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Country Size, Appropriate Policy, and Economic Performance: Some Evidence from OECD Countries

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Abstract

This paper investigates economic performance and policies in OECD countries. Our hypothesis is that the effects of policy are determined by country-size. We employ non parametric distribution dynamics techniques (e.g. Quah, 1993) and we analyze differences across and within groups of countries by controlling for size and EMU membership. We first show that controlling for size only does not imply significant cross-country differences in performance. In contrast, controlling for both size and EMU membership reveals marked differences in performance and policies across groups of big and small countries, and between groups of similar size as well. Moreover, differences are more marked in the Euro Area than outside, and among big countries than among small ones. Furthermore, we show that differences in performances are related to diverging dynamics in domestic vs. external demand components, and to different strategies concerning fiscal, openness and structural policies. Finally, we draw implications on the most appropriate policy for countries of a given size.

Keywords: Country Size, Growth Strategies, Demand and Supply Policies, European Monetary Union, Distribution Dynamics.

JEL Classification: E02, E63, E65, C14

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1 Introduction

This work investigates economic performance and policy in countries having different size. We divide our panel of 20 OECD countries over the years 1982-2003 into different countries' groups according to size and other characteristics, and we study differences in terms of performance and policy indicators. More precisely, we identify countries' groups by conditioning both on size and EMU membership status, and we divide our time interval into two periods (1982-1993, 1994-2003). Then, we investigate non parametrically differences in the shape of the distributions of performance and policy indicators, both cross-groups and within-groups across-periods.

The current consensus among economists about macroeconomic policy involves a strict dichotomy on the role of demand-side vs. supply-side policies (see e.g. Lucas, 2003). In that view, aggregate demand has real effects only in the short run and its role is limited to the stabilization of the economy around a growth trend defined by supply conditions. Accordingly, the possibility of achieving enduring wide welfare gains ultimately rests on the ability of policy makers to implement well-designed supply-side policies. To this end, the debate in last decades has identified three broad categories of - possibly complementary - supply policies that should be pursued (see among others, Aghion and Howitt, 2006; Rodrik and Rodriguez, 2000, Sapir et al., 2004): i) policies aimed at removing frictions in labour and product markets, ii) policies aimed at increasing openness to international trade, iii) policies aimed at facilitating innovation and diffusion of new technologies.

In the foregoing framework, country size plays a tiny role. This is partly explained by empirical evidence. Cross-country growth studies (see e.g. Rose, 2006) have found so far little support for a significant effect of country size measures on economic performance. Moreover, also the literature on trade, growth and country size (see Alesina, Spolaore, and Wacziarg, 2005; Alesina and Spolaore, 2003) has not paid attention at how size may influence the effects of policies. This literature has indeed studied how nations' borders are endogenously determined by a trade-off between costs and benefits of size, and the latter trade-off is affected by international trade on such a trade-off. More recently, however, a small flow of empirical research has started to investigate the interplay between the effects of different types of policies and country size (see Carlin and Soskice, 2009; Laurent and Le Cacheux, 2007). By contrasting the experience of countries of different size, these works have pointed out how structural policies reducing labour and product market rigidities and disinflation policies, are likely to be more effective in small countries than in big ones. Indeed, these policies improve external competitiveness and therefore stimulate external demand that plays a major role in small countries, being structurally more open. Moreover, these studies have reinstated a role for aggregate demand in explaining cross-country differences in performance. To this end, they emphasize the fact that fiscal policies, and in general policies stimulating domestic demand should be more effective

in big countries than in small ones, due to the larger weight of domestic demand in the former.

We contribute to the foregoing literature along several dimensions. *First* we re-assess the existence and the characteristics of the relations between country size and performance, and between country size and policy effectiveness. In particular, we carry out the analysis of performance and policies by conditioning on size and EMU membership status. *Second*, we do not limit our analysis to countries of different size, but we compare countries of similar size as well. In addition, we study both cross-groups and within-groups dynamics. *Third*, we employ distribution dynamics techniques to perform our investigation (see e.g., Quah, 1993; Overman and Puga, 2002). Studying distributions controls some of the problems related to regression analysis and highlighted by the literature on policy and growth (see e.g. Rodrik, 2005; Durlauf, Johnson, and Temple, 2005). In addition, it allows one to go beyond the first moment of data, and thus to investigate other data characteristics (e.g. within-group heterogeneity in performance and policies). *Fourth*, we study structural policies by building an index that summarizes the information contained in several variables related to regulation in product and labour markets. This allows us to study cross-country structural policy patterns in a coherent way, i.e. avoiding the biases related to studying each single variable in isolation.

In line with previous results in the literature we find that controlling for size only does not imply significant countries' differences in performance. Conversely, conditioning on *both* size and EMU membership leads to significant differences in the distributions of performance and policy indicators across groups of countries of different size, as well as across groups of similar size. To this end, differences are more marked across groups of countries in the Euro Area than outside the area, and between groups of big countries than between groups of small countries. As to performance, big countries in the Euro Area display worse performance with respect to small countries in the Euro Area and to big countries outside the area, especially in one of periods analyzed (1994-2003). The performance record of small countries' groups is instead comparable and rather good relatively to the average. As to growth strategies followed, we find that countries markedly differ in terms of aggregate demand growth, cyclical behaviour of fiscal policies, openness, levels of market rigidities and structural policies. In particular, relative to other groups, big countries outside the Euro area followed a strategy based on private consumption growth, investment in new technologies, and counter-cyclical fiscal policy. In contrast, big countries in the Euro Area were characterized by a relatively lower growth of domestic demand and of technology investment, by a pro-cyclical fiscal policy and (in the second period) by sustained growth in openness. Furthermore, groups of small countries displayed relatively higher external demand contribution to growth (in 1994-2003). Moreover, small countries in the Euro area were characterized by higher rates of technology-related investment and by a reduction in labour and product market rigidities. Finally, despite the foregoing

heterogeneity, we find that all groups of countries displayed comparable levels of total investments,and follow the same strategy of improved fiscal austerity and convergence to common low inflation rates.

As a guide in the interpretation of our results we exploit the "weakest-link" hypothesis, recently advocated in the literature on policy and long-run growth (see e.g. Easterly, 2005; Sirimaneetham and Temple, 2006). The hypothesis states that good performance is only the weakest link in a set of policy outcomes, and thus implies that bad policy is harmful for growth but good policy may not be enough for it. Exploiting such a criterion our results bring support to the idea that aggregate demand matters for the medium-run performance, especially in big countries, and that policies aiming at improving openness and terms of trade are more effective in small countries. Indeed, we observe that sustained growth in domestic demand together with counter-cyclical fiscal policy have not harmed the good performance in big countries outside the Euro Area. Nevertheless, this strategy was not followed by big countries in the Euro Area, that displayed the worst performance relatively to other groups. Finally, small countries groups displayed similar performance, good in relative terms. Especially in the second period analyzed (1994-2003), these groups of countries followed a policy of low inflation and reduction in labour and product markets rigidities. In addition, their growth was marked by a strong contribution from external demand.

The paper is organized as follows. In Section 2 we describe our dataset, while in Section 3 we describe the methodology we use in our work. Sections from 4 to 6 are devoted to the presentation of results. We begin in Section 4 with the comparative analysis of countries' performance. Section 5 analyzes how differences in performance can be related to different dynamics in aggregate demand. Furthermore, Section 6 contains the results of the analysis on differences and similarities in the policies followed by each country group. To this regard, we focus on indicators related to fiscal policy, inflation policy, international trade and structural policies. Section 7 discusses the implications of our results. Finally, Section 8 concludes.

2 Data

Our empirical analysis focuses on yearly data concerning several variables related to economic performance, aggregate demand, and policy in 20 OECD countries in the period 1982-2003. Analyzing data at yearly frequency has the advantage of smoothing the effect of short-run fluctuations in performance indicators, and allows us to focus on "medium-run" outcomes. The countries we study are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, The Netherlands, New Zealand Norway, Portugal, Spain, Sweden, Switzerland, UK, US. Table 1 contains the list of countries studied, together with the indication of their size (in terms of population and of real

GDP). We take as measures of economic performance the growth rate in real GDP, the unemployment rate, the growth rate in GDP per man hour and the growth rate in total factor productivity. Data for PPP adjusted real GDP and for the unemployment rate are drawn from the OECD Economic Outlook Database. Data for GDP per man hour and total factor productivity growth come, respectively, from the "Total Economy Database" and from the "Total Economy Growth Accounting Database" at the Groeningen Growth and Development Center.

To uncover the factors underlying cross-country performance patterns we examine two different sets of indicators: i) indicators related to aggregate demand (both internal and external); ii)indicators related to fiscal policy, inflation policy, international trade and structural policies. As the first group is concerned, we track the dynamics of the following GDP components: private final consumption, total gross fixed capital formation (less housing), government consumption and net exports. Furthermore, we study the dynamics of the share of investment in ICT in GDP, to shed light on those components of investment that are more related to productivity dynamics. Data for GDP components are extracted from the OECD Economic Outlook database. Data for the share of ICT investment in GDP come from the OECD Productivity Database.

Turning to policy indicators, we study fiscal policy by focusing on the evolution of the ratio between the cyclically adjusted primary government balance and potential GDP. We also consider the change in the cyclically adjusted primary government balance, to investigate the characteristics of fiscal policy in relation to business cycles dynamics. To study inflation policy we focus on the growth rate of the CPI index, whereas for international trade policies we consider one of the most popular measures of openness proposed in the empirical literature on international trade and growth (see e.g. Alesina, Spolaore, and Wacziarg, 2005; Rodrik and Rodriguez, 2000; Dollar, 1992), namely the (logarithm of the) ratio of export plus imports to GDP. Finally, as to structural policies, we consider a set of variables that have been associated in the literature (see Bassanini and Duval, 2006; Nickell, Nunziata, and Ochel, 2005; Blanchard and Wolfers, 2000) with reforms in the labour and products markets. Namely, these variables are the tax-wedge on labour, the average replacement rate of unemployment subsidies, the union density rate, the corporate tax rate, the OECD index of employment protection, the OECD index of regulation in product markets[1] and the tax rate on corporate income. We exploit different sources of data for our purposes. Data for fiscal and inflation policy come from the OECD Outlook Database. Data for the openness indicator is from the Penn World Table PWT 6.2 Database. Data for the corporate income tax rate are from the OECD Tax database. The other measures[2] are taken from the dataset in Bassanini and Duval (2006).

[1]This indicator summarizes regulatory impediments to product market competition in seven energy and service industries: gas, electricity, post, telecoms, passenger air transport, railways, and road freight.

[2]The database is available at http://bassax.freeyellow.com/

3 Methodology

The main objects of our analysis will be cross-country distributions of economic performance and policy variables, pooled over the time interval of interest and conditioned on country size and other characteristics. More precisely, let $T = \{t_1, ..., t_n\}$ be the time interval over which we observe the variable of interest x (e.g. GDP growth rate, CPI inflation, etc.). Moreover, let us define by $s_i(T)$ the average size of country i in the time-interval T_n and by $S(T) = \{s_i(T) : \underline{S}(T) \leq s_i(T) < \bar{S}(T)\}$ the size group to which country i belongs in the interval T, the cross-country pooled distribution of the variable x is defined as:

$$X_{ST} = \{x_i(t), t \in T, s_i(T) \in S(T)\} \tag{1}$$

We will investigate the shape of the distributions non-parametrically, by employing kernel density estimates[3], according to the methods developed in Silverman (1986). Compared to standard regression analysis, the advantage of studying the behaviour of the entire distribution is given by the possibility of capturing (and to control for) patterns that go beyond the first moment of the data. In this way, it is then possible to investigate mobility and persistence across groups of countries in terms of performance or policies followed. By comparing different groups over different periods, one can for example gets how much a group is different from another with respect to the average in the whole sample, and whether those differences have widened or reduced over time. In addition, we study whether differences concern the mean as well as other moments (e.g. the variance) of the distribution. Furthermore, by comparing the same group of countries over different periods one can investigate the evolution of within group heterogeneity, that is whether countries within a specific group have become more different or more similar over time. Finally, tracking the dynamics of the entire distribution allows one to control for some of the biases often emphasized in the literature on policy and long-run growth (Easterly, 2005; Sirimaneetham and Temple, 2006; Rodrik, 2005), e.g. the presence of extreme variations in the data, (e.g. due to the presence of countries with performance and or policies very different from the average in the sample).

Beside comparing kernel density estimates, we further check the significance of distributional differences through two-samples non-parametric tests. More precisely, we consider tests of difference in location (the Wilcoxon test and its robust version, the Fligner-Policello test), a test of difference in variance (Squared Rank Test) and, finally, the Kolmogorov-Smirnov test, which check for general differences in the shape of the distributions of two samples.

Furthermore, following an increasingly standard practice in the literature on distribution dynamics (see e.g. Quah, 1993; Overman and Puga, 2002; Castaldi and Dosi,

[3]We estimate densities by using a Gaussian kernel with bandwidth set using the techniques developed in Chapter 3 of Silverman (1986).

2008), we carry out our investigation on variables cleaned from their cross-country average means. Let $x_i(t)$ be the performance or policy variable under investigation, and $\bar{x}(t)$ be its cross-country mean The "mean-cleansed" variable $\bar{x}_i(t)$ is defined as:

$$\bar{x}_i(t) = x_i(t) - \bar{x}(t) \tag{2}$$

Removing cross-country time-varying means helps to detrend the variables, at the same time washing away trends that are common to all countries in the sample.

We focus on two different periods, the period 1982-1993 (Period I) and the period 1994-2003 (Period II). The motivations behind such a split are twofold. First, in 1993 the Maastricht treaty that eventually led to the creation of the European Monetary Union (EMU) was implemented. As this treaty touched a significant share of countries in our sample (see also below), we decided to isolate the period in which its rules have been enforced, to see whether these rules also led to significant changes in actual policies followed by countries. Furthermore, the year 1993 represents a major discontinuity in the data. The plot in Figure 1, shows the dynamics of the cross-country average growth rate of GDP (computed on raw data). As the figure shows quite clearly, the year 1993 coincides with the end of the of the recession begun at the beginning of the 90's and the onset of a new business cycle.

We divide the sample of countries in two groups, by taking the median of the size distribution of countries is each period, with size measured in terms of GDP. The composition of size groups is invariant to the size measure adopted. Indeed, both measures of size (population and real GDP) predict the same ranking of countries[4].

Table 2, presents the composition of groups of small and big countries. Note that the two groups display quite different degrees of size heterogeneity. In particular, the group of small countries is by far more homogeneous. For instance, taking GDP, the largest country (Netherlands) in the groups is only 2.69 times larger than the smallest (Portugal). On the contrary, the group of big countries is characterized by high size unevenness, due to the presence of both medium sized countries (like Australia and the European countries) and very large ones (the US). In this group the size ratio between the largest country (US) and the smallest (Australia) is 19.35.

Another element of heterogeneity in the sample is due to the fact that half of the countries - i.e. the Euro Area countries - experienced a process of monetary integration in one of the periods considered (1994-2003). Such a process has been characterized by the enforcement of a very well defined set of policy constraints and objectives, especially with respect to fiscal and monetary policies. It is therefore worthwhile investigating i) whether the constraints introduced have also mapped into differences in performance and actual

[4]In addition, the size ranking of countries is preserved over the two periods analyzed. It follows that the composition of groups is invariant over the periods considered.

policies followed by countries in the EMU with respect to countries outside the area; ii) whether these differences are dependent on country size. Thus, we further condition in each size group for the EMU status (EMU/Non EMU). In this way, we are left with four groups of countries (cf. Table 2): EMU Big (Germany, France, Italy, Spain) , Non Emu Big (US, UK, Canada, Japan, Australia), EMU Small (Austria, Belgium, Finland, The Netherlands, Ireland, Portugal), Non EMU Small (Denmark, New Zealand, Norway, Sweden, Switzerland).

4 Country Size and Economic Performance

This section is devoted to present the results on the analysis of performance of groups of big and small countries, following the methodology described in Section 3. Our goal is to unveil the presence of a relation between size and economic performance, and study whether this relation is influenced by other country characteristics, i.e. EMU membership status. We focus on three sets of different performance indicators: i) the growth rate of GDP, ii) the unemployment rate, and iii) the growth rate of productivity, both measured as labour productivity and total factor productivity. We consider observations cleaned from their time-varying mean (see Section 3). It follows that each variable is expressed in values relative to the average computed on the whole sample.

4.1 GDP Growth

The plots in Figure 2 compare kernel density estimates of GDP growth rates for different groups of small and big countries, starting with groups of small and big countries not conditioned on EMU membership (top plots), and then moving to big and small countries inside the Euro Area (plots in the middle) and, finally, to big and small countries outside the Euro Area (bottom plots). As the plots in the figure make clear, no significant difference emerge between the unconditional distributions of big and small countries, in both periods considered[5]

The picture radically changes when we analyze groups of small and big countries conditioned on EMU status. Let us first consider countries in EMU. There, big and small countries distributions have the same location in period I (1982-1993). In Period II (1993-2004), however, location is different. In particular, the distribution of small countries is more shifted to the right than the one of big countries. In addition, it displays a fatter right tail, due to the presence of countries with GDP growth far above the average in those years (e.g. Ireland). The same differences are not replicated outside the Euro Area. Indeed Non EMU Big countries display higher average growth than Non EMU Small in

[5]The only remarkable difference is represented by fatter right tail of the small country distribution in the second period. See also discussion below.

Period I, whereas no difference is found in Period II.

To further check the significance of the above differences in distributions we run a battery of two-sample non parametric tests (see Section 3). Tests statistics[6] together with p-values are reported in Table 3 (cols. 1-6). The latter confirm that most of the above described differences cannot be rejected at the 5% level.

The previous results indicate that significant differences in GDP growth rates arise among groups of countries of different size, when size groups are also conditioned on EMU membership. Moreover,differences in GDP growth performance are also observed between groups of similar size (see Figure 3 and Table 3, cols. 7-10). The analysis of these plots show that the distribution of big countries outside the EMU is more shifted to the right than the distribution for big countries in the EMU, in both periods considered. In addition (ii) the distribution of big countries outside the EMU has higher variance and more skewness to the left in Period I, while the variance look the same in Period II. Furthermore, no marked differences across group of small countries are observed. Indeed, the distributions of small countries do not appear different in both periods, except for the much fatter right tail of the distribution of small Euro countries in Period II.

The foregoing comparative exercises shed light on differences in performance across groups of countries. However, they do not help to clarify which changes in the distributions led to different patterns across periods. In addition, they do not allow one to look at"within-group" heterogeneity in performance. To address the latter issues we therefore study the evolution of within-group distributions across the different periods considered. The results of this investigation are presented in Figure 4 and in Table 4. Big countries have improved their GDP growth performance over time. Indeed, the null hypothesis of no difference in location across the two periods is rejected in favor of the alternative of bigger median growth in Period II. This is however the result of a composition effect. Indeed, only the distribution of countries outside EMU shifted in location from one period to another (cf. Figure 4 left plots and Table 4). Distribution location in EMU Big is instead the same over time. Furthermore, growth rate variance in big countries outside EMU has decreased over time. Turning to small countries groups, we observe that changes in the distributions have occurred through an increasing importance of extreme observation in the data (indicating countries with GDP growth far above the average) This is evident from the analysis of kernel density plots in Figure 4 (see plot on top-right) but also from the fact that the Kolmogorov-Smirnov test rejects the null hypothesis of no changes in the distribution. Once again, the same pattern is not always observed on EMU conditioned groups. Indeed, only the distribution of small countries in the EMU has become more uneven of over time. In contrast, over time variance has decreased in Non EMU Small.

[6]For GDP growth, as well as for all other performance and policy indicators analyzed, the variance test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and variances.

4.2 Unemployment

The second performance variable we focus on is the unemployment rate. Unlike GDP growth rates, differences emerge between the distributions of unconditioned groups of small and big countries. In particular, small countries outperform big countries in terms of lower unemployment rates, in both periods considered. This is evident from kernel density plots in Figure 5. In addition, it is confirmed by the results of the Wilcoxon and Fligner-Policello tests (see Table 5, cols. 1-2), which both reject the null hypothesis in favor of the alternative of higher average unemployment rate in big countries (in both periods analyzed). Furthermore, this difference is always confirmed after controlling for EMU status (cf. Fig. 5, middle and bottom plots, and Table 5, cols. 3-6). More precisely, Big EMU countries do exhibit higher average unemployment rates than Small EMU countries both in Period I and Period II. The same is observed outside the Euro Area. Finally, differences across small and big countries emerge also with respect other distribution characteristics. To this end, the distributions of countries in the Euro Area (both small and big) display higher variance than countries outside the area and are relatively more asymmetric toward positive values of the support. It follows that in both periods unemployment performance was much more uneven within EMU countries groups, with a relatively high presence of countries with unemployment rates far above the common average.

Let us now turn to the comparative analysis of groups with similar size characteristics (see Figure 6 and Table 5, cols. 7-10). In both periods, countries in EMU display higher average unemployment than countries outside EMU. However, the gap between big countries has widened over time, while the opposite is observed for groups of small countries.

Finally, we analyze the behaviour of within-country distributions across periods (cf. Figure 7, and Table 6). Our results show that relative unemployment rates decreased on average in Non EMU Big countries, while they raised on average in EMU Big and Non EMU Small. Another important feature to remark, is the reduction in variance observed in the Non EMU Big distribution. Thus, countries in this latter group have not only improved their unemployment performance over time. They also displayed a convergence towards similar unemployment rates. The composition of all these changes affects the evolution of the distributions of aggregate big and small countries. Indeed, the distribution of the former group is invariant over the two periods, whereas the distribution of small countries shows only a reduction in variance.

4.3 Productivity

The evidence discussed in the previous section has pointed to the presence of marked cross-country differences in GDP growth and unemployment performance when one con-

trols for size and for EMU membership. In particular, big countries in the Euro Area displayed worse performance (i.e. lower GDP growth and higher unemployment rates) both with respect to small countries in the area, and to countries with similar size characteristics outside the area. On the other hand, the performance record of Small EMU countries looks much more similar to the one of their non EMU counterparts. We now turn to investigate whether differences emerge also in aggregate productivity. Figures 8 and 9 compare kernel density estimates of, respectively, labour productivity and total factor productivity for groups of countries with different size characteristics. Table 7 and Table 9 (columns from 1 to 6) report results about tests on differences in distributions. From the analysis of figures and tables, no striking difference arises between the different measures of productivity employed. The difference among unconditional groups of small and big countries concern only the spread of the distributions. However, similarly to the other performance measures, differences are more marked considering groups conditioned on EMU membership status. More precisely, in the Euro Area labour productivity is more volatile[7] in small countries than in big ones in Period I. In the second period, this difference in volatility vanishes. However, average productivity growth in small countries is higher. The same dynamics is observed employing total factor productivity (except for the larger variance in small countries groups in both periods). Outside the Euro Area no significant difference arises. Independently from the measure used, small and big countries' productivity distributions are statistically equivalent.

