Regional Employment evolution in Italy: Some preliminary analysis

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1. Introduction

Increasing economic and monetary integration should lead to a convergence of employment rates and per capita income across regions. Shock will only temporarily disturb the convergence process. Despite the single market and European Monetary Union (EMU) we still observe in Europe a systematic variation in regional employment. Even in a integrated Europe, labour mobility remains lower than it is in USA and institutional setting may prevent wages to fully respond to changes in employment and productivity shocks. The basic implication of these arguments then is that increasing monetary end economic integration in the EU may not ensure that regional employment evolution will become increasingly convergent.

Our aim is to explore regional employment evolution in Italy in the last fifty years. Differently from Blanchard and Katz (1992) paper which deal primarily with USA regional evolution and Martin and Tyler (2000) analysis which take in consideration a number of european countries, our main focus is on Italian regions. Although the analysis is less ambitious than Blanchard and Katz and Martin and Tyler, nevertheless our findings reveal some striking aspects of regional employment in Italy and point out to some further research in this important area.

The empirical analysis, in particular, will address the following questions:

1) Does regional employment path diverge across regions?
2) How much of the typical movements in regional employment is common to all regions and how much is regional specific?
3) Does geographical proximity matter in employment performance?

In the rest of the paper we present some descriptive statistics on employment growth in Italy to discuss regional employment growth convergence; we will distinguish between trend and cycles and perform some multivariate analysis to investigate whether movements in regional employment are idiosyncratic; finally a spatial correlation analysis will be performed to address the issue of geographical proximity.

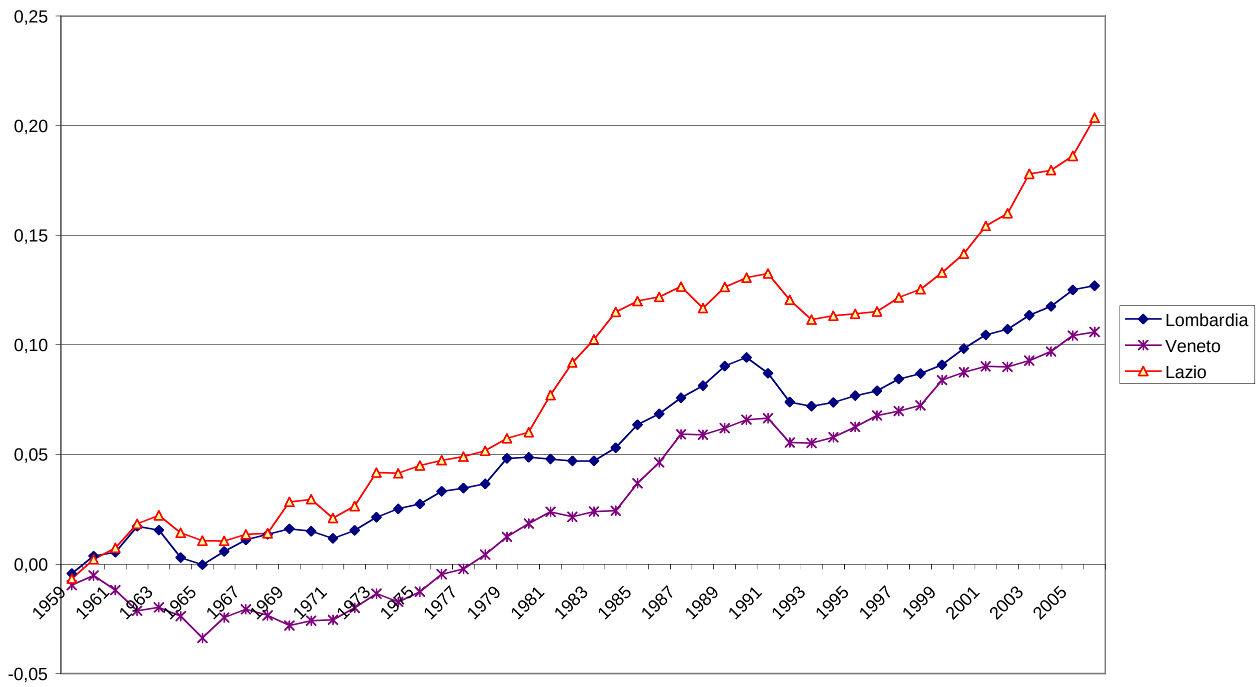
2. Regional employment growth divergence

The data consist of annual values of regional employment. Data come from ISTAT database and run over the period 1960-2007. In the empirical analysis we focus on cumulative relatively employment growth, defined as the cumulative annual change in the log of regional employment minus the average cumulative annual change in the log of aggregate country's employment. This measure thus captures the cumulative differential employment growth experience of regions and should reveal the evolutionary pattern of any regional growth divergence or convergence.

Over the last fifty years Italian regions have experienced large and sustained differences in employment growth rates. The evolution is illustrated in figures 1 to 4 which plot employment from 1960 to 2007 for a number of regions. In term of overall performance we can distinguish Italian regions into four groups. The first group includes the fast movers regions; the second one the relative fast movers; the third group consider the average performers; finally, the slow movers.

