levels of relative productivity, around 0.95 in 2010. Furthermore, in 2000 the shrinking of the distribution seems to be accompanied by the arising of a second mode. However, at the end of the period the second peak does not emerge, while a long fat right tail does.

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[12] I will omit the construction sector only.

[13] See also Paci and Pigliaru (1997b) for a similar analysis, evaluating the role of structural change in accounting for convergence for the Italian regions.

As before for aggregate productivity, one may suspect that two different processes drive the two sub-periods. Hence I proceed to first compute the stochastic kernel for the whole period and the corresponding ergodic distribution. They are shown in Figure 10.

FIGURE 9
Estimated density for Manufacturing Relative Productivity
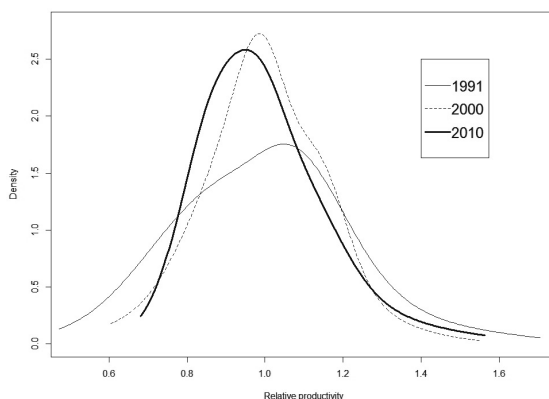
FIGURE 10
Ergodic Distribution (left) and Stochastic Kernel (right) for Manufacturing Relative Productivity
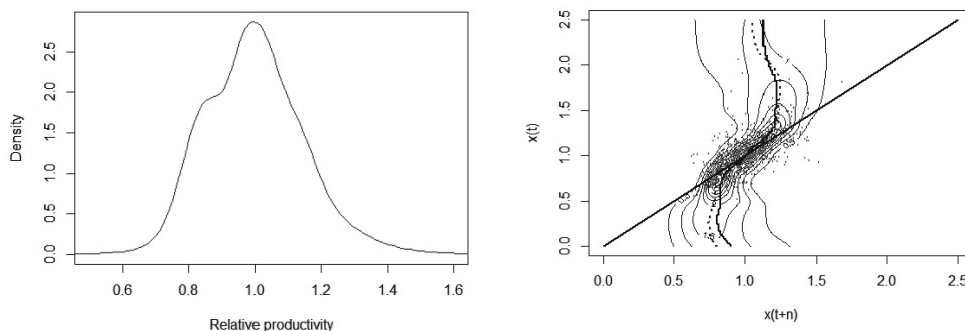
The ergodic density has a single peak but some mass is displaced around 0.8. Comparing it with the estimated distribution in 2010, one may suspect that - assuming the underlying process does not change - the single peak is going to split in two poles, one around the mean and the other at a lower level of relative productivity.

Even in this case, analyzing the two sub-periods separately is informative. Indeed, the ergodic density for the years 2001-2010 in Figure 11 confirms that the intra distribution dynamics tend to generate a bimodal process. The stochastic kernel also shows the agglomeration of the observations in the two clusters, a quite different process with respect to the previous decade [14]. This result is indicative of the nature of

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[14] The ergodic distribution for the first decade displays unimodality.

the Italian Dualism, and it contrasts with the results of Rodrik (2013) which finds that manufacturing is characterized by *absolute* convergence at the country level. Here it does not hold at the local one.

FIGURE 11
Ergodic Distribution and Stochastic Kernel for Manufacturing Relative Productivity 2001-2010
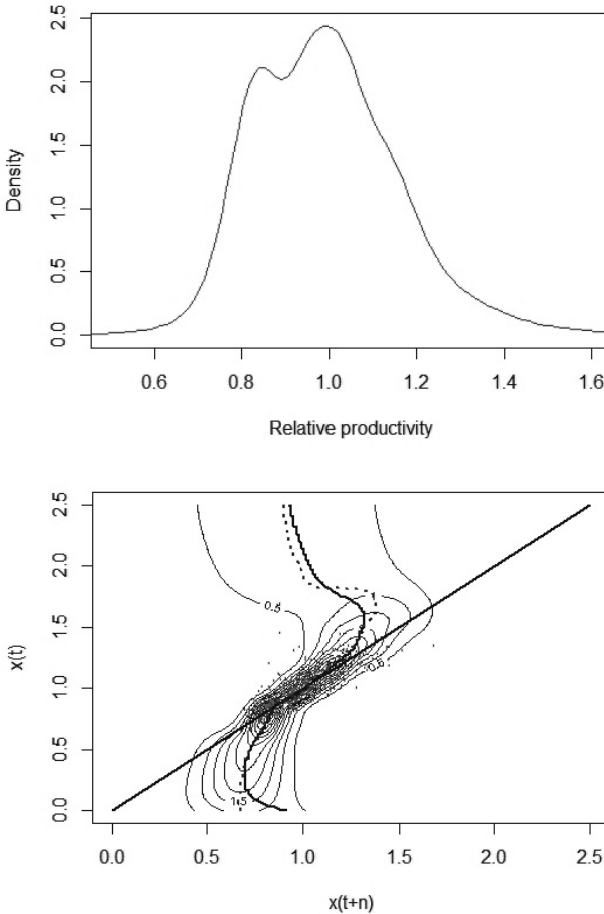
4.2 Financial and other market services