The comparison of productivity dynamics among groups of similar size reveals further interesting patterns (cf. Figures 10-11 and cols. 7-10 in Table 7 and 9). First, considering labour productivity, big countries in EMU were characterized on average by higher growth rates than big countries outside EMU in the first period (1982-1993). In the second period, however, the gap is reversed! This is not observed analyzing small countries groups. Indeed, average labour productivity growth was higher in Euro Area countries than outside. However, over periods small countries converged to the same average growth rate. Similar results are obtained employing total factor productivity. For instance, groups of big countries displayed the same average in the 1982-1993 period. In the second period, a gap in favor of countries outside the Euro Area emerges. Once again, this dynamics is not observed between small countries' groups. Except for the larger variance of EMU Small in the second period, the distributions of total factor productivity growth are statistically equivalent in both periods.

Thus, also with respect to productivity dynamics big countries in the Euro Area were characterized by worse performance than small countries in the area and than big countries outside the area. On the other hand, small countries display similar productivity dynamics. We now turn to the analysis of within-group distributions over time (cf. Figures

[7]Like for all indicators in this work, the variance of the pooled distribution of productivity captures both "within-country" volatility as well as "between country" volatility.

12-13, and Tables 8-10) to see which changes in the distributions have produced the above described patterns. First, results are independent from the productivity measure employed. Second, average productivity growth is invariant across periods for all groups but EMU Big. In this group average growth is significantly lower in the second period. It turns out, that above described productivity gap of EMU Big in the second period was generated by a deterioration (relative to the common average) of productivity performance in the former group, rather than by an improvement of productivity in Non EMU Big and EMU Small. Finally, significant movements in other distributional moments are observed. In particular, productivity variance decreased in Non EMU Big and EMU Small. This indicates that over time countries within those groups have become more homogeneous in terms of productivity performance.

5 Country Size and Aggregate Demand Dynamics

The evidence presented indicates that size matters for economic performance if one further controls for EMU membership status. To this regard, big countries in the Euro Area emerge as the group displaying worse economic performance, both with respect to small countries in the area as well as to countries with similar size outside the area. In contrast, differences among small countries' groups are much smaller. In this section, we begin the exploration of the factors underlying these performance patterns, by focusing on the evolution of aggregate demand indicators. Indeed, in light of the structural differences in openness between big and small countries it is worthwhile checking whether the observed performance patterns an be at least partly explained by the different contributions to growth stemming from internal and external demand components. The implicit hypothesis is that aggregate demand has real effects also in the long-run. This might run against the classical dichotomy in modern macroeconomic theory. Nevertheless, in the last years a growing body of research has started unveiling channels through which aggregate demand may have real effects also in the long run. For instance, Carlin and Soskice (2009) argue that in a New Keynesian open economy framework, aggregate demand is a selection device of output equilibria determined by the interaction among price-wage dynamics and real exchange rate dynamics. Likewise, the works in Greenwald, Kohn, and Stiglitz (1990); Stiglitz (1994); Aghion and Marinescu (2008) show that increased aggregate demand may be beneficial in the long-run, because it alleviates firms' financial constraints and induce firms to invest in more productive technologies.

We study aggregate demand dynamics in the 1982-1993 and 1994-2003 periods through a detailed analysis of the distributions of growth contributions from GDP components. More precisely, we consider contributions from private consumption, total investment (i.e. government plus private), government consumption and net exports. The contribution of

each GDP component to annual GDP growth, is defined as:

$$y_j(t) = s_j(t-1)g_j(t) \tag{3}$$

where $y_j(t)$ is the contribution of component j to the growth rate of real GDP in year t, $s_j(t-1)$ is the share of each component in GDP in year $t-1$ and $g_j(t)$ is the growth rate of GDP component j in year t. In what follows, we present results for each single GDP component. Similarly to Section 4 we discuss both distributional differences across countries' groups, and within-groups over time. However, given the absence of significant differences in performance across unconditioned groups of big and small countries, we show results only for groups conditioned on EMU membership.

5.1 Private Consumption

Differences in private consumption contribution to GDP growth across small and big countries are the same in the two periods analyzed. In the Euro Area the distributions of big and small countries are the same in both periods, except for the larger variance in small countries in the first period (cf. Figure 14 and Table 11, cols. 1-4). Outside the Euro Area big countries display on average higher consumption contribution to growth than small countries.

Furthermore, in both periods the contribution of consumption to growth in Non EMU Big is large also compared to EMU big countries (cf. Figure 15 and Table 11, cols. 5-8). On the other hand, EMU Small and Non EMU Small differ in location in Period I only (higher in EMU countries). In the second period, differences in distribution concern the variance, that is larger in Small EMU.

Consistently with the above picture, within-group distributions do not show any evolution over time (see Figure 16). Indeed, all distribution tests (cf. Table) fail to reject the hypothesis of equality in distributions across periods.

5.2 Investment

Big and small countries display no difference in average total investment contribution to growth (cf. Figure 17 and Table 13, cols. 1-4). This pattern is observed both inside and outside the Euro Area, and in both periods. Same considerations can be made for results from the comparative analysis of groups of similar size (Fig. 18 and Table 13, cols. 5-8). Nonetheless, differences across big and small countries emerge with respect to the variance of investment distributions. More precisely, in the first period total investment is more volatile[8] in small countries than in big countries, and in Non EMU big countries than in

[8]Cf. note 7.

EMU big ones. These differences however disappear in the second period of observation. Coherently with this pattern, the analysis of within-group distributions reveals that only the distributions of EMU Big and Non EMU Small groups have shifted over time. The shift concerned the variance or higher moments of distributions. In particular, over time investment has become less volatile in Non EMU Small. In addition, the distribution in EMU Small is more asymmetric to the right in the second period. This shift is captured by the Kolmogorov-Smirnov Test.

The evidence presented so far relates to total gross fixed capital formation, i.e. to an aggregate including both private and government investment expenditure, as well as expenditure for capital goods with heterogeneous features and uses. It follows, that the absence of differences in average investment contribution between big and small countries (and/or among countries of similar size) could simply be a sheer result of aggregation, not replicated at a finer levels of investigation. Thus, we also perform a more disaggregated analysis of investment components. To this regard, we focus on the share of ICT investment in GDP, also in light of the attention that this component of the investment expenditure has received in cross-country productivity studies (see e.g. David, 2000; Brynjolfsson and Hitt, 2000). The plots in Figures 20 and 21 compare estimates of ICT share distributions across different groups of big and small countries, while Figure 22 refers to the evolution of within-group distributions. As the figures makes quite clear, the cross-country dynamics of ICT investments shares is quite different from aggregate investment dynamics[9]. First, in the Euro Area small and big countries have the same average (and also different variances) in the 1982-1993 period. In the second period, however, the average in small countries is higher. Furthermore, outside the Euro Area small countries lead big countries in terms of high average share ICT share in the first period. Nevertheless, in the second period the gap is reversed.

The comparative analysis of groups of similar size reveals other interesting features. The share of ICT investments is larger in Non EMU big countries that in EMU big ones. In addition, the gap in averages seems to widen over time. Differences in distribution location arise also in small countries inside and outside EMU, in both periods considered. However, compared to big countries, the gap is much smaller. In addition, it looks stable over time.

5.3 Government Consumption

In the first period groups of EMU countries do not differ in terms of government consumption contribution to growth (see Fig. 23 and Table 15, cols. 1-4). In the second period, however, a gap in averages emerges. In particular, the distribution of big countries

[9]The results of tests on distributions differences confirm the qualitative patterns emerging from kernel densities analyses. The tables with tests are available form the authors upon request.

is more shifted to the left. In addition, it is centered on negative values of the support. Outside the Euro Area no difference in averages is found, in both periods analyzed. The only distributional difference is represented by the larger variance of the small countries' distribution in the Period II.

The decline of government consumption contribution in EMU Big is evident also with respect to big countries outside the Euro Area (see Fig. 24 and Table 15, cols. 5-8). This dynamics contrasts with the one of small countries. Indeed, over periods average government consumption contribution increased in EMU Small relatively to their Non EMU counterparts.

The analysis of within-groups distributions (Fig. 25 and Table 16) reveals that the above gap in the Euro area between small and big countries, was produced both by a leftward shift of the distribution in big countries and by an increase in the average contribution in small countries. In addition, variance increased in big countries and shrank in small ones. Finally, no statistically significant change in within-country distributions was detected outside the Euro Area.

5.4 Net Exports

By definition, big and small countries are characterized by different weights of external demand in GDP, relatively larger in small countries. One might therefore expect net exports to give on average a larger contribution in small countries than in big ones. However, from the comparative analysis of kernel density estimates in Figures 26 and 27 and from the tests results in table 17 (columns 1-4) it is evident that this difference between small and big countries emerge only in the second period analyzed (1994-2003). Interestingly, the same difference is observed both inside and outside the Euro area. The overwhelming presence of European countries in the Non EMU Small group might be be at the root of this similarity between the groups of small countries. Indeed, by being small and in a regime with high mobility of capital and goods, these countries have *de facto* been facing many of the opportunities of their EMU neighbours.

Moreover, the analysis of groups of similar size (cf. Figure 27 and columns 5-8 in Table 17) reveals that the distributions of net exports contribution in big countries groups were statistically equal across the two periods. As to small countries, differences are found only in Period I, and concern the distribution' variance, larger in small countries outside the Euro Area.

Finally, let us turn to within-groups dynamics. All distributions are remarkably stable across periods (cf. Fig. 28). Indeed, no distribution shift is statistically significant according to tests in Table 18, except for the lower variance of the Non EMU Small distribution in the second period.

6 Country Size and Growth Policy

The comparative study discussed in the previous section has revealed how differences in performance across different groups of small and big countries can be related to different dynamics in aggregate demand components. It has also shown how those differences are not the same over time. For instance, in the Euro area average government consumption contribution and ICT investment share in GDP have shrank over time in big countries relatively to small ones. On the other hand, no statistically significant difference is found in average private consumption and total investment contribution to GDP growth, in both periods. Outside the Euro Area, big countries were characterized by larger private consumption contribution to growth than small countries, in both periods. In addition, over time they leapfrogged small countries in terms of ICT investment share in GDP. Countries of similar size display important differences as well. To this end, big countries in the Euro Area differ markedly from their non EMU counterparts in terms of average lower consumption and government contributions to growth. Differences in averages across small countries inside and outside the Euro Area are either not statistically significant or are very small, and typically concentrated in the first period of analysis. However, compared to big countries' groups, small countries display more differences in the variances of their distributions. In addition, the distributions of demand components in small countries and are in general very skewed, displaying the presence of positive (or negative) outliers.

We now turn to analyze how the above described dynamics in performance and aggregate demand patterns reflect different policy choices by the groups of countries under consideration. We begin our analysis of policies, by examining fiscal policy. Next, we move to study inflation and trade policies. Finally we conclude with an account of structural policies in labour and product markets.

6.1 Fiscal Policy

To shed light on fiscal policy choices in the different groups of countries under examination, we focus on the cyclically adjusted primary government balance (as a share of potential GDP). This measure is unaffected by cyclical budget expenditures (e.g. automatic stabilizers) and from government debt interest payments. It is therefore better suited to capture discretionary fiscal policy dynamics. The analysis of the plots in Figure 29 and of tests in Table 19 (cols. 1-4) reveals different fiscal balances dynamics inside and outside the Euro Area. On one hand, small countries in the area presents a much better situation than big countries, in both periods considered. The distribution of the primary government balance ratio is indeed located to the right of the one of big countries in both periods. In addition, the mass of the distribution is more shifted toward positive values of the support. All this indicates a stronger ability of Small EMU governments to run better fiscal balances. However, the gap between small and big countries looks smaller

in Period II (cf. Figure 29) . Outside the Euro Area is the group of big countries that display on average better fiscal balances, in both periods considered. Moreover, similarly to what observed in the Euro area the gap in locations between the distributions shrank across the periods considered. Finally, note that in Period II both small and big countries' distributions are significantly left skewed towards negative values of the support. This asymmetry in distribution can be related to the huge fiscal deficits ran in countries like Japan and Sweden in the '90s.

The analysis of groups of similar size (cf. Fig. 30 and Tab. 19, cols. 6-8) shows that on average fiscal policies converged over time in big countries groups. Indeed, significant differences in the average are found only in Period I and not in Period II. A similar dynamics is observed across small countries groups, although differences remain statistically significant (in favor on EMU Small) in Period II. Furthermore, significant differences are found in other distribution moments. More precisely, the variance of the distribution is statistically larger in Non EMU countries than in EMU ones in Period II. Looking at plots in Figure 30 it becomes clear that this is the result of the significant increase in the left skewness of Non EMU countries distributions (see also above).

Overall, the above results indicate cross-country convergence toward positive average fiscal balances, especially for big countries' groups. Such an outcome is certainly mirroring the trends in disinflation policies (see also next section) and public debt reduction policies[10], followed by many OECD countries in the 80's and in the 90's. To this end, from the analysis of within-group distribution dynamics (cf. Figure 31) it is clear that this convergence is the result of improved fiscal austerity in EMU Big and Non EMU Small groups. The right-ward shift in EMU big countries appears quite significant, as it is also detected by distribution differences test (see Wilcoxon and Fligner-Policello tests in Table 20). Furthermore, the Squared rank test detects larger variance in Period II for EMU Big, Non EMU Big and Non EMU Small countries. From plots in Figure 31 it is clear that this result is largely due to an increase in the asymmetry of the aforementioned distributions over time.

We now move to analyze the cyclical character of discretionary fiscal policy. Indeed, the results discussed so far shed light on various size-related aspects of fiscal policy in the countries analyzed. However, they do not tell us whether discretionary fiscal policy has had a counter-cyclical, pro-cyclical or even an a-cyclical character in the years under consideration. To shed light on the latter issue, we study the correlation between the change in the cyclically adjusted primary government balance and the GDP growth rate, taken as the reference indicator for the business cycle. As discretionary fiscal policy responses to cyclical turns might display long lags, we compute both contemporaneous and one-year lagged correlations. Correlation coefficients and p-values are reported in

[10]See Fitoussi (2006) for an account of trends in macroeconomic policies in many industrialized countries.

Table 21. This table shows that, in both periods analyzed, discretionary fiscal policy has been pro-cyclical in EMU Big countries and counter-cyclical in Non EMU big countries. Correlation coefficients are indeed negative[11] in the former group of countries and positive in the latter. In small countries outside the Euro Area, discretionary fiscal policy displays a counter-cyclical character in the first period only, whereas in the second it seems not responding to cyclical turns. Indeed, both contemporaneous and lagged coefficients are not significant in this period. Finally, discretionary fiscal policy was a-cyclical in Small EMU countries, in both periods studied.

6.2 International Trade

We study international trade policy by focusing on the growth rate in openness, where the latter is measured by ratio between total trade (exports plus imports) and GDP. Studying growth rates allows one to track closely which groups of countries have followed a more (or less) openness-oriented policy, despite the existing structural differences in openness levels between small and big countries. Figures 32 and 33 compare kernel density estimates for, respectively, groups of different and similar size. Distributions' differences tests are reported in Table 22. Let us start with groups of different size. Outside the Euro Area no difference in distributions is found, in any of the periods considered. This looks evident from the bottom-plots in Figure 32 but it is also confirmed by the tests in Table 22 (see columns 3-4) which all fail to reject the null of equal distributions for countries not in the EMU. This pattern contrast with the evidence from Euro area countries. More precisely, no difference between big and small countries arises in the first period (cf. top-plots in Figure 32 and Table 22, cols. 1-2). In the second period, however, EMU big countries lead small ones in terms of higher average openness growth rates (cf. Wilcoxon and Fligner-Policello tests in Table 22).

Furthermore, from the analysis of groups of similar size (Fig.33, and Table 22, cols. 5-8), it is clear in the second period of analysis, EMU big countries are also ahead of Non EMU big countries in terms of higher average openness growth. On the contrary, no significant difference is found in Period I. Finally, the distributions of small countries groups are statistically equivalent in both periods.

By and large, the above results indicate that openness policy has been remarkably stable across time for all groups of countries, except for the group of big countries in the Euro Area. There, the regime shift represented by the process of monetary integration has fostered international trade. This fact is evident also from within-groups distribution

[11]Note that a negative correlation indicate a pro-cyclical fiscal policy, as negative GDP growth rates tend to be associated with positive changes in primary government balance and vice-versa. A positive correlation coefficient instead indicates a counter-cyclical character of fiscal policy, as negative (positive) GDP growth rates are associated with negative (positive) changes in primary government balance. Finally, zero or non significant correlation coefficient will be interpreted as an instance of a-cyclical fiscal policy, i.e. poorly responsive to cyclical movements.

analysis. Indeed, only the distribution of big countries in EMU has significantly shifted to the right over time. This strong push on trade policy in EMU big countries, however, contrasts with the evidence from net export dynamics (cf. Section 5.4). Indeed, higher growth rates in openness did not lead to stronger average net export growth vis-à-vis Non EMU Big countries in the period 1994-2003, nor they were able to prevent the emergence of a gap with respect to Small EMU countries in the same period.

6.3 Inflation Policy

The plots in Figure 35 compare kernel density plots of the CPI index growth rates for groups of countries of different size and over different periods. Two-sample non parametric tests are reported in Table 24. The analysis indicates that in the Euro area big countries displayed on average higher inflation rates than small countries in Period I. Furthermore, the small countries' distribution is significantly more skewed to the right in the first period, due to a larger fraction of countries displaying far-from-average inflation rates in the period. The converse is observed outside the Euro area. There, it is the distribution of small countries that displays higher average inflation in the first period.

The second period of analysis has been characterized by the convergence in inflation rates among groups of big and small countries. Indeed, in the 1994-2003 period the distributions of EMU Big and EMU Small are statistically equivalent according to tests in Table 24 (see bottom panel). The same thing is observed outside the Euro Area. The comparison of similar size groups reveals further interesting details on such a convergence process. In particular, inflation rates were on average larger in EMU big countries than in Non EMU big ones in the first period. However, the distributions eventually converged to be statistically equivalent in Period II (cf. Figure 36 and columns 5-6 in Table 24). The picture in small countries' groups is slightly different. Indeed, the distributions of inflation rates were were statistically equivalent in the first period (except for the thicker right tail in EMU Small). In the period 1994-2003, however, Small EMU lead Non EMU Small in terms of higher average inflation.

The above results suggest that disinflation policies implemented in OECD countries since the early 80s eventually lead to a convergence to a common distribution of inflation rates across different groups of countries. To this end, convergence has been particularly evident across small and big countries in the Euro Area, and among groups of big countries. Moreover, the analysis of within-group dynamics shows that convergence in inflation rates has occurred within each group as well. Indeed, from plots in Figure 37 and from the Squared Rank test results in Table 25 it is evident that all groups of countries have been characterized over time by a marked reduction in the variance of inflation rates. In addition, average inflation rate stayed the same in EMU Big, whereas it increased in Non EMU Big and in EMU Small. It follows, that the above observed convergence among

groups of big countries was generated by a rightward shift of the distributions of the latter groups (rather than a leftward shift of the EMU Big distribution).

6.4 Structural Policy

The final block of policy we analyze concerns structural policies, i.e. those actions aimed at improving the supply-side of the economy. In particular, we focus on the functioning of labour and product markets and we examine some of the variables that have been associated in the literature (see e.g. Bassanini and Duval, 2006; Nickell, Nunziata, and Ochel, 2005) with the presence of rigidities in labour and product markets. Namely, the indicators studied are: the overall tax wedge on labour, the average replacement rate of unemployment subsidies, the OECD index of employment market protection, the OECD index of regulation in product markets, the union density rate, and the tax rate on corporate income.

The variables listed above affect labour and product markets in different ways. Nonetheless, an increase (reduction) in their level has been usually associated with an increase in the rigidity of labour and product markets, and consequently with a deterioration of aggregate supply conditions. To capture the overall quality of structural policy in labour and product markets we aggregate the foregoing variables into a single index. As the recent literature on policy and growth has pointed out (see Burnside and Dollar, 2000; Sirimaneetham and Temple, 2006), working with a single composite index, has several advantages. First, it reduces measurement errors implied from taking a single variable a proxy of policy quality. Second, single indicators can be significantly correlated among them. It follows that, building an aggregate measure reduces redundant information, at the same time avoiding possible biases induced by sources of variation associated with each single variable.

We use principal component analysis to build our index of labour and product market regulation[12]. This implies taking the n variables under consideration and building new indices $P_1, P_2, ...P_k, ..., P_n$ that maximize explained total variance of the variables and are mutually uncorrelated. More formally, the principal component P_k is defined by the vector of loadings $a_k = (a_{k1}, a_{k2}, ..., a_{kn})$ and the variables $X_1, X_2, ..., X_n$ such that the linear combination:

$$P_k = a_{k1}X_1 + a_{k2}X_2 + ... + a_{kn}X_n$$

has the maximum variance subject to the constraint that a_k belongs to an orthonormal set (i.e. $a_k'a_j = \delta_{kj}$ with $\delta_{kj} = 1$ if $j = k$ and zero otherwise). We first compute correlations among the labour and product market regulation variables in our dataset, to check whether principal component analysis is meaningful in our context. Correlation

[12]See Sirimaneetham and Temple (2006); Zalduendo (2005) for applications of this approach in similar contexts.

coefficients are reported in Table 26. Note that values are high and significant[13] for most variables in the panel. In light of the significant collinearity among the variables, we carry out principal component analysis by previously standardizing the variables to have zero mean and unit variance[14]. Table 27 reports the share of total variance explained by each single component. Note that the first component largely leads the others, by explaining more than 42% of the variance. We thus identify our Labour and Product Markets Regulation Index (LPMR Index) with the first principal component of the data and we exclude the other components. The coefficients (i.e. the loadings) of the variables assigned by the first component[15] are reported in Table 28. Note that, except for the union density rate, all coefficients have positive sign. It follows that high (low) values of the index will be interpreted as indicating the presence of high (low) rigidities in labour and product markets.

Figure 38 shows the evolution of the cross-country average LPMR Index in the years under analysis. As it is clear from the figure, the whole period 1982-2003 has been characterized by a general trend toward the reduction of rigidities in labour and product markets. Similarly to other policy indicators in this work, however, we compare the index evolution in different groups of countries by removing the cross-country common average from the index. Table 29 shows group means of this latter index in the different periods analyzed. From the table it is evident that, relative to the common average, Euro Area countries are characterized by rigid labour and product markets in both periods, and in big countries much more than small ones. Outside the Euro Area, the picture is reversed. Both big and small countries display below average rigid labour and product markets in both periods. In addition, rigidities are lower in big countries than in small ones[16].

Previous remarks notwithstanding, the values in Table 29 indicate that over time labour and market rigidity decreased more than the average in the Euro Area (more markedly in small countries) and increased (or decreased less than the average) in Non EMU big countries. To shed further light on the foregoing differences, we perform a comparative analysis of cross-groups and within-group distributions of the changes in our index of labour and product markets regulation. Similarly to other policy indicators (see Section 6.2), index changes provide a measure of the direction and magnitude of structural reforms in the different groups of countries, despite differences in the index levels. Figure 39 and Table Table 30 compare the distributions of change in the LPMR Index for groups of different size. Note that distributions in the Euro Area look very similar in Period I, and are statistically equivalent according to tests results in Table 30 (top-panel). In the

[13]The table of p-values for the null hypothesis of zero correlation are available from the authors upon request.

[14]This is equivalent to work on the correlation matrix rather than on variance-covariance matrix.

[15]The coefficients in Table 28 are obtained after applying a varimax rotation to the original loadings.