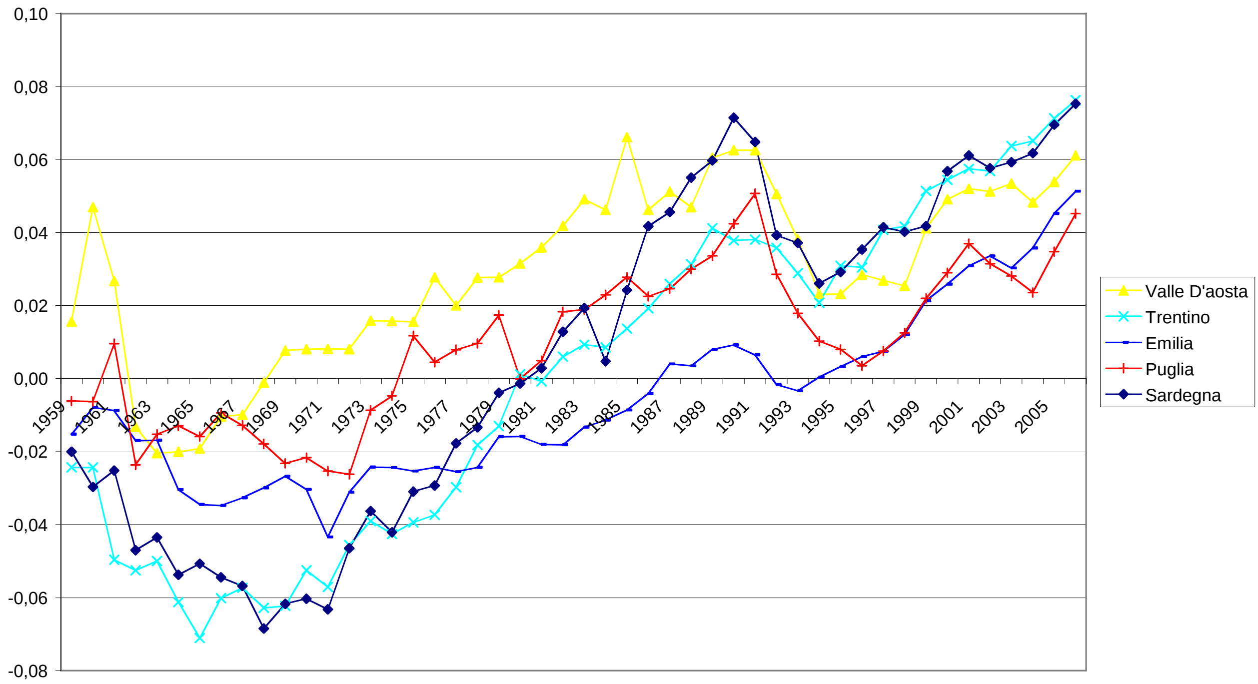
The fast movers regions, Lombardia, Veneto and Lazio see figure 1, have managed to expand their employment base cumulatively during the period by over 10% more than Italian average and Lazio, in particular, by over 15%. Within this fast movers group Lombardia and Lazio have consistently done better than Italian average throughout the whole period, while Veneto evolution is very much a 1980's phenomenon.

Fig. 1 Cumulative employment growth rate: fast mover regions



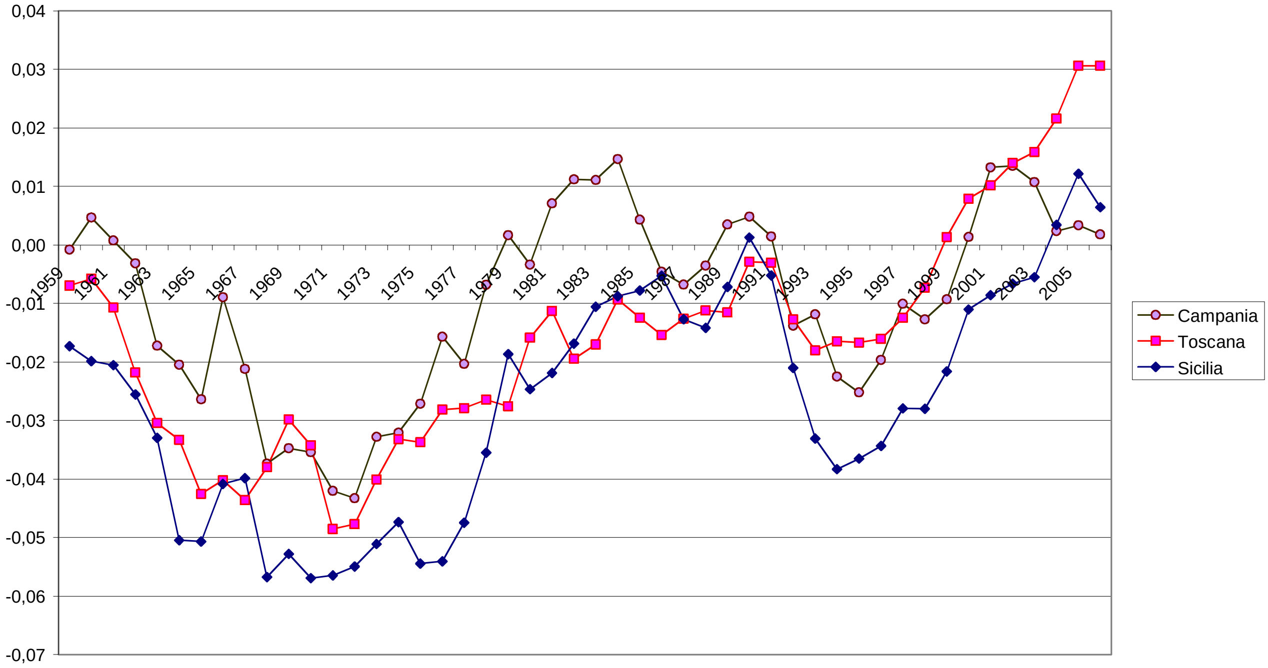
Valle D’Aosta, Trentino, Emilia, Sardegna and Puglia, have tended to generate cumulative employment growth during the period by over 5% more than the average value, see figure 2. Such evolution for almost every countries really emerges in the last 30 years.