Services constitute the main sector in the post industrial economies. This is the case for Italy as well. In particular, some researchers argue that Southern Italy became a tertiary economy too early, before having achieved industrial maturity[15]. Distribution

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[15] See La Spina (2004) for an overview on the last six decades of economic development in Southern Italy.

analysis for market services supports the convergence hypothesis. Estimated densities are characterized by unimodality in each year, displaying also a significant fall in dispersion in the last decade[16], as shown in Figure 12 [17].

FIGURE 12
Estimated density for Financial and other Market Services Relative Productivity
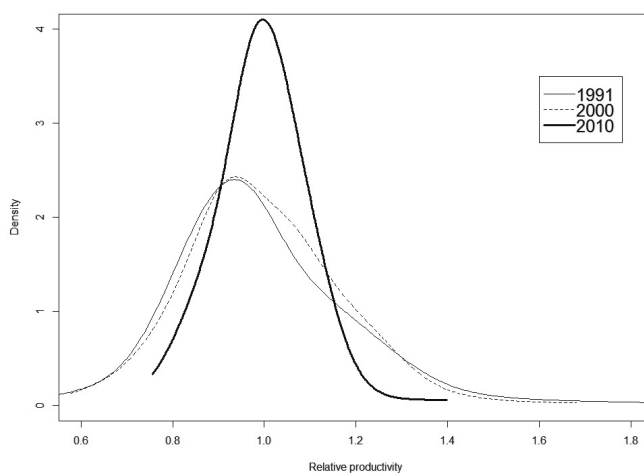
4.3 Agriculture

Productivity dynamics in agriculture can be traced back to two different processes, as shown in Figure 13. In 1991 and 2000 the estimated densities are skewed with a long right tail (shrinking in 2000), both having a single peak around a productivity level below the mean. This implies low levels of productivity, balanced by some very good performers. This tendency drastically changes in the last decade, where two masses between 0.5 and 0.8 and between 1.1 and 1.4 do emerge. The underlying processes favoured convergence towards a single mode in the first sub-period, polarization in the second. The main drivers of such divergence are the provinces belonging to Toscana, Umbria, Emilia-Romagna, Liguria, Veneto, Lombardia e Trentino[18]. In 2010, almost all of them have relative productivity levels larger than 1.1. Some provinces in Campania register productivity gains as well. At the same time, good performers in Sicily suffered a decline.

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[16] The standard deviation of the log of productivity in financial and other market services is 0.2 in 1991, halving to 0.1 in 2010.

[17] The ergodic distribution and the stochastic kernel confirm that the underlying process is not different from the estimated density in 2010, hence they are not shown in the text. The same holds for agriculture, non-market services, transport and communication services.

[18] That is, all Northern provinces but those located in Piedmont and on the Adriatic coast.

FIGURE 13

Estimated density for Agriculture Relative Productivity
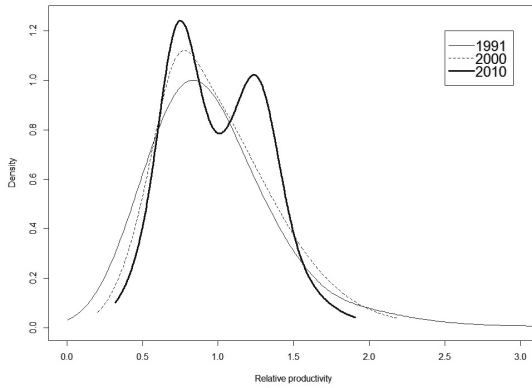
4.4 Non-market services

Data on non-market services are affected by the composition effect due to the privatizations occurred in the second part of the Nineties. For instance, while employment shares in both clusters slightly increase during the period (about 2%), GVA share increases in cluster Low and decreases in cluster High[19].

The composition effect is evident both in terms of average performance of the sector - which drastically collapsed in 1995 - and of dispersion, with standard deviation rising from about 0.2 in 1994 to 0.8 in 1995. This causes the drastic change in the shape of the estimated density in 2000 with respect to 1991, as represented in Figure 14.

