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Pay Inequality in Europe 1995-2000: Convergence Between Countries and Stability Inside

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Abstract

This paper measures pay inequality in the EU during the convergence process to the Monetary Union. The decomposability property of Theil's T statistic permits us to construct a three-level hierarchical panel data set of pay inequalities for the years 1995-2000: between and within regions, countries, and for the European continent as a whole. We find a marked pattern of declining pay inequality across Europe for this period, which is due mainly to the rising (initially, negative) position of the United Kingdom and decreasing positive position of Germany.

JEL Classification: D63, E24, J31, O52, R23

Keywords: Inequality, Unemployment, Wage Level and Structure, Europe, Regional Labor Markets

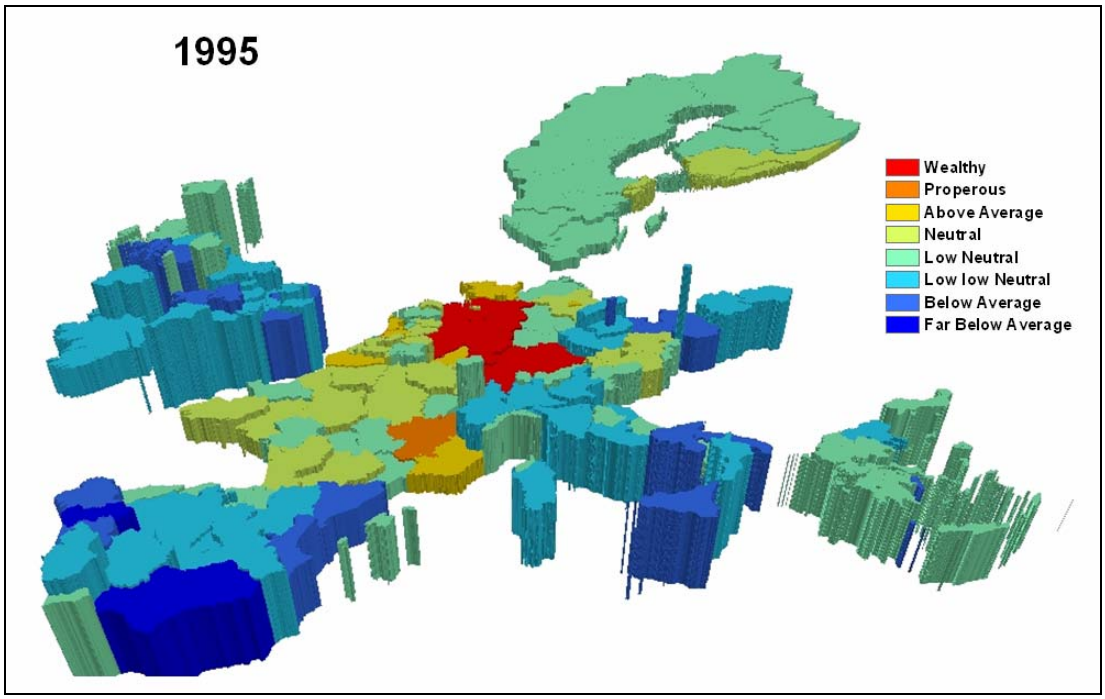
1. Introduction

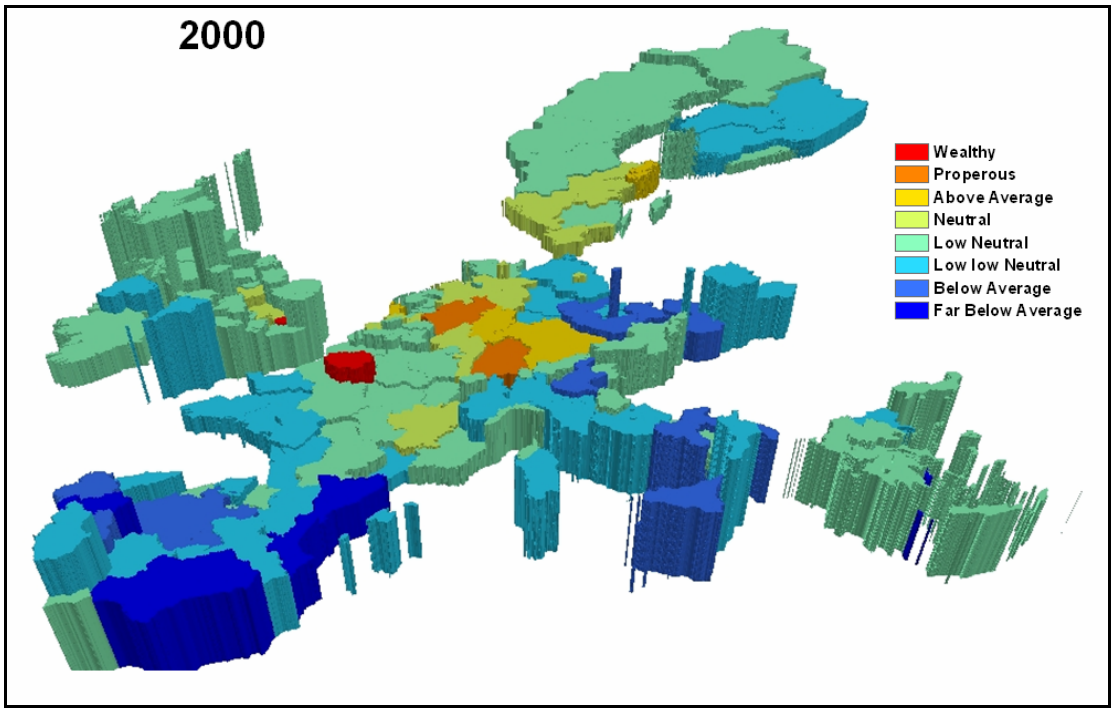
Research on inequality in the European Union generally falls into two main lines. One measures GDP per capita inequality between European countries and regions. Studies of this kind find a convergence in per capita income between EU countries during 1980-2000: member states with lower initial income levels grew faster, on average, than those with higher incomes (Sapir *et al.*, 2003). Inequality within countries accounts for roughly half of total EU inequality in the early 1980s, but rises to about two thirds by the mid-1990s (Puga, 2002; Neven and Gouyette, 1995). Thus, convergence did not occur at the regional level. The test to determine these facts is a sigma convergence or beta convergence test in per capita income levels as proposed by Sala i Martin (1996).

The other line of research measures interpersonal inequality between EU citizens. At the European level, Morrisson and Murtin (2003) estimate measures of income inequality for 1970, 1980, 1990, 1995, and 1998, while Beblo and Knaus (2001) estimate a single measure of European inequality for 1995. Morrisson and Murtin find that inequality within countries first fell from 1970 to 1980, and then returned to the 1970s' level by the late 1990s, while inequality across countries fell by half between 1970 and 1998 with a particular sharp decrease starting in the 1980s. Beblo and Knaus develop 11 country measures for 1995, and Alvarez-Garcia *et al.* (2004) develop 13 measures for 1995 and 1996.

This paper departs from the traditional focus on *income* inequality and instead develops a measure of *pay* inequality. We measure the evolution of pay inequalities across sectors in each of the three distinct geographical delimitations: regions, countries, and across the whole of Europe. We develop this data set for the period from 1995 to 2000, permitting us to evaluate the trends in pay disparities, both between and within each of the three geographic levels. For reasons described in Conceição *et al.* (2001), the intersectoral measures so constructed is a good proxy for both the movement of the interpersonal distribution over time and a reasonable estimator of relative inequality levels between regions and countries. Also, Galbraith and Kum (2005) find that similar

measures at the county level are well correlated with survey measures of inequality, once differences in survey method are controlled for.





Payroll data enable us to construct inequality measures across countries, including where survey studies are not available – such as in the newly admitted countries – and through time. Our calculations include 22 countries, 11 more than in Morrisson and Murtin and Beblo and Knaus. Since payroll data is published for each

year across all observations, we are able to produce a consistent time series of inequality measures from 1995 to 2000. This period of time is particularly interesting as the process of European integration intensified after the implementation of the Maastricht Treaty in 1993.

A second advantage of this approach is that it permits us to measure inequality at three distinct hierarchical levels. Payroll data is available by industrial sector within European regions; thus we can compute measures of inequality between and within regions, within and between countries, and in summary at the continental level. At the regional level our measurements are the first of their kind. We can also measure the contribution of each region, and of each country, to total inequality. This permits us to pinpoint exactly which countries or regions have converged to the European average and which ones have diverged, and precisely when these developments occurred.

A third advantage lies in the consistency and comparability of our inequality measures. Since Eurostat publishes payroll data in a common metric (Euros and ECUs before 1999), summation across countries is easy. The measures produced by Morrisson and Murtin, and by Beblo and Knaus, are converted into a common currency through the method of purchasing power parity (PPP) for a reference year. Our measures reflect the arrival of a single currency and are particularly precise – for comparative purposes – after 1999 in EMU member countries. For non-EMU member countries and regions, changes in exchange rates relative to the Euro are an important factor in changing patterns of relative pay; for several reasons. First, they have a direct impact on import prices and therefore living standards. Second, they determine the purchasing of the national pay packet outside the country, an increasingly important factor as migration rises. Third, they determine the wage-cost associated with foreign investment, the calculation made by non-resident corporations. Within the Euro region, these considerations largely continue to hold even though exchange rate fluctuation has been abolished. For these reasons we think that the advantages of using nominal currency units outweigh the advantages of PPP adjustment, quite apart from data difficulties of the latter.

Our inequality measures, while more narrowly based, yield more information in certain respects than measures derived from surveys. Morrisson and Murtin, and Beblo and Knaus estimate European inequality measures based on a grouping structure partitioned by income levels from each country; they proceed by using the additive decomposability property of the Theil statistic to develop a European Theil index. Using this method, they decompose the contribution of each country to total inequality, and compare the magnitude of the between-groups component to the within-groups component of the Theil index at the country level. (Not surprisingly, they find that there is more inequality within countries than between them.) Since we have data disaggregated by countries, regions, and sectors, we can measure the contribution of each of the 188 administrative regions to a European Theil index. Moreover, we are not imposing a grouping structure on our measures, but rather letting the groups themselves reveal the key patterns of associated with geographic and sectoral change.

Last but not least, our measures are easy to update at a low cost. Survey studies are very expensive projects, a fact that limits the availably of observations across countries and time. The high cost is also an impediment to producing observations at

the regional level. Our measures are very inexpensive to obtain and to keep up-to-date; payroll data is available online,[1] free of charge.

Eurostat, in collaboration with other Commission departments, set up the Nomenclature of Territorial Units for Statistics (NUTS) at the beginning of the 1970s as a single, coherent system for dividing the Europe's territory in order to produce regional statistics for the EU. The NUTS is a three-level hierarchical classification system, subdividing each country into a number of NUTS 1 regions, each of which is in turn subdivided into NUTS 2 regions, which are further subdivided into NUTS 3 regions.