Figure 2. Cumulative employmet growth rate: relative fast mover regions



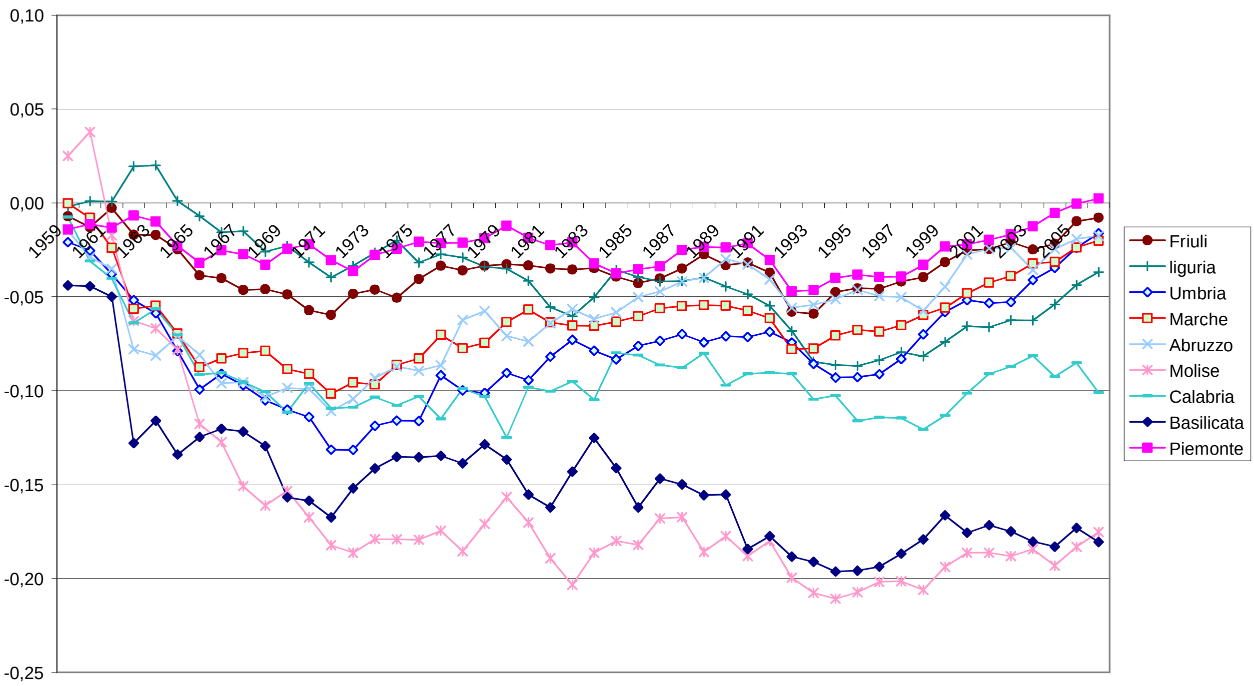
The third group of countries, Piemonte, Campania, Toscana, Sicilia, see figure 3, do not exhibit a trend, but rather fluctuations culminating in the crisis of the 1970’s. In particular from the 60’s to the middle of 70’s they experience a depressing evolution experiencing a steadily relative employment losses. Since the middle of the 70’s until the begin of the 90’s these regions have inverted their process moving toward the national average. The same process, on a short scale, occurs from the 1993 to the 2007.

Fig.3. Cumulative employment growth rate: the average movers



The fourth group of regions, Friuli, Liguria, Umbria, Marche, Abruzzo, Molise, Calabria, Basilicata, have lagged behind the average in term of employment growth, with Basilicata and Molise performing particularly poorly. The Abruzzo miracle of a phasing-out regions from the regions objective one in the EEC, does not reveal any interesting dynamic over the whole period, see figure 4.

Fig. 4. Cumulative empolyment regional growth: slow mover regions



Despite previous empirical analysis have found some tendency toward convergence of per capita income across European regions (Boldrin and Canova, 2000), our results show that there is no evidence, at this scale, for any general convergence in employment growth in Italy. Furthermore, the performance of regional employment evolution in Italy is not in line with the geographical division into North, Center and Mezzogiorno. Lazio, for example, is the best performing region. Piemonte and Friuli, on the other hand, are included among the slow movers regions. However this issue will be investigated further when we will perform the spatial autocorrelation analysis.

3. Trend and fluctuations in relatively employment

There are several statistical techniques to separate the trend from the cycle in a time series. As it is well known, the estimation of growth cycles is strongly dependent on the statistical technique used. One of the most well known non linear univariate method is the HP filter (Hodrick and Prescott, 1997). A part from its widespread use, the HP filter identifies more accurately supply-side shocks – the type of shocks with greater impact across regions. Demand-side shocks (such as fiscal, monetary or currency shocks) usually have a cross national impact, while supply-side shocks (such as those linked to productive capacity, price of raw materials and productive factors) differ more across regions.

The HP filter assumes that any time series of data can be decomposed into a growth component (trend) and a cyclical component. Subtracting the long run component from the original series, the cyclical component is obtained. Figures 5-7 show the growth cycles in employment by regions for the period 1960-2007.[1] Figure 5, in particular, puts together regions with seem to show cycles of apparent low and moderate intensity in the magnitude of their peaks and troughs, while Fig 6 and 7 seem to exhibit growth cycles of relatively higher intensity. Fig. 8, finally, displays the growth cycle of aggregate employment in Italy.