[16]All described differences are statistically significant according to Wilcoxon and Fligner-Policello tests.

second period differences are concentrated in the Euro area and concern the spread of distributions. More precisely, the variance is higher in EMU big countries than in small ones (cf. Figure 39, top-right and Squared Rank test in Table 30, bottom-panel). This suggests a relatively larger heterogeneity in structural policy reforms within the EMU Big group. To this regard, note also that EMU Big distribution is much more asymmetric to the left in Period II.

Let us turn to compare groups of similar size (cf. Figure 40 and columns 5-8 in Table 30). First, note that distributions of both small and big countries groups are the same in Period I, except for the larger variance of the Non EMU big distribution. In the second period, however, the distributions of EMU countries is more shifted to the left. In addition, the distribution display larger variance. The analysis of small countries reveals a similar pattern. More precisely, no distributional difference is found in Period I. In Period II the average is smaller in EMU Small.

From the analysis of within-groups distributions (cf. Figure 41 and Table 31) it is clear the gaps discussed above were generated on one hand by a rightward shift of the distribution of Non EMU big countries, and on the other hand by a leftward shift of the distribution of small Euro countries.Distribution location in EMU Big and Non EMU Small remained statistically stable across periods. Finally, the variance in EMU Big countries increased over time, while it decreased in Non EMU small countries.

The foregoing results indicate that differences across countries of different and similar size emerge only in one period of analysis (1994-2003). In this period, small countries in the Euro area took on average actions aimed at decreasing rigidities in labour and product markets. The same occurred only for some countries in EMU Big group, thus generating the above described increase in policy heterogeneity. This pattern contrast with the one observed outside the Euro Area. There, big countries implemented actions aimed at increasing (relative to the common average) regulatory levels in labour and product markets.

The composition of the different groups of countries is certainly underlying many of the above described patterns. Indeed, the presence of rigidities in labour and product markets in the Euro Area is in line with previous findings of the literature (see e.g. Nickell, 1997; Blanchard and Wolfers, 2000) that has then pointed to those rigidities as the source (or as the enabling factor) of the European unemployment problem in last decades. In addition, these patterns seem to confirm the conjecture of a superior ability (and/or incentive) of small countries to implement reforms (Robinson, 1960; Duval and Elmeskov, 2006). Moreover, the differences observed outside the EMU can be explained on one hand by the fact that group of big countries is mostly composed of Anglo-Saxon countries (Australia, UK, US), often identified as "market-based economies" (cf. Hall and Soskice, 2001) characterized by less rigid labour and product markets. On the other hand, the group of small non EMU countries is largely composed by European countries, and

in particular by Scandinavian countries (like Sweden, Norway, Denmark), identified as "coordinated-economies", and as being characterized by an equilibrium between social welfare levels and a business-enhancing environment.

7 Discussion of Results

The evidence presented in the previous sections brings support to the claim that size matters in explaining cross-country patterns in performance, provided that one further controls for other key country characteristics, i.e. EMU membership status. In addition, the analysis has revealed the presence of significant divergences across countries of similar size, i.e. between big countries inside and outside the Euro area. Moreover, we found that differences in performance are related to different dynamics of domestic vs. external demand components and, finally, to different policies by the groups of countries scrutinized.

Previous remarks in mind, let us now propose some tentative conjectures for the type of growth strategies that sound more appropriate given the size of a country. In performing this task, we shall make use of the "weakest-link" hypothesis, proposed in the policy-growth literature (Easterly, 2005; Sirimaneetham and Temple, 2006, see e.g.). In brief, the hypothesis is that bad policy can be harmful for growth, whereas good policy might not be enough for growth. It follows that a scenario in which a given growth strategy is associated with a (relatively) good performance record indicates - at least - that the strategy has not harmed economic performance in the group of countries under consideration. On the other side of the medal, finding growth strategies associated to bad performance indicates that those strategies have been harmful - or at least have not promoted - economic growth in the countries under analysis.

In light of the above considerations, our results suggest that domestic demand and technology related investments, together with a counter-cyclical fiscal policy is an appropriate strategy for growth in countries of large size. Indeed, this strategy has promoted growth - or at least it has not harmed it - in big countries outside the Euro area. Moreover, this strategy was absent, or to same extent reversed, in big countries in the Euro Area, that displayed a worse performance in the years considered.

Moreover, our results cast doubts on the effectiveness of a strategy based on openness and external competitiveness for countries of big size. Indeed, in the 1994-2003 period growth and productivity prospects worsened in big countries in the Euro Area despite higher relative growth in openness and lower inflation rates. On the contrary, policies aimed at sustaining external demand and competitiveness, as well as structural policies, look appropriate for small sized countries. This conjecture is supported by the fact that the relatively good performance record of small countries in the period 1994-2003 was accompanied by a larger contribution of external demand to growth and by a low inflation

rate policy.

Finally, our results seem to weaken the claim that larger government size and/or increased regulation in labour and product markets is harmful for growth. Indeed, on the one hand government contribution to growth did not decrease nor increased in countries with good performance record (e.g. Non EMU countries, and EMU small countries). On the other hand, good performance was observed in Non EMU Big countries despite a relative increase in market rigidities.

Before concluding, however, some remarks are in order. First, our groups display different levels of heterogeneity in the size of countries they include. While, small countries groups are very homogeneous in terms of size, this is not true for groups of big countries (see Table 2 and discussion in Section 3). Indeed, the group of big countries in the Euro Area includes only medium-sized countries like Germany, France, Italy and Spain, whereas the group of big countries outside the area encompasses also very large countries like Japan and US. It turns out that judging appropriateness of policies based on evidence from heterogeneous samples may sound misleading. Nonetheless, building on the weakest-link criterion, our analysis allows to place a first restriction in the class of policies that are more suited for a group of countries, e.g. by excluding those policies associated with a bad performance of one group. Second, in identifying the most appropriate growth strategy for big countries we emphasized the role of domestic demand. Nevertheless, it must be stressed that the factors underlying domestic demand components do matter as well. To this end, the recent global financial crisis[17] has shown, growth strategies based on consumption growth may not be sustainable if they are associated with decreasing households saving rates and increasing debt driven by bubbles in financial and/or housing markets.

8 Concluding Remarks

In this paper we provided an account of economic performance and growth policies in the years from 1982 to 2003 for several OECD countries. Central in our analysis is the hypothesis that policies affect in different ways countries having unequal size. For this reason, we divided our sample of countries in groups of big and small countries. In addition, we conditioned on EMU membership. By employing non parametric distribution dynamics techniques, we found that no significant differences between big and small countries in economic performance arise if one simply control for size. On the contrary, marked differences in performance emerge if one controls both for size and for EMU membership. In particular, big countries in the Euro Area emerge as the group displaying worse performance both with respect to small countries in the area and with respect to big countries

[17] See Stiglitz (2008) for an account of the global financial crisis and its consequences. See Carlin and Soskice (2009) for remarks similar to ours about domestic demand strategies.

outside the area. The performance record of small countries look instead very similar. Moreover, we studied the main differences and invariances across growth strategies followed by big and small countries. Our results show how differences in performance can be related to diverging dynamics in aggregate demand components, fiscal policy response to business cycles, international trade and structural policies. Despite this heterogeneity, however, all groups of countries followed the same policy in terms of inflation and improved fiscal rigour.

Our work can be extended in several ways. First, one could integrate the analysis of performance with other key indicators of performance and policies of a country. Measures of inequality in the functional and personal income distribution seem a good candidate in this respect (e.g. see Akerlof, 2007; Fitoussi, 2006). Second, one could go beyond the counterfactual analysis of growth and policy relations performed in this work, and try to investigate how the effect (and its magnitude) of a given policy on growth and unemployment changes according to the size of the country. Non parametric conditioning techniques, or parametric techniques allowing for cross-sectional heterogeneous coefficients could be employed for that purpose. Second, we employed a discrete measure to quantitatively evaluate the distance across performance and/or policies of countries. Indeed, distribution difference tests employed in this paper only allow to judge whether distributions of performance variables are statistically "close" or "far" enough. No evaluation of the magnitude of distances is possible. One way to overcome such problems would be introducing continuous distribution distance measures, and then study how much distributions of performance and policy indicators are farther or closer within and across periods.

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Country	Population	Real GDP
Australia	17389.11	398224.9
Austria	7862.21	192761.29
Belgium	10072.56	237069.51
Canada	28383	696018.17
Denmark	5211.31	128473.94
Finland	5040.8	108495.14
France	57358.25	1294814.58
Germany	80292.28	1997045.26
Ireland	3629.34	69467.76
Italy	57102.06	1262108.52
Japan	124095.39	2835817.05
Netherlands	15202.8	369342.38
New Zealand	4316.99	128457.87
Norway	3535.59	65383.9
Portugal	10071.59	137173.47
Spain	39667.82	684607.05
Sweden	8654.86	206723.81
Switzerland	6875.94	201312.51
UK	57299.82	1242961.22
US	263196.42	7705460.53

Table 1: List of countries studied together with their size, measured as population (thousands of citizens) and PPP adjusted Real GDP. Size values are averages over the entire period considered (1982-2003).

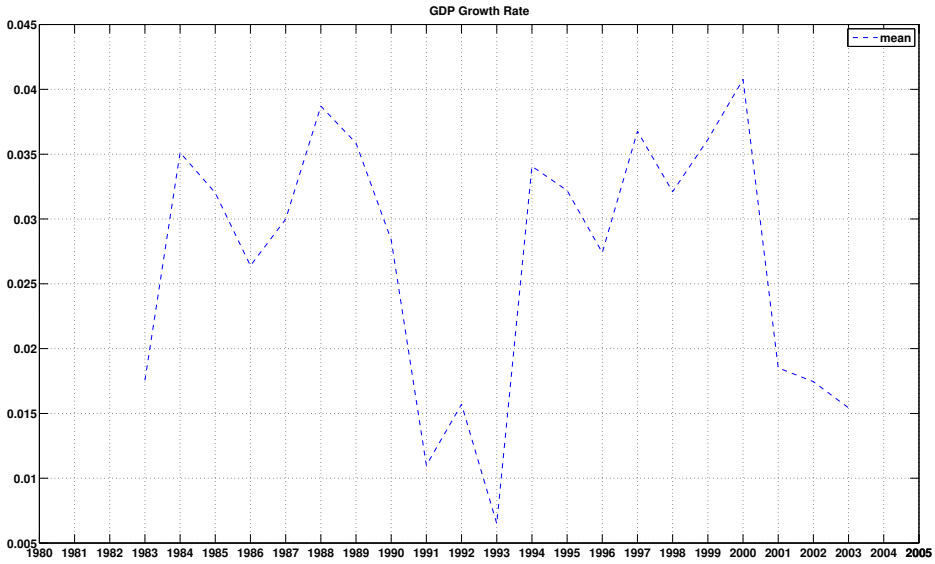


Figure 1: Cross-country average GDP growth rate.

Big Countries	Population	Real GDP
US (Non EMU)	263196.42	7705460.53
Japan (Non EMU)	124095.39	2835817.05
Germany (EMU)	80292.28	1997045.26
France (EMU)	57358.25	1294814.58
Italy (EMU)	57102.06	1262108.52
UK (Non EMU)	57299.82	1242961.22
Canada (Non EMU)	28383	696018.17
Spain (EMU)	39667.82	684607.05
Australia (Non EMU)	17389.11	398224.9

Small Countries	Population	Real GDP
Netherlands (EMU)	15202.8	369342.38
Belgium (EMU)	10072.56	237069.51
Sweden (Non EMU)	8654.86	206723.81
Switzerland (Non EMU)	6875.94	201312.51
Austria (EMU)	7862.21	192761.29
Denmark (Non EMU)	5211.31	128473.94
Finland (EMU)	5040.8	108495.14
Ireland (EMU)	3629.34	69467.76
Norway (Non EMU)	3535.59	65383.9
Portugal (EMU)	10071.59	137173.47

Table 2: Groups of big and small countries, together with the indication of their EMU membership status. In each group countries are ranked in terms of their size.

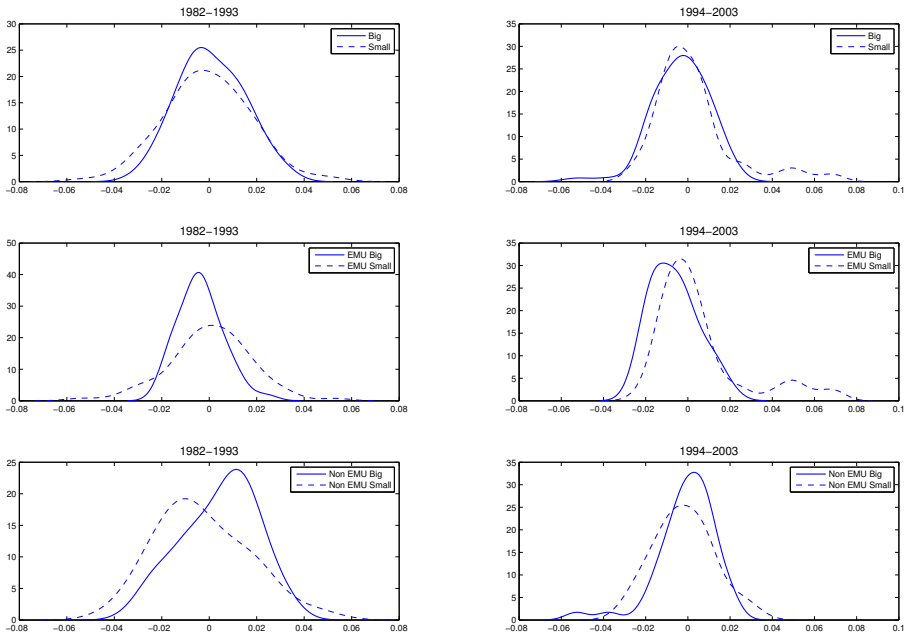


Figure 2: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. GDP growth rate. Big and small countries in the EMU (top plots). Big and small countries outside the EMU (bottom plots). Big countries and small countries (top plots). Big and small countries in the EMU (intermediate plots). Big and small countries outside the EMU (bottom plot).

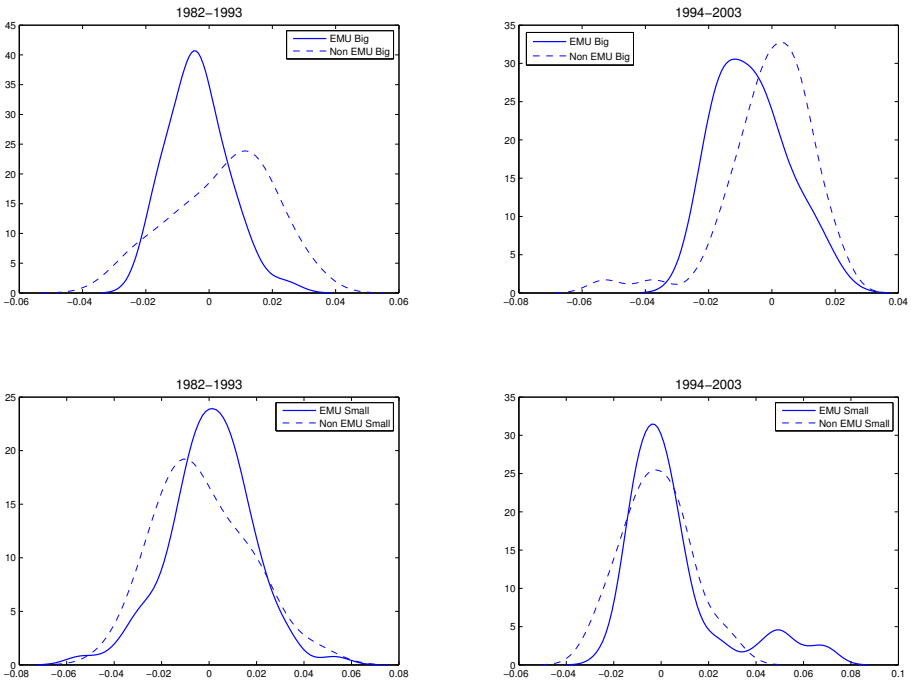


Figure 3: Comparative analysis of kernel density estimates of distributions for countries with similar size characteristics. GDP growth rate. Big and small countries in the EMU (top plots). Big and small countries outside the EMU (bottom plots). Big countries in EMU vs. big countries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

Table 3: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions of GDP growth rates across groups of small and big countries.

GDP Growth Rate 1982-1993

	b.a>s.a	b.a<s.a	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	0.746	0.746	-1.976	-1.976	2.211	2.211	-3.040	-3.040	1.415	1.415
	0.228	***0.772***	***0.976***	***0.024***	***0.014***	***0.986***	***0.999***	***0.001***	***0.078***	***0.922***
Fligner-Policello	0.750	0.750	-2.123	-2.123	2.215	2.215	-3.244	-3.244	1.363	1.363
	0.227	***0.773***	***0.983***	***0.017***	***0.013***	***0.987***	***0.999***	***0.001***	***0.086***	***0.914***
Squared Rank	-1.810	-1.810	-3.182	-3.182	-0.967	-0.967	-3.600	-3.600	-1.229	-1.229
	0.965	***0.035***	***0.999***	***0.001***	***0.833***	***0.167***	***1.000***	***0.000***	***0.891***	***0.109***
Kolmogorov-Smirnov	0.048	0.056	0.109	0.069	0.100	0.189	0.178	0.094	0.099	0.158
	0.764	***0.693***	***0.487***	***0.747***	***0.581***	***0.144***	***0.180***	***0.616***	***0.490***	***0.218***

GDP Growth Rate 1994-2003

	b.a > s.a	b.a<s.a	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-1.242	-1.242	-3.022	-3.022	0.936	0.936	-2.809	-2.809	1.138	1.138
	0.893	***0.107***	***0.999***	***0.001***	***0.175***	***0.825***	***0.998***	***0.002***	***0.127***	***0.873***
Fligner-Policello	-1.244	-1.244	-3.222	-3.222	0.921	0.921	-2.971	-2.971	1.124	1.124
	0.893	***0.107***	***0.999***	***0.001***	***0.178***	***0.822***	***0.999***	***0.001***	***0.131***	***0.869***
Squared Rank	-1.334	-1.334	-2.154	-2.154	-0.933	-0.933	-0.086	-0.086	1.091	1.091
	0.909	***0.091***	***0.984***	***0.016***	***0.825***	***0.175***	***0.534***	***0.466***	***0.138***	***0.862***
Kolmogorov-Smirnov	0.122	0.178	0.230	0.246	0.083	0.167	0.217	0.144	0.276	0.147
	0.249	***0.052***	***0.076***	***0.053***	***0.744***	***0.306***	***0.135***	***0.411***	***0.015***	***0.351***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "b.a.": All Big; "s.a": All Small; "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 4: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in within-group distributions of gdp growth rates across different periods.

GDP Growth Rate

	All Big		EMU Big		Non EMU Big		All Small		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	1.680	1.680	1.454	1.454	1.745	1.745	-0.453	-0.453	1.054	1.054	-0.680	-0.680
	0.047	***0.953***	***0.073***	***0.927***	***0.040***	***0.960***	***0.675***	***0.325***	***0.146***	***0.854***	***0.752***	***0.248***
Fligner-Policello	1.710	1.710	1.431	1.431	1.796	1.796	-0.454	-0.454	-0.082	-0.082	-0.680	-0.680
	0.044	***0.956***	***0.076***	***0.924***	***0.036***	***0.964***	***0.675***	***0.325***	***0.533***	***0.467***	***0.752***	***0.248***
Squared Rank	1.475	1.475	-1.379	-1.379	2.199	2.199	1.315	1.315	-0.502	-0.502	1.785	1.785
	0.070	***0.930***	***0.916***	***0.084***	***0.014***	***0.986***	***0.094***	***0.906***	***0.692***	***0.308***	***0.037***	***0.963***
Kolmogorov-Smirnov	0.127	0.038	0.128	0.144	0.122	0.078	0.100	0.185	0.108	0.226	0.106	0.111
	0.217	***0.869***	***0.499***	***0.411***	***0.444***	***0.720***	***0.315***	***0.019***	***0.424***	***0.023***	***0.622***	***0.591***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).

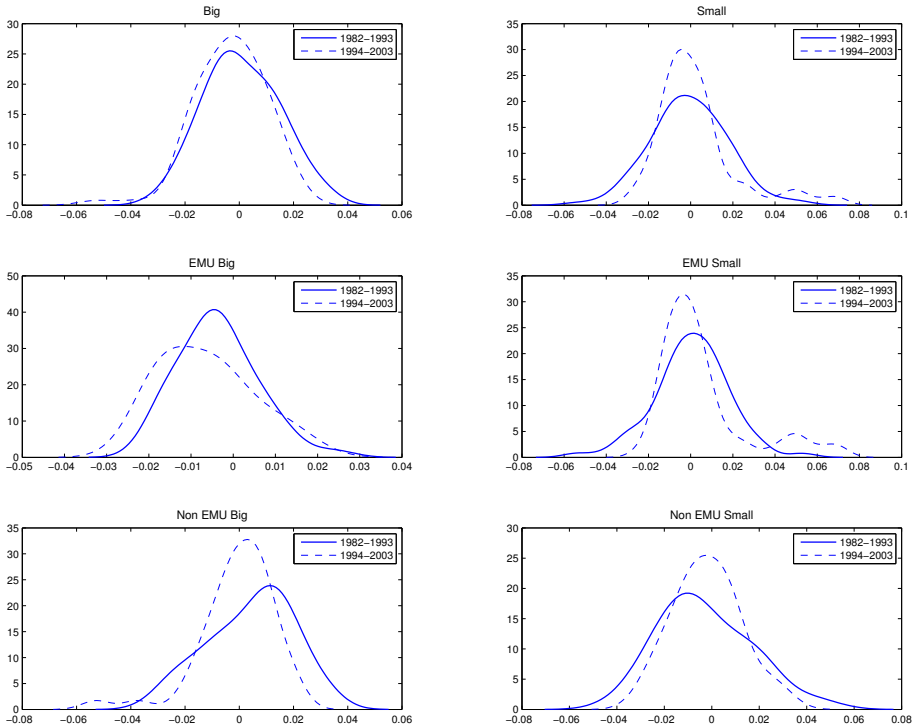


Figure 4: Evolution of within-group distributions for different country size groups. GDP growth rate.