FIGURE 14

Estimated density for Non-market services Relative Productivity

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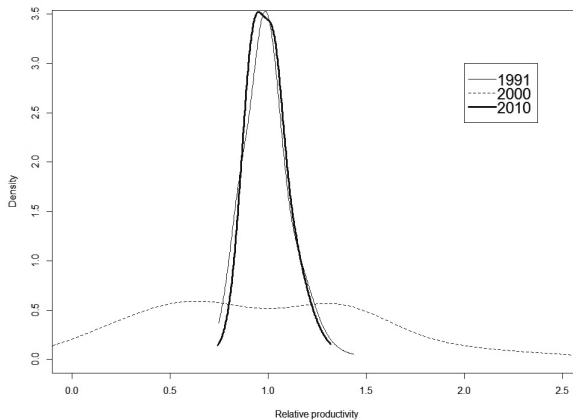
[19] Considering the North-South divide, GVA share is unchanged in the North, while it slightly increases in the South. All statistics are reported in Table 5 below.

However, convergence towards a unimodal distribution is displayed in 2010. Overall, data do not reflect the territorial dimension of the Dualism, since heterogeneity prevails both in the North and in the South. Furthermore, Southern provinces tend to be good performers in the sector.

4.5 Transport and communication services

The trend of productivity in transport and communication services is characterized by a considerable decrease in dispersion, occurred mostly in the last decade, as shown in Figure 15. The estimated density in 2010 is centred around the mean, with levels of relative productivity in the range [0.8,1.2].

FIGURE 15
Estimated density for Transport and communication services Relative Productivity
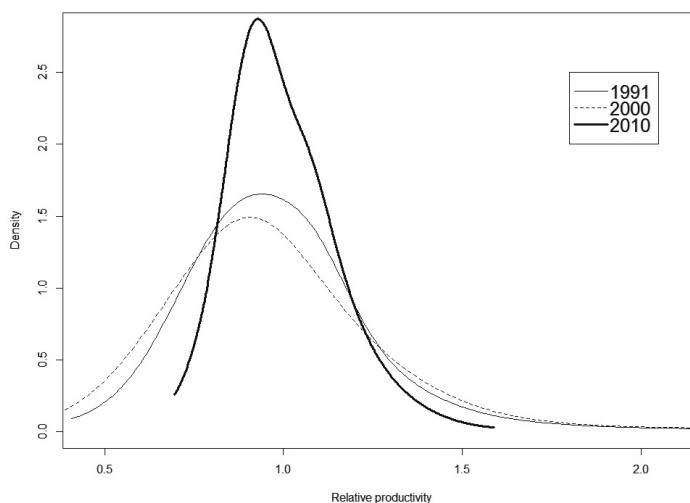
4.6 Sectoral contribution to cluster performance: intra-sectors productivity differentials

Total productivity is the result of the aggregation of productivity in each sector. Hence, investigating the sectoral performance of the provinces in the two clusters is informative of which sectors contribute the most in determining polarization. Clusters statistics are summarized in Table 5 (right panel). The values of productivity in agriculture suggest that the polarization trend of Figure 13 reflects on average the cluster composition. However, the standard deviation of 0.203 (Low) and 0.282 (High) shows that there is strong heterogeneity within each cluster. The main difference is in the trend of minimum and maximum values: the former are worsening in cluster Low and improving in cluster High, while the opposite holds for the latter.

Manufacturing statistics confirm that unconditional convergence is not taking place. Moreover, if clusters were to be built according to productivity in manufacturing the composition would have been quite similar and only some provinces of cluster High would have been moved to cluster Low.

At the end of the period, best performers belong to cluster High only. In particular, maximum relative productivity in cluster Low fells from 1.270 in 1991 to 0.994 in 2010. Values for financial and other market services reflect the convergence process analyzed before. The differential in performance between the two cluster is drastically lower than in the previous sectors. Furthermore there is more variation within clusters than between. It is worth noting that average productivity in cluster Low is higher in this sector than in manufacturing and this is true for the whole time span. Non-market services are the exception to the rule[20]: provinces in cluster Low perform better during the whole period[21]. Also in this case there is more heterogeneity within than between clusters and overall convergence seems to hold.

As anticipated by the estimated densities, dynamics in the transports and communication sectors display a drastic change in the last decade. Although average productivity is always higher in cluster High, in 1991 and 2000 within clusters heterogeneity is large and sector leaders and laggards can be found in both clusters. In 2010, standard deviation is relevant only in cluster High: within homogeneity increases, nonetheless best performers disappear from cluster Low.

Finally, it is informative to compare the clusters statistics with the data according to the North-South divide (right panel). As one could reasonably expect, statistics do not differ that much. For agriculture and transport and communication services there is an impressive overlapping between the two classifications, in terms both of average performance and standard deviation. Considering manufacturing, there is slightly more within groups heterogeneity, and some good performers can be found in the South, as well some laggards in the rest of the country. Concerning finance and other services, the homogeneity observed for the clusters is preserved, but Southern provinces perform systematically worse (excluding some provinces in Sicily). The reversal of the rule still applies to non-market services. The only exception concerns best performers, which do better in the Centre-North than in the South.