With the arrival of the newly-admitted member countries, Eurostat proposed a breakdown for each of the ten countries in the PHARE Programme. The proposal changed the regional breakdown originally agreed upon between Eurostat and member countries. The new regional breakdown resulted in NUTS-2003, which reclassified regions from Germany, Spain, Italy, Portugal, Finland, and the ten newly-admitted member countries. According to the NUTS-2003 classification scheme, European countries contained the following numbers of regions at each hierarchical category:

Table 1. Number of European Regions in Each NUTS Level According to NUTS-03

Country	Level 1	Level 2	Level 3
Austria	3	9	35
Belgium	3	11	43
Denmark	1	1	15
Finland	2	5	20
France	9	26	100
Germany	16	41	439
Greece	4	13	51
Ireland	1	2	8
Italy	5	21	103
Luxembourg	1	1	1
Portugal	3	7	30
Spain	7	19	52
Sweden	1	9	21
The Netherlands	4	12	40
United Kingdom	12	37	133
Total	72	214	1091

Source: European Commission

Eurostat publishes payroll data for all EU-25 member countries in addition to other future candidate countries such as Bulgaria and Romania. Our inequality index – the between-groups component of Theil's T statistic – is derived from two variables: a measure of income for a given group, and a measure of population in that group. Both variables are available in Eurostat's REGIO accounts disaggregated by region and industry for all member states in the EU, including the newly admitted countries. The regional taxonomy is the NUTS classification system, and the industrial classification is NACE Rev. 1.1. The list of industries is given in the appendix (Table A2).

[1] Source: www.europa.eu.int/comm/eurostat/

As of January 2005,[2] Eurostat made available data for Germany, Greece, Spain, France, Ireland, Italy, Portugal, Austria, Finland, Sweden, Belgium, Netherlands, United Kingdom, Czech Republic, Hungary, Poland, Slovakia, Bulgaria, Slovenia, Lithuania, Latvia, and Estonia for 1995-2000. Regional observations for Germany are only available at NUTS level 1 while for the rest of the countries they are available at NUTS level 2. Regions are classified according to NUTS-2003 except for Finland for which more data is available under NUTS-99. For the case of Portugal, data is missing under NUTS-2003 for the regions of Centro (pt 12), Lisboa e Vale do Tejo (pt 13), and Alentejo (pt 14), while coverage is available in all Portuguese regions under NUTS-99 except for 2000. In our tables we use the NUTS-03 classification for Portugal, while in our graphs we use the values of NUTS-99 for visual purposes.

2. Measuring Inequality from Payroll Data

One of the attractive features of Theil's T statistic is decomposability. As long as a distribution of income and a distribution of individuals are grouped into mutually exclusive and completely exhaustive groups, overall inequality can be broken down into a between-groups component and a within-groups component. The formal expressions of this method are documented by Conceição and Galbraith (2000) and in Conceição *et al.* (2001). The inequality measure given by these studies, Theil's T statistic, is founded on the original works of Henri Theil (1972) and the widely known Theil statistic.

Payroll data published by Eurostat are disaggregated into 16 industrial sectors at the regional level. Our regional unit of analysis will be NUTS level 2 (when available[3]), which is the same unit chosen by the European Commission to declare regions eligible for financial support. A further reason for this choice is that coverage at level 3 is scarce in some geographical areas.

We develop a hierarchical data set of pay inequality which provides measures at the regional, national, and European level. There are a total of five measures. These are listed in Table 2 (T1-T5) at their corresponding hierarchical level. In addition to these measures we compute the contribution of each region and of each country to a pan-European measure of pay inequality through the individual Theil elements.

Table 3.4 Measures of Pay-Inequality

Level	Measures of Pay Inequality	Contribution to Inequality
Regions	T1=Within-Regions Between-Sectors	Regional Theil Elements
Countries	T2=Within-Countries Between-Sectors T3=Between-Regions Component + Within-Regions Component	Country Theil Elements
Europe	T4=Between-Regions Component + Within-Regions Component T5=Between-Countries Component+ Within-Counties Component	

Our first measure is the within-regions, between-sectors component of Theil's T statistic. We calculate pay inequality between 16 industrial sectors, categorized by Nace

[2] For updates visit www.eurostat.org

[3] Germany is the only country where data is not available at level 2.

Rev. 1.1 for each region. This means all regions have the same grouping structure[4], enabling us to compare observations with each other and over time.

The between-sectors, within-regions component of Theil's T statistic is expressed as:

$$T_j^{'} = \sum_{i=1}^{n} P_i^{'} \left(\frac{\overline{Y_{ij}}}{\overline{Y_j}} \right) \log \left(\frac{\overline{Y_{ij}}}{\overline{Y_j}} \right) \quad \forall\ j \qquad (1)$$

where $$P_i^{'} = \left(\frac{P_{ij}}{P_j} \right)$$

$T_j^{'}$ is the within-region between-sectors component of Theil's T statistic for the j^{th} region. $P_i^{'}$ is the share of employment of i^{th} sector of j^{th} region to the total employment of j^{th} region, where P_{ij} is the number of individuals employed in the i^{th} sector of the j^{th} region. $\overline{Y}_{ij}$ is the average income of i^{th} sector of j^{th} region, while $\overline{Y}_j$ is the average income of j^{th} region. Coverage for the within-regions between-sectors component of Theil's T statistic for 1995-2000 varies each year and ranges from 191 to 214 administrative regions. The values for all regions are given in Table A.2.[5]

Our second measure, the regional Theil elements, is obtained from the between-regions component of the pan-European Theil's T statistic by regions and sectors. The between-regions component is the sum of the contribution of each region to total inequality in the EU. More precisely, it is the weighted sum of the logarithm of the ratio of the average income for each region to the average income of all the regions in the EU, and it is expressed as:

$$T^B = \sum_{j=1}^{m} \left(\frac{P_j}{P} \right) \left(\frac{\overline{Y_j}}{\overline{Y}} \right) \log \left(\left(\frac{\overline{Y_j}}{\overline{Y}} \right) \right) \qquad (2)$$

where $$P = \sum_{j=1}^{m} \sum_{i-1}^{n} P_{ij}$$

P is the number of individuals employed in all the sectors of all the regions and $\overline{Y}$ is the average income earned by them. If we compute a time series of between-regions Theil elements (the expression within the summation in equation 2) with the same number of regions in each year, we can determine which regions have gained and which have lost relative position over time. Table A.3 displays a time series

[4] NACE Rev. 1.1.

[5] In the appendix tables, the classification of a particular region can be observed from the code column. The single digit or letter along with the country code refers to the classification at level 1, while the double digit refers to level 2.

of these Theil elements. There are 188 regional observations per year except for 2000. In 2000, some regions from Spain are missing, distorting the European average. We correct this problem in Table A.4 by including observations from 1999 into 2000.

We include two tables associated with inequalities at the country level. The first is constructed with data disaggregated by regions and sectors. It provides a Theil's T statistic, a between-regions component and within-regions components. The within-regions component is expressed as:

$$T^W = \sum_{j=1}^{m} \left(\frac{Y_j}{Y} \right) T_j^{'} \qquad (3)$$

where $$Y = \sum_{j=1}^{m} \sum_{i=1}^{n} Y_{ij} = \sum_{j=1}^{m} Y_j$$

$\left(\frac{Y_j}{Y} \right)$ is the income weight for the j^{th} region, and $T_j^{'}$ is the between-sectors within region T value for the j^{th} region. In Table A.5 we present inequality measures for each country. Since countries have different numbers of regions, Theil's T statistic will have a different upper bound[6] in each country, making inequality measures incomparable. These measures can, on the other hand, be used to track inequality trends over time, and to compare the magnitude of the between-regions component with the within-regions component for any given country.

When countries are partitioned into the same number of groups, inequality measures become comparable. The same grouping scheme is achieved when we aggregate the regional observations into a single national data set partitioned into a uniform set of 16 sectors of economic activity. Eurostat publishes data at NUTS level 0 (country level), disaggregated by economic sector. Some sectoral observations[7] are missing in these publications while data is available for these sectors at the NUTS level 2. We thus aggregate the data ourselves to obtain more complete observations and to compute a within-country between-sectors Theil's T statistic, which is presented in Table A.6.

Our final calculations yield inequality measures at the European level. There are two sets of tables corresponding to these computations. The first is a pan-European Theil's T statistic for 1995-2000, based on disaggregation by regions and sectors. This measure of pay inequality is the summation of a European between-regions component across Europe measuring inequality between 188 regions, and the within-regions component, an income-weighted average of the within-regions between-sectors Theil's T statistic for all European regions. The key in these yearly calculations is to have the

[6] Theil's T statistic is bounded below by zero and above by log (N). Different number of regions will consequently yield different upper bounds and thereby distort comparisons.

[7] For Spain, Austria, Netherlands, and the United Kingdom, there is no data available at NUTS level 0 for sectors where data is available at NUTS level 2 and level 1. For instance in Spain data is available at NUTS 2 for the following sectors that is and missing at NUTS 0: Agriculture, hunting and forestry, Fishing, Mining and quarrying, Electricity, gas and water supply.

same grouping structure through time; we therefore include the same 188 administrative regions in all years. A list of regions is given in Table A8.[8]

The pan-European Theil's T statistic is the summation of the between-groups (between-regions) component and the within-groups (within-regions between-sectors) component. There are approximately 3000 region-sector Theil components in each annual observation of the pan-European Theil's T statistic. Table A.9 provides the values of the between-regions component, the within-regions component, and the total pan-European Theil's T statistic. Again, observations for Spain in 2000 are missing. In Table A.10 we correct for this problem by including data from 1999 for the Spanish case.

The pan-European Theil's T statistic at the country level can only be compared from year to year when the same numbers of countries are included in each year. We offer two calculations. The first includes the same coverage as in the pan-European Theil's T statistic at the regional level, while the second maximizes coverage by including all available observations. The countries included in the first calculation are: Belgium, Germany, Greece, Spain, France, Ireland, Italy, Netherlands, Austria, Portugal, Finland, Sweden, United Kingdom, the Czech Republic and Slovakia. Table A.11 provides the values for the pan-European Theil's T statistic disaggregated by country-sector. Once again, observations for Spain are missing in 2000; Table A.12 makes the usual correction.

In the second set of calculations we include Denmark, Estonia, Lithuania, Latvia, Hungary, Slovenia, and Bulgaria in addition to the 16 countries from the first calculations. Since data on Bulgaria is missing for 1995 and Spain for 2000, we include the values for Bulgaria from 1996 and for Spain from 1999. The values of the pan-European Theil's T statistic disaggregated by country-sector for 16 countries in Table A.12 and 22 countries in Table A.13 have a constant number of observations in all years; thus the indices are comparable from one year to the next.