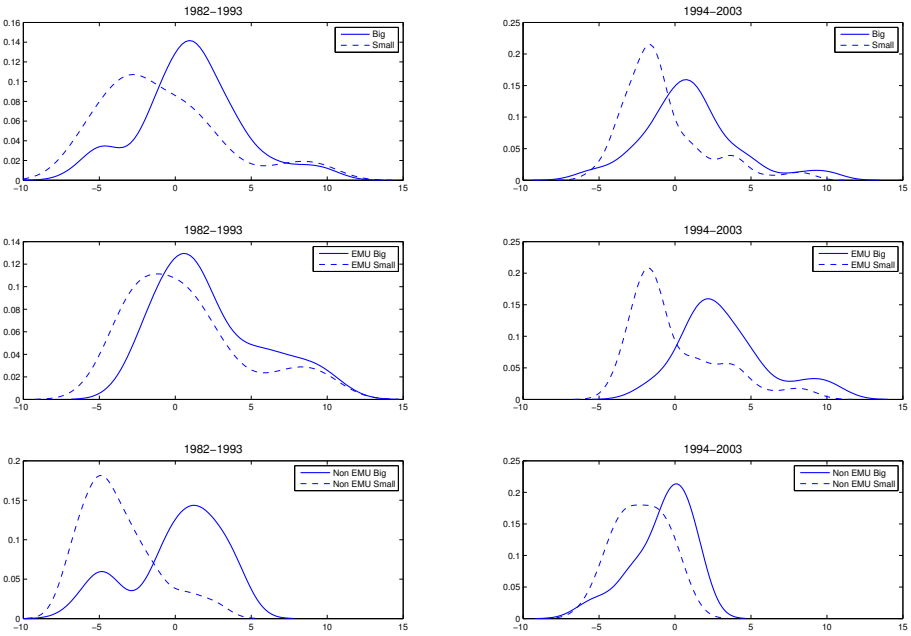


Figure 5: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. Unemployment rate. Big countries and small countries (top plots). Big and small countries in the EMU (intermediate plots). Big and small countries outside the EMU (bottom plot).

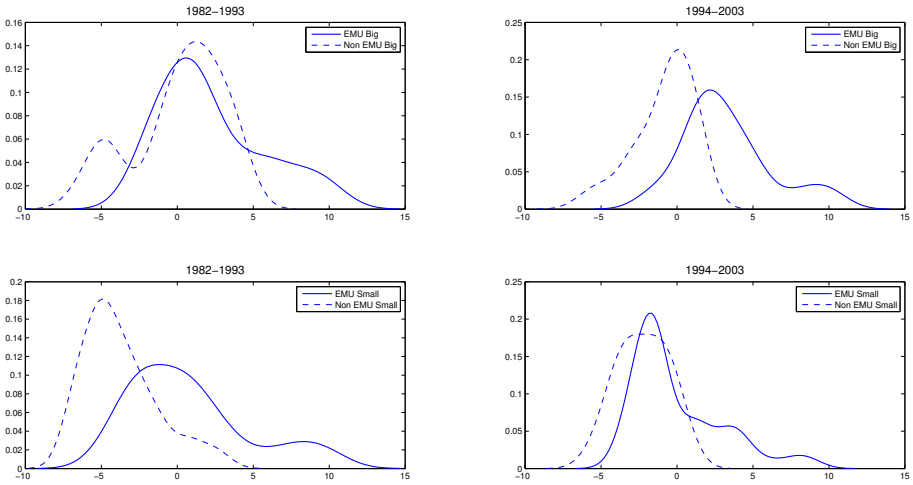


Figure 6: Comparative analysis of kernel density estimates of distributions for countries with similar size characteristics. Unemployment rate. Big countries in EMU vs. big countries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

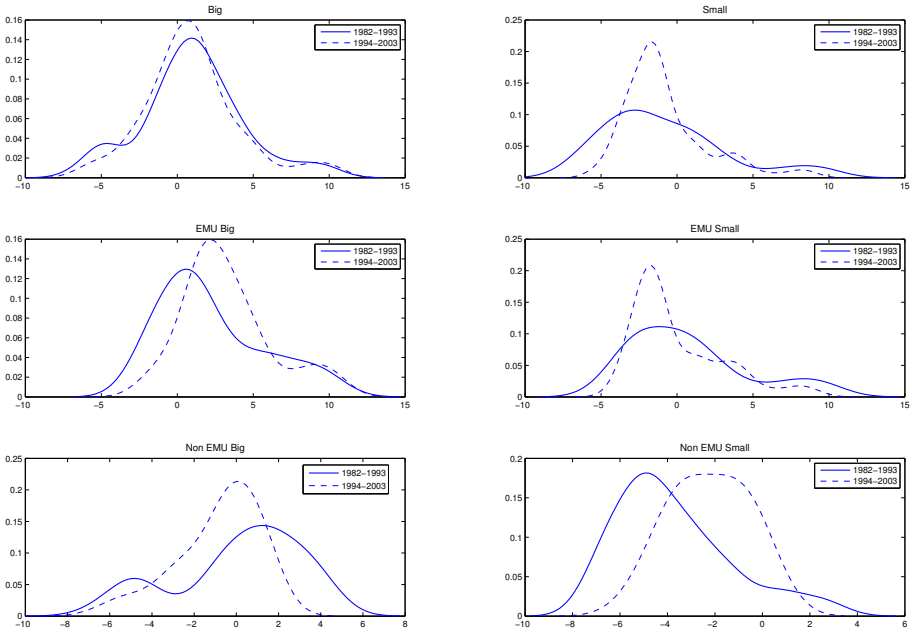


Figure 7: Evolution of within-group distributions for different country size groups. Unemployment rate.

Table 5: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions of unemployment rates across small and big countries.

Unemployment Rate 1982-1993

	b.a>s.a	b.a<s.a	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	4.682	4.682	2.709	2.709	5.715	5.715	2.075	2.075	6.677	6.677
	0.000	***1.000***	***0.003***	***0.997***	***0.000***	***1.000***	***0.019***	***0.981***	***0.000***	***1.000***
Fligner-Policello	4.990	4.990	2.986	2.986	7.845	7.845	2.117	2.117	9.914	9.914
	0.000	***1.000***	***0.001***	***0.999***	***0.000***	***1.000***	***0.017***	***0.983***	***0.000***	***1.000***
Squared Rank	-2.131	-2.131	-0.373	-0.373	1.528	1.528	0.894	0.894	2.831	2.831
	0.983	***0.017***	***0.645***	***0.355***	***0.063***	***0.937***	***0.186***	***0.814***	***0.002***	***0.998***
Kolmogorov-Smirnov	0.113	0.153	0.099	0.090	0.200	0.245	0.260	0.200	0.237	0.071
	0.215	***0.061***	***0.543***	***0.604***	***0.111***	***0.037***	***0.024***	***0.111***	***0.017***	***0.735***

Unemployment Rate 1994-2003

	b.a>s.a	b.a<s.a	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	4.802	4.802	4.935	4.935	3.759	3.759	6.382	6.382	3.561	3.561
	0.000	***1.000***	***0.000***	***1.000***	***0.000***	***1.000***	***0.000***	***1.000***	***0.000***	***1.000***
Fligner-Policello	5.167	5.167	6.731	6.731	4.429	4.429	12.011	12.011	3.941	3.941
	0.000	***1.000***	***0.000***	***1.000***	***0.000***	***1.000***	***0.000***	***1.000***	***0.000***	***1.000***
Squared Rank	0.562	0.562	-0.650	-0.650	0.440	0.440	1.544	1.544	3.272	3.272
	0.287	***0.713***	***0.742***	***0.258***	***0.330***	***0.670***	***0.061***	***0.939***	***0.001***	***0.999***
Kolmogorov-Smirnov	0.093	0.195	0.083	0.175	0.122	0.156	0.300	0.139	0.346	0.163
	0.447	***0.029***	***0.714***	***0.227***	***0.529***	***0.356***	***0.022***	***0.439***	***0.001***	***0.276***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "b.a.": All Big; "s.a": All Small; "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 6: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in within-group distributions of unemployment rates across different periods.

Unemployment Rate

	All Big		EMU Big		Non EMU Big		All Small		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	0.435	0.435	-2.023	-2.023	2.574	2.574	-0.991	-0.991	4.258	4.258	-3.415	-3.415
	0.332	***0.668***	***0.978***	***0.022***	***0.005***	***0.995***	***0.839***	***0.161***	***0.000***	***1.000***	***1.000***	***0.000***
Fligner-Policello	0.436	0.436	-2.078	-2.078	2.718	2.718	-0.997	-0.997	0.730	0.730	-3.841	-3.841
	0.332	***0.668***	***0.981***	***0.019***	***0.003***	***0.997***	***0.841***	***0.159***	***0.233***	***0.767***	***1.000***	***0.000***
Squared Rank	0.618	0.618	1.345	1.345	2.591	2.591	3.773	3.773	1.981	1.981	1.627	1.627
	0.268	***0.732***	***0.089***	***0.911***	***0.005***	***0.995***	***0.000***	***1.000***	***0.024***	***0.976***	***0.052***	***0.948***
Kolmogorov-Smirnov	0.064	0.078	0.134	0.100	0.111	0.089	0.078	0.118	0.106	0.168	0.150	0.128
	0.678	***0.558***	***0.461***	***0.649***	***0.511***	***0.651***	***0.496***	***0.200***	***0.433***	***0.122***	***0.381***	***0.494***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).

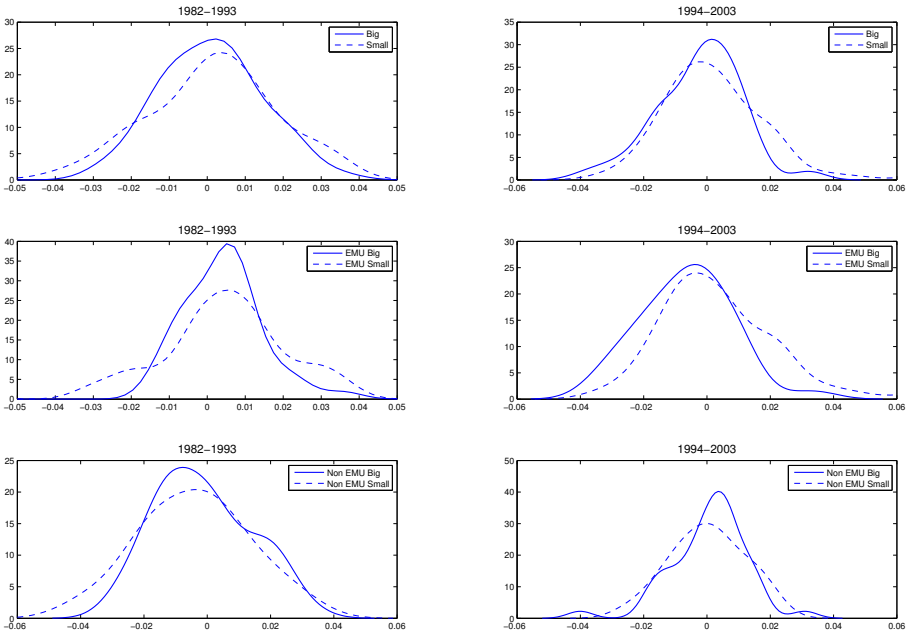


Figure 8: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. Labour productivity growth rate. Big countries and small countries (top plots). Big and small countries in the EMU (intermediate plots). Big and small countries outside the EMU (bottom plot).

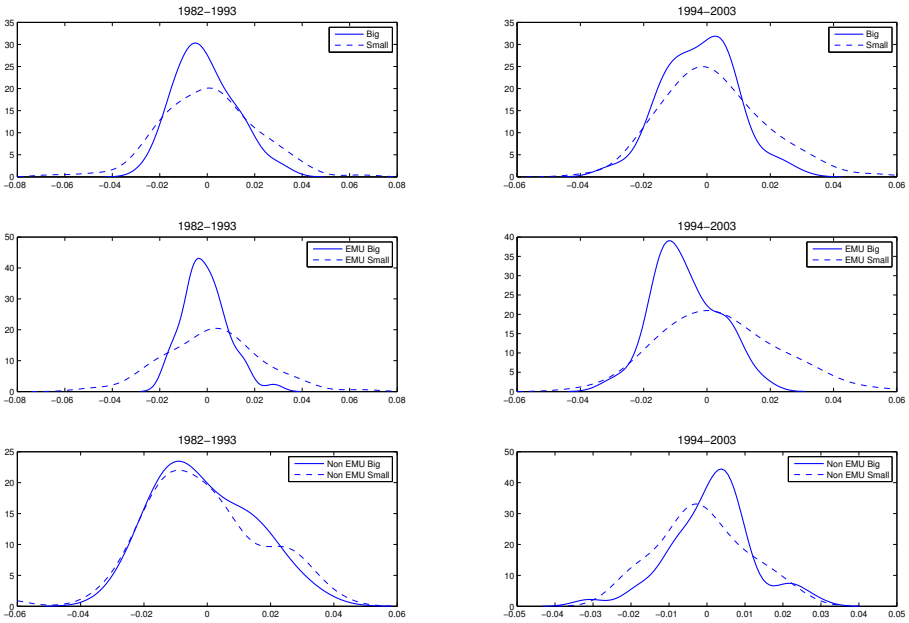


Figure 9: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. Total factor productivity growth rate. Big countries and small countries (top plots). Big and small countries in the EMU (intermediate plots). Big and small countries outside the EMU (bottom plot).

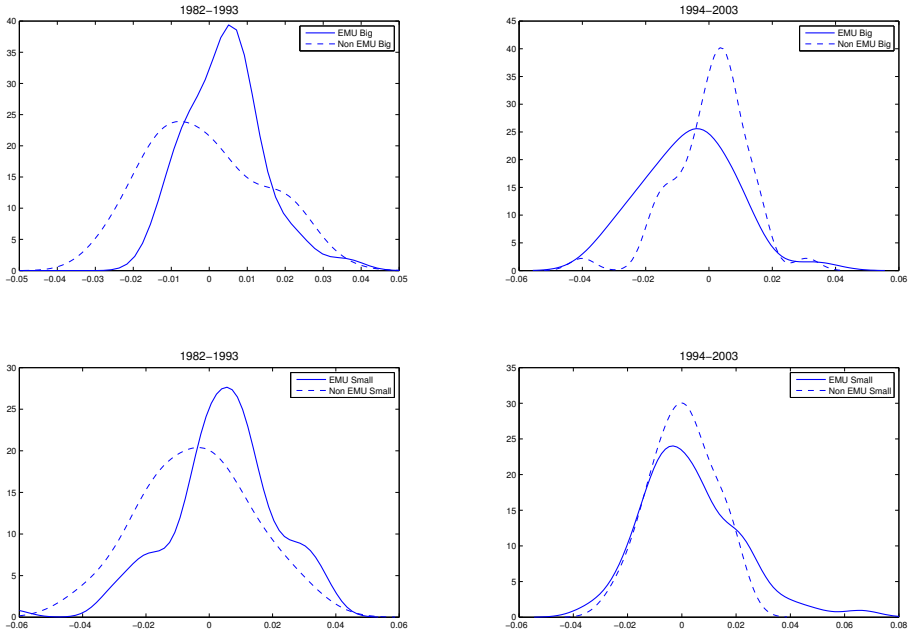


Figure 10: Comparative analysis of kernel density estimates distributions for countries with similar size characteristics. Labour productivity growth rate. Big countries in EMU vs. big countries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

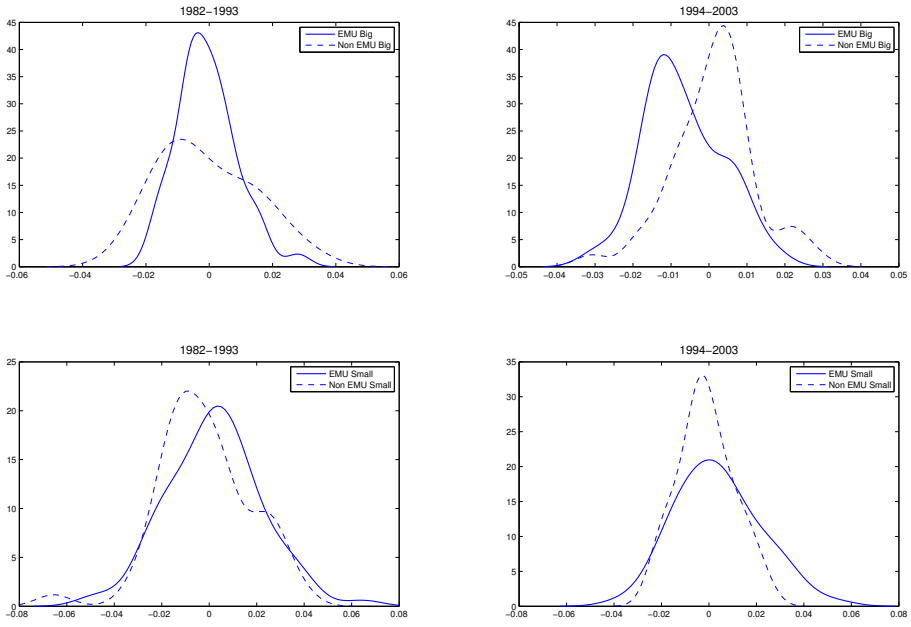


Figure 11: Comparative analysis of kernel density estimates distributions for countries with similar size characteristics. Total factor productivity growth rate. Big countries in EMU vs. big countries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

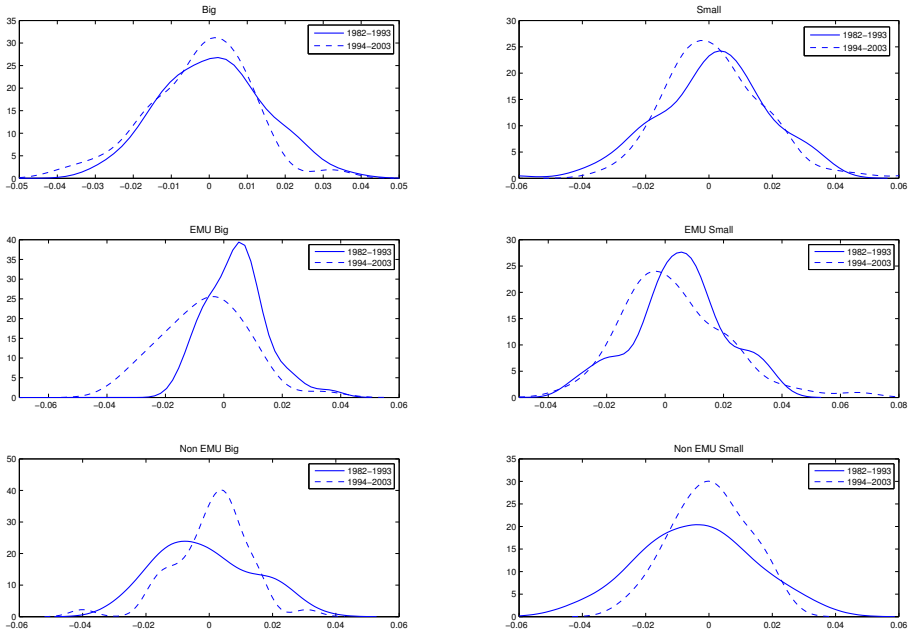


Figure 12: Evolution of within-group distributions for different country size groups. Labour productivity growth rate.

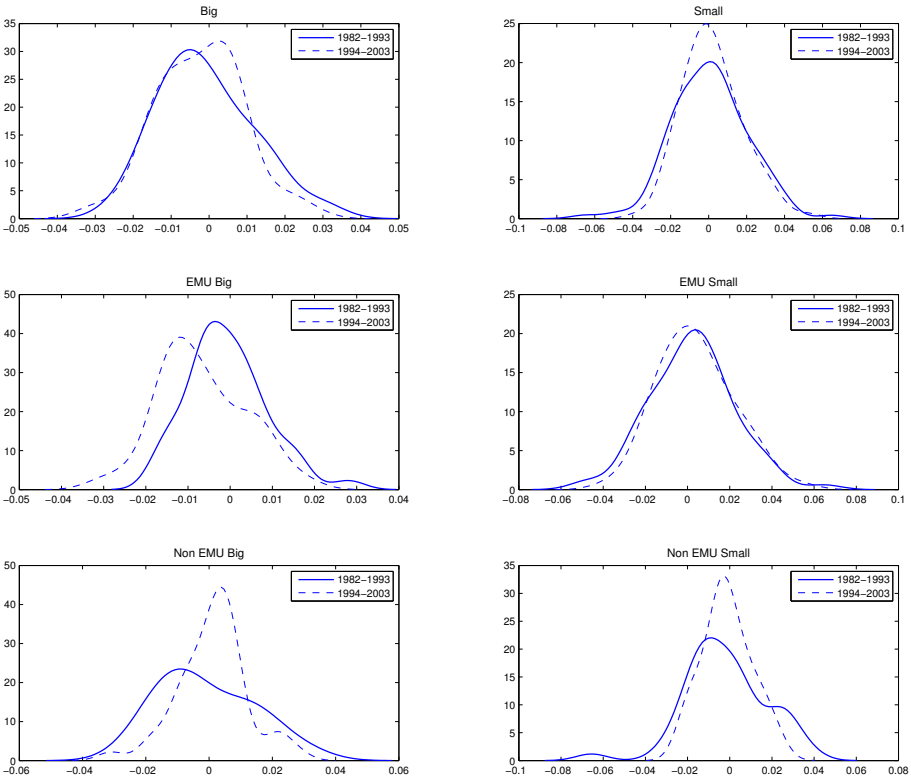


Figure 13: Evolution of within-group distributions for different country size groups. Total factor productivity growth rate.

Table 7: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions of labour productivity growth rates across groups of small and big countries.

Labour Productivity Growth Rate 1982-1993

	b.a>s.a	b.a<s.a	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-0.430	-0.430	-0.621	-0.621	0.774	0.774	2.134	2.134	2.571	2.571
	0.666	***0.334***	***0.733***	***0.267***	***0.220***	***0.780***	***0.016***	***0.984***	***0.005***	***0.995***
Fligner-Policello	-0.431	-0.431	-0.645	-0.645	0.764	0.764	2.198	2.198	2.651	2.651
	0.667	***0.333***	***0.740***	***0.260***	***0.223***	***0.777***	***0.014***	***0.986***	***0.004***	***0.996***
Squared Rank	-1.828	-1.828	-2.160	-2.160	-0.541	-0.541	-2.609	-2.609	-0.489	-0.489
	0.966	***0.034***	***0.985***	***0.015***	***0.706***	***0.294***	***0.995***	***0.005***	***0.687***	***0.313***
Kolmogorov-Smirnov	0.084	0.108	0.163	0.163	0.094	0.078	0.183	0.322	0.102	0.178
	0.432	***0.251***	***0.198***	***0.198***	***0.616***	***0.720***	***0.161***	***0.004***	***0.473***	***0.146***

Labour Productivity Growth Rate 1994-2003

	b.a>s.a	b.a<s.a	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-1.504	-1.504	-2.411	-2.411	0.309	0.309	-2.600	-2.600	0.506	0.506
	0.934	***0.066***	***0.992***	***0.008***	***0.379***	***0.621***	***0.995***	***0.005***	***0.307***	***0.693***
Fligner-Policello	-1.519	-1.519	-2.559	-2.559	0.306	0.306	-2.714	-2.714	0.524	0.524
	0.936	***0.064***	***0.995***	***0.005***	***0.380***	***0.620***	***0.997***	***0.003***	***0.300***	***0.700***
Squared Rank	-1.142	-1.142	-1.106	-1.106	-0.658	-0.658	1.493	1.493	1.976	1.976
	0.873	***0.127***	***0.866***	***0.134***	***0.745***	***0.255***	***0.068***	***0.932***	***0.024***	***0.976***
Kolmogorov-Smirnov	0.063	0.123	0.107	0.155	0.089	0.106	0.117	0.072	0.168	0.075
	0.693	***0.243***	***0.572***	***0.312***	***0.714***	***0.622***	***0.560***	***0.801***	***0.208***	***0.759***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "b.a.": All Big; "s.a": All Small; "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 8: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in within-group distributions of labour productivity growth rates across different periods.