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[20] The minimum value of 0.045 for cluster High in 2000 refers to Rieti, and it is probably due to the composition effect mentioned above.

[21] OECD definition of non-market services include those services provided to the community as a whole free of charge, or to individual consumers either free of charge or at a fee which is well below 50 per cent of production costs (http://stats.oecd.org/glossary/detail.asp?ID=1812).

TABLE 5

Sectoral relative productivity. South-North (left) and cluster L-cluster H (right)

Sectoral Relative Productivity							
	1991	2000	2010		1991	2000	2010
Agriculture							
South	0,718	0,701	0,765	Cluster LOW	0,863	0,711	0,759
- Minimum	0,372	0,408	0,468	- Minimum	0,632	0,408	0,468
- Maximum	1,811	1,107	1,207	- Maximum	1,354	1,140	1,290
Stand Dev	0,301	0,177	0,174	- Standard Dev.	0,208	0,179	0,203
Centre-North	1,168	1,179	1,140	Cluster HIGH	1,032	1,126	1,198
- Minimum	0,359	0,483	0,549	- Minimum	0,464	0,597	0,549
- Maximum	3,637	1,980	1,760	- Maximum	1,732	1,638	1,760
Stand Dev	0,501	0,343	0,297	- Standard Dev.	0,292	0,250	0,282
Manufacturing							
South	0,906	0,941	0,883	Cluster LOW	0,876	0,913	0,868
- Minimum	0,548	0,643	0,722	- Minimum	0,649	0,643	0,745
- Maximum	1,488	1,512	1,131	- Maximum	1,270	1,332	0,994
Stand Dev	0,254	0,182	0,083	- Standard Dev.	0,187	0,159	0,065
Centre-North	1,056	1,035	1,070	Cluster HIGH	1,032	1,024	1,064
- Minimum	0,649	0,690	0,784	- Minimum	0,778	0,794	0,877
- Maximum	1,630	1,316	1,524	- Maximum	1,488	1,512	1,524
Stand Dev	0,187	0,134	0,160	- Standard Dev.	0,149	0,122	0,123
Fin&Oth services							
South	0,940	0,948	0,959	Cluster LOW	0,990	0,983	0,944
- Minimum	0,593	0,625	0,773	- Minimum	0,789	0,625	0,773
- Maximum	1,245	1,327	1,109	- Maximum	1,260	1,327	1,100
Stand Dev	0,144	0,168	0,090	- Standard Dev.	0,147	0,163	0,080
Centre-North	1,036	1,031	1,025	Cluster HIGH	1,057	1,039	1,017
- Minimum	0,650	0,721	0,817	- Minimum	0,656	0,721	0,836
- Maximum	1,845	1,634	1,382	- Maximum	1,601	1,485	1,163
Stand Dev	0,231	0,178	0,109	- Standard Dev.	0,225	0,170	0,092
Non Market services							
South	1,041	1,192	1,064	Cluster LOW	1,023	1,166	1,039
- Minimum	0,844	0,267	0,864	- Minimum	0,844	0,388	0,871
- Maximum	1,371	2,089	1,255	- Maximum	1,371	2,041	1,255
Stand Dev	0,118	0,481	0,098	- Standard Dev.	0,148	0,466	0,098
Centre-North	0,976	0,886	0,962	Cluster HIGH	0,986	0,801	0,966
- Minimum	0,772	0,045	0,761	- Minimum	0,772	0,045	0,798
- Maximum	1,413	2,568	1,304	- Maximum	1,200	2,389	1,219
Stand Dev	0,123	0,630	0,096	- Standard Dev.	0,109	0,578	0,081
Transport							
South	0,823	0,849	0,903	Cluster LOW	0,872	0,878	0,892
- Minimum	0,530	0,495	0,730	- Minimum	0,575	0,495	0,730
- Maximum	1,526	1,515	1,203	- Maximum	1,526	1,515	1,081
Stand Dev	0,187	0,241	0,099	- Standard Dev.	0,242	0,251	0,088
Centre-North	1,106	1,090	1,058	Cluster HIGH	1,029	1,109	1,046
- Minimum	0,585	0,546	0,772	- Minimum	0,712	0,546	0,846
- Maximum	2,266	2,670	1,554	- Maximum	1,481	2,279	1,554
Stand Dev	0,285	0,381	0,148	- Standard Dev.	0,169	0,370	0,146