[1] Using a HP filter with the smoothing parameter l=100

Fig.6. Regional growth cycles of employment

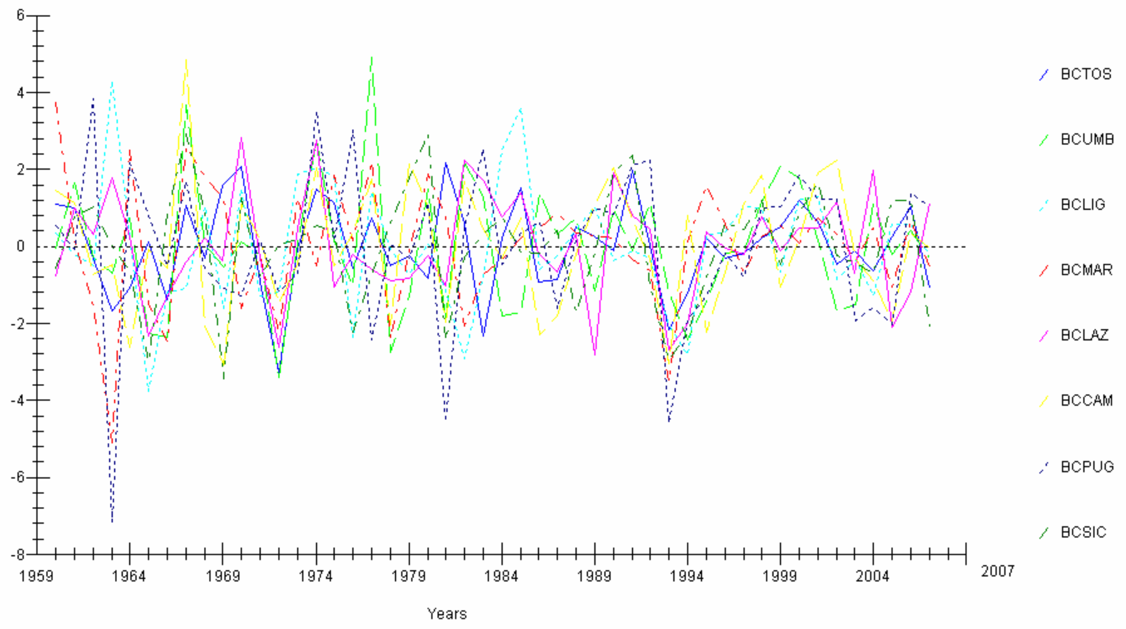
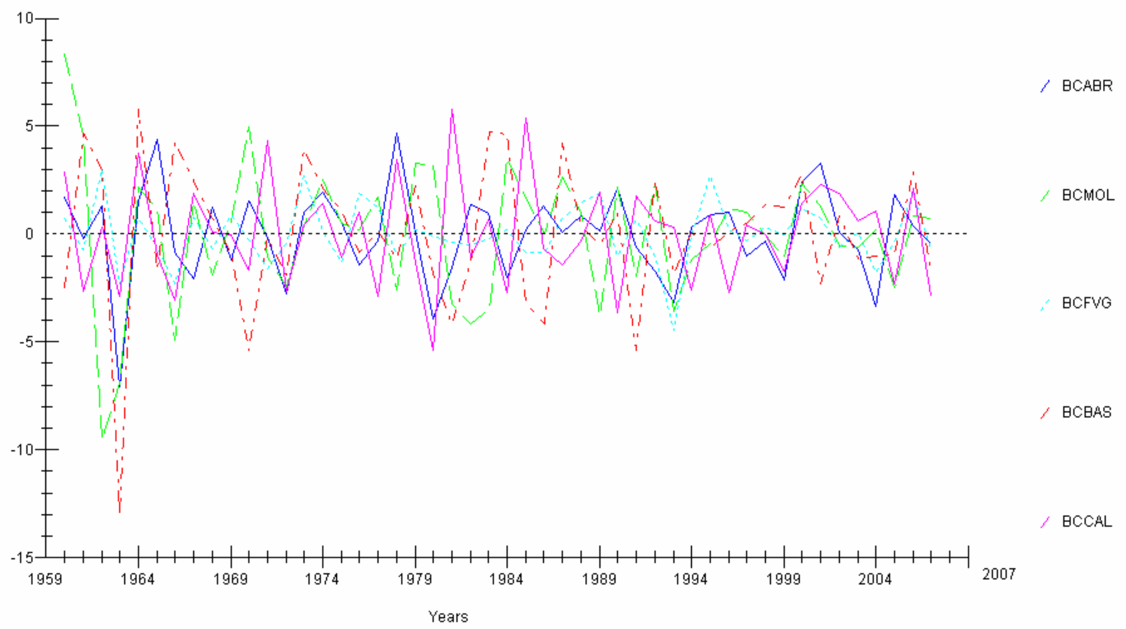
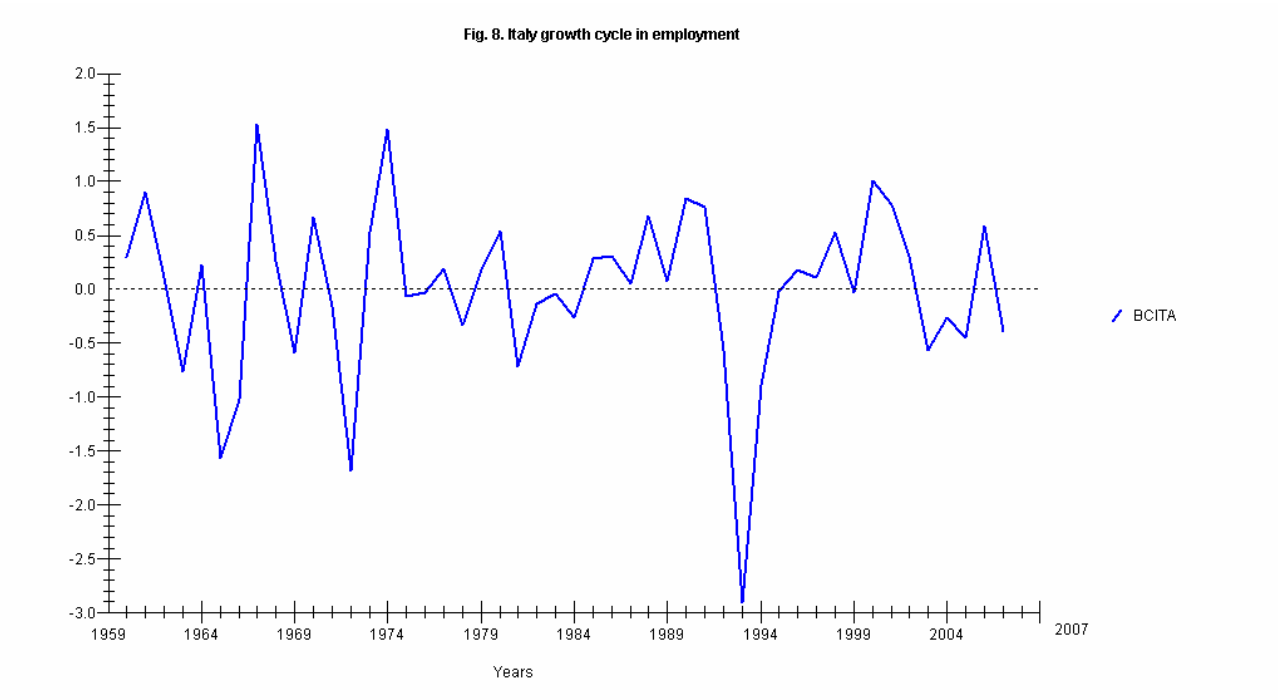


Fig.7 Regional growth cycles of employment





To better inform policy making, it is relevant to check whether there have been any significant commovement over time between the regional growth cycles of employment and the growth cycle of employment in Italy as a whole. (i.e. estimate their temporal correlation.) This is important because it shows whether fluctuations in employment at the national level have any bearing on the behaviour of regional employment over time. Furthermore, the sign of such relationship shows whether they have moved in the same direction or not. Table 1 presents the estimates of correlation coefficient. We have also estimated the cross-correlation coefficients in order to measure the degree of sinchronization between the series, but the value of contemporary correlation has proven to be the highest, showing how employment regional cycles move in the same direction as that Italian average.

Table 1. Estimated correlation matrix

LOM	PIE	TAA	VEN	FVG	LIG	EMI	TOS	UMB	MAR
0,72	0,66	0,43	0,65	0,52	0,41	0,71	0,54	0,59	0,52

LAZ	ABR	MOL	CAM	PUG	BAS	CAL	SIC	SAR
0,55	0,66	0,42	0,56	0,53	0,23	0,14	0.61	045

Table 1 suggests how contemporary correlation coefficients are in all cases positive. Furthermore, the values of these coefficients go from high to moderate or weak depending on the region. In particolar, Lombardia, Piemonte, Veneto, Sicilia, Emilia present an average value of 70. Regions such as Friuli, Puglia, Campania, Marche, Lazio, Toscana display an average value of 50; while other regions present the weakest relations between regional employment cycles and employment cycle in Italy. Another way to explore how much of the typical movements in regional employment is common to all regions is to run the following regression:

$$\Delta N_{it} = \alpha_i + \beta_i \Delta N_t + \varepsilon_{it} \qquad (1)$$

where N is the logarithm of regional employment in region i at time t, N is the logarithm of aggregate Italian employment at time t and ε is a disturbance. We also explored whether lagged values of aggregate employment were significant in estimating equation 1. We found no evidence of such a dynamic specification and thus we did not report it in the table. The results of estimation are reported in table 2.