3. Convergence across Countries

In our European measures we have a Theil's T statistic calculated in two ways: across countries and sectors and across regions and sectors. The trend in both calculations is similar: a reduction of wage inequality across the continent. In both calculations, the reduction in total inequality is driven by a reduction in the between-groups component, while the within-groups component remains constant. The trend in the inequality measure by countries-sectors is the same for the EU-15, as when we include the newly admitted Eastern European countries and one candidate country.[9] There are a total of 22 countries in the latter case. Figure 1 displays the pan-European Theil's T statistic in addition to the between-countries component and the within-countries component for 16 and 22 countries.

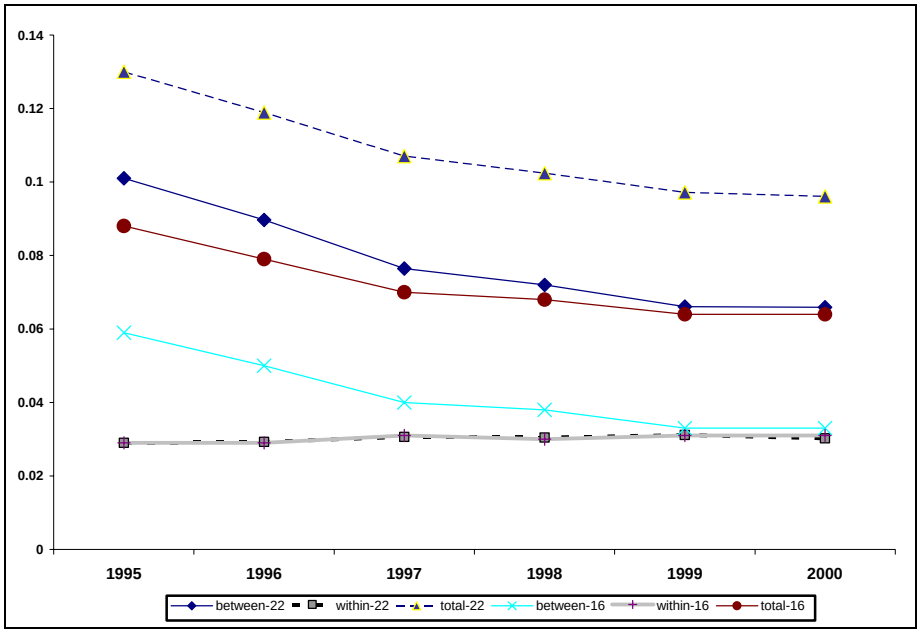
Our trend differs from Morrisson and Murtin's measures. While they find a reduction in total inequality from 1970 to 1998, their trend from 1995 to 1998 displays

[8] There are a total of 193 regions, but in this table data are missing for the regions of Provincia Autonoma Bolzano-Bozen (itd1), Provincia Autonoma Trento (itd2), Centro (pt12), Lisboa e Vale do Tejo (pt13), and Alentejo (pt14).

[9] There are a total of 22 countries. In addition to the 16 countries, they include Estonia, Latvia, Lithuania, Hungary, Slovenia, and the candidate country of Bulgaria.

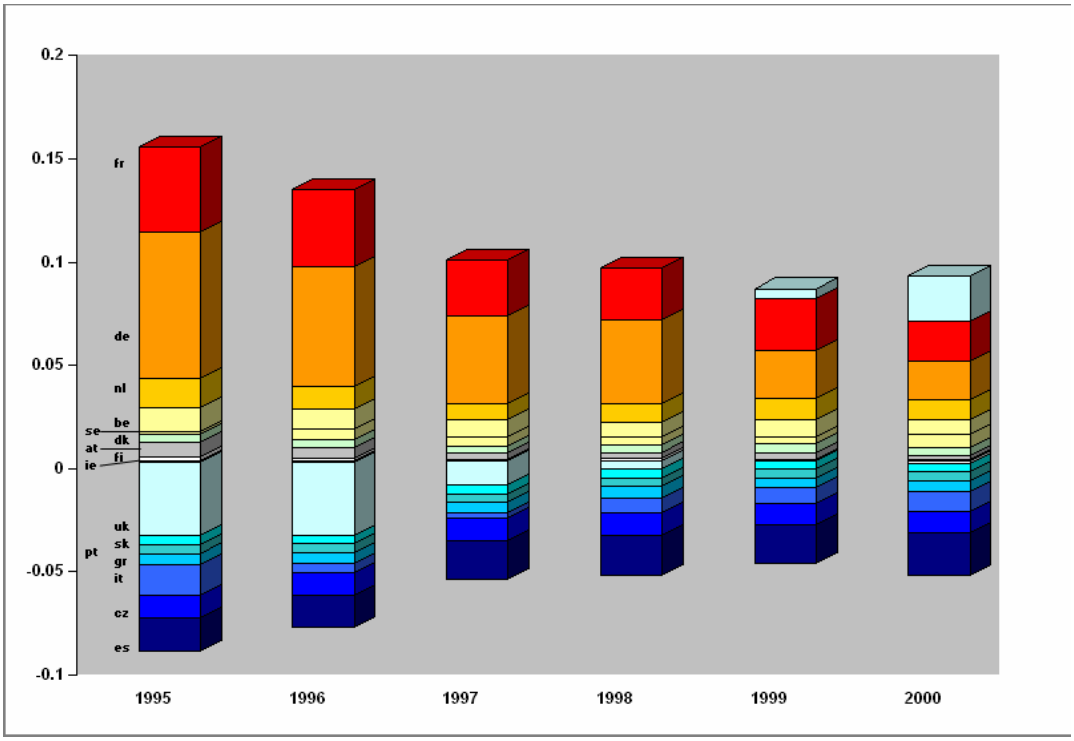
an increase in the Gini coefficient, the within-country Theil and the total Theil. We do not find such an increase in our data.

Figure 1. The Evolution of Pay Inequality at the Country Level, 1995-2000



A reduction of the between-groups component of Theil's T statistic implies that some countries (regions) have gained from the bottom of the pay distribution, while others have lost from the top.

Figure 2. Trend of Theil Elements for 16 Countries, 1995-2000



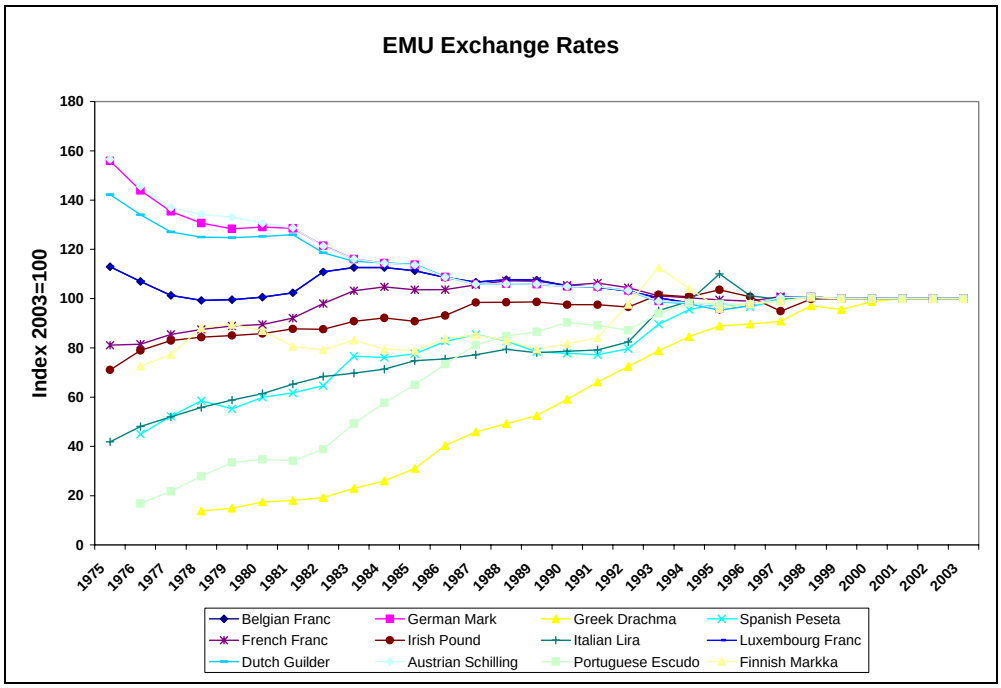
The between-country component of the pan-European Theil's T statistic is a summation of the individual country Theil elements, where each element contributes to inequality according the distance between its average income and the European average. We graph the evolution of the country Theil elements in a stacked bar graph, which displays which countries have gained and lost relative to the European average during this time.

The height (or area) of each segment represents each country's contribution to European pay inequality; the larger the height or area, the greater the contribution. When Theil elements are above zero they contribute to inequality from above the average income; when below zero they contribute from below the average.

In this figure, the distribution of Theil elements becomes tighter until 1999, and appears to expand in 2000. The greatest reduction in inequality occurs from 1996 to 1997. In particular, Germany suffers a sharp relative loss, while the United Kingdom gains. Thus the area corresponding to Germany is positive but declining, while the area corresponding to the UK starts negative and becomes positive over time. It is the switch of the UK to a significant positive position in 2000 that creates an overall increase in European pay inequality that year.

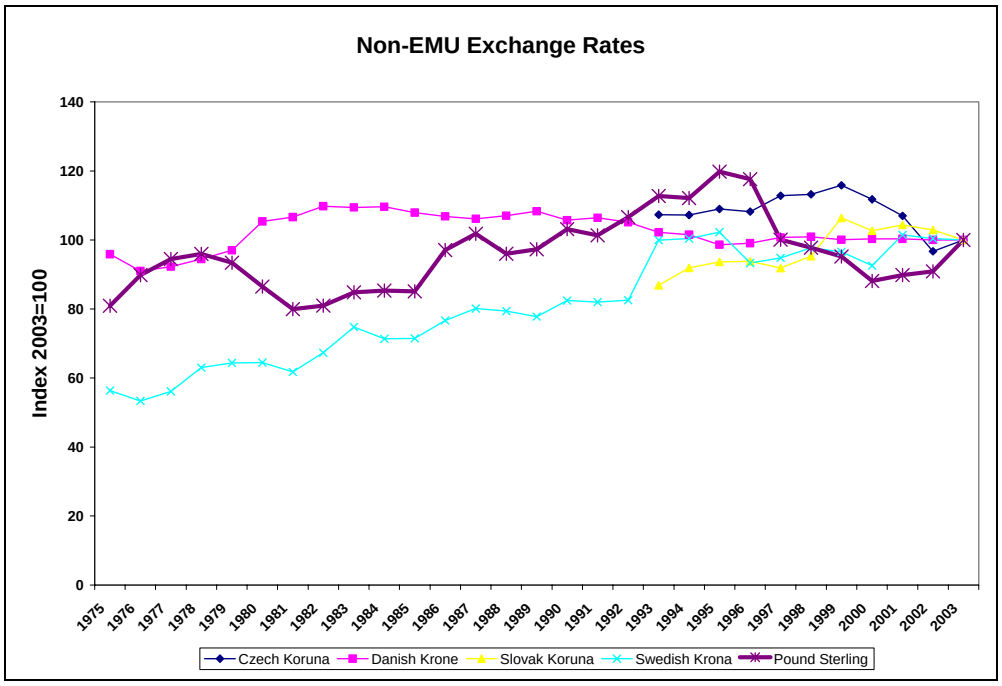
As already noted, fluctuations of national exchange rates – especially for non-EMU member countries such as Denmark, Slovakia, Sweden, the Czech Republic and the UK – are bound to influence the relative pay rankings of European countries. Fluctuations in the exchange rates of EMU members changed little during the 1995-2000 as shown in Figure 3.