Summing up, polarization is a feature concerning mainly manufacturing, agriculture and, on a lesser extent, transport and communication services. In the former, the divide closely reflects both the pattern of aggregate productivity and the territorial dimension of the Italian Dualism. This is true also for agriculture, but in this case high productive provinces do not include Piedmont and part of the Adriatic coast. Finally, in transport and communication services polarization is less striking, since more the productive

provinces do not include Piedmont and part of the Adriatic coast. Finally, in transport and communication services polarization is less striking, since more the productive provinces are located along the Tirrenic coast and in the most Northern regions, including Emilia-Romagna. Interestingly, for non-market services there is no more a clear territorial divide. On the contrary, productivity distribution is somehow reversed. Finally, finance and other market services are characterized by heterogeneity and the divide between the two clusters is reduced. Overall, sectoral dynamics alone are not capable to explain the observed polarization of aggregate productivity. Hence, how can polarization at the aggregate level be explained? The answer is that output composition matters. Specialization in activities whose productivity growth opportunities are weak in absolute terms[22] will hamper growth dynamics. The larger the weight of such activities in the local economies, the lower aggregate productivity (and its growth rate) will be. Hence, in next section I will consider the composition of output and labour force and their changing overtime.

5. STRUCTURAL CHANGE: SECTORAL DYNAMICS OF PRODUCTIVITY

Some sectors are intrinsically less productive than others. Agriculture is usually characterized by the lowest output per worker together with non-market services, while market services (financial the most) and manufacturing have the highest productivity levels. Moreover, some sectors have limited capacity to absorb labour, so even if its output per worker is higher than others, their weight in terms of employment and GVA share are limited. This in turn implies that their contribution to total aggregate productivity will be not enough to significantly raise the overall performance, nor to increase employment. This is for instance the case of Chile's experience in the 1980s, when the country's growth was supported by investment in capital intensive production activities, such as copper mining, with very limited capacity to support employment creation (Cimoli and Katz 2003). Moreover, the same reasoning can be extended in dynamic terms: productivity growth can be indeed the outcome of – ceteris paribus – a variation in output per worker and/or a change in the share of labour force in each sector. If the latter takes place, then the composition output will be changing overtime: structural change will occur. Furthermore, if this displacement of labour will be directed towards sectors whose productivity is higher or growing, one may argue that 'pro growth' structural change takes place (see Bernard and Jones 1996, Paci and Pigliaru 1997, Fiaschi and Lavezzi 2007, Cimoli *et al.* 2010, Rodrik 2013). In other terms, overall performance can improve if either technical change causes an increase in productivity, or if employment moves towards more productive activities, or both. Understanding whether Italian provinces have been undertaking 'pro growth' structural change is the scope of this section. Firstly, I consider average productivity of sectors at the country level. Agriculture and non-market services have the lowest GVA per worker, being respectively 17244 ad 30117 euro in 1991, 32050 and 31623 in 2010.

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[22] And whose average productivity is low.

Non-market services suffer the drastic drop in 1995 and then recovered in the last decade. Although its low value in absolute terms, agriculture productivity markedly increased along the period, having an average growth rate of 4%.

Differently, financial and market services are the most productive sector, but had a disappointing productivity trend. Starting from 87904 euro in 1991, GVA per worker raised to over 100000 at the end of the first half of the 1990s, and then declined constantly to about 81908 euro in 2010. The observed trend is consistent with the European Union (27) average, which also raised from 68000 to 76000 euro per worker in the 1990s for then stagnating until the end of the 2000s[23]. As suggested by vanArk *et al.*(2008) and O'Mahoney *et al.* (2010), the disappointing performance of key market services may be the most important proximate cause of the slowdown of European productivity growth in the last two decades, as well of the divergence between Europe and the US. The Italian case seems even more dramatic. Not only productivity enhancing technical innovation has not occurred, actual productivity has also worsened in the last fifteen years. Finally, considering this trend together with the dynamics of relative productivity, there has been convergence towards the mean and the latter has been declining for 15 years. Indeed, only 35% of the Italian provinces (38 out of 107) has higher GVA per worker in 2010 than in 1991. And 63% of these are from Centre-North. Summing up, an overall decline of the Italian economy has been taking place.

Transport services and manufacturing have GVA per worker respectively around 44097 and 46066 in 2010. Productivity of the former increased to almost 60000 in the 1990s for then falling to 44097 in the 2000s. For manufacturing the trend displays a slow increase overtime, after having been stagnating from 1997 to 2003. However, comparing it with the European trend reveals that the ratio Italy/EU declined to 0.75 in 2010[24].

Table 6 summarizes employment and GVA shares for each sector in the two clusters (right panel). The transition from 1991 and 2010 has been accompanied by an increase in the employment share of market services not related to communication, as well by a decrease in the weight of manufacturing and agriculture. The most relevant feature is the gap between cluster High and cluster Low in manufacturing and market services. In cluster Low the employment shares are lower in both of them and, most importantly, the GVA shares are lower, especially in manufacturing where the ratio Low/High is about 0.7 in both the dimensions considered. According to the previous analysis, this implies a clear disadvantage, since market services is the most productive sector[25] - even if its trend overtime is quite far to be satisfactory.