Regions	***á***	***B***	***R²***
Lomdardia	0.007	0,96	0.52
Piemonte	0,02	1,09	0,46
Valle d'Aosta	- 0.08	1,02	0,10
Trentino Alto Adige	0,02	1,27	0,20
Veneto	- 0.86	0,90	0,43
Friuli Venezia Giulia	- 0,007	0,93	0,28
Liguria	- 0,005	0,77	0,19
Emilia Romagna	0,02	1,03	0,54
Toscana	- 0.02	0,75	0,30
Umbria	0,008	1.26	0,35
Marche	-0,07	1,04	0,29
Lazio	0,02	0,96	0,31
Abruzzo	-0.03	0,75	0.08
Molise	-0.16	1,67	0,20
Campania	-0.02	1,22	0,34
Puglia	-0.006	1,33	0,30
Basilicata	0.06	1,11	0.09
Calabria	-0.06	0,33	0,36
Sicilia	0.01	1,16	0,38
Sardegna	0.01	1,23	0,26

The R^2 in the table gives an answer to how much of the variation over time in regional employment is accounted for by the variation in aggregate employment. The estimated equation suggests that on average year to year movements in Italian regions are much dominated by regional movements. In fact, only Lombardia, Piemonte, Veneto, Emilia, like the previous analysis, present the highest value of the R^2 giving further support to the previous findings that in those regions year to year movements are dominated more by aggregate movements. For the rest of regions the R^2 are relatively low. The coefficient of the log of aggregate employment in the table indicates how, for each region, regional employment moves with aggregate employment. Of particular interest therefore is the distribution for β across regions. The majority of regions present an elasticity coefficient near to one. Only Molise has high elasticity with respect to aggregate fluctuations. Toscana, Trentino, Liguria, instead present a coefficient lower than one.

The empirical analysis therefore supports the idea that the majority of regional employment is idiosyncratic (after accounting for common national fluctuations) and that examining individual regions is a fruitful approach. There is no any clear cut distinction between southern and northern regions behaviour.

4. Spatial autocorrelation analysis: global and local Moran index

Spatial correlation analysis aims to verify whether spatial proximity has any impact on employment growth rate in a region. It is reasonable to assume that spatial distribution of employment growth rates may be affected not only by common shocks but as well as by the geographical characteristics of the country. We explore, therefore, the possibility that regions with high degree of geographical proximity show an higher level of correlation. From a statistical point of view spatial correlation analysis try to measure such a regional interaction (Cliff and Ord, 1973, Anselin, 1995). Although there are available different indices in literature, in these paper we focus a “global Moran” and “local Moran” statistics only.

The formal expression of global Moran’s I_M is:

$$I_M = \left(\frac{n}{\sum_i \sum_j \omega_{ij}} \right) \left(\frac{\sum_i \sum_j \omega_{ij} (x_i - \bar{x})(x_j - \bar{x})}{\sum_i (x_i - \bar{x})^2} \right)$$

where i and j index the areal units of which there are n, $\bar{x}$ is the average of variable and ω_{ij} is a spatial weight defining the interconnection between areal unit i and areal unit j. The ω_{ij} is an element of an n*n spatial weight matrix, Ω, defining the neighbourhood structure according the S-DSMA procedure (Mucciardi et al., 2006). This method has the important property of being “sensitive” with respect to the different territorial configurations as the consequence of the introduction of particular parameters regarding the distance and surface of areal units[2]. Positive values of Moran’s I_M suggest spatial cluster of similar values. Negative values suggest that high values are frequently found in the vicinity of low values. The I_M statistics is similar to the correlation coefficient, however, the maximum and minimum possible value of Moran’s I are not constrained to lie in the (-1, 1) range (For more details see Cliff and Ord).

Instead, in a local index of spatial autocorrelation each unit is characterized by one value of the index; it gives the individual contribution of that location in the global spatial autocorrelation measured on all n locations (Mucciardi, 2008). Local Moran’s I_i statistic for each observation “i” may be defined as follows (Anselin, 1995):

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[2] By adopting such procedure, the problem of topological invariance is solved

$$I_i = z_i \sum_{j, j \neq i}^{n} \omega_{ij} z_j$$

where the observation z_i and z_j are in standardized form and the weight ω_{ij} are in row-standardized form. The local index is the product of the standardized local value and the weighted mean of the standardized neighbouring value. Thus, similarly to the global index, it can be positive, negative or equal to zero. It is negative when there is an association of opposite values at neighbouring locations, and positive in the case of spatial association of similar values.

Explorative spatial data analysis performed for various years seems to suggest that spatial proximity does not matter. The only exception to this general result occurs for the year 1988 with a global Morgan index 0.436 (See table 3c and figure 8). Fast movers regions, for example, do not constitute a “traino” effects on contiguous region. Moreover the performance of regional employment evolution in Italy is not in line with the geographical division into North and Mezzogiorno.

As far as the local index of spatial autocorrelation, Local Moran index, it is possible to observe (see figure 9) that southern regions and in particular Calabria, Sardegna and Sicilia, display an higher degree of variation over the period compare to northern regions. This would suggest that despite the low regime of spatial correlation at national level, southern regions receive a stronger effects form the geographical proximity thatn the northern regions.