Figure 3. Fluctuation of Exchange Rates in EMU Countries



However, as Figure 4 shows, there was a large change in non-EMU exchange rates in 1995-2000, especially a sharp appreciation of the British pound, following its collapse in 1994.

Figure 4. Fluctuation of Exchange Rates in non-EMU Countries



If the UK is taken out of the sample, we still find a reduction in total and between-countries inequality in our pan-European inequality measure. But the reduction it is not as large as when the UK is included as depicted in Table 3:

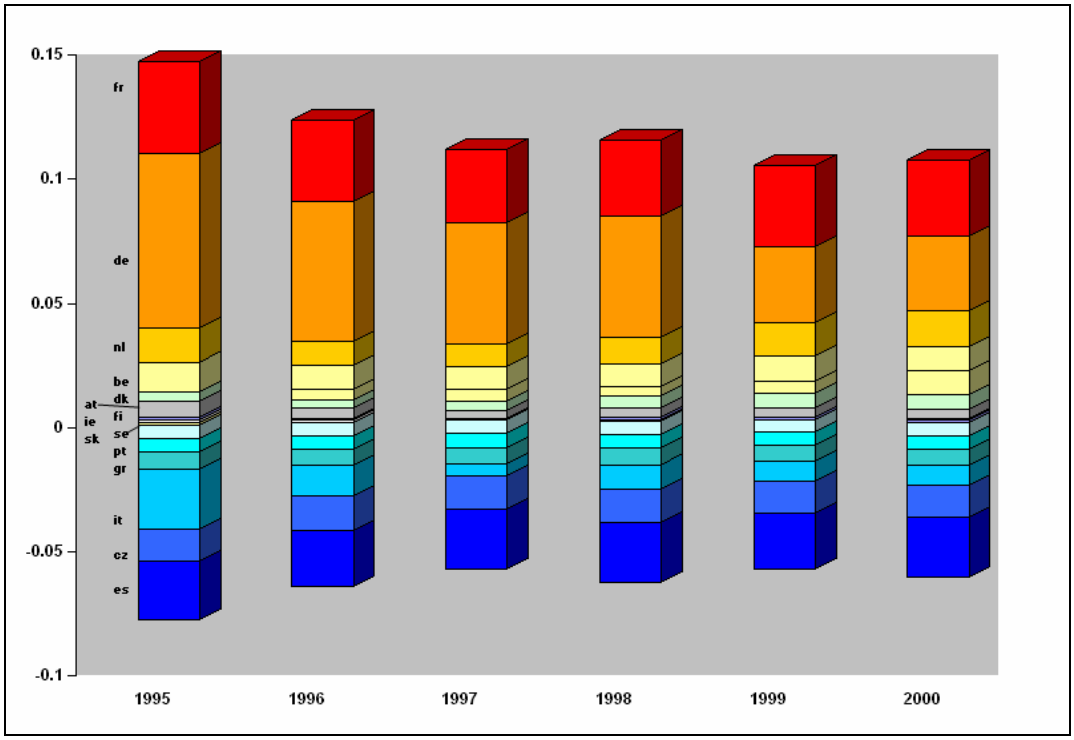
Table 3. European Theil for 21 Countries and 16 Sectors Excluding the UK

		1995	1996	1997	1998	1999	2000
By Countries	**Between Groups**	0.116	0.103	0.094	0.089	0.082	0.083
	Within Groups	0.024	0.026	0.027	0.027	0.029	0.027
	Total	0.140	0.129	0.121	0.116	0.110	0.110

Figure 5 displays the evolution of these elements in a stacked bar graph. These elements capture the evolution of inequality in Europe excluding the UK.

The distribution of the Theil elements gets tighter until 1997, but the trend ceases thereafter. There is no reduction in inequality levels between the 15 countries during 1997-2000, the period where the euro was introduced. This suggests that the reduction in the between-countries component from 1997 to 1999 in Figure 2 (when the UK is in the sample) is driven mainly by the appreciation of the British pound. The reduction in inequality is also influenced by a loss in Germany's average wage level and an improvement in Italy's from 1995 to 1997.

Figure 5. Trend of Theil Elements for 15 Countries, 1995-2000



4. Inequality across Regions

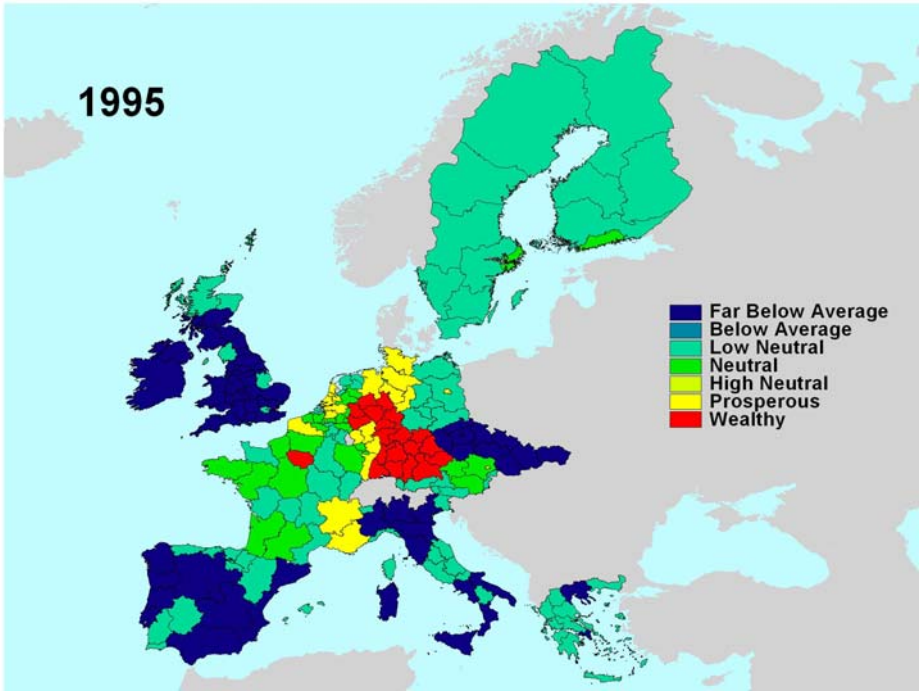
Our second measure at the European level is derived from regions and sectors. The between-regions component of Theil's T statistic measures inequality between 188 regions, while the within-regions component measures inequality within regions, between 16 economic sectors. Many studies have measured regional convergence through beta and sigma convergence techniques (Sala i Martin, 1996), or Markov Chains approaching a steady state (Happich and Geppert, 2003). While these techniques are mathematically adept, they do not reveal which specific countries or regions are converging from either below or above the average.

The geographic coverage in the European Theil disaggregated by regions and sectors is the same as in the pan-European Theil's T statistic by countries and sectors: the 16 countries and 16 sectors can be decomposed into exactly 188 regions and 16 sectors. The trend in the pan-European Theil's T statistic by regions-and-sectors given in Table A.8 and A.9 is the same as the trend in the pan-European Theil's T statistic by countries-and-sectors. There is a reduction in the between-regions component and a constant within-regions component. In both cases the between-groups component is larger than the within-groups component. This means geographical inequalities are more important than inequalities among the 16 sectors across Europe.

Looking across regions, the individual elements of the between-regions component of the pan-European Theil's T statistic reveal which regions are wealthy and

which ones are poor in relation to average pay in Europe.[10] The regional Theil component for each of the 188 regions for 1995 is given in Figure 6:

Figure 6. Regional Contribution to the European Theil for the Year 1995



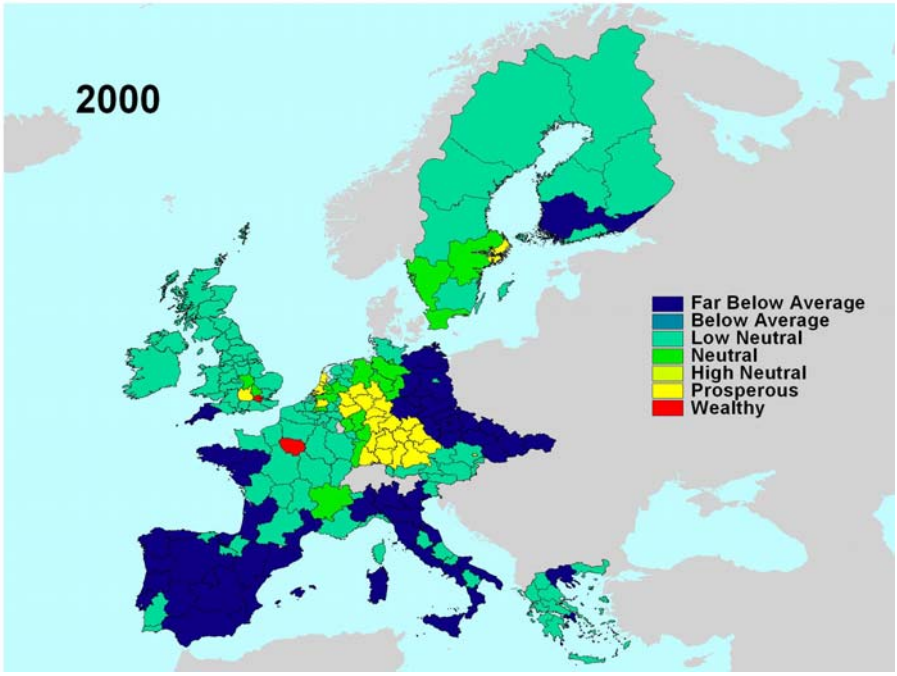
Regions from Germany are contributing to inequality from above, while most regions from the Czech Republic, Slovakia, Spain, Portugal, Ireland, England, and some regions of Italy and Greece are contributing to inequality from below the average. The metropolitan regions: London (Inner and Outer), Île-de-France (Paris), Berlin, and Stockholm exhibit higher wage levels than their neighboring regions.

By fixing the legend values to a base year (1995) and graphing the individual Theil elements of the same regions in subsequent years we observe which regions have gained and which ones have lost relative to 1995. Figure 7 displays the Theil elements for the year 2000.