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[23] European Union statistics are computed using the NUTS3 data of Cambridge Econometrics 2012. For instance, in 2010 EU average productivity in agriculture is 25% more than in Italy. EU data do not include Latvia and Bulgaria.

[24] The ratio was almost 1 in 1991.

[25] The relative importance of market services increases with the relevance of the ICT in the post industrial economies, especially considering the 'global division of labour'. See for instance vanArk *et al.* (2008).

TABLE 6
GVA and employments shares. South-North (left) and cluster L-cluster H (right)

	Employment Share		GVA share			Employment Share		GVA share	
	1991	2010	1991	2010		1991	2010	1991	2010
Agriculture									
Italy	0.101	0.058	0.040	0.038	Italy	0.101	0.058	0.040	0.038
South	0.162	0.092	0.056	0.055	Cluster L	0.118	0.083	0.051	0.047
- min	0.038	0.020	0.014	0.014	- min	0.016	0.020	0.008	0.013
- max	0.329	0.195	0.180	0.122	- max	0.257	0.195	0.180	0.122
C / N	0.065	0.037	0.030	0.029	Cluster H	0.069	0.034	0.029	0.028
- min	0.004	0.003	0.002	0.002	- min	0.009	0.003	0.003	0.003
- max	0.176	0.105	0.075	0.083	- max	0.173	0.089	0.067	0.083
Manufacturing									
Italy	0.235	0.193	0.216	0.199	Italy	0.235	0.193	0.216	0.199
South	0.144	0.138	0.137	0.139	Cluster L	0.207	0.160	0.180	0.160
- min	0.068	0.071	0.047	0.080	- min	0.068	0.080	0.073	0.083
- max	0.331	0.315	0.262	0.327	- max	0.348	0.315	0.262	0.327
C / N	0.290	0.226	0.262	0.234	Cluster H	0.277	0.216	0.251	0.225
- min	0.088	0.054	0.087	0.078	- min	0.096	0.054	0.098	0.078
- max	0.503	0.386	0.419	0.393	- max	0.503	0.377	0.419	0.385
Financial & other services									
Italy	0.091	0.144	0.200	0.265	Italy	0.091	0.144	0.200	0.265
South	0.084	0.125	0.202	0.245	Cluster L	0.085	0.127	0.203	0.247
- min	0.052	0.085	0.143	0.171	- min	0.060	0.085	0.155	0.171
- max	0.120	0.162	0.241	0.317	- max	0.109	0.162	0.240	0.317
C / N	0.096	0.155	0.199	0.277	Cluster H	0.092	0.157	0.200	0.279
- min	0.038	0.098	0.152	0.197	- min	0.047	0.098	0.143	0.197
- max	0.170	0.225	0.268	0.387	- max	0.143	0.210	0.268	0.341
Non-market services									
Italy	0.277	0.296	0.222	0.221	Italy	0.277	0.296	0.222	0.221
South	0.313	0.337	0.291	0.288	Cluster L	0.292	0.323	0.256	0.272
- min	0.238	0.254	0.193	0.215	- min	0.226	0.253	0.193	0.189
- max	0.376	0.402	0.393	0.345	- max	0.354	0.402	0.356	0.345
C / N	0.255	0.272	0.181	0.181	Cluster H	0.261	0.276	0.192	0.184
- min	0.188	0.206	0.117	0.124	- min	0.188	0.206	0.117	0.132
- max	0.389	0.398	0.271	0.284	- max	0.362	0.398	0.312	0.250
Transports and communication services									
Italy	0.219	0.225	0.254	0.222	Italy	0.219	0.225	0.254	0.222
South	0.208	0.219	0.229	0.216	Cluster L	0.220	0.222	0.242	0.218
- min	0.119	0.146	0.166	0.160	- min	0.119	0.146	0.213	0.165
- max	0.315	0.320	0.288	0.283	- max	0.299	0.320	0.300	0.283
C / N	0.225	0.230	0.268	0.226	Cluster H	0.230	0.237	0.268	0.231
- min	0.089	0.140	0.190	0.152	- min	0.137	0.140	0.189	0.164
- max	0.390	0.365	0.384	0.323	- max	0.363	0.365	0.359	0.323

Moreover manufacturing should be the sector more suitable for innovation and consequently productivity growth (vanArk *et al.* 2008, McMillian and Rodrik 2011, Rodrik 2013). How can such a difference be explained? The answer is likely to be found in non-market services. Employment share in cluster Low is 4 percentage points higher than in cluster High and most striking is the GVA share differential: 27% against 18%. Given the low levels of productivity and being its growth rate almost close to

zero, the 'excessive' weight on total GVA is one cause of cluster Low backwardness, together with intra-sector productivity differentials analyzed in section 4. Furthermore, a comparison with the left panel shows again good overlapping between clusters and the North-South divide for each sector. This implies that non-market services in cluster Low are accounted mostly by the public sector, providing naturally low productive activities[26].