Table 3a. Global and Local Moran by year[3]

Region	Local Moran index I_i										
	1960	**1961**	**1962**	**1963**	**1964**	**1965**	**1966**	**1967**	**1968**	**1969**	**1970**
Piemonte	-0.072	0.113	-0.028	0.523	0.076	-0.017	-0.008	0.068	0.015	-0.118	0.263
Valle d'Aosta	-0.305	0.843	-0.077	-0.944	-0.105	-0.521	0.118	0.079	0.271	0.281	0.193
Lombardia	0.003	0.157	-0.047	0.396	0.029	0.054	-0.056	0.067	0.332	0.495	0.021
Trentino	-0.292	-0.032	-0.234	0.226	-0.082	0.007	-0.004	0.032	0.324	-0.101	0.000
Veneto	-0.001	0.067	0.000	0.120	-0.082	-0.186	0.010	0.095	0.276	0.150	-0.070
Friuli	-0.027	-0.016	-0.273	0.029	-0.010	-0.054	0.103	-0.247	-0.345	0.406	0.065
Liguria	0.016	0.071	-0.096	0.392	-0.058	0.114	-0.001	-0.665	0.186	-0.637	0.035
Emilia	-0.024	0.069	0.006	0.127	-0.023	-0.046	-0.040	-0.004	0.248	0.454	0.057
Toscana	0.006	0.001	-0.011	0.077	-0.001	-0.129	0.018	0.017	-0.039	0.265	0.125
Umbria	-0.317	-0.036	0.025	0.020	0.227	-0.306	0.332	-0.260	0.033	-0.104	-0.154
Marche	0.067	-0.069	0.082	-0.204	-0.118	-0.090	0.269	-0.044	-0.100	0.048	-0.305
Lazio	-0.008	-0.133	-0.136	-0.663	-0.097	0.032	-0.078	0.072	-0.337	-0.123	-0.290
Abruzzo	-0.039	-0.201	-0.002	0.350	0.015	-0.272	0.027	-0.268	-0.190	-0.012	-0.086
Molise	-0.581	-0.458	-0.512	0.494	-0.063	-0.067	0.020	-0.079	0.344	0.073	-0.334
Campania	-0.040	-0.158	-0.034	-0.339	-0.830	-0.026	-0.080	-0.560	0.412	0.474	-0.093
Puglia	0.007	0.025	-0.613	0.456	0.288	0.348	-0.131	-0.164	0.137	0.040	0.186
Basilicata	-0.978	0.032	-0.004	0.539	-0.138	-0.573	-0.625	-0.032	-0.070	0.285	-0.537
Calabria	-0.003	-0.368	0.023	0.236	0.022	0.002	-0.261	-0.112	0.372	0.087	0.664
Sicilia	0.318	0.224	-0.003	-0.376	-0.484	0.316	0.171	0.527	-0.312	1.295	-0.510
Sardegna	-0.121	-0.691	0.638	-0.308	0.522	-0.019	0.589	0.336	-0.032	-0.766	1.092
Global Moran I_M	-0.120	-0.028	-0.065	0.058	-0.046	-0.072	0.019	-0.057	0.076	0.125	0.016
	threshold distance = 379 Km (1^{st} spatial lag)										

Table 3b. Global and Local Moran by year

Region	Local Moran index I_i										
	1971	**1972**	**1973**	**1974**	**1975**	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**
Piemonte	-0.001	-0.053	-0.271	-0.036	-0.005	-0.112	-0.111	0.024	0.082	0.015	-0.243
Valle d'Aosta	0.032	0.366	-0.081	0.025	0.019	0.166	-0.156	0.012	-0.179	-0.104	0.040
Lombardia	0.002	-0.018	-0.005	0.196	0.004	0.003	0.064	-0.002	0.136	0.069	0.017
Trentino	-0.473	0.132	0.022	0.232	-0.152	-0.020	-0.076	-0.257	-0.508	0.014	0.254
Veneto	-0.078	-0.164	0.010	0.176	-0.212	-0.076	0.172	-0.041	-0.128	0.063	0.141
Friuli	-0.160	-0.176	0.231	0.583	-0.145	-0.095	0.189	0.100	0.062	-0.145	-0.024
Liguria	-0.178	0.003	-0.039	0.081	0.148	0.237	-0.003	0.128	0.248	-0.161	-0.209
Emilia	0.010	-0.030	-0.082	0.047	-0.067	0.078	-0.170	0.020	0.170	-0.001	0.007
Toscana	0.102	0.247	-0.037	0.017	0.066	0.079	0.041	0.015	0.121	-0.111	0.011
Umbria	0.211	0.409	-0.018	-0.243	0.058	0.075	0.598	0.136	0.054	0.048	-0.010
Marche	0.078	0.157	0.003	-0.215	-0.147	-0.040	0.383	0.067	0.007	0.052	0.021
Lazio	-0.112	0.106	0.005	0.479	-0.172	0.023	-0.070	-0.003	-0.049	0.013	-0.098
Abruzzo	-0.018	0.483	-0.047	0.278	0.407	-0.078	-0.062	-1.656	0.002	-0.516	0.099
Molise	-0.436	0.736	0.173	-0.101	-0.183	-0.070	0.005	-0.192	-0.266	-0.460	0.051
Campania	0.000	-0.083	0.160	0.180	-0.070	0.001	-0.182	-0.098	0.085	-0.101	0.126
Puglia	0.067	-0.415	0.087	0.991	-0.023	-0.194	0.547	0.058	-0.248	-0.285	0.235
Basilicata	-0.022	0.046	-1.058	0.293	-0.078	-0.085	0.262	-0.285	0.341	0.252	0.302
Calabria	-1.097	-0.203	0.210	-0.318	-0.433	0.057	0.702	-0.669	-1.688	-1.002	-3.006
Sicilia	-0.504	-0.644	-0.009	-0.107	-0.118	-0.258	0.354	0.131	0.362	-1.792	-0.166
Sardegna	0.131	-0.163	0.266	0.844	0.756	0.318	0.103	0.032	0.016	0.106	0.073
Global Moran I_M	-0.122	0.037	-0.024	0.170	-0.017	0.000	0.129	-0.124	-0.069	-0.202	-0.119
	threshold distance = 379 Km (1^{st} spatial lag)										

[3] The proposed application calculates the measurement of autocorrelation by considering a matrix of distance between the regional territorial barycentres (km) and a vector of total surface area (hectares) for each region.