An improvement in all regions from the United Kingdom and Ireland occurs, while there is deterioration in all German regions. Relative wages also increase in some regions in Sweden, and decrease in Finland, Austria, and France, and Northern Italy, while regions from Spain, Portugal, Greece, the Czech Republic and Slovakia do not experience significant changes relative to 1995. The metropolitan regions maintain their wealthy wage levels relative to neighboring regions, especially London (Inner and Outer), and Île-de-France (Paris).

[10] Regions with a positive Theil element are wealthy regions as they contribute to inequality since they are above the average, while regions with a negative Theil element are poor regions as they contribute to inequality from below the average. A necessary condition for a region *j* to have a positive Theil element in Equation 2 is for the average wage of region *j* to be higher then the average European wage. A similar logic follows for a lower Theil element.

Figure 7. Regional Contribution to the Pan-European Theil's T Statistic for 2000



5. Within Country Stability

In Table A.5 we provide a between-regions component, a within-regions component and a total inequality measure for 16 individual countries. These inequality measures are country-specific and cannot be compared among each other since they have different numbers of regions. In Table A.7 we calculate the within-country between-sectors inequality index where all countries have the same grouping scheme (partitioned into 16 economic sectors) and are thus comparable with each other.

The country rankings derived from our pay inequality calculations are very similar to interpersonal inequality rankings measuring income inequality developed by Beblo and Knaus (2001) and Alvarez-Garcia *et al.* (2004). Both studies find that northern European counties have the lowest values and southern European countries have the highest. Their rankings (given in Table 4) are very similar to our country inequality measures (given in Table A.7). The correlation coefficient between Belbo and Knaus and our calculations is 0.7978, while for Alvarez-Garcia *et al.* and ours it is even higher: 0.8911. This demonstrates, we believe, the efficiency of our approach.

A main advantage of our measures is increased coverage. Payroll data at the national level (in addition to the EU-15 countries) is available through Eurostat for Bulgaria, Hungary, the Czech Republic, Slovenia, Slovakia, Estonia, Latvia, and Lithuania, with the same grouping structure (Nace Rev 1.1), and in euros for 1995-2000. This enables us to compare[11] levels of interpersonal pay inequality from these countries with the rest of the European countries for the first time.

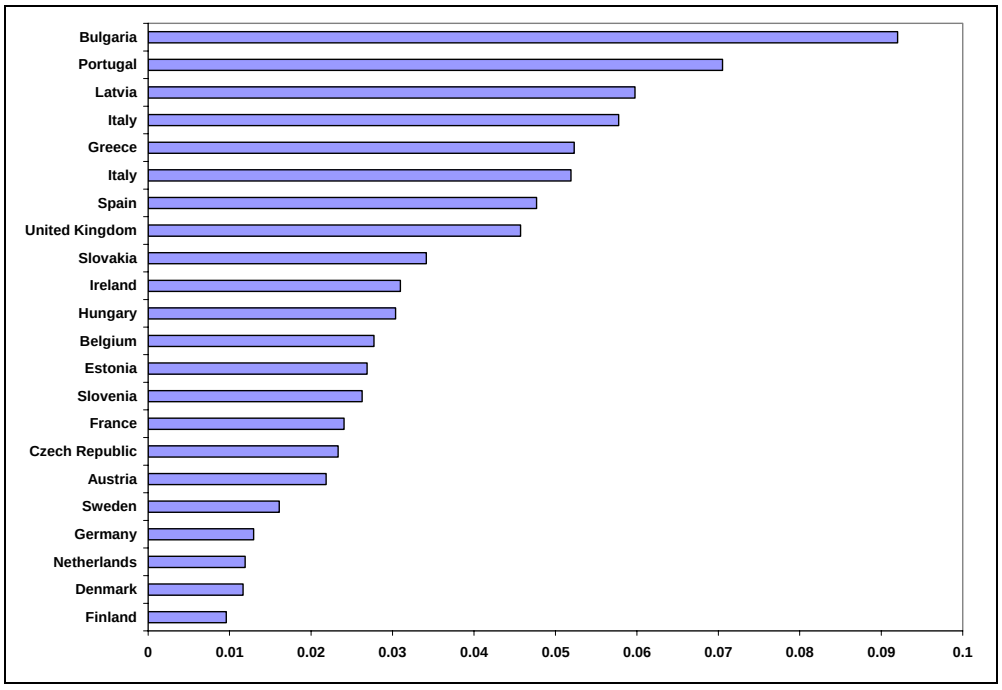
[11] Since Theil's T Statistic for these countries is computed with the same grouping scheme (16 industrial sectors), these measures are comparable to the pay inequality measures of EU-15 countries, not withstanding the fact that the upper limit can vary. Measures done in this way are highly correlated with other indices of comparative inequality, such as the Luxembourg Income Studies or the Deninger and Squire data set when data are available (Galbraith and Kum, 2004).

Table 4. Ranking of Country Income Inequality by Other Authors

1995 Beblo Knaus (Theil)		1996 Alvarez-Garciz *et al.* (Gini)	
1	Netherlands	1	Sweden
2	Austria	2	Denmark
3	France	3	Finland
4	Germany	4	Germany
5	Belgium	5	Netherlands
6	Italy	6	Austria
7	Luxembourg	7	France
8	Spain	8	Italy
9	Ireland	9	Belgium
10	Portugal	10	UK
		11	Ireland
		12	Spain
		13	Greece
		14	Portugal

Measures of inequality at the country level are unaffected by fluctuations in exchange rates since the nominal effects cancel each other out in the numerator and the denominator of the between-groups component of Theil's T statistic. We graph the average level of inequality from 1995 to 2000 for 22 countries in Figure 8.

Figure 8. Within-Country Between-Sectors Theil's T Statistic, 1995-2000 Average Value



The newly-admitted members are strikingly heterogeneous in inequality levels. Bulgaria, Latvia, and Lithuania display the highest levels of inequality, while Slovakia, Hungary, Estonia, and Slovenia and the Czech Republic fall in the middle of the distribution with similar levels to France, Ireland, and Belgium. Bulgaria's level of between-sectors inequality is nine times higher than in Finland. This should not be

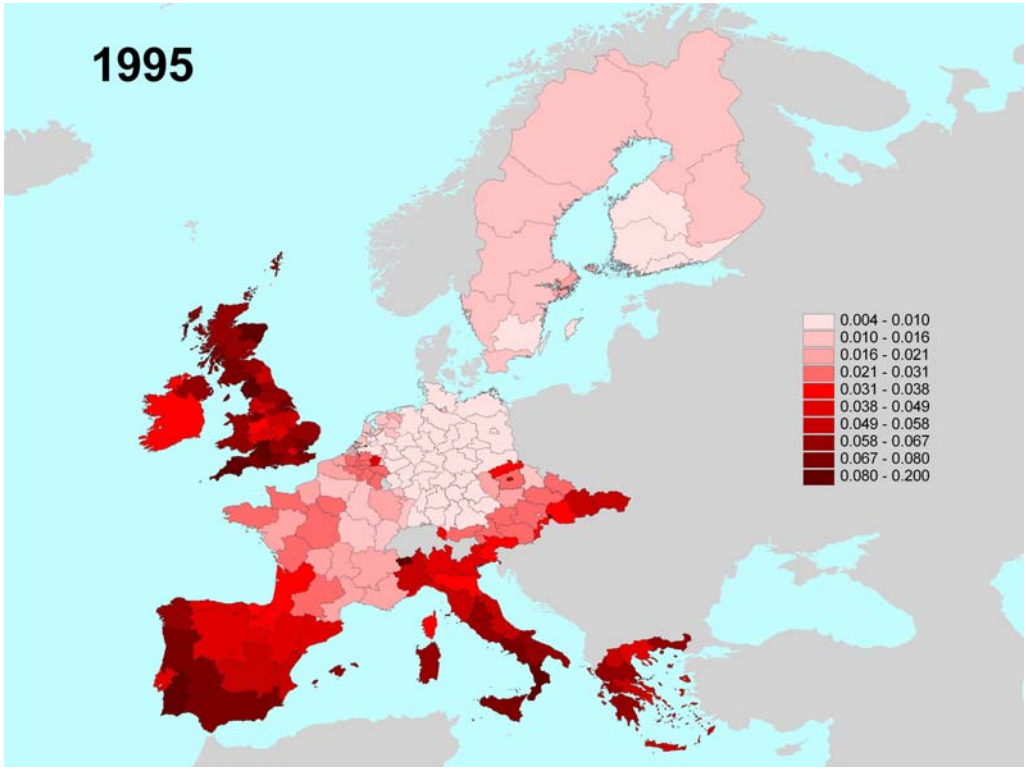
taken as a claim about the relative degree of interpersonal wage inequality, since the between-sectors measure is typically more variable than the overall distribution. The average wages in each of the 16 economic sectors of the 22 countries for the year 2000 are provided in Table A.6.

The trend of inequality at the European level by countries given in Table A.12 shows convergence (reduction in the between-countries component) among the 16 countries, while no major trends occur within countries.

In Table A.7, the evolution of the within-country between-sectors inequality is very stable in all EU-15 countries, as well as in Slovenia and the Czech Republic; in contrast there is a fluctuating trend in Bulgaria, Estonia, Latvia, Lithuania, Slovakia, and Hungary. The table also displays increasing inequality in Germany, and Latvia, and decreasing in the United Kingdom, Ireland, and Lithuania.

Similarly, when we move to the regional level, the between-regions component declines while the within-regions component remains fairly stable (Table A.10). We can deepen the analysis further by looking at each individual country when partitioned by regions and sectors. Each country is partitioned into the same group of sectors (16) but has a different number of regions. In all countries, inequality within regions is larger than between them, thus the decreasing (increasing) trend between-sectors within country is driven by a decrease (increase) in the within-regions component for the UK (Germany). There is a decline in this component in Ireland, Italy, Austria, Greece and France (especially in the latter period), while for the Czech Republic, Finland, Portugal, Sweden, and Slovakia it increases.

Figure 9. Within-Regions Between-Sectors Theil's T Statistic, 1995



By looking at the individual within-region measures of inequality, we can compare the levels of inequality across all European regions. As noted, fluctuations in

national currencies do not affect the measures at the regional level. We compare measures across all regions and through time to determine which regions have the highest and lowest levels of inequality as well as to track any significant changes.

Our coverage (different in each year) is based on payroll data available from a minimum of 191 administrative regions in 1995 to a maximum of 214 in 1998. We provide a total of 1204 regional observations from 1995 to 2000. The lowest value (0.0044) occurs in Thüringen during 1995, while the highest (0.269) in Severozapaden in 1999. The values for the year 1995 are graphed in Figure 9.

Peripheral regions from Spain, UK, Portugal, Italy, Bulgaria, and Poland have the highest level of regional pay inequality, while regions located in the center of Europe from Denmark, Germany, Belgium, Austria and parts of Sweden and Finland display the lowest values.