Labour Productivity Growth Rate

	All Big		EMU Big		Non EMU Big		All Small		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	1.316	1.316	3.189	3.189	-1.156	-1.156	0.104	0.104	1.485	1.485	-1.316	-1.316
	0.094	***0.906***	***0.001***	***0.999***	***0.876***	***0.124***	***0.459***	***0.541***	***0.069***	***0.931***	***0.906***	***0.094***
Fligner-Policello	1.327	1.327	3.445	3.445	-1.163	-1.163	0.105	0.105	0.963	0.963	-1.338	-1.338
	0.092	***0.908***	***0.000***	***1.000***	***0.878***	***0.122***	***0.458***	***0.542***	***0.168***	***0.832***	***0.910***	***0.090***
Squared Rank	0.621	0.621	-1.598	-1.598	2.395	2.395	1.354	1.354	-0.281	-0.281	2.011	2.011
	0.267	***0.733***	***0.945***	***0.055***	***0.008***	***0.992***	***0.088***	***0.912***	***0.611***	***0.389***	***0.022***	***0.978***
Kolmogorov-Smirnov	0.113	0.138	0.161	0.272	0.161	0.144	0.055	0.141	0.090	0.203	0.072	0.094
	0.295	***0.162***	***0.331***	***0.042***	***0.244***	***0.322***	***0.708***	***0.103***	***0.549***	***0.047***	***0.801***	***0.684***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).

Table 9: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions of total factor productivity growth rates across groups of small and big countries.

TFP Productivity Growth Rate 1982-1993

	b.a>s.a	b.a<s.a	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-0.681	-0.681	-1.110	-1.110	0.163	0.163	0.571	0.571	1.160	1.160
	0.752	***0.248***	***0.866***	***0.134***	***0.435***	***0.565***	***0.284***	***0.716***	***0.123***	***0.877***
Fligner-Policello	-0.686	-0.686	-1.174	-1.174	0.163	0.163	0.561	0.561	1.165	1.165
	0.754	***0.246***	***0.880***	***0.120***	***0.435***	***0.565***	***0.287***	***0.713***	***0.122***	***0.878***
Squared Rank	-3.414	-3.414	-3.882	-3.882	-0.717	-0.717	-3.568	-3.568	0.189	0.189
	1.000	***0.000***	***1.000***	***0.000***	***0.763***	***0.237***	***1.000***	***0.000***	***0.425***	***0.575***
Kolmogorov-Smirnov	0.083	0.037	0.118	0.070	0.125	0.091	0.107	0.107	0.119	0.103
	0.450	***0.854***	***0.423***	***0.738***	***0.441***	***0.647***	***0.547***	***0.547***	***0.378***	***0.519***

TFP Productivity Growth Rate 1994-2003

	b.a>s.a	b.a<s.a	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-1.524	-1.524	-2.993	-2.993	1.164	1.164	-3.103	-3.103	1.349	1.349
	0.936	***0.064***	***0.999***	***0.001***	***0.122***	***0.878***	***0.999***	***0.001***	***0.089***	***0.911***
Fligner-Policello	-1.546	-1.546	-3.374	-3.374	1.143	1.143	-3.315	-3.315	1.417	1.417
	0.939	***0.061***	***1.000***	***0.000***	***0.126***	***0.874***	***1.000***	***0.000***	***0.078***	***0.922***
Squared Rank	-2.479	-2.479	-2.899	-2.899	-0.869	-0.869	0.649	0.649	2.221	2.221
	0.993	***0.007***	***0.998***	***0.002***	***0.807***	***0.193***	***0.258***	***0.742***	***0.013***	***0.987***
Kolmogorov-Smirnov	0.065	0.110	0.147	0.095	0.117	0.139	0.189	0.139	0.149	0.079
	0.675	***0.325***	***0.351***	***0.644***	***0.560***	***0.439***	***0.219***	***0.439***	***0.291***	***0.736***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "b.a.": All Big; "s.a": All Small; "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 10: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in within-group distributions of total factor productivity growth rates across different periods.

TFP Growth Rate

	All Big		EMU Big		Non EMU Big		All Small		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	0.427	0.427	2.546	2.546	-1.198	-1.198	-0.460	-0.460	1.090	1.090	-0.369	-0.369
	0.335	***0.665***	***0.005***	***0.995***	***0.885***	***0.115***	***0.677***	***0.323***	***0.138***	***0.862***	***0.644***	***0.356***
Fligner-Policello	0.426	0.426	2.616	2.616	-1.180	-1.180	-0.463	-0.463	-0.422	-0.422	-0.372	-0.372
	0.335	***0.665***	***0.004***	***0.996***	***0.881***	***0.119***	***0.678***	***0.322***	***0.663***	***0.337***	***0.645***	***0.355***
Squared Rank	1.096	1.096	-0.939	-0.939	2.935	2.935	1.691	1.691	0.501	0.501	2.353	2.353
	0.136	***0.864***	***0.826***	***0.174***	***0.002***	***0.998***	***0.045***	***0.955***	***0.308***	***0.692***	***0.009***	***0.991***
Kolmogorov-Smirnov	0.096	0.094	0.098	0.150	0.189	0.167	0.053	0.063	0.057	0.076	0.107	0.107
	0.422	***0.442***	***0.662***	***0.381***	***0.157***	***0.236***	***0.722***	***0.632***	***0.781***	***0.649***	***0.608***	***0.608***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).

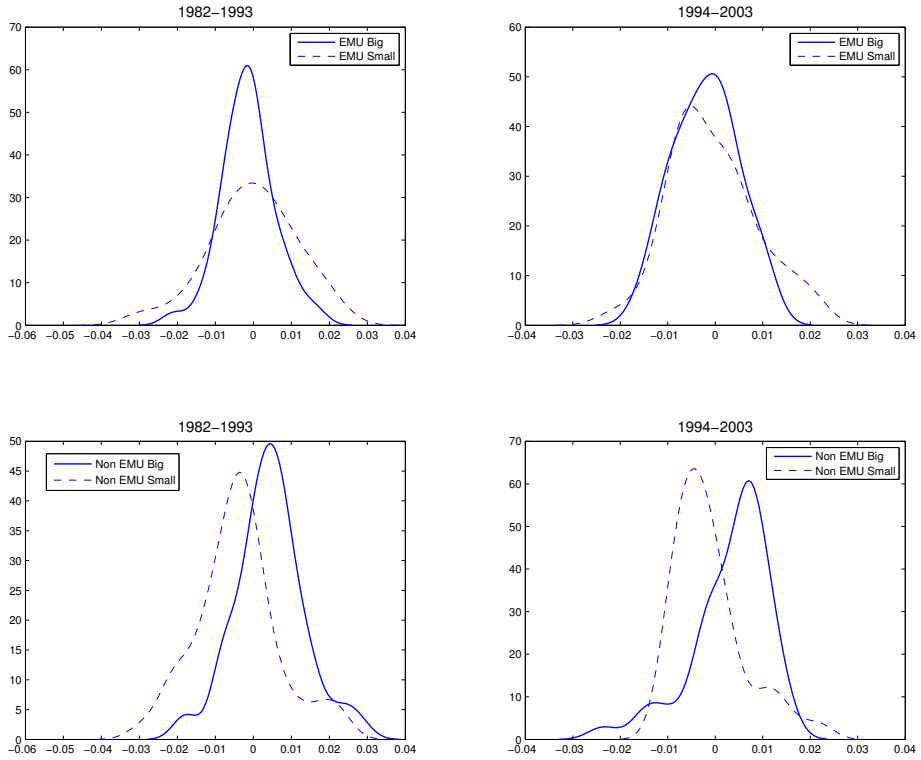


Figure 14: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. Private consumption contribution to GDP growth. Big and small countries in the EMU (top plots). Big and small countries outside EMU (bottom plot).

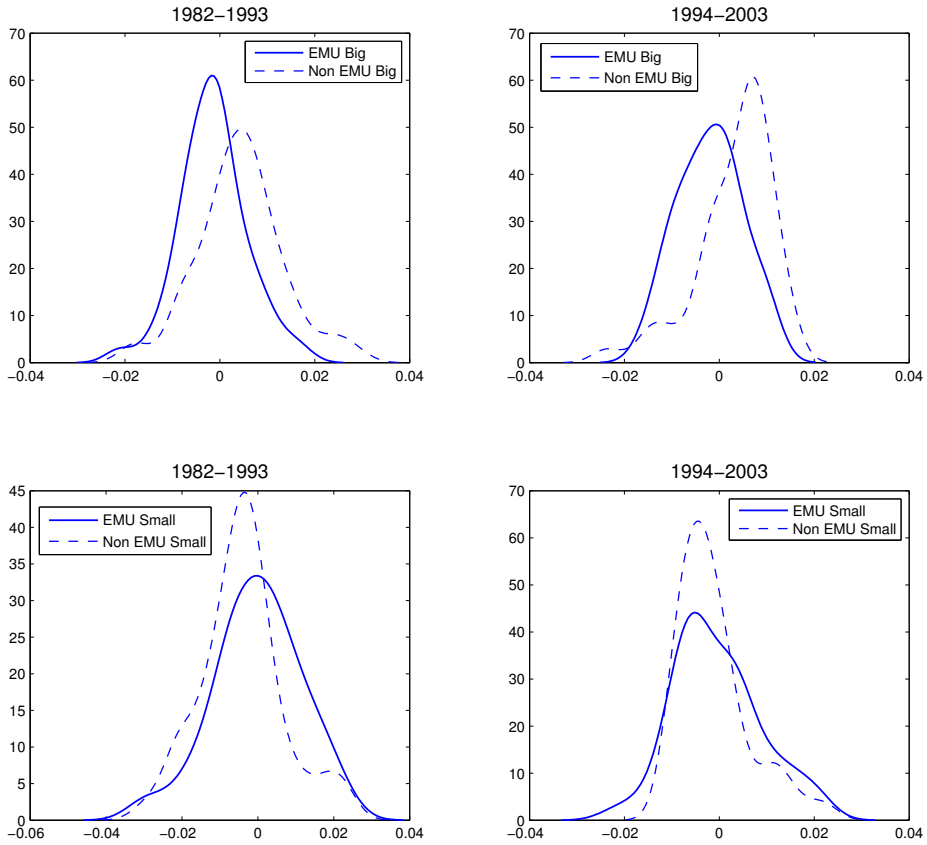


Figure 15: Comparative analysis of kernel density estimates distributions for countries with similar size characteristics. Private consumption contribution to GDP growth. Big countries in EMU vs. big countries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

Table 11: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions across different country size groups. Private consumption contribution to GDP growth.

Private Consumption Contribution 1982-1993

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-0.932	-0.932	4.374	4.374	-3.558	-3.558	2.184	2.184
	0.824	***0.176***	***0.000***	***1.000***	***1.000***	***0.000***	***0.014***	***0.986***
Fligner-Policello	-0.981	-0.981	4.949	4.949	-3.913	-3.913	2.263	2.263
	0.837	***0.163***	***0.000***	***1.000***	***1.000***	***0.000***	***0.012***	***0.988***
Squared Rank	-3.116	-3.116	-0.723	-0.723	-1.361	-1.361	0.992	0.992
	0.999	***0.001***	***0.765***	***0.235***	***0.913***	***0.087***	***0.161***	***0.839***
Kolmogorov-Smirnov	0.091	0.069	0.078	0.078	0.083	0.067	0.051	0.096
	0.601	***0.747***	***0.720***	***0.720***	***0.686***	***0.785***	***0.831***	***0.568***

Private Consumption Contribution 1994-2003

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-0.549	-0.549	3.284	3.284	-3.350	-3.350	0.476	0.476
	0.709	***0.291***	***0.001***	***0.999***	***1.000***	***0.000***	***0.317***	***0.683***
Fligner-Policello	-0.564	-0.564	3.401	3.401	-3.718	-3.718	0.490	0.490
	0.714	***0.286***	***0.000***	***1.000***	***1.000***	***0.000***	***0.312***	***0.688***
Squared Rank	-1.427	-1.427	0.454	0.454	-0.097	-0.097	1.671	1.671
	0.923	***0.077***	***0.325***	***0.675***	***0.539***	***0.461***	***0.047***	***0.953***
Kolmogorov-Smirnov	0.111	0.103	0.139	0.267	0.156	0.111	0.187	0.115
	0.549	***0.596***	***0.439***	***0.048***	***0.356***	***0.591***	***0.143***	***0.525***

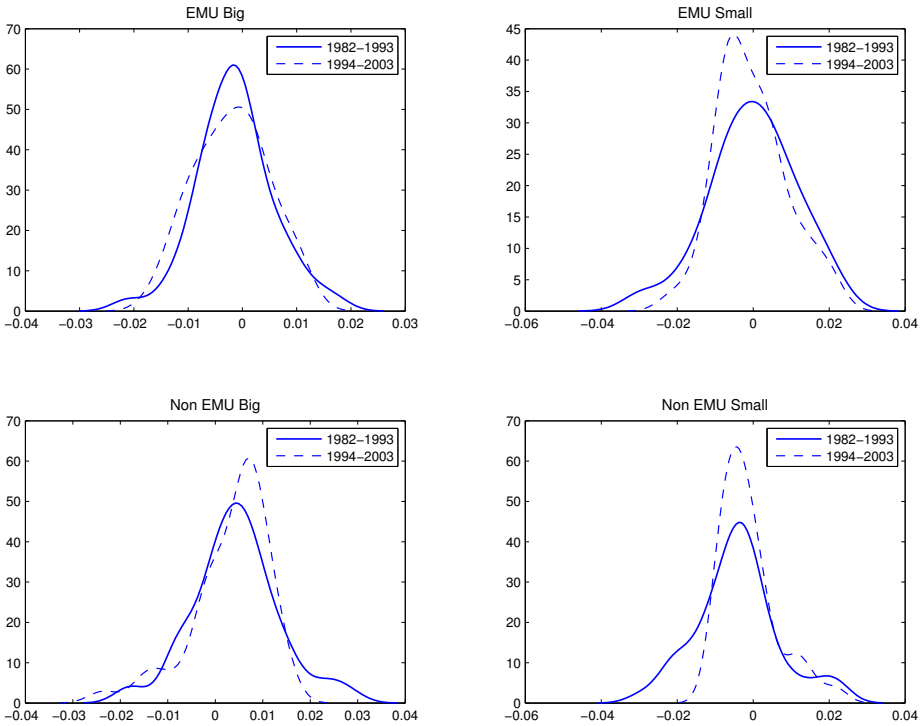
Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 12: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in within-group distributions across different time-periods. Private consumption contribution to GDP growth.

Private Consumption Contribution

	EMU Big		Non EMU Big		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	0.290	0.290	0.003	0.003	1.025	1.025	-1.202	-1.202
	0.386	***0.614***	***0.499***	***0.501***	***0.153***	***0.847***	***0.885***	***0.115***
Fligner-Policello	0.287	0.287	0.006	0.006	0.530	0.530	-1.222	-1.222
	0.387	***0.613***	***0.497***	***0.503***	***0.298***	***0.702***	***0.889***	***0.111***
Squared Rank	-0.599	-0.599	0.506	0.506	1.406	1.406	1.367	1.367
	0.725	***0.275***	***0.307***	***0.693***	***0.080***	***0.920***	***0.086***	***0.914***
Kolmogorov-Smirnov	0.156	0.133	0.217	0.078	0.055	0.115	0.111	0.206
	0.356	***0.469***	***0.078***	***0.720***	***0.801***	***0.377***	***0.591***	***0.165***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).



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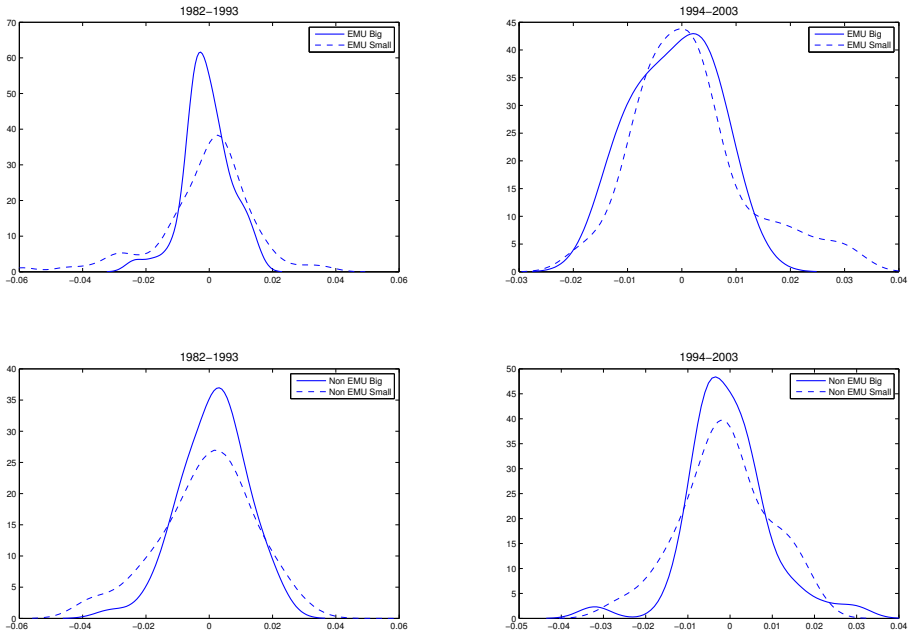

Figure 17: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. Total investment contribution to GDP growth. Big and small countries in the EMU (top plots). Big and small countries outside the EMU (bottom plots).

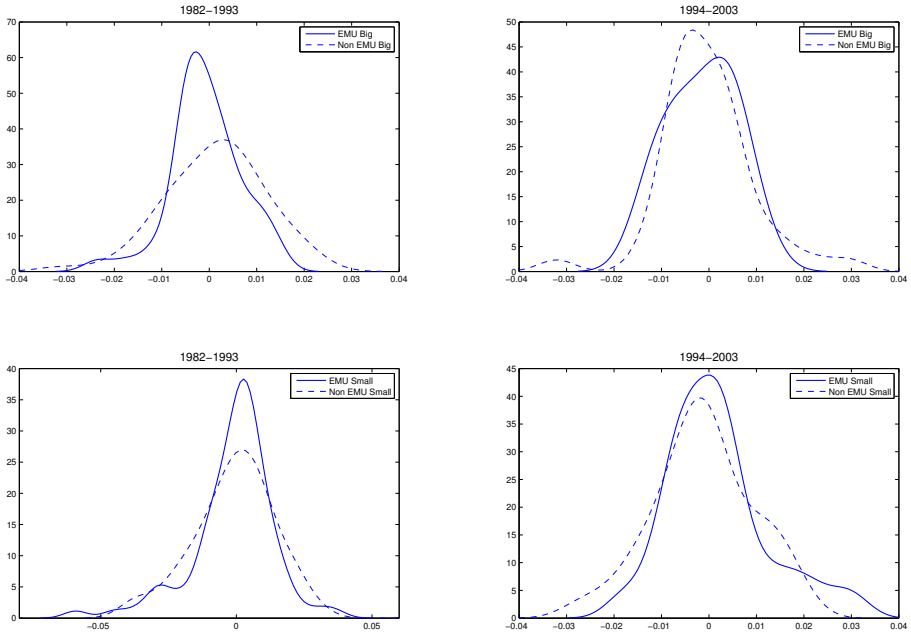

Figure 18: Comparative analysis of kernel density estimates distributions for countries with similar size characteristics. Total investment contribution to GDP growth. Big countries in EMU vs. big countries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

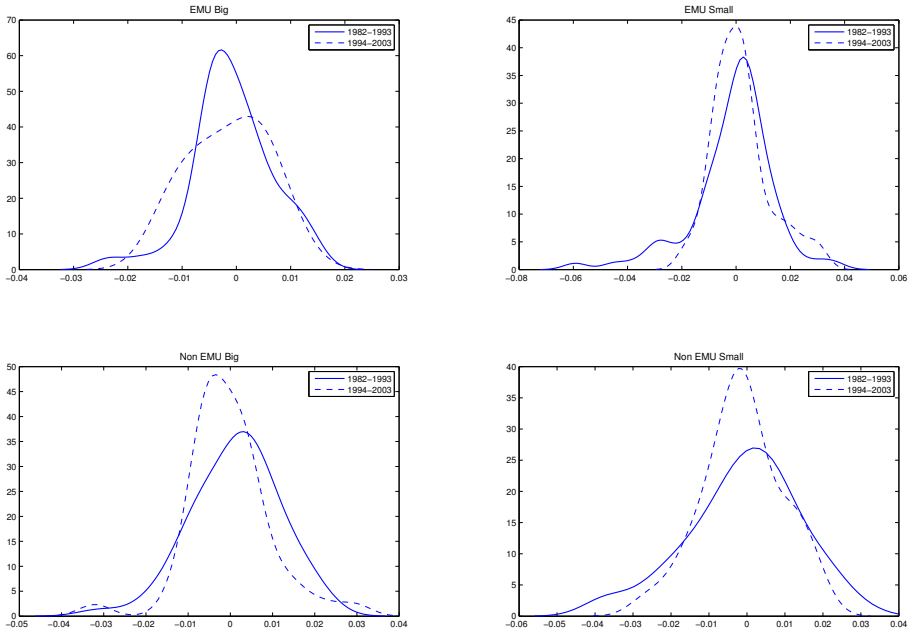

Figure 19: Evolution of within-group distributions for different country size groups. Total investment contribution to GDP growth.

Table 13: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions across different country size groups. Total investment contribution to GDP growth.

Total Investment Contribution 1982-1993

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-0.810	-0.810	0.424	0.424	-1.266	-1.266	-0.158	-0.158
	0.791	***0.209***	***0.336***	***0.664***	***0.897***	***0.103***	***0.563***	***0.437***
Fligner-Policello	-0.843	-0.843	0.409	0.409	-1.278	-1.278	-0.153	-0.153
	0.800	***0.200***	***0.341***	***0.659***	***0.899***	***0.101***	***0.561***	***0.439***
Squared Rank	-3.066	-3.066	-2.078	-2.078	-2.037	-2.037	-1.006	-1.006
	0.999	***0.001***	***0.981***	***0.019***	***0.979***	***0.021***	***0.843***	***0.157***
Kolmogorov-Smirnov	0.173	0.081	0.100	0.133	0.111	0.161	0.080	0.153
	0.162	***0.667***	***0.581***	***0.381***	***0.511***	***0.244***	***0.633***	***0.240***

Total Investment Contribution 1994-2003

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-0.964	-0.964	0.261	0.261	-0.242	-0.242	0.993	0.993
	0.832	***0.168***	***0.397***	***0.603***	***0.596***	***0.404***	***0.160***	***0.840***
Fligner-Policello	-0.973	-0.973	0.258	0.258	-0.241	-0.241	0.986	0.986
	0.835	***0.165***	***0.398***	***0.602***	***0.595***	***0.405***	***0.162***	***0.838***
Squared Rank	-0.972	-0.972	-1.024	-1.024	0.279	0.279	-0.168	-0.168
	0.834	***0.166***	***0.847***	***0.153***	***0.390***	***0.610***	***0.567***	***0.433***
Kolmogorov-Smirnov	0.143	0.238	0.117	0.100	0.183	0.239	0.127	0.075
	0.371	***0.064***	***0.560***	***0.653***	***0.239***	***0.088***	***0.409***	***0.759***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 14: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences on within-group distributions across different time-periods. Total investment contribution to GDP growth.