Considering these findings together with those of Section 4.6, polarization in aggregate productivity can be explained by two emerging trends. First, relative productivity in manufacturing, agriculture and transport and communication services is consistent with polarization observed at the aggregate level. Given the relevance of the former and the latter in the post industrial economies, this divide importantly contributes to the overall trend.

However, this is not enough. Indeed, provinces in cluster Low tend to be more specialized in sectors with low productivity levels, as for instance non-market services. They account for relevant GVA and employment shares. Hence, the combination of these two features explains aggregate polarization, which in turn follows closely the territorial dimension of the Italian Dualism.

5.1 Source of productivity growth: structural change

Now I can finally analyze the dynamics of productivity in the two clusters. In the literature there are different approaches to the decomposition of productivity growth, as for instance Bernard and Jones (1996) and Rodrik (2013). The main idea is to identify productivity gains due to technological advance – because of innovation, imitation or learning – and to shifts in the structure of employment. Here I follow the approach of Cimoli *et al.* (2011).

In particular, productivity growth is decomposed in three terms: 1) productivity gain (PrG) in each sector, given the share of employment in t_0; 2) variation in employment shares in each sector (ShEff), given the level of productivity in t_0; 3) an interaction term between productivity gain and the variation in the employment share (DynEff). The last term is helpful in order to assess whether structural change is *pro growth* or wrong specialisation is occurring. Indeed, if it is positive, than employment is moving either *from* sectors suffering productivity loss or *to* sectors whose productivity has been growing over the period (see Cimoli *et al.* 2011). The following relation holds:

$$\frac{\Delta y}{y_0} = \sum_i \left[\underbrace{\frac{\Delta y_i L_o}{y_0}}_{\text{PrG}} + \underbrace{\frac{\Delta L_i y_o}{y_0}}_{\text{ShEff}} + \underbrace{\frac{\Delta y_i \Delta L_i}{y_0}}_{\text{DynEff}} \right] \qquad (2)$$

[26] The just 4 percentage points differential in terms of employment can be explained by the greater importance of the so called "third sector" activities in the Northern part of Italy, as for instance in Tuscany, Emilia-Romagna and Trentino. The nature of this kind of activities also helps explaining the low GVA share.

where y_0 is aggregate labour productivity in t_0, Δy_i is productivity growth in sector i in the period, that is $y_T - y_0$, ΔL_i is the variation in the employment shares in the period, $L_T - L_0$. Hence $\frac{\Delta y}{y_0}$ is the growth rate of aggregate productivity. In Table 7 productivity growth is decomposed.

TABLE 7
Structural change: determinants of productivity growth

	PrG	%PrG	ShEff	%ShEff	DynEff	%DynEff	SecTot
1991-2010							
				cluster L			
AGR	0,0499	0,4714	-0,0218	-0,1844	-0,0247	0,4866	0,0035
CONSTR	-0,0128	-0,1212	0,0017	0,0144	-0,0036	0,0711	-0,0147
FIN&OTH	-0,0098	-0,0926	0,1132	0,9593	-0,0122	0,2404	0,0912
MANUF&ENERGY	0,0421	0,3980	-0,0100	-0,0845	-0,0044	0,0859	0,0278
NNMKT	0,0204	0,1931	0,0210	0,1782	0,0004	-0,0072	0,0418
TRANS&COMM	0,0160	0,1512	0,0138	0,1171	-0,0062	0,1233	0,0236
Total	0,1058	1	0,118	1	-0,0507	1	0,1732
				cluster H			
AGR	0,0352	0,4333	-0,0125	-0,1134	-0,0189	0,2874	0,0038
CONSTR	-0,0080	-0,0990	0,0154	0,1400	-0,0069	0,1052	0,0004
FIN&OTH	-0,0117	-0,1446	0,1396	1,2713	-0,0148	0,2248	0,1130
MANUF&ENERGY	0,0779	0,9590	-0,0585	-0,5328	-0,0201	0,3052	-0,0007
NNMKT	0,0106	0,1311	0,0108	0,0987	0,0001	-0,0023	0,0216
TRANS&COMM	-0,0227	-0,2799	0,0150	0,1363	-0,0052	0,0797	-0,0130
Total	0,0812	1,0000	0,1098	1,0000	-0,0658	1,0000	0,1252

Percentage values indicate the weight of each sector in total productivity growth for each of the three terms in equation (2). SecTot sums up PrG, ShEff and DynEff for each row.