6. Combining Within and Between-Regions Inequality

This section combines the between-regions component of Theil's T statistic at the European level computed in Section IV with the within-regions between-sectors component from Section V. There is a clear relationship between both components – wealthy regions (contributing to inequality from above the average) have a striking pattern of lower levels of inequality within them. These include Germany, France and the Scandinavian countries. On the other hand, poorer regions (contributing to inequality from below) such as Spain, Italy, Greece, Portugal, the Czech Republic and the UK have consistently higher levels of inequality within them.

The improvement in the UK's relative position is accompanied by a remarkable reduction in inequality within regions, especially across the southern regions of the UK. The deterioration in the position of Germany (given by the reduction of the element in the between-regions component) is accompanied by a (modest) increase of inequality within regions, while the deterioration in Finnish regions is supplemented with an increase in inequality within regions. On the other hand there is no significant movement in the between and within components in regions from peripheral countries of Spain, Portugal, Greece, Italy, the Czech Republic, and Slovakia.

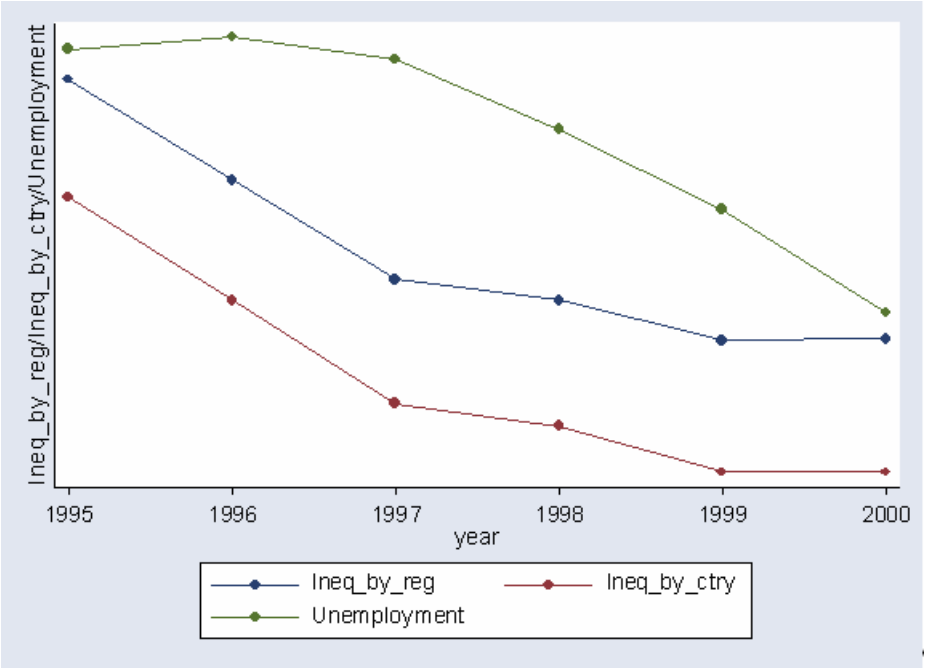
7. Implications for Unemployment

Unemployment across Europe (EU-15) decreased more than two and a half percentage points[12] during the five year period of our study. The same declining trend occurs in overall inequality measured by countries and by regions

At the regional level the relationship between inequality and unemployment is positive as detailed in Galbraith and Garcilazo (2004). The implications of this fact are clearest for the UK and Germany. Regional inequality within the UK has decreased, at a time UK regions became wealthier as a consequence of the appreciation of the British pound, and unemployment fell from 8.5 percent in 1995 to 5.4 percent in 2000. This runs remarkably counter to older arguments about currency competitiveness, and suggests a mechanism whereby credit and employment expansion, mainly in the services sectors, is driven by the financial health of the country.

[12] 10.1% in 1995 to 7.8% in 2000, source Eurostat.

Figure 10. Inequality and Unemployment at the European Level, 1995-2000



Germany on the other hand experienced unemployment problems reducing their rate by only two tenths of a percentage point to 7.8 percent in 2000, a reduction that is ten times lower than across Europe (EU-15). The problems in reducing German unemployment are associated with Germany's (modest) increase in within-region inequality, and a reduction of its real wage levels relative to the European average.

8. Conclusions

We find a pattern of declining pay inequality across Europe as a whole for the period 1995-2000, mainly due to improvement in the previously low position of the United Kingdom and decline in the previously high position of Germany. Convergence occurs both between countries and between regions, though it is clear that the country unit is the main driver of convergence. The rise in the relative position of the UK is caused largely by the appreciation of the pound following its decline earlier in the decade. The decline in overall wage inequality ceases in 1999-2000. By the end of the period, we find regions from Germany and metropolitan regions (London, Île-de-France, Berlin, and Stockholm) are contributing to inequality from above, while most regions from the Czech Republic, Slovakia, Spain, Portugal, Ireland, England, and some regions of Italy and Greece are contributing to inequality from below the average. Within regional inequality is higher in peripheral regions from Spain, UK, Portugal, Italy, Bulgaria, and Poland, while regions located in the center and north of Europe display the lowest values.

At the country level, northern European countries have the lowest within country inequality and southern countries have the highest values. In the newly-admitted members, Bulgaria, Latvia, and Lithuania display the highest levels. Inequality in Bulgaria is nine times higher than in Finland, while Slovakia, Hungary, Estonia, and Slovenia and the Czech Republic fall in the middle of the distribution with similar levels to France, Ireland, and Belgium.

Declines in unemployment are associated with declining inequality, as well as with rising incomes. This work lends no support to the view that Europe's continuing unemployment problem stems from excessive equality. Quite to the contrary, it suggests that progress toward higher employment and greater equality is not only possible, but an overlooked part of recent European experience, once inequality is properly measured within and between the countries of the European Union.

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Appendix Tables

Table A.1 Sectorization used to Calculate Regional Inequality

Industries by NACE Rev 1.1 (1995-2000)	
a	Agriculture, hunting and forestry
b	Fishing
c	Mining and quarrying
d	Manufacturing
e	Electricity, gas and water supply
f	Construction
g	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
h	Hotels and restaurants
i	Transport, storage and communication
j	Financial intermediation
k	Real estate, renting and business activities
l	Public administration and defence; compulsory social security
m	Education
n	Health and social work
o	Other community, social, personal service activities
p	Private households with employed persons

Table A.2 Within-Regions Between-Sectors Theil's T Statistic 1995-2000

Code	Region/ Province	1995	1996	1997	1998	1999	2000
de1	Baden-Württemberg	0.0072	0.0067	0.0077	0.0079	0.0173	0.0185
de2	Bayern	0.0064	0.0064	0.0073	0.0077	0.0178	0.0207
de3	Berlin	0.0095	0.0109	0.0121	0.0138	0.0273	0.0283
de4	Brandenburg	0.0081	0.0095	0.0096	0.0106	0.0190	0.0213
de5	Bremen	0.0101	0.0095	0.0114	0.0121	0.0236	0.0233
de6	Hamburg	0.0141	0.0143	0.0163	0.0172	0.0321	0.0337
de7	Hessen	0.0097	0.0097	0.0102	0.0110	0.0192	0.0214
de8	Mecklenburg-Vorpommern	0.0054	0.0072	0.0085	0.0094	0.0138	0.0163
de9	Niedersachsen	0.0073	0.0077	0.0079	0.0087	0.0172	0.0192
dea	Nordrhein-Westfalen	0.0091	0.0085	0.0091	0.0095	0.0184	0.0200
deb	Rheinland-Pfalz	0.0074	0.0071	0.0079	0.0087	0.0184	0.0213
dec	Saarland	0.0117	0.0136	0.0138	0.0128	0.0181	0.0211
ded	Sachsen	0.0059	0.0070	0.0079	0.0093	0.0135	0.0155
dee	Sachsen-Anhalt	0.0047	0.0062	0.0072	0.0078	0.0124	0.0132
def	Schleswig-Holstein	0.0081	0.0086	0.0088	0.0087	0.0196	0.0193
deg	Thüringen	0.0044	0.0050	0.0060	0.0068	0.0111	0.0121
gr11	Anatoliki Makedonia, Thraki	0.0640	0.0511	0.0613	0.0672	0.0812	0.0709
gr12	Kentriki Makedonia	0.0475	0.0426	0.0480	0.0488	0.0475	0.0497
gr13	Dytiki Makedonia	0.0515	0.0455	0.0519	0.0550	0.0617	0.0581
gr14	Thessalia	0.0601	0.0519	0.0637	0.0642	0.0742	0.0682
gr21	Ipeiros	0.0609	0.0520	0.0550	0.0561	0.0554	0.0610