Total Investment Contribution

	EMU Big		Non EMU Big		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	0.385	0.385	1.130	1.130	0.635	0.635	0.556	0.556
	0.350	***0.650***	***0.129***	***0.871***	***0.263***	***0.737***	***0.289***	***0.711***
Fligner-Policello	0.376	0.376	1.135	1.135	-0.166	-0.166	0.558	0.558
	0.354	***0.646***	***0.128***	***0.872***	***0.566***	***0.434***	***0.288***	***0.712***
Squared Rank	-1.131	-1.131	1.353	1.353	1.337	1.337	1.801	1.801
	0.871	***0.129***	***0.088***	***0.912***	***0.091***	***0.909***	***0.036***	***0.964***
Kolmogorov-Smirnov	0.178	0.161	0.161	0.117	0.090	0.201	0.150	0.067
	0.260	***0.331***	***0.244***	***0.477***	***0.549***	***0.050***	***0.383***	***0.827***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).

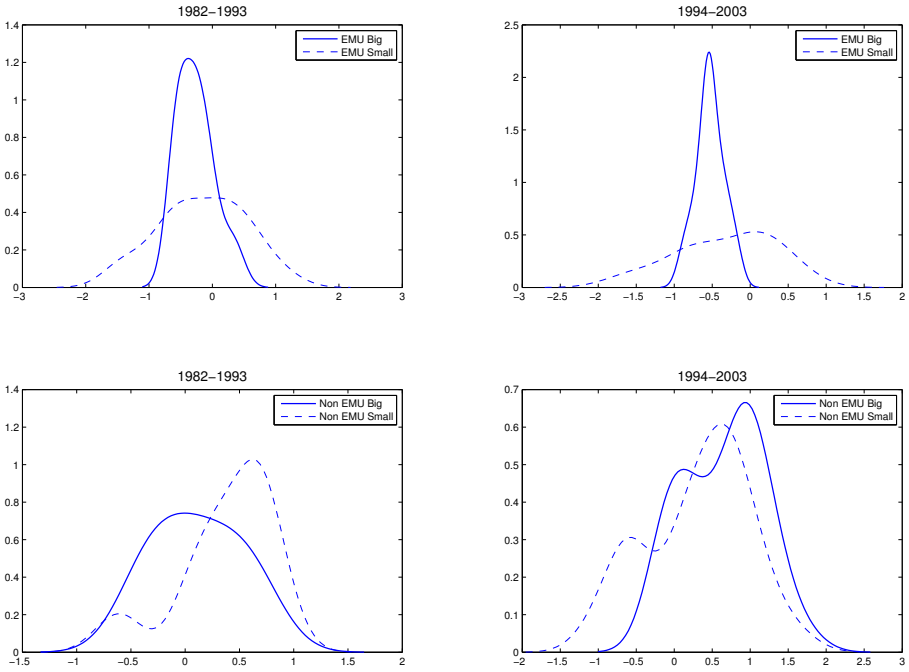

Figure 20: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. ICT investment as a share of GDP. Big and small countries in the EMU (top plots). Big and small countries outside the EMU (bottom plots).

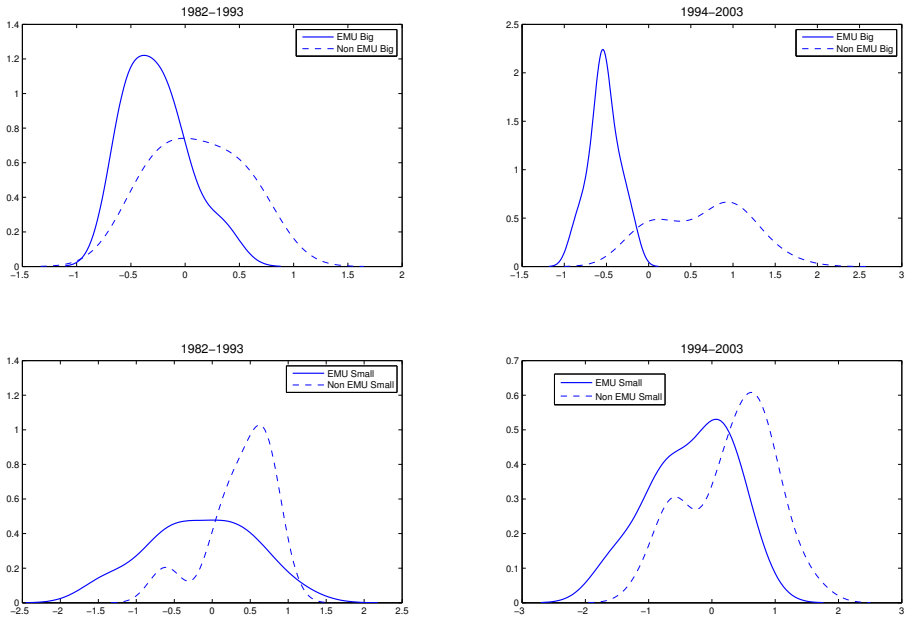

Figure 21: Comparative analysis of kernel density estimates distributions for countries with similar size characteristics.ICT investment as a share of GDP. Big countries in EMU vs. big coutries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

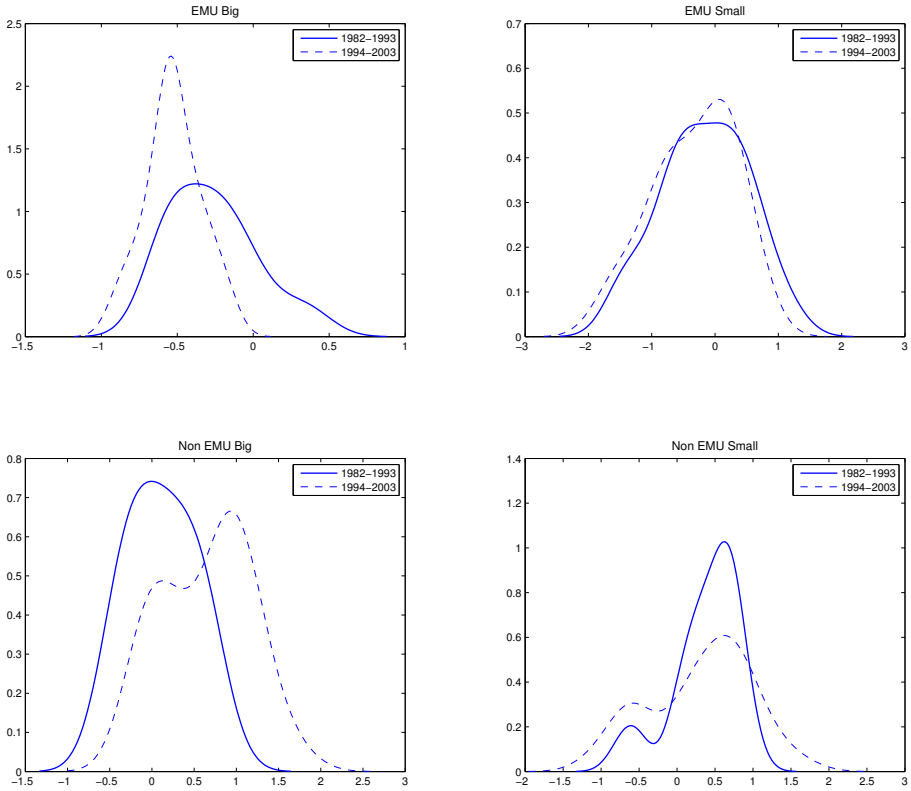

Figure 22: Evolution of within-group distributions for different country size groups. ICT investment as a share of GDP.

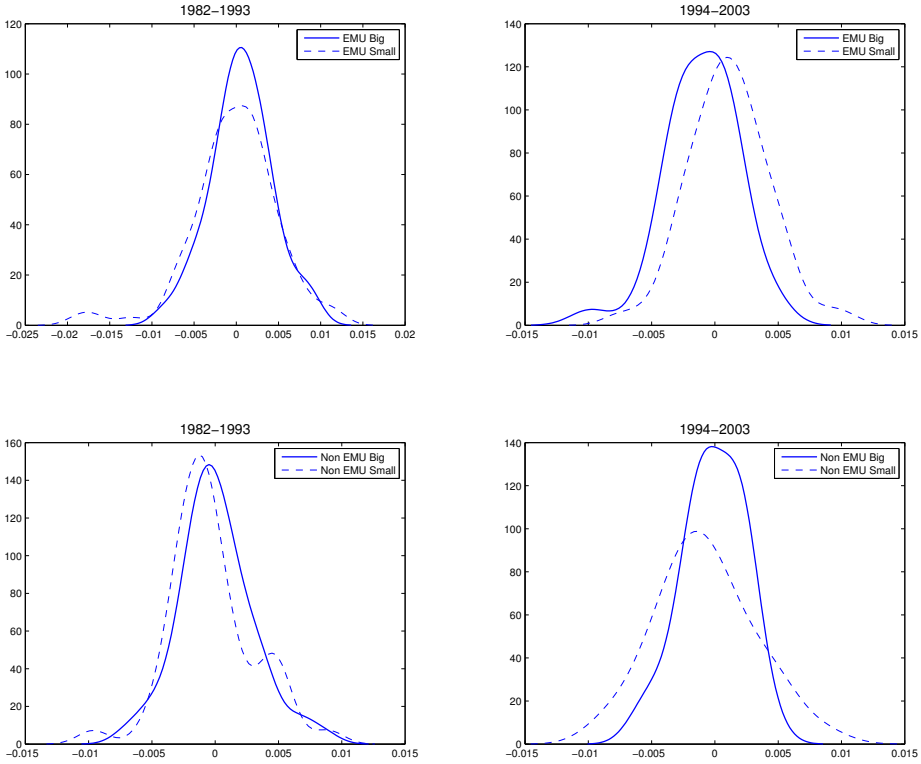

Figure 23: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. Government consumption contribution to GDP growth.Big and small countries in the EMU (top plots). Big and small countries outside the EMU (bottom plots).

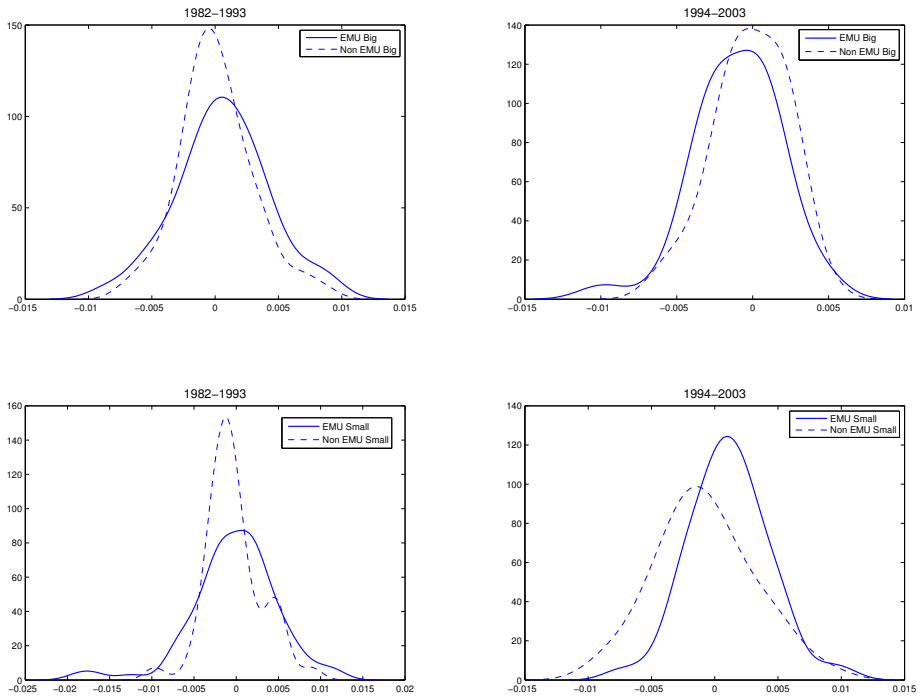

Figure 24: Comparative analysis of kernel density estimates distributions for countries with similar size characteristics. Government consumption contribution to GDP growth. Big countries in EMU vs. big coutries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

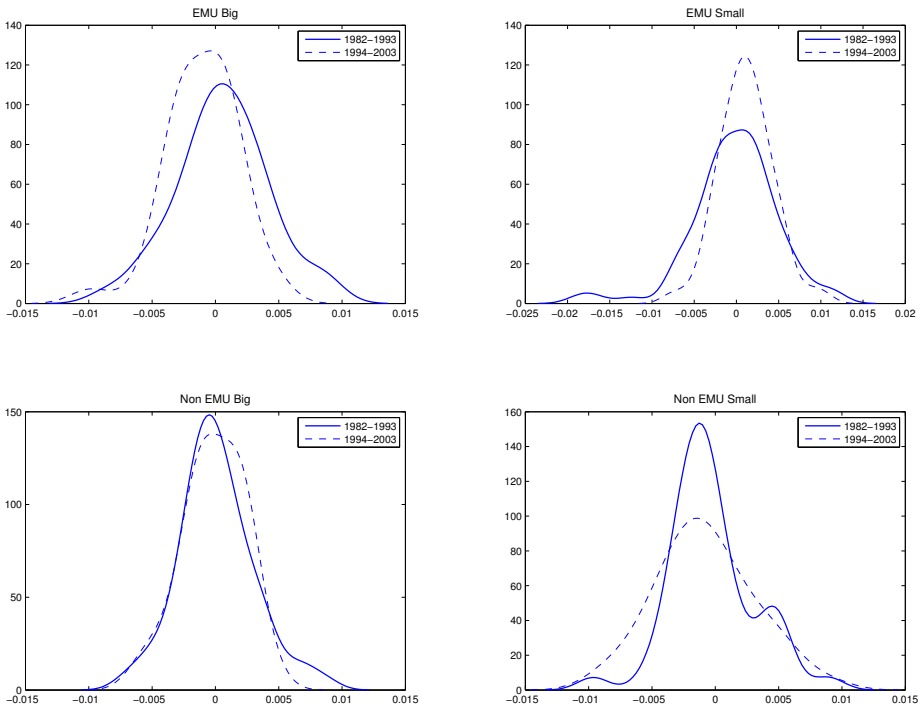

Figure 25: Evolution of within-group distributions for different country size groups. Government consumption contribution to GDP growth.

Table 15: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions across different country size groups. Government consumption contribution to GDP growth.

Government Consumption Contribution 1982-1993

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	0.799	0.799	1.065	1.065	1.000	1.000	0.616	0.616
	0.212	***0.788***	***0.143***	***0.857***	***0.159***	***0.841***	***0.269***	***0.731***
Fligner-Policello	0.822	0.822	1.048	1.048	0.979	0.979	0.637	0.637
	0.206	***0.794***	***0.147***	***0.853***	***0.164***	***0.836***	***0.262***	***0.738***
Squared Rank	-1.337	-1.337	-0.453	-0.453	1.340	1.340	2.280	2.280
	0.909	***0.091***	***0.675***	***0.325***	***0.090***	***0.910***	***0.011***	***0.989***
Kolmogorov-Smirnov	0.074	0.059	0.089	0.089	0.061	0.078	0.076	0.163
	0.716	***0.807***	***0.651***	***0.651***	***0.816***	***0.720***	***0.659***	***0.198***

Government Consumption Contribution 1994-2003

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-3.284	-3.284	1.231	1.231	-1.659	-1.659	2.644	2.644
	0.999	***0.001***	***0.109***	***0.891***	***0.951***	***0.049***	***0.004***	***0.996***
Fligner-Policello	-3.713	-3.713	1.187	1.187	-1.679	-1.679	2.664	2.664
	1.000	***0.000***	***0.118***	***0.882***	***0.953***	***0.047***	***0.004***	***0.996***
Squared Rank	-0.646	-0.646	-2.171	-2.171	0.271	0.271	-1.326	-1.326
	0.741	***0.259***	***0.985***	***0.015***	***0.393***	***0.607***	***0.908***	***0.092***
Kolmogorov-Smirnov	0.091	0.107	0.072	0.133	0.128	0.072	0.165	0.071
	0.667	***0.572***	***0.801***	***0.469***	***0.499***	***0.801***	***0.221***	***0.780***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 16: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in within-group distributions across different time-periods. Government consumption contribution to GDP growth.

Government Consumption Contribution

	EMU Big		Non EMU Big		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	2.115	2.115	-0.003	-0.003	1.066	1.066	0.632	0.632
	0.017	***0.983***	***0.501***	***0.499***	***0.143***	***0.857***	***0.264***	***0.736***
Fligner-Policello	2.214	2.214	-0.006	-0.006	-1.687	-1.687	0.617	0.617
	0.013	***0.987***	***0.503***	***0.497***	***0.954***	***0.046***	***0.269***	***0.731***
Squared Rank	1.406	1.406	0.436	0.436	2.439	2.439	-1.196	-1.196
	0.080	***0.920***	***0.331***	***0.669***	***0.007***	***0.993***	***0.884***	***0.116***
Kolmogorov-Smirnov	0.117	0.078	0.172	0.083	0.056	0.085	0.122	0.089
	0.560	***0.773***	***0.200***	***0.686***	***0.789***	***0.588***	***0.529***	***0.714***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).

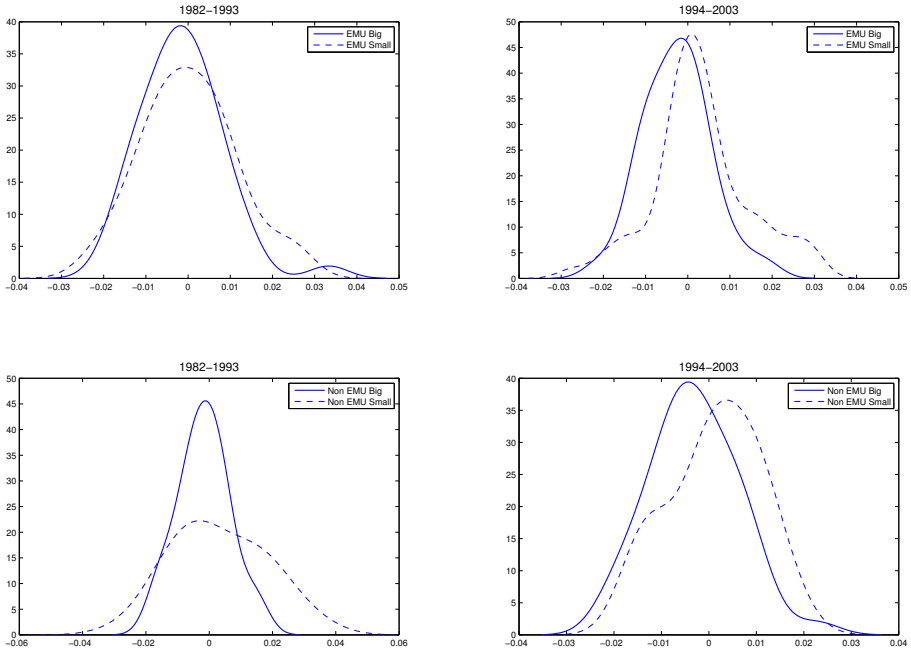

Figure 26: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. Net exports contribution to GDP growth . Big and small countries in the EMU (top plots). Big and small countries outside the EMU (bottom plots).

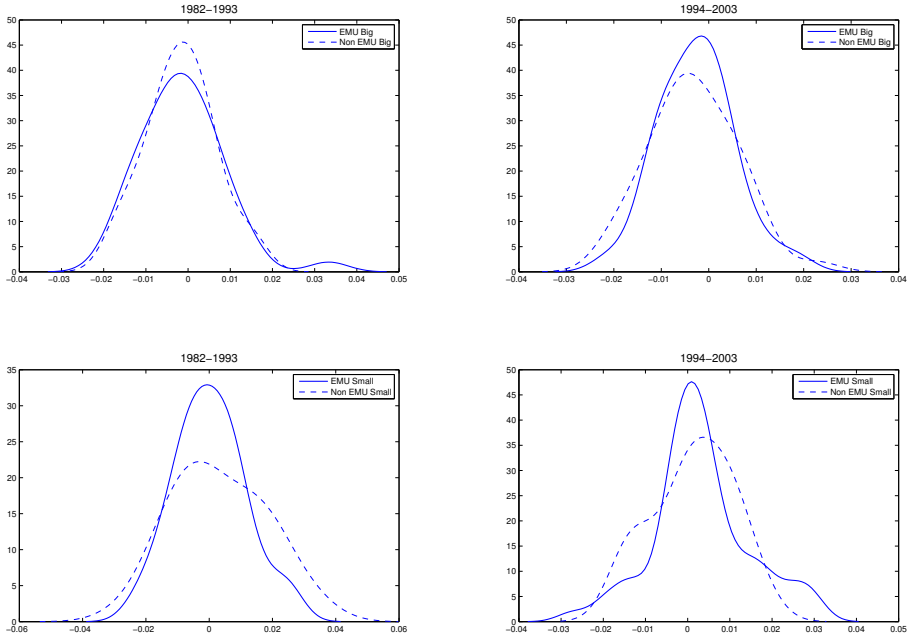

Figure 27: Comparative analysis of kernel density estimates distributions for countries with similar size characteristics. Net exports contribution to GDP growth. Big countries in EMU vs. big coutries outside EMU (top plots).Small countries in EMU vs. small countries outside EMU (bottom plots).

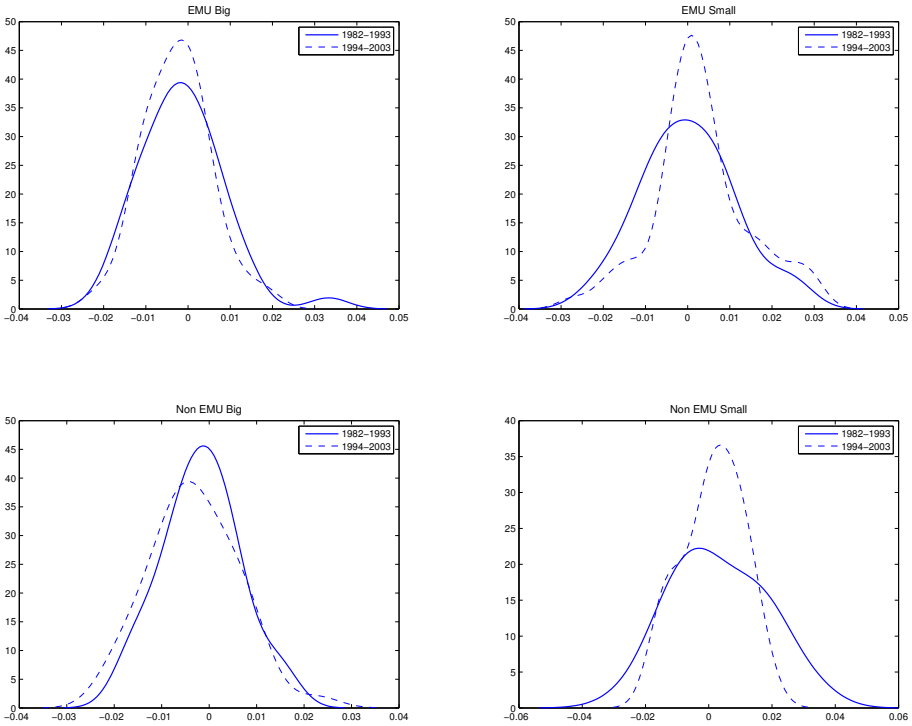

Figure 28: Evolution of within-group distributions for different country size groups.Net exports contribution to GDP growth.