In cluster Low, productivity gains are significantly positive in manufacturing and agriculture only, more than twice the gain in non-market services and transport and communication[27]. ShEff reflects what has been observed before: it is negative in agriculture and manufacturing and positive elsewhere. Note how the DynEff term is (on average) always negative or zero. However, its meaning must be taken with care. Consider for instance manufacturing and market services (fin&oth).

The sign of the term is negative for both. However, the underlying dynamics are different: for the former it is the result of the decline in the employment share, in the latter it is caused by the constant productivity loss from 1995 onwards. Claiming that the increasing specialisation in market services implies wrong structural change would be hardly believable. First, because of the innovation and growth potential of ICT services. Second, because they are by far the most productive sector in Italy (and in the EU), despite the negative growth rate of the last fifteen years. Indeed, the final column

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[27] The negative sign of fin&oth reflects the negative trend of productivity in the sector.

makes things clear: aggregate productivity increases 17 percent in twenty years, and 9 percent is accounted by fin&oth. The ShEff component dominates, since the shift from lower productivity activities has a positive final effect. Policy advice should instead consider solutions to reverse the negative growth trend of market services. Conversely, even though agriculture is the sector growing the most, its contribution is close to zero, given the diminishing weight of primary activities in the post industrial Italy. Finally, Rodrik's (2013) stress on investing in manufacturing for achieving convergence seems finding some support. Indeed, the overall effect for the sector is two points less than the PrG component: technological gains are somehow partially 'wasted' by labour displacement.

Cluster High performance is quite similar. However, productivity gains in agriculture are smaller than in cluster Low, while they are greater in manufacturing. Interestingly, transport and communication services PrG is negative (-0.02) and ShEff is positive (0.01). Hence, on average, the DynEff is negative as well total contribution to aggregate productivity growth (-0.01). Most interesting is the dynamics of the manufacturing sector: the growth rate of sectoral productivity is roughly equal to zero, against the 2 percentage points of sector Low. Sectoral convergence did not occur since the initial gap in productivity was too wide (see section 4.1) and because of labour displacement. However, if it had to, this would have not been the result of a virtuous process.

Summing up across sectors, in the period 1991-2010, the growth rate of productivity in cluster Low High provinces has been 17% and 12% respectively. This finding and previous analysis reconcile the estimated growth path of Figure 1 and the estimated densities in Figure 3. The initial gap was too wide, hence the different growth rates (Figure 1) reduced the dispersion (see the change in the shape of the estimated density from 1991 to 2010 in Figure 3) but were not enough to avoid the emergence of bimodality. These results are confirmed if the same analysis is provided for the two sub-periods separately. The overall growth rate of productivity has been positive in the first half, negative in the second one. In both cases, cluster Low grows more (first period) and declines less (second period) than cluster High.

6. CONCLUDING REMARKS

This paper analyzed the distribution of labour productivity across the Italian provinces. In the period 1991-2010 the distribution dynamics have favoured the reduction in dispersion of productivity and the emergence of two clusters, with high and low levels of productivity. However, this trend has not changed the territorial feature of the Italian economic divide. It has rather contributed to reinforce it. Indeed, polarization has contributed to further reduce heterogeneity *within* the Northern and Southern regions, while convergence between the two macro regions did not occur. Sectoral analysis of productivity reveals that provinces in the higher cluster are on average more productive in every sector but non-market services. However, differences in sectoral relative productivity are not enough to explain the pattern of aggregate polarization.

Indeed, structural composition of output shows that laggard provinces tend to be more specialised in activities whose productivity is naturally low. In addition, productivity growth dynamics in the low cluster were not good enough to reduce the gap with the initially more productive (Northern) Italian provinces. Finally, the overall Italian performance in the 2000s has been unsatisfactory, signalling economic stagnation and decline common to both the clusters.

Adopting North's (1990) terminology, this paper focused on the *proximate* causes of productivity distribution and growth among the Italian provinces. Therefore, future research should address the *root* causes driving the dynamics of structural change and productivity growth. It should also assess how they affected either the persistence or the transformation of the Italian Dualism. In the European Union context, public policy choices at the European, national and local level play (and interplay) a crucial role in directing economic activities and structural change. They can counterbalance geographical factors – such as the location of peripheral regions with respect to the main markets – direct investment and the transformation of the economy composition of output, stimulate supply and demand. The relationship between employment and productivity dynamics should also be addressed in depth. From this perspective, investigating how the *institutional* (hence, policy) framework affects the economic dynamics presented above constitutes the next step to explain path dependency and change in the Italian Dualism.

ROBERTO MARTINO
PH.D. CANDIDATE IN ECONOMICS, UNIVERSITÀ DI PISA

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