gr22	Ionia Nisia	0.0583	0.0518	0.0544	0.0570	0.0797	0.0650
gr23	Dytiki Ellada	0.0610	0.0570	0.0658	0.0666	0.0496	0.0668
gr24	Sterea Ellada	0.0510	0.0439	0.0510	0.0554	0.0782	0.0599
gr25	Peloponnisos	0.0634	0.0588	0.0657	0.0682	0.0325	0.0717
gr3	Attiki	0.0491	0.0480	0.0464	0.0486	0.0605	0.0505
gr41	Voreio Aigaio	0.0543	0.0478	0.0553	0.0548	0.0582	0.0563
gr42	Notio Aigaio	0.0541	0.0426	0.0465	0.0509	0.0673	0.0498
gr43	Kriti	0.0585	0.0547	0.0635	0.0639	0.0505	0.0691
es11	Galicia	0.0612	0.0591	0.0585	0.0605	0.0579	.
es12	Principado de Asturias	0.0472	0.0533	0.0596	0.0543	0.0522	.
es13	Cantabria	0.0435	0.0362	0.0377	0.0361	0.0330	.
es21	Pais Vasco	0.0362	0.0365	0.0388	0.0409	0.0373	.
es22	Comunidad Foral de Navarra	0.0360	0.0306	0.0291	0.0266	0.0281	.
es23	La Rioja	0.0362	0.0271	0.0279	0.0312	0.0265	.
es24	Aragón	0.0408	0.0298	0.0333	0.0356	0.0317	.
es3	Comunidad de Madrid	0.0429	0.0450	0.0435	0.0404	0.0420	.
es41	Castilla y León	0.0464	0.0380	0.0397	0.0382	0.0354	.
es42	Castilla-la Mancha	0.0501	0.0483	0.0500	0.0503	0.0435	.
es43	Extremadura	0.0737	0.0657	0.0681	0.0668	0.0614	.
es51	Cataluña	0.0412	0.0427	0.0396	0.0403	0.0385	.
es52	Comunidad Valenciana	0.0551	0.0479	0.0462	0.0452	0.0466	.
es53	Illes Balears	0.0619	0.0554	0.0545	0.0573	0.0574	.
es61	Andalucia	0.0710	0.0759	0.0778	0.0780	0.0745	.
es62	Murcia	0.0736	0.0711	0.0682	0.0677	0.0600	.
es7	Canarias (ES)	0.0735	0.0756	0.0760	0.0751	0.0757	.
fr1	Île-de-France	0.0299	0.0301	0.0348	0.0357	0.0390	0.0390
fr21	Champagne-Ardenne	0.0142	0.0145	0.0173	0.0185	0.0193	0.0203
fr22	Picardie	0.0154	0.0147	0.0166	0.0160	0.0154	0.0139
fr23	Haute-Normandie	0.0196	0.0197	0.0226	0.0223	0.0251	0.0197
fr24	Centre	0.0252	0.0250	0.0272	0.0257	0.0258	0.0232
fr25	Basse-Normandie	0.0234	0.0275	0.0225	0.0197	0.0180	0.0215
fr26	Bourgogne	0.0164	0.0166	0.0179	0.0176	0.0183	0.0168
fr3	Nord - Pas-de-Calais	0.0175	0.0173	0.0198	0.0191	0.0204	0.0150
fr41	Lorraine	0.0204	0.0216	0.0246	0.0230	0.0259	0.0206
fr42	Alsace	0.0142	0.0166	0.0210	0.0239	0.0249	0.0227
fr43	Franche-Comté	0.0123	0.0136	0.0159	0.0156	0.0167	0.0152
fr51	Pays de la Loire	0.0201	0.0223	0.0199	0.0207	0.0203	0.0176
fr52	Bretagne	0.0270	0.0274	0.0211	0.0175	0.0193	0.0180
fr53	Poitou-Charentes	0.0271	0.0279	0.0227	0.0200	0.0228	0.0246
fr61	Aquitaine	0.0330	0.0336	0.0244	0.0239	0.0227	0.0217
fr62	Midi-Pyrénées	0.0249	0.0259	0.0258	0.0255	0.0273	0.0273
fr63	Limousin	0.0166	0.0147	0.0175	0.0184	0.0166	0.0176
fr71	Rhône-Alpes	0.0204	0.0226	0.0265	0.0257	0.0274	0.0227
fr72	Auvergne	0.0207	0.0234	0.0204	0.0205	0.0223	0.0219
fr81	Languedoc-Roussillon	0.0178	0.0162	0.0205	0.0417	0.0170	0.0143
fr82	Provence-Alpes-Côte d'Azur	0.0211	0.0244	0.0212	0.0204	0.0211	0.0201
fr83	Corse	0.0318	0.0434	0.0369	0.0348	0.0373	0.0387
ie01	Border, Midlands and Western	0.0390	0.0411	0.0445	0.0435	0.0394	0.0303
ie02	Southern and Eastern	0.0347	0.0364	0.0328	0.0333	0.0315	0.0279
itc1	Piemonte	0.0496	0.0527	0.0489	0.0461	0.0458	0.0444
itc2	Valle d'Aosta/Vallée d'Aoste	0.0860	0.0994	0.1189	0.1083	0.0805	0.0576
itc3	Liguria	0.0490	0.0546	0.0526	0.0558	0.0486	0.0452
itc4	Lombardia	0.0418	0.0467	0.0454	0.0426	0.0389	0.0367
itd1	Prov. Autonoma Bolzano-Bozen	.	.	.	.	.	.

itd2	Prov. Autonoma Trento	.	.	.	.	.	.
itd3	Veneto	0.0464	0.0493	0.0456	0.0455	0.0428	0.0425
itd4	Friuli-Venezia Giulia	0.0352	0.0389	0.0379	0.0368	0.0365	0.0357
itd5	Emilia-Romagna	0.0384	0.0403	0.0385	0.0372	0.0369	0.0365
it1	Toscana	0.0541	0.0562	0.0545	0.0509	0.0493	0.0482
it2	Umbria	0.0621	0.0691	0.0700	0.0710	0.0688	0.0700
it3	Marche	0.0555	0.0597	0.0588	0.0560	0.0490	0.0492
it4	Lazio	0.0621	0.0687	0.0677	0.0644	0.0629	0.0637
itf1	Abruzzo	0.0578	0.0608	0.0620	0.0613	0.0621	0.0620
itf2	Molise	0.0530	0.0608	0.0698	0.0629	0.0604	0.0580
itf3	Campania	0.0729	0.0770	0.0751	0.0721	0.0688	0.0690
itf4	Puglia	0.0638	0.0713	0.0728	0.0697	0.0657	0.0691
itf5	Basilicata	0.0616	0.0692	0.0718	0.0667	0.0614	0.0619
itf6	Calabria	0.0865	0.0956	0.1026	0.0982	0.0983	0.0988
itg1	Sicilia	0.0796	0.0868	0.0833	0.0783	0.0747	0.0760
itg2	Sardegna	0.0633	0.0729	0.0758	0.0730	0.0692	0.0663
nl11	Groningen	0.0186	0.0200	0.0197	0.0187	0.0193	0.0179
nl12	Friesland	0.0142	0.0151	0.0168	0.0178	0.0183	0.0173
nl13	Drenthe	0.0148	0.0142	0.0146	0.0144	0.0146	0.0129
nl21	Overijssel	0.0115	0.0111	0.0110	0.0109	0.0113	0.0113
nl22	Gelderland	0.0103	0.0109	0.0104	0.0108	0.0111	0.0107
nl23	Flevoland	0.0111	0.0095	0.0106	0.0094	0.0096	0.0097
nl31	Utrecht	0.0096	0.0093	0.0111	0.0097	0.0107	0.0106
nl32	Noord-Holland	0.0132	0.0140	0.0142	0.0151	0.0156	0.0157
nl33	Zuid-Holland	0.0123	0.0128	0.0137	0.0133	0.0139	0.0137
nl34	Zeeland	0.0169	0.0182	0.0168	0.0198	0.0201	0.0196
nl41	Noord-Brabant	0.0096	0.0099	0.0105	0.0103	0.0110	0.0111
nl42	Limburg (NL)	0.0122	0.0126	0.0127	0.0119	0.0122	0.0119
at11	Burgenland	0.0339	0.0362	0.0473	0.0484	0.0488	0.0510
at12	Niederösterreich	0.0307	0.0301	0.0303	0.0309	0.0284	0.0296
at13	Vienna	0.0201	0.0207	0.0261	0.0226	0.0203	0.0202
at21	Kärnten	0.0353	0.0403	0.0504	0.0503	0.0508	0.0496
at22	Steiermark	0.0304	0.0304	0.0399	0.0422	0.0404	0.0377
at31	Oberösterreich	0.0229	0.0232	0.0265	0.0243	0.0198	0.0165
at32	Salzburg	0.0290	0.0329	0.0310	0.0267	0.0247	0.0287
at33	Tirol	0.0291	0.0285	0.0308	0.0286	0.0332	0.0293
at34	Vorarlberg	0.0331	0.0326	0.0330	0.0339	0.0243	0.0250
pt11	Norte	0.0701	0.0692	0.0722	0.0699	0.0683	0.0716
pt12	Centro (PT)	.	.	.	.	.	.
pt13	Lisboa e Vale do Tejo	.	.	.	.	.	.
pt14	Alentejo	.	.	.	.	.	.
pt15	Algarve	0.0896	0.0845	0.0846	0.0819	0.0860	0.0812
pt2	Açores (PT)	0.0952	0.0931	0.1003	0.0933	0.1014	0.1045
pt3	Madeira (PT)	0.0870	0.0837	0.0857	0.0796	0.0755	0.0699
fi13	Itä-Suomi	0.0111	0.0118	0.0107	0.0108	0.0119	0.0185
fi14	Väli-Suomi	0.0099	0.0115	0.0117	0.0122	0.0120	0.0206
fi15	Pohjois-Suomi	0.0131	0.0153	0.0131	0.0149	0.0153	0.0249
fi16	Uusimaa (suuralue)	0.0076	0.0077	0.0073	0.0088	0.0091	0.0104
fi17	Etelä-Suomi	0.0094	0.0100	0.0108	0.0106	0.0111	0.0185
fi2	Åland	0.0171	0.0155	0.0169	0.0138	0.0238	0.0484
se01	Stockholm	0.0204	0.0199	0.0234	0.0260	0.0258	0.0238
se02	Östra Mellansverige	0.0157	0.0130	0.0143	0.0154	0.0156	0.0176
se04	Sydsverige	0.0123	0.0119	0.0122	0.0135	0.0139	0.0164
se06	Norra Mellansverige	0.0152	0.0165	0.0148	0.0130	0.0168	0.0200