Table 17: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions across different country size groups. Net exports contribution to GDP growth.

Net Exports Contribution 1982-1993

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-0.891	-0.891	-1.518	-1.518	-0.094	-0.094	-0.922	-0.922
	0.814	***0.186***	***0.936***	***0.064***	***0.537***	***0.463***	***0.822***	***0.178***
Fligner-Policello	-0.912	-0.912	-1.424	-1.424	-0.095	-0.095	-0.869	-0.869
	0.819	***0.181***	***0.923***	***0.077***	***0.538***	***0.462***	***0.807***	***0.193***
Squared Rank	-1.227	-1.227	-4.233	-4.233	0.687	0.687	-2.452	-2.452
	0.890	***0.110***	***1.000***	***0.000***	***0.246***	***0.754***	***0.993***	***0.007***
Kolmogorov-Smirnov	0.044	0.067	0.156	0.044	0.044	0.094	0.037	0.035
	0.887	***0.763***	***0.268***	***0.898***	***0.898***	***0.616***	***0.906***	***0.930***

Net Exports Contribution 1994-2003

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-2.841	-2.841	-2.191	-2.191	0.280	0.280	0.389	0.389
	0.998	***0.002***	***0.986***	***0.014***	***0.390***	***0.610***	***0.349***	***0.651***
Fligner-Policello	-3.093	-3.093	-2.237	-2.237	0.283	0.283	0.389	0.389
	0.999	***0.001***	***0.987***	***0.013***	***0.389***	***0.611***	***0.349***	***0.651***
Squared Rank	-1.095	-1.095	-0.524	-0.524	-0.930	-0.930	0.262	0.262
	0.863	***0.137***	***0.700***	***0.300***	***0.824***	***0.176***	***0.396***	***0.604***
Kolmogorov-Smirnov	0.139	0.151	0.100	0.128	0.083	0.128	0.105	0.131
	0.392	***0.331***	***0.653***	***0.499***	***0.744***	***0.499***	***0.544***	***0.435***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 18: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in within-group distributions across different time-periods. Net exports contribution to GDP growth.

Net Exports Contribution

	EMU Big		Non EMU Big		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	0.537	0.537	0.890	0.890	-0.700	-0.700	0.423	0.423
	0.296	***0.704***	***0.187***	***0.813***	***0.758***	***0.242***	***0.336***	***0.664***
Fligner-Policello	0.539	0.539	0.879	0.879	-1.498	-1.498	0.421	0.421
	0.295	***0.705***	***0.190***	***0.810***	***0.933***	***0.067***	***0.337***	***0.663***
Squared Rank	0.987	0.987	-0.788	-0.788	0.623	0.623	2.720	2.720
	0.162	***0.838***	***0.785***	***0.215***	***0.266***	***0.734***	***0.003***	***0.997***
Kolmogorov-Smirnov	0.061	0.094	0.067	0.061	0.141	0.127	0.061	0.172
	0.853	***0.684***	***0.785***	***0.816***	***0.228***	***0.302***	***0.853***	***0.282***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).

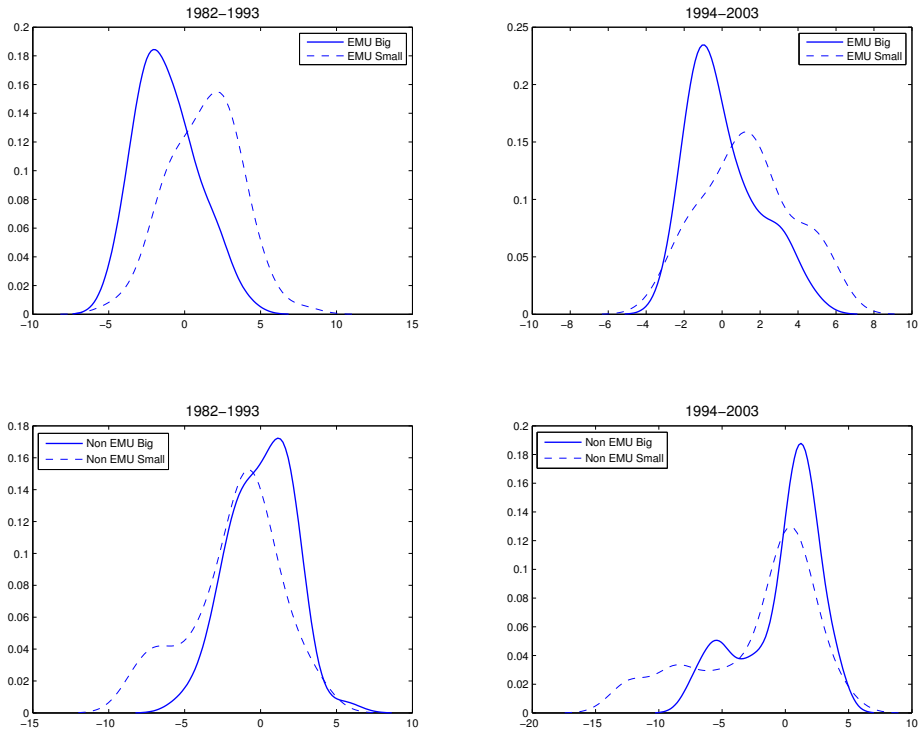

Figure 29: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. Cyclically adjusted primary government balance as a share of GDP. Big and small countries in the EMU (top plots). Big and small countries outside the EMU (bottom plots).

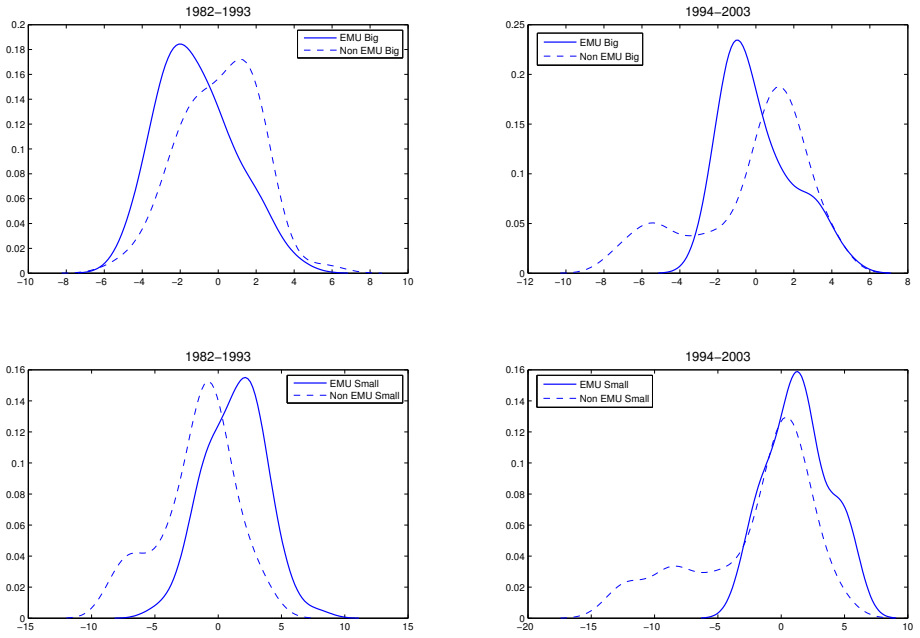

Figure 30: Comparative analysis of kernel density estimates distributions for countries with similar size characteristics. Cyclically adjusted primary government balance as a share of GDP. Big countries in EMU vs. big countries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

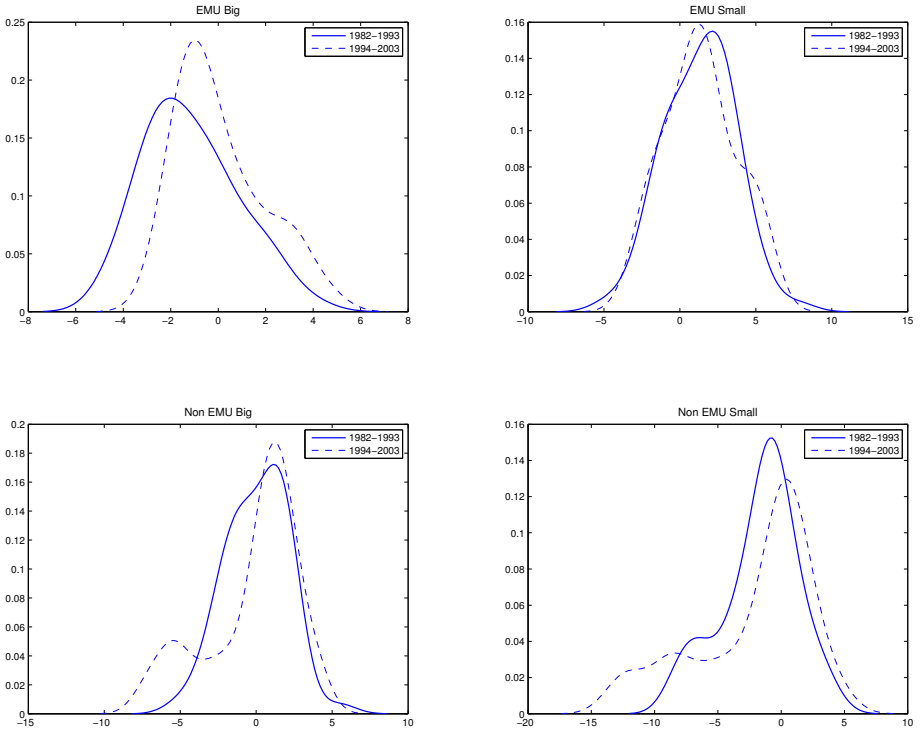

Figure 31: Evolution of within-group distributions for different country size groups. Cyclically adjusted primary government balance as a share of GDP.

Table 19: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions across different country size groups. Cyclically adjusted primary government balance as a share of GDP.

Prim. Govt. Balance/GDP 1982-1993

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-5.445	-5.445	2.782	2.782	-3.057	-3.057	4.813	4.813
	1.000	***0.000***	***0.003***	***0.997***	***0.999***	***0.001***	***0.000***	***1.000***
Fligner-Policello	-7.085	-7.085	2.919	2.919	-3.235	-3.235	6.146	6.146
	1.000	***0.000***	***0.002***	***0.998***	***0.999***	***0.001***	***0.000***	***1.000***
Squared Rank	-1.065	-1.065	-1.544	-1.544	-0.241	-0.241	-0.904	-0.904
	0.857	***0.143***	***0.939***	***0.061***	***0.595***	***0.405***	***0.817***	***0.183***
Kolmogorov-Smirnov	0.125	0.093	0.130	0.136	0.119	0.102	0.091	0.089
	0.382	***0.583***	***0.457***	***0.425***	***0.460***	***0.563***	***0.545***	***0.668***

Prim. Govt. Balance/GDP 1994-2003

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-2.666	-2.666	2.086	2.086	-0.746	-0.746	3.764	3.764
	0.996	***0.004***	***0.018***	***0.982***	***0.772***	***0.228***	***0.000***	***1.000***
Fligner-Policello	-2.845	-2.845	2.144	2.144	-0.723	-0.723	4.313	4.313
	0.998	***0.002***	***0.016***	***0.984***	***0.765***	***0.235***	***0.000***	***1.000***
Squared Rank	-1.470	-1.470	-2.585	-2.585	-2.515	-2.515	-3.881	-3.881
	0.929	***0.071***	***0.995***	***0.005***	***0.994***	***0.006***	***1.000***	***0.000***
Kolmogorov-Smirnov	0.183	0.135	0.122	0.044	0.294	0.167	0.206	0.151
	0.198	***0.413***	***0.529***	***0.919***	***0.025***	***0.306***	***0.094***	***0.331***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 20: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in within-group distributions across different time-periods.Cyclically adjusted primary government balance as a share of GDP.

Prim. Govt. Balance/GDP

	EMU Big		Non EMU Big		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	-2.789	-2.789	-0.314	-0.314	3.890	3.890	-0.488	-0.488
	0.997	***0.003***	***0.623***	***0.377***	***0.000***	***1.000***	***0.687***	***0.313***
Fligner-Policello	-3.057	-3.057	-0.303	-0.303	0.126	0.126	-0.476	-0.476
	0.999	***0.001***	***0.619***	***0.381***	***0.450***	***0.550***	***0.683***	***0.317***
Squared Rank	0.421	0.421	-2.442	-2.442	-0.502	-0.502	-2.624	-2.624
	0.337	***0.000***	***0.993***	***0.007***	***0.692***	***0.308***	***0.996***	***0.004***
Kolmogorov-Smirnov	0.134	0.042	0.106	0.222	0.109	0.116	0.052	0.124
	0.461	***0.926***	***0.546***	***0.068***	***0.414***	***0.369***	***0.903***	***0.561***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).

	1982-1993		1994-2003	
	$t-1$	t	$t-1$	t
EMU Big	-0.360	-0.357	-0.439	-0.243
	0.051	***0.042***	***0.007***	***0.131***
EMU Small	-0.161	-0.231	-0.020	-0.053
	0.263	***0.090***	***0.886***	***0.687***
Non EMU Big	0.247	0.306	0.236	0.371
	0.084	***0.023***	***0.118***	***0.008***
Non EMU Small	0.519	0.546	0.207	0.241
	0.019	***0.009***	***0.173***	***0.091***

Table 21: Correlation coefficients between changes in cyclically adjusted primary government balance and gdp growth rate at different lags. $t-1$: one year lagged correlation; t: contemporaneous correlation. P-values for the null hypothesis of zero correlation in bold.

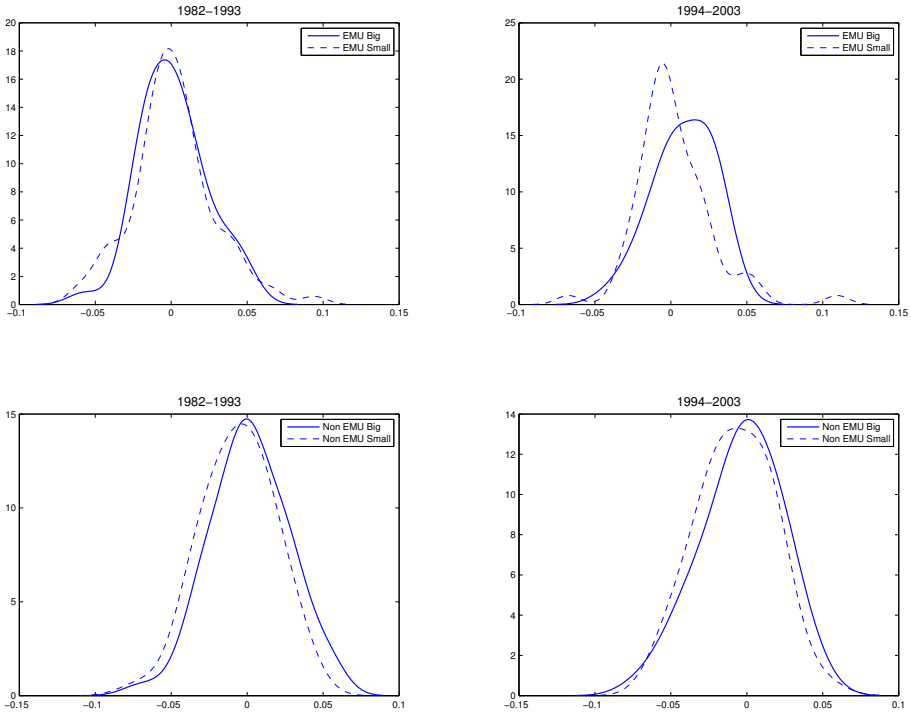

Figure 32: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. Openness growth rate. Big and small countries in the EMU (top plots). Big and small countries outside the EMU (bottom plots).

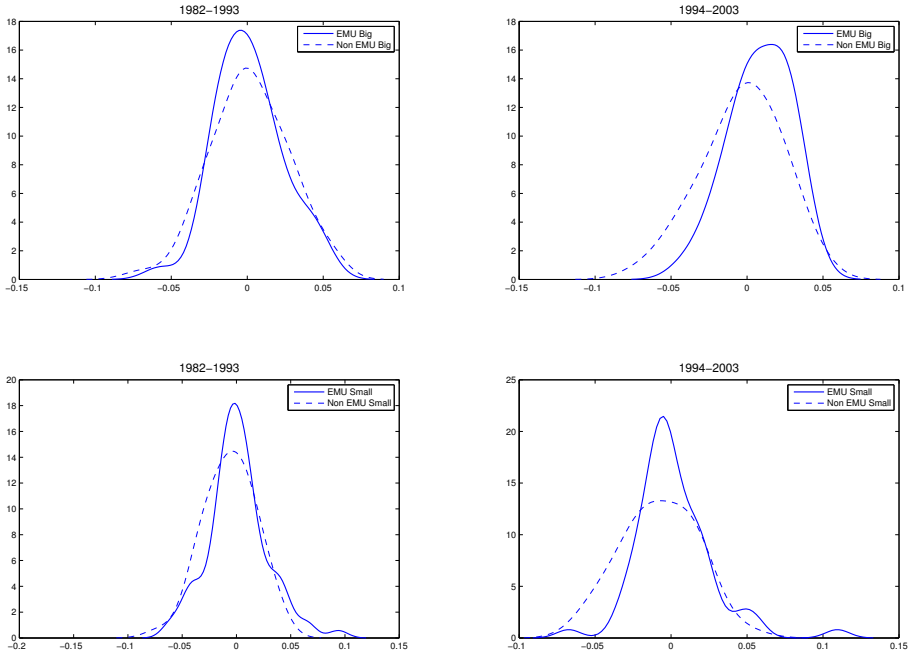

Figure 33: Comparative analysis of kernel density estimates distributions for countries with similar size characteristics. Openness growth rate. Big countries in EMU vs. big coutries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

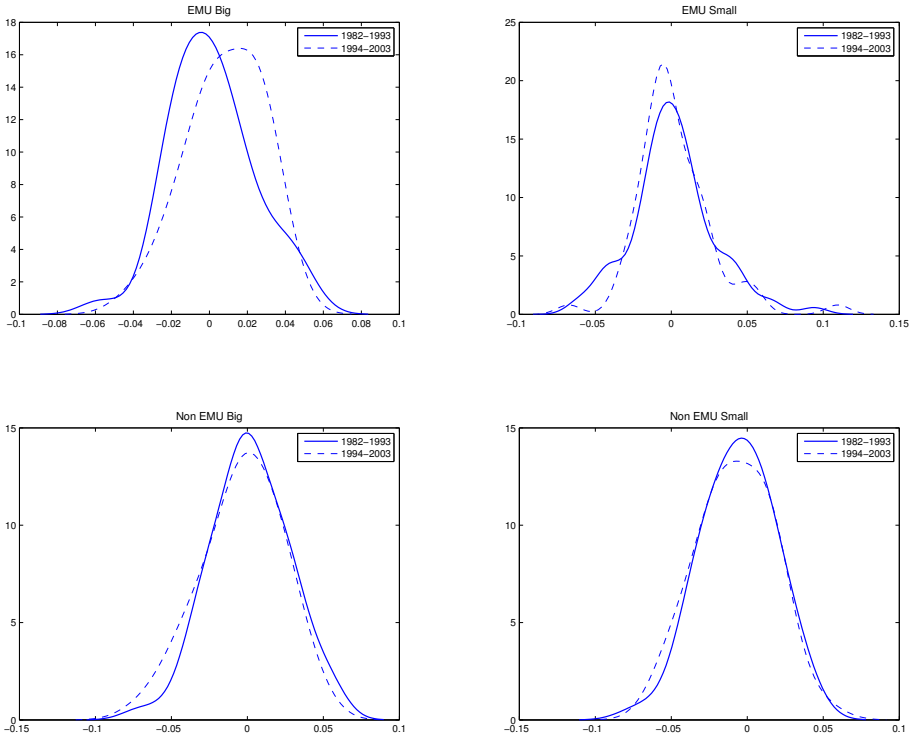

Figure 34: Evolution of within-group distributions for different country size groups. Openness growth rate.

Table 22: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions across different country size groups. Openness growth rate.

Openness Growth Rate 1982-1993

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	0.020	0.020	1.596	1.596	-0.107	-0.107	1.314	1.314
	0.492	***0.508***	***0.055***	***0.945***	***0.543***	***0.457***	***0.094***	***0.906***
Fligner-Policello	0.023	0.023	1.623	1.623	-0.110	-0.110	1.320	1.320
	0.491	***0.509***	***0.052***	***0.948***	***0.544***	***0.456***	***0.093***	***0.907***
Squared Rank	-0.512	-0.512	0.470	0.470	-0.933	-0.933	0.030	0.030
	0.696	***0.304***	***0.319***	***0.681***	***0.825***	***0.175***	***0.488***	***0.512***
Kolmogorov-Smirnov	0.094	0.077	0.083	0.106	0.089	0.094	0.112	0.106
	0.585	***0.700***	***0.686***	***0.546***	***0.651***	***0.616***	***0.406***	***0.503***

Openness Growth Rate 1994-2003

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	2.149	2.149	0.936	0.936	2.191	2.191	1.648	1.648
	0.016	***0.984***	***0.175***	***0.825***	***0.014***	***0.986***	***0.050***	***0.950***
Fligner-Policello	2.187	2.187	0.937	0.937	2.301	2.301	1.598	1.598
	0.014	***0.986***	***0.174***	***0.826***	***0.011***	***0.989***	***0.055***	***0.945***
Squared Rank	0.132	0.132	0.336	0.336	-1.466	-1.466	-1.299	-1.299
	0.448	***0.552***	***0.368***	***0.632***	***0.929***	***0.071***	***0.903***	***0.097***
Kolmogorov-Smirnov	0.147	0.135	0.128	0.050	0.044	0.128	0.035	0.171
	0.351	***0.413***	***0.499***	***0.899***	***0.919***	***0.499***	***0.935***	***0.243***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 23: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in within-group distributions across different time-periods. Openness growth rate.

Openness Growth Rate

	EMU Big		Non EMU Big		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	-1.706	-1.706	0.832	0.832	1.491	1.491	0.261	0.261
	0.956	***0.044***	***0.203***	***0.797***	***0.068***	***0.932***	***0.397***	***0.603***
Fligner-Policello	-1.727	-1.727	0.831	0.831	0.074	0.074	0.262	0.262
	0.958	***0.042***	***0.203***	***0.797***	***0.470***	***0.530***	***0.397***	***0.603***
Squared Rank	0.285	0.285	-0.138	-0.138	0.742	0.742	-0.326	-0.326
	0.388	***0.612***	***0.555***	***0.445***	***0.229***	***0.771***	***0.628***	***0.372***
Kolmogorov-Smirnov	0.167	0.089	0.050	0.106	0.131	0.041	0.100	0.117
	0.306	***0.714***	***0.873***	***0.546***	***0.283***	***0.885***	***0.653***	***0.560***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).