Table 3c. Global and Local Moran by year

Region	Local Moran index I_i										
	1982	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**
Piemonte	0.107	0.140	-0.338	-0.167	-0.030	0.028	0.767	0.030	-0.146	0.027	0.244
Valle d'Aosta	-0.214	-0.139	-0.106	-0.061	0.344	-0.403	0.330	-0.225	-0.022	-0.003	-0.148
Lombardia	0.031	0.225	0.081	-0.054	0.125	-0.060	0.497	0.078	-0.114	0.019	0.208
Trentino	0.094	-0.250	-0.007	0.000	0.048	-0.073	0.461	0.156	-0.182	-0.073	-0.145
Veneto	-0.117	0.275	0.018	0.014	0.111	-0.177	0.841	-0.020	0.003	0.014	-0.131
Friuli	-0.019	0.202	0.072	0.040	-0.211	0.003	0.301	0.137	-0.189	0.008	-0.005
Liguria	-0.080	0.316	-0.327	-0.259	-0.313	0.103	-0.449	0.005	-0.263	-0.080	0.126
Emilia	-0.047	0.097	-0.059	-0.001	-0.003	-0.033	0.514	-0.009	0.011	0.005	0.065
Toscana	-0.044	0.374	0.008	0.041	-0.090	-0.145	-0.055	-0.026	-0.049	-0.112	-0.047
Umbria	-0.072	-0.353	-0.150	-0.233	-0.061	0.002	0.016	0.144	0.000	0.005	-0.136
Marche	-0.147	0.191	-0.015	-0.001	0.000	0.016	-0.128	-0.005	-0.100	0.018	-0.004
Lazio	0.123	0.036	0.074	-0.294	-0.045	-0.012	-0.073	0.297	0.128	-0.097	0.190
Abruzzo	0.106	0.042	-0.348	-0.001	-0.266	0.007	-0.136	-0.159	0.127	0.133	-0.845
Molise	-1.149	-1.144	-0.411	0.085	0.225	-0.266	0.216	0.211	-0.109	0.263	0.677
Campania	0.040	0.029	-0.052	0.032	0.413	-0.258	0.634	-0.221	-0.038	-0.031	-0.217
Puglia	0.030	0.480	-0.101	0.082	-0.164	-0.123	0.161	-0.442	-0.003	-0.704	0.956
Basilicata	-0.258	0.402	-0.109	-1.338	0.667	-0.433	0.863	0.243	-0.037	-0.596	0.603
Calabria	0.080	0.076	-1.184	-0.700	0.427	-0.123	1.159	-0.597	-0.807	-0.382	0.319
Sicilia	-0.011	0.137	-0.051	-0.014	0.300	-0.005	2.746	-0.080	-0.574	-0.742	-0.511
Sardegna	0.757	1.230	0.486	-2.108	0.395	-0.098	0.047	-2.265	0.189	0.573	-0.664
Global Moran I_M	-0.039	0.118	-0.126	-0.247	0.094	-0.102	0.436*	-0.138	-0.109	-0.088	0.027

threshold distance = 379 Km (1st spatial lag) * = sign. p-value < 0.05

Table 3d. Global and Local Moran by year

Region	Local Moran index I_i										
	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Piemonte	-0.294	-0.167	-0.071	0.052	-0.349	0.151	0.007	0.055	0.234	0.152	0.150
Valle d'Aosta	0.076	-0.168	-0.697	-0.149	0.068	0.040	-0.091	-0.092	-0.072	0.125	-0.193
Lombardia	0.007	0.040	0.141	0.131	-0.007	-0.064	0.064	-0.357	-0.018	-0.266	0.176
Trentino	-0.068	-0.071	-0.554	0.376	-0.062	-0.822	-0.033	-0.001	0.182	0.105	-0.272
Veneto	0.094	0.046	0.187	0.239	-0.214	-0.008	0.076	-0.001	0.163	0.175	-0.195
Friuli	-0.786	0.247	0.502	0.107	0.025	-0.009	0.087	0.011	0.051	0.238	0.209
Liguria	-0.005	-0.394	-0.001	-0.154	0.002	-0.009	-0.418	-0.069	-0.077	0.366	0.196
Emilia	0.142	0.068	0.258	0.123	-0.071	0.030	0.137	0.018	0.028	-0.048	0.234
Toscana	0.064	0.008	0.223	-0.139	0.057	0.009	0.132	-0.001	0.007	0.116	0.340
Umbria	-0.163	-0.359	-0.420	-0.041	-0.001	-0.177	-0.398	-0.134	-0.033	-0.123	-0.060
Marche	-0.096	0.120	0.238	0.118	-0.044	-0.031	0.001	-0.146	0.009	-0.051	0.214
Lazio	-0.043	-0.197	-0.085	-0.003	0.023	0.055	0.067	-0.004	0.022	-0.042	-0.662
Abruzzo	0.005	0.072	-0.061	-0.108	0.076	-0.392	-0.886	0.032	-0.534	-0.073	0.026
Molise	-0.179	-0.038	0.007	-0.241	-0.573	-0.218	-0.244	0.011	0.005	-0.591	0.029
Campania	-0.006	-0.385	-0.001	0.263	-0.524	-0.123	-0.011	-0.384	0.027	0.406	0.051
Puglia	-0.275	-0.105	0.080	0.435	-0.319	-0.001	-0.421	0.038	-0.001	0.701	0.228
Basilicata	-0.066	-0.121	0.104	0.095	-0.026	-0.092	-0.860	-0.064	-1.972	-0.053	0.274
Calabria	-1.123	0.153	-0.377	0.899	0.001	-0.647	0.134	-0.018	-0.365	0.497	-0.926
Sicilia	-0.321	-0.058	0.206	-0.219	0.072	0.243	0.185	0.154	-0.263	-0.577	-0.062
Sardegna	-0.390	-0.375	-0.719	-0.034	-0.385	0.449	-0.257	0.612	0.425	0.032	-2.544
Global Moran I_M	-0.171	-0.084	-0.052	0.087	-0.113	-0.081	-0.137	-0.017	-0.109	0.054	-0.139

threshold distance = 379 Km (1st spatial lag)

Table 3e. Global and Local Moran by year

Region	Local Moran index I_i			
	2004	**2005**	**2006**	**2007**
Piemonte	0.011	0.287	-0.005	0.032
Valle d'Aosta	0.000	-0.651	0.111	-0.017
Lombardia	0.059	0.152	-0.019	0.079
Trentino	-0.043	-0.010	-0.099	-0.086
Veneto	0.018	0.150	-0.040	-0.067
Friuli	-0.403	0.090	0.165	0.160
Liguria	-0.124	0.313	-0.144	0.120
Emilia	-0.243	0.271	-0.033	-0.172
Toscana	-0.010	0.265	0.033	0.164
Umbria	-0.094	0.126	-0.049	0.023
Marche	0.049	-0.032	-0.001	0.334
Lazio	-0.853	0.000	-0.043	-0.009
Abruzzo	-0.474	-0.559	-0.157	-0.101
Molise	-0.001	0.398	-0.137	0.076
Campania	-0.072	0.420	-0.731	-0.455
Puglia	0.142	0.753	-0.632	0.861
Basilicata	0.163	0.410	-0.256	0.691
Calabria	-0.332	1.508	-0.015	0.934
Sicilia	0.067	-1.770	-0.224	-0.359
Sardegna	-0.218	0.001	0.032	-0.144
Global Moran I_M	-0.118	0.106	-0.112	0.103

threshold distance = 379 Km (1st spatial lag)