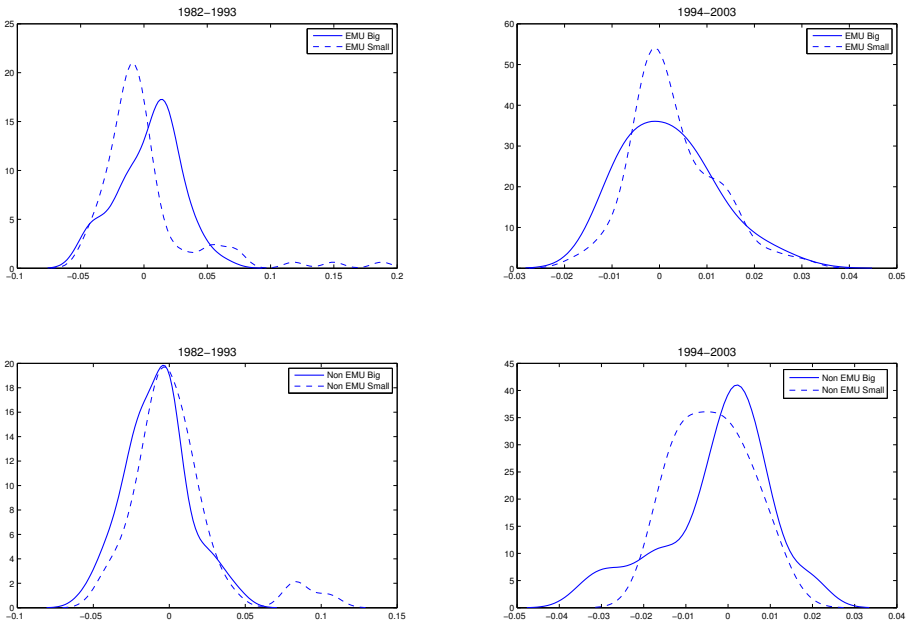

Figure 35: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. CPI inflation rate. Big and small countries in the EMU (top plots). Big and small countries outside the EMU (bottom plots).

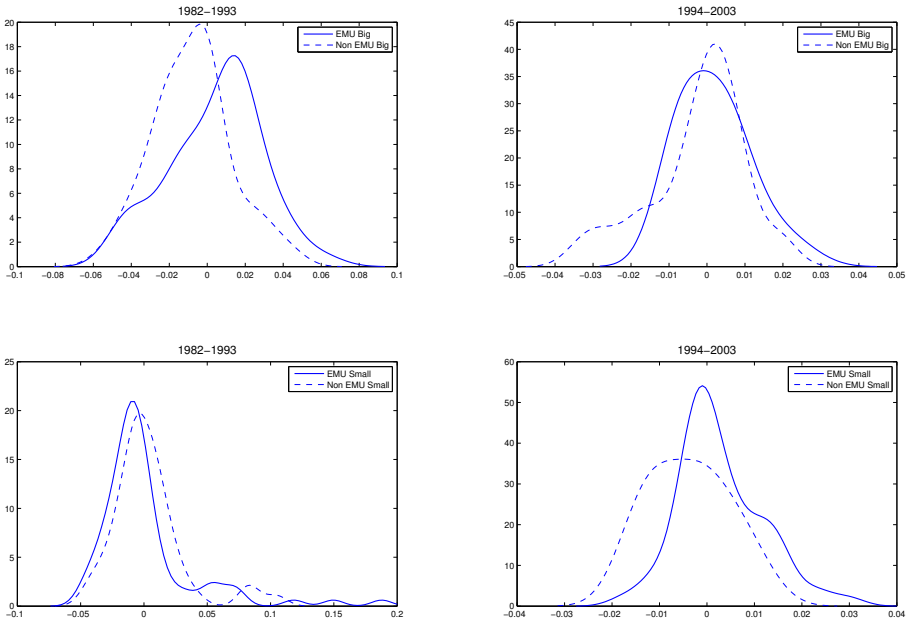

Figure 36: Comparative analysis of kernel density estimates distributions for countries with similar size characteristics. CPI inflation rate. Big countries in EMU vs. big coutries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

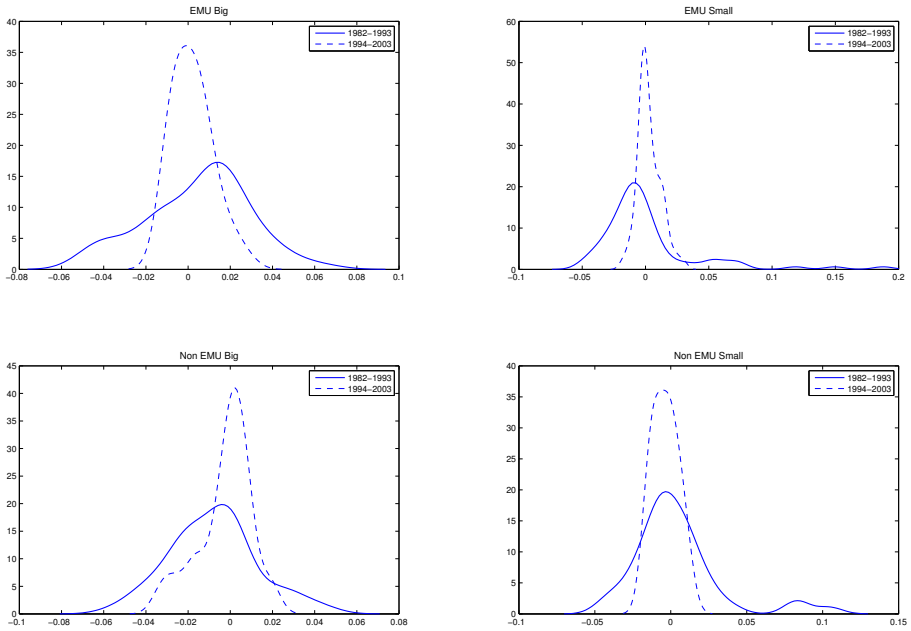

Figure 37: Evolution of within-group distributions for different country size groups. CPI inflation rate.

Table 24: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions across different country size groups. CPI Inflation Rate.

CPI Inflation Rate 1982-1993

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	2.235	2.235	-1.939	-1.939	2.885	2.885	-1.594	-1.594
	0.013	***0.987***	***0.974***	***0.026***	***0.002***	***0.998***	***0.944***	***0.056***
Fligner-Policello	2.199	2.199	-1.976	-1.976	2.916	2.916	-1.625	-1.625
	0.014	***0.986***	***0.976***	***0.024***	***0.002***	***0.998***	***0.948***	***0.052***
Squared Rank	-0.592	-0.592	-0.517	-0.517	1.441	1.441	1.122	1.122
	0.723	***0.277***	***0.698***	***0.302***	***0.075***	***0.925***	***0.131***	***0.869***
Kolmogorov-Smirnov	0.121	0.336	0.083	0.211	0.078	0.144	0.302	0.067
	0.410	***0.001***	***0.686***	***0.089***	***0.720***	***0.322***	***0.001***	***0.763***

CPI Inflation Rate 1994-2003

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-0.626	-0.626	1.212	1.212	0.974	0.974	3.219	3.219
	0.734	***0.266***	***0.113***	***0.887***	***0.165***	***0.835***	***0.001***	***0.999***
Fligner-Policello	-0.601	-0.601	1.201	1.201	0.970	0.970	3.453	3.453
	0.726	***0.274***	***0.115***	***0.885***	***0.166***	***0.834***	***0.000***	***1.000***
Squared Rank	0.609	0.609	1.368	1.368	-1.250	-1.250	-0.473	-0.473
	0.271	***0.729***	***0.086***	***0.914***	***0.894***	***0.106***	***0.682***	***0.318***
Kolmogorov-Smirnov	0.194	0.143	0.128	0.194	0.217	0.111	0.251	0.143
	0.159	***0.371***	***0.499***	***0.200***	***0.135***	***0.591***	***0.031***	***0.371***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 25: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in within-group distributions across different time-periods. CPI Inflation Rate.

CPI Inflation Rate

	EMU Big		Non EMU Big		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	1.231	1.231	-2.147	-2.147	-1.190	-1.190	0.936	0.936
	0.109	***0.891***	***0.984***	***0.016***	***0.883***	***0.117***	***0.175***	***0.825***
Fligner-Policello	1.177	1.177	-2.209	-2.209	-3.961	-3.961	0.934	0.934
	0.120	***0.880***	***0.986***	***0.014***	***1.000***	***0.000***	***0.175***	***0.825***
Squared Rank	4.719	4.719	2.719	2.719	5.975	5.975	3.958	3.958
	0.000	***1.000***	***0.003***	***0.997***	***0.000***	***1.000***	***0.000***	***1.000***
Kolmogorov-Smirnov	0.111	0.183	0.156	0.072	0.152	0.116	0.200	0.156
	0.591	***0.239***	***0.268***	***0.753***	***0.181***	***0.366***	***0.182***	***0.356***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).

Table 26: Correlation coefficients across labour and product market regulation variables

	Tax Wedge	Avg.Repl.	EPL	PMR	Un.Dens.	Corp.Tax
Tax Wedge	**1.000**	0.351	0.619	0.348	0.324	0.162
Avg. Repl.	0.351	**1.000**	0.299	0.161	0.270	-0.255
EPL	0.619	0.299	**1.000**	0.535	0.083	0.228
PMR	0.348	0.161	0.535	**1.000**	0.160	0.476
Un. Dens.	0.324	0.270	0.083	0.160	**1.000**	0.068
Corp.Tax	0.162	-0.255	0.228	0.476	0.068	**1.000**

Table 27: Share of total variance explained by each principal component

	Share	Cumulated Share
1st component	42.15	42.15
2nd component	21.54	63.68
3rd component	16	79.68
4th component	8.58	88.27
5th component	7.37	95.63
6th component	4.37	100

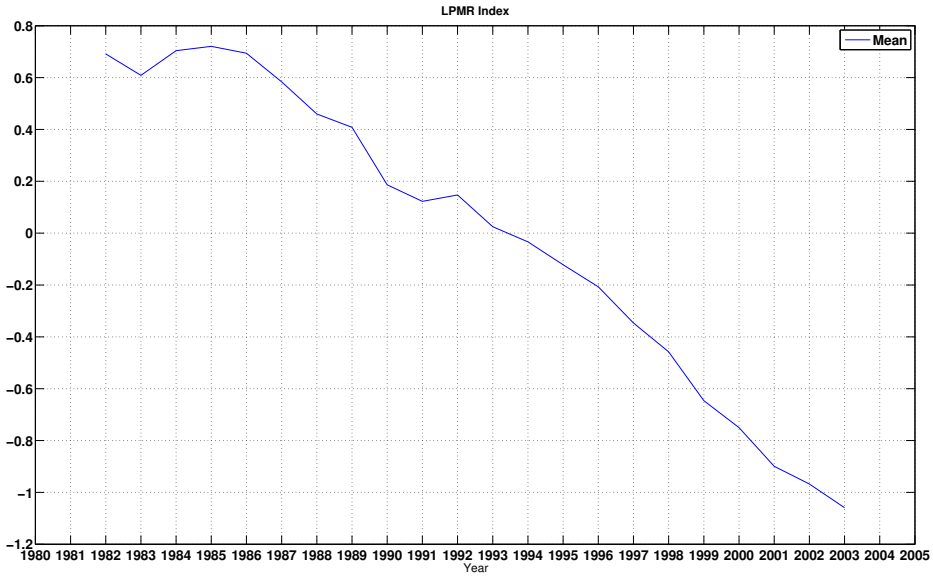

Figure 38: Cross-country average Labour and Product Markets Regulation Index

Table 28: Labour and Product Markets Regulation Index. Coefficients associated with variables

Variable	Coefficient
Lab. Tax Wedge	0.390
Avg. Repl. Rate	0.231
EPL	0.610
PMR	0.596
Union Dens. Rate	-0.201
Corp. Tax Rate	0.163

Note: The index is defined as the first principal component. Coefficients values are obtained after varimax rotation.

Table 29: Labour and Product Markets Regulation Index. Means for different groups of countries and periods.

Mean	1982-1993	1994-2003
EMU Big	1.47	1.45
EMU Small	0.69	0.47
Non EMU Big	-1.68	-1.45
Non EMU Small	-0.46	-0.45

Note: Means are computed on index values without the common average.

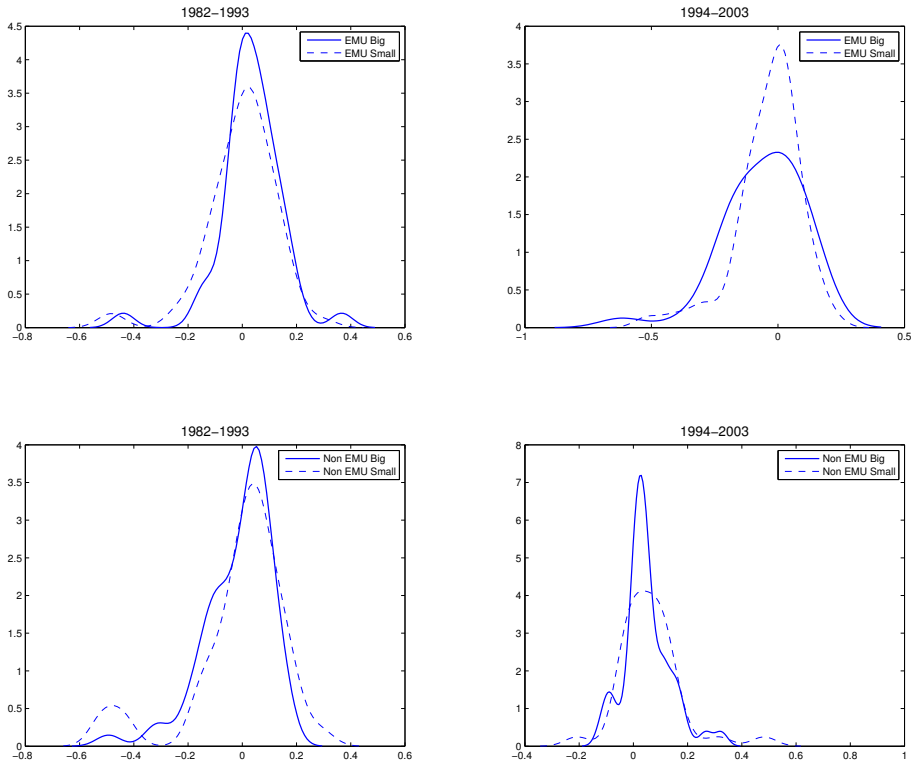

Figure 39: Comparative analysis of kernel density estimates of distributions for countries with different size characteristics. Change in labour and product markets regulation index. Big and small countries in the EMU (top plots). Big and small countries outside the EMU (bottom plots).

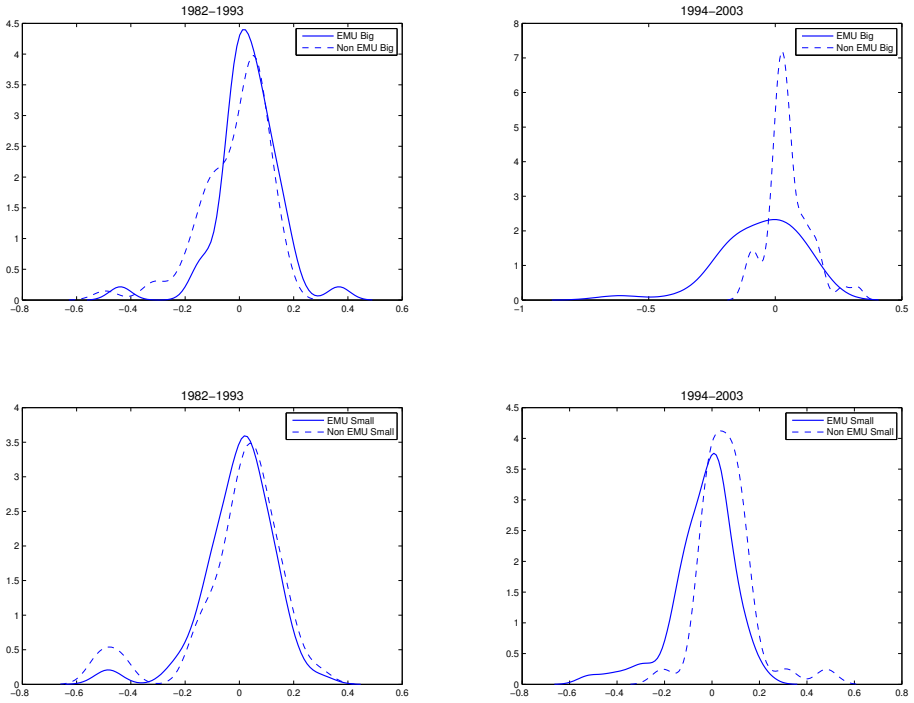

Figure 40: Comparative analysis of kernel density estimates distributions for countries with similar size characteristics. Change in Labour and Product Markets Regulation Index. Big countries in EMU vs. big coutries outside EMU (top plots). Small countries in EMU vs. small countries outside EMU (bottom plots).

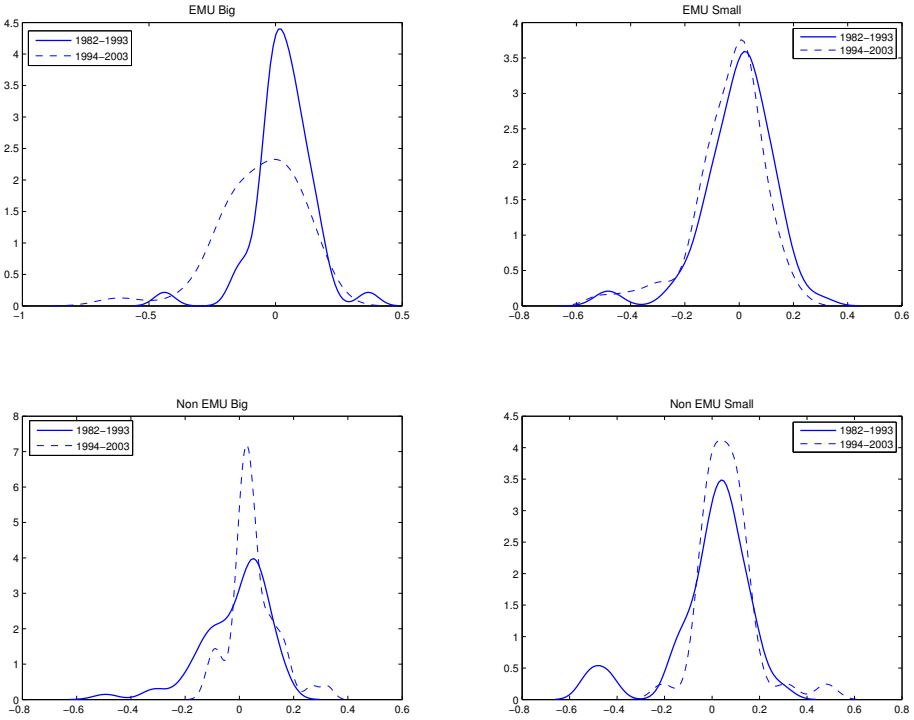

Figure 41: Evolution of within-group distributions for different country size groups. Change in Labour and Product Markets Regulation Index.

Table 30: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in distributions across different country size groups.Change in Labour and Product Markets Regulation Index.

Change in Labour and Product Markets Regulation Index 1982-1993

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	1.408	1.408	-0.910	-0.910	1.544	1.544	-0.598	-0.598
	0.080	***0.920***	***0.819***	***0.181***	***0.061***	***0.939***	***0.725***	***0.275***
Fligner-Policello	1.442	1.442	-0.893	-0.893	1.562	1.562	-0.582	-0.582
	0.075	***0.925***	***0.814***	***0.186***	***0.059***	***0.941***	***0.720***	***0.280***
Squared Rank	-1.167	-1.167	-0.774	-0.774	-1.837	-1.837	-1.160	-1.160
	0.878	***0.122***	***0.780***	***0.220***	***0.967***	***0.033***	***0.877***	***0.123***
Kolmogorov-Smirnov	0.117	0.108	0.111	0.189	0.189	0.128	0.174	0.069
	0.441	***0.496***	***0.511***	***0.144***	***0.144***	***0.412***	***0.120***	***0.753***

Change in Labour and Product Markets Regulation Index 1994-2003

	b.e>s.e	b.e < s.e	b.ne >s.ne	b.ne<s.ne	b.e>b.ne	b.e<b.ne	s.e>s.ne	s.e<s.ne
Wilcoxon	-0.644	-0.644	-0.299	-0.299	-3.369	-3.369	-3.553	-3.553
	0.740	***0.260***	***0.618***	***0.382***	***1.000***	***0.000***	***1.000***	***0.000***
Fligner-Policello	-0.608	-0.608	-0.293	-0.293	-3.615	-3.615	-4.071	-4.071
	0.728	***0.272***	***0.615***	***0.385***	***1.000***	***0.000***	***1.000***	***0.000***
Squared Rank	2.028	2.028	-0.774	-0.774	3.479	3.479	1.273	1.273
	0.021	***0.979***	***0.780***	***0.220***	***0.000***	***1.000***	***0.101***	***0.899***
Kolmogorov-Smirnov	0.167	0.103	0.100	0.133	0.122	0.233	0.063	0.183
	0.259	***0.596***	***0.653***	***0.469***	***0.529***	***0.098***	***0.800***	***0.198***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations.P-values in bold. "b.e": EMU Big; "b.ne": Non EMU Big; "s.e": EMU Small; "s.ne": Non EMU Small.

Table 31: Non parametric upper-tailed tests (odd columns) and lower-tailed tests (even columns) on differences in within-group distributions across different time-periods. Change in Labour and Product Markets Regulation Index.

Change in labour and product markets regulation index

	EMU Big		Non EMU Big		EMU Small		Non EMU Small	
	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II	P.I>P.II	P.I<P.II
Wilcoxon	0.874	0.874	-2.367	-2.367	5.950	5.950	-0.135	-0.135
	0.191	***0.809***	***0.991***	***0.009***	***0.000***	***1.000***	***0.554***	***0.446***
Fligner-Policello	0.749	0.749	-2.474	-2.474	1.442	1.442	-0.131	-0.131
	0.227	***0.773***	***0.993***	***0.007***	***0.075***	***0.925***	***0.552***	***0.448***
Squared Rank	-5.446	-5.446	-0.059	-0.059	1.260	1.260	5.169	5.169
	1.000	***0.000***	***0.524***	***0.476***	***0.104***	***0.896***	***0.000***	***1.000***
Kolmogorov-Smirnov	0.159	0.116	0.094	0.100	0.117	0.142	0.222	0.225
	0.335	***0.561***	***0.616***	***0.581***	***0.369***	***0.229***	***0.119***	***0.114***

Note: Each column in the table reports tests statistics for the null of equality in distributions against the specified one-sided alternative. The Squared Rank test is performed on observations standardized for their groups' means. The Kolmogorov-Smirnov test is performed on observation standardized for their groups' means and standard deviations. P-values in bold. "P.I": Period I (1982-1993). "P.II": Period II (1994-2003).