Fig 8. Trend of Global Moran by year

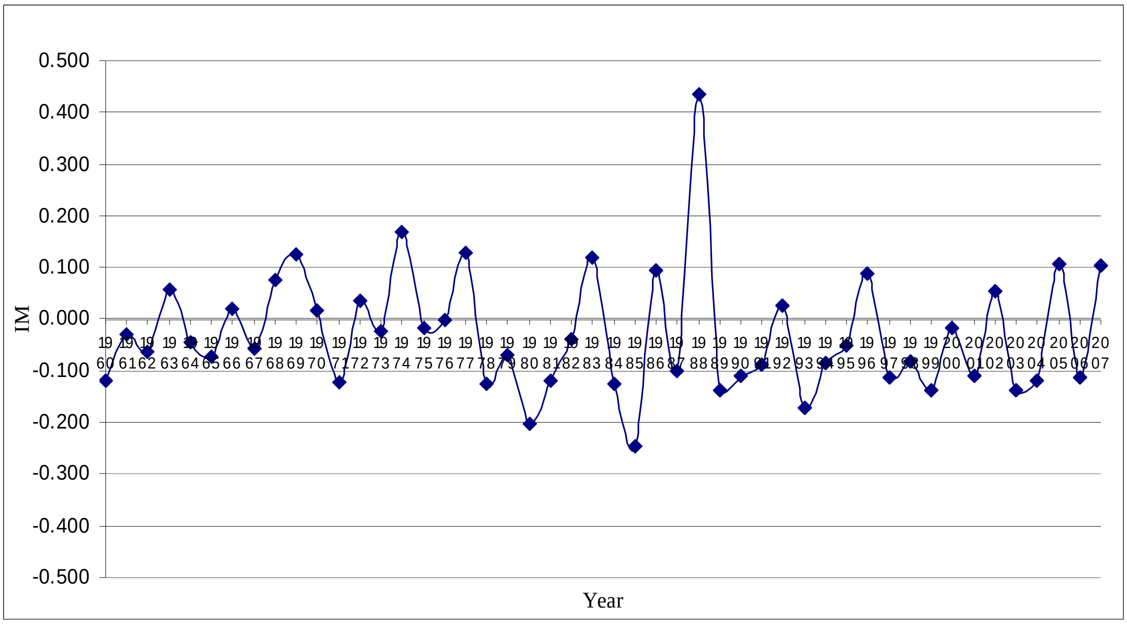
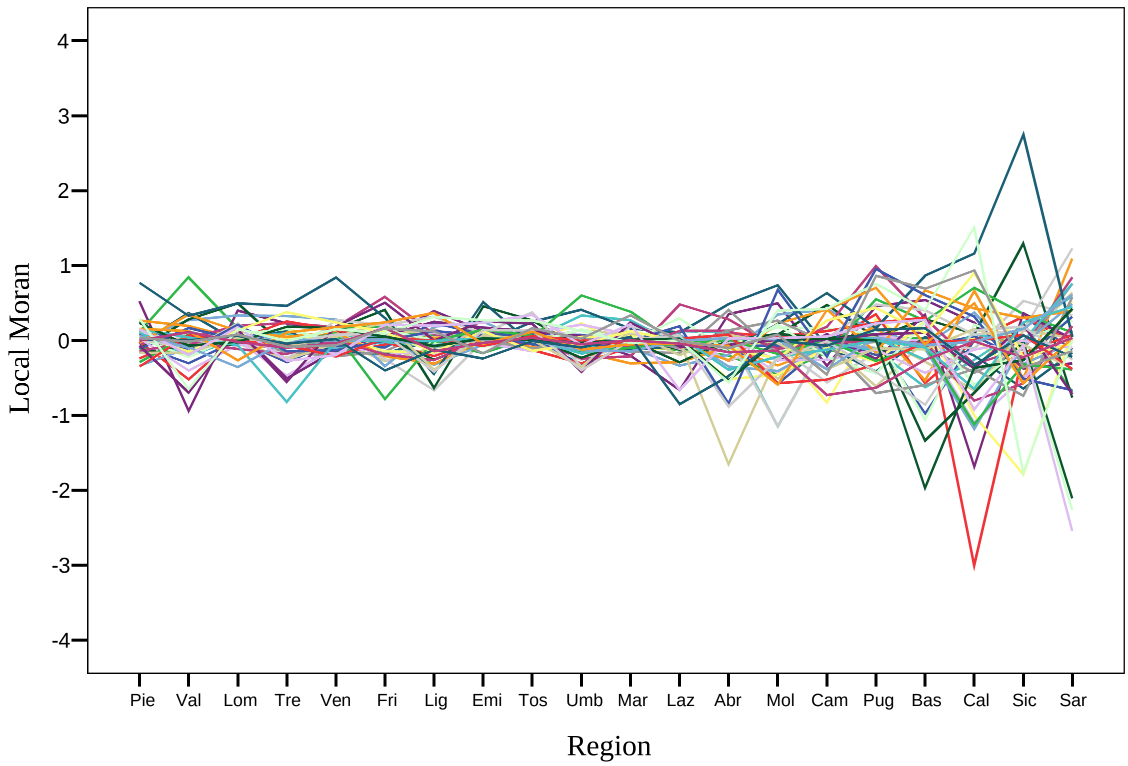


Fig 9. Trend of Local Moran by region



5. Some final remarks

In the last fifty years in Italy there have been some dramatic differences in regional employment growth. Much of the evolution of regional employment, furthermore, can be explained by idiosyncratic shocks and geographical proximity of a territory do not display any positive effect on employment performance. These results pose a clear number of important questions. For example what has made Lazio, Lombardia and Veneto such a favourable employment generator? Why European policies do not play a significant role in fostering convergence? Despite the differences in employment growth performance, relatively little is known about the underlying causes, or why regional convergence has not occurred. It is also clear that more research is needed to evaluate existing theories and to build models able to take into account the variations in the employment behaviour at regional level. Such issues form the basis of our future agenda.

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