se07	Mellersta Norrland	0.0140	0.0129	0.0168	0.0150	0.0161	0.0188
se08	Övre Norrland	0.0139	0.0118	0.0132	0.0141	0.0132	0.0139
se09	Småland med öarna	0.0099	0.0117	0.0111	0.0121	0.0119	0.0145
se0a	Västsverige	0.0129	0.0137	0.0140	0.0151	0.0154	0.0179
be10	Région de Bruxelles	0.0292	0.0312	0.0295	0.0280	0.0273	0.0280
be21	Prov. Antwerpen	0.0256	0.0289	0.0345	0.0312	0.0330	0.0310
be22	Prov. Limburg (B)	0.0430	0.0453	0.0467	0.0479	0.0470	0.0440
be23	Prov. Oost-Vlaanderen	0.0236	0.0258	0.0327	0.0275	0.0279	0.0284
be24	Prov. Vlaams Brabant	0.0286	0.0325	0.0339	0.0264	0.0243	0.0232
be25	Prov. West-Vlaanderen	0.0187	0.0207	0.0232	0.0291	0.0289	0.0213
be31	Prov. Brabant Wallon	0.0306	0.0335	0.0398	0.0375	0.0386	0.0392
be32	Prov. Hainaut	0.0239	0.0270	0.0304	0.0308	0.0320	0.0306
be33	Prov. Liège	0.0278	0.0296	0.0350	0.0360	0.0371	0.0320
be34	Prov. Luxembourg (B)	0.0278	0.0316	0.0343	0.0372	0.0294	0.0304
be35	Prov. Namur	0.0256	0.0259	0.0290	0.0308	0.0338	0.0300
ukc1	Tees Valley and Durham	0.0632	0.0573	0.0699	0.0688	0.0708	0.0632
ukc2	Northumberland, Tyne and Wear	0.0573	0.0502	0.0548	0.0543	0.0615	0.0494
ukd1	Cumbria	0.0912	0.0972	0.1017	0.1143	0.0852	0.1142
ukd2	Cheshire	0.0770	0.0748	0.0634	0.0681	0.0686	0.0725
ukd3	Greater Manchester	0.0485	0.0449	0.0404	0.0393	0.0359	0.0323
ukd4	Lancashire	0.0566	0.0540	0.0633	0.0625	0.0640	0.0519
ukd5	Merseyside	0.0575	0.0517	0.0463	0.0464	0.0471	0.0476
uke1	East Riding and N.L.*	0.0700	0.0662	0.0713	0.0788	0.0742	0.0643
uke2	North Yorkshire	0.0654	0.0599	0.0565	0.0590	0.0529	0.0491
uke3	South Yorkshire	0.0616	0.0551	0.0573	0.0626	0.0523	0.0478
uke4	West Yorkshire	0.0549	0.0509	0.0482	0.0458	0.0369	0.0344
ukf1	Derbyshire and Nottinghamshire	0.0565	0.0447	0.0492	0.0510	0.0436	0.0462
ukf2	Leicestershire, R. and N.**	0.0453	0.0376	0.0354	0.0347	0.0326	0.0359
ukf3	Lincolnshire	0.0505	0.0434	0.0460	0.0573	0.0591	0.0601
ukg1	Herefordshire, W. and W.***	0.0413	0.0401	0.0325	0.0324	0.0346	0.0354
ukg2	Shropshire and Staffordshire	0.0378	0.0335	0.0309	0.0350	0.0388	0.0355
ukg3	West Midlands	0.0481	0.0457	0.0384	0.0432	0.0336	0.0309
ukh1	East Anglia	0.0614	0.0512	0.0552	0.0612	0.0560	0.0544
ukh2	Bedfordshire, Hertfordshire	0.0630	0.0541	0.0461	0.0495	0.0357	0.0398
ukh3	Essex	0.0784	0.0685	0.0601	0.0633	0.0570	0.0514
uki1	Inner London	0.0327	0.0370	0.0407	0.0345	0.0311	0.0303
uki2	Outer London	0.0634	0.0747	0.0784	0.0685	0.0673	0.0649
ukj1	Berkshire, Bucks and Oxfordshire	0.0642	0.0385	0.0344	0.0338	0.0343	0.0305
ukj2	Surrey, East and West Sussex	0.0643	0.0447	0.0436	0.0392	0.0367	0.0380
ukj3	Hampshire and Isle of Wight	0.0761	0.0491	0.0473	0.0524	0.0541	0.0465
ukj4	Kent	0.0717	0.0456	0.0566	0.0592	0.0629	0.0668
ukk1	Gloucestershire, W. and N.S.****	0.0859	0.0771	0.0712	0.0753	0.0682	0.0630
ukk2	Dorset and Somerset	0.0731	0.0670	0.0687	0.0734	0.0673	0.0557
ukk3	Cornwall and Isles of Scilly	0.0799	0.0679	0.0768	0.0780	0.0558	0.0574
ukk4	Devon	0.0912	0.0858	0.0840	0.1076	0.0798	0.0917
ukl1	West Wales and The Valleys	0.0615	0.0512	0.0635	0.0650	0.0570	0.0555
ukl2	East Wales	0.0673	0.0593	0.0592	0.0666	0.0589	0.0505
ukm1	North Eastern Scotland	0.1053	0.0705	0.0584	0.0453	0.0448	0.0422
ukm2	Eastern Scotland	0.0652	0.0572	0.0521	0.0449	0.0416	0.0410
ukm3	South Western Scotland	0.0701	0.0632	0.0626	0.0482	0.0365	0.0397
ukm4	Highlands and Islands	0.0595	0.0530	0.0534	0.0554	0.0603	0.0754
ukn0	Northern Ireland	0.0673	0.0603	0.0573	0.0583	0.0518	0.0438
cz01	Praha	0.0517	0.0427	0.0544	0.0472	0.0589	0.0702
cz02	Střední Čechy	0.0237	0.0266	0.0241	0.0167	0.0137	0.0153

cz03	Jihozápad	0.0193	0.0224	0.0214	0.0171	0.0196	0.0285
cz04	Severozápad	0.0366	0.0462	0.0347	0.0294	0.0274	0.0171
cz05	Severovýchod	0.0160	0.0144	0.0126	0.0153	0.0157	0.0199
cz06	Jihovýchod	0.0273	0.0245	0.0198	0.0163	0.0156	0.0142
cz07	Střední Morava	0.0415	0.0292	0.0258	0.0274	0.0313	0.0224
cz08	Moravskoslezko	0.0251	0.0186	0.0265	0.0298	0.0247	0.0300
hu1	Közép-Magyarország	.	.	.	.	.	0.0396
hu21	Közép-Dunántúl	.	.	.	.	.	0.0530
hu22	Nyugat-Dunántúl	.	.	.	.	.	0.0181
hu23	Dél-Dunántúl	.	.	.	.	.	0.0354
hu31	Észak-Magyarország	.	.	.	.	.	0.0197
hu32	Észak-Alföld	.	.	.	.	.	0.0159
hu33	Dél-Alföld	.	.	.	.	.	0.0215
pl11	Lódzkie	.	.	.	0.0744	0.0475	0.0769
pl12	Mazowieckie	.	.	.	0.0768	0.0376	0.0439
pl21	Malopolskie	.	.	.	0.0587	0.0371	0.0617
pl22	Slaskie	.	.	.	0.0610	0.0356	0.0690
pl31	Lubelskie	.	.	.	0.0763	0.0411	0.0670
pl32	Podkarpackie	.	.	.	0.0413	0.0276	0.0575
pl33	Swietokrzyskie	.	.	.	0.0565	0.0322	0.0665
pl34	Podlaskie	.	.	.	0.0731	0.0375	0.0624
pl41	Wielkopolskie	.	.	.	0.0534	0.0337	0.0504
pl42	Zachodniopomorskie	.	.	.	0.0554	0.0329	0.0691
pl43	Lubuskie	.	.	.	0.0507	0.0418	0.0750
pl51	Dolnoslaskie	.	.	.	0.0569	0.0332	0.0694
pl52	Opolskie	.	.	.	0.0676	0.0370	0.0667
pl61	Kujawsko-Pomorskie	.	.	.	0.0440	0.0260	0.0478
pl62	Warminsko-Mazurskie	.	.	.	0.0501	0.0306	0.0630
pl63	Pomorskie	.	.	.	0.0466	0.0282	0.0536
sk01	Bratislavský	0.1072	0.1111	0.0487	0.0581	0.0510	0.0928
sk02	Západné Slovensko	0.0383	0.0406	0.0281	0.0229	0.0215	0.0315
sk03	Stredné Slovensko	0.0521	0.0518	0.0390	0.0490	0.0440	0.0694
sk04	Východné Slovensko	0.0533	0.0555	0.0435	0.0491	0.0416	0.0452
bg11	Severozapaden	.	0.1126	0.1102	0.1234	0.2690	0.1844
bg12	Severen tsentralen	.	0.0723	0.0554	0.0919	0.1068	0.1006
bg13	Severoiztochen	.	0.0937	0.0834	0.0762	0.0807	0.0984
bg21	Yugozapaden	.	0.1162	0.0997	0.1236	0.1635	0.1136
bg22	Yuzhen tsentralen	.	0.0929	0.0811	0.1058	0.1212	0.1089
bg23	Yugoiztochen	.	0.0762	0.0663	0.0932	0.1028	0.1077
Number of Observations		**193**	**197**	**198**	**214**	**207**	**197**

** North Lincolnshire*
***Rutland and Northants*
*** *Worcestershire and Warks*
***** Wiltshire and North Somerset*

Table A.3 Regional Theil Element, 1995-2000, Constant Region Observations per Year

Code	Region/ Province	1995	1996	1997	1998	1999	2000
de1	Baden-Württemberg	0.0134	0.0111	0.0086	0.0083	0.0058	0.0047
de2	Bayern	0.0125	0.0105	0.0080	0.0078	0.0046	0.0033
de3	Berlin	0.0032	0.0027	0.0020	0.0019	0.0010	0.0005
de4	Brandenburg	0.0004	0.0002	-0.0001	-0.0001	-0.0005	-0.0007
de5	Bremen	0.0011	0.0009	0.0007	0.0006	0.0005	0.0004
de6	Hamburg	0.0032	0.0028	0.0022	0.0021	0.0016	0.0013
de7	Hessen	0.0080	0.0066	0.0051	0.0050	0.0034	0.0026
de8	Mecklenburg-Vorpommern	0.0001	0.0000	-0.0002	-0.0002	-0.0004	-0.0005
de9	Niedersachsen	0.0063	0.0052	0.0038	0.0037	0.0023	0.0015
dea	Nordrhein-Westfalen	0.0202	0.0168	0.0128	0.0119	0.0081	0.0063
deb	Rheinland-Pfalz	0.0035	0.0028	0.0021	0.0019	0.0011	0.0007
dec	Saarland	0.0010	0.0008	0.0006	0.0006	0.0004	0.0002
ded	Sachsen	0.0002	-0.0001	-0.0006	-0.0006	-0.0013	-0.0017
dee	Sachsen-Anhalt	0.0002	0.0000	-0.0003	-0.0003	-0.0005	-0.0008
def	Schleswig-Holstein	0.0019	0.0016	0.0011	0.0010	0.0005	0.0002
deg	Thüringen	0.0000	-0.0002	-0.0004	-0.0004	-0.0007	-0.0009
gr11	Anatoliki Makedonia, Thraki	-0.0003	-0.0003	-0.0003	-0.0003	-0.0002	-0.0003
gr12	Kentriki Makedonia	-0.0010	-0.0010	-0.0009	-0.0009	-0.0009	-0.0010
gr13	Dytiki Makedonia	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
gr14	Thessalia	-0.0003	-0.0003	-0.0003	-0.0003	-0.0002	-0.0003
gr21	Ipeiros	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
gr22	Ionia Nisia	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
gr23	Dytiki Ellada	-0.0003	-0.0003	-0.0003	-0.0003	-0.0002	-0.0003
gr24	Sterea Ellada	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
gr25	Peloponnisos	-0.0003	-0.0002	-0.0002	-0.0002	-0.0001	-0.0002
gr3	Attiki	-0.0025	-0.0023	-0.0022	-0.0023	-0.0026	-0.0029
gr41	Voreio Aigaio	-0.0001	-0.0001	-0.0001	-0.0001	0.0000	-0.0001
gr42	Notio Aigaio	-0.0002	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
gr43	Kriti	-0.0003	-0.0003	-0.0002	-0.0003	-0.0002	-0.0003
es11	Galicia	-0.0014	-0.0013	-0.0015	-0.0015	-0.0014	.
es12	Principado de Asturias	-0.0003	-0.0003	-0.0004	-0.0004	-0.0004	.
es13	Cantabria	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	.
es21	Pais Vasco	-0.0003	-0.0002	-0.0005	-0.0005	-0.0004	.
es22	Comunidad Foral de Navarra	-0.0002	-0.0001	-0.0002	-0.0002	-0.0002	.
es23	La Rioja	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	.
es24	Aragón	-0.0005	-0.0004	-0.0005	-0.0005	-0.0005	.
es3	Comunidad de Madrid	-0.0012	-0.0011	-0.0015	-0.0015	-0.0014	.
es41	Castilla y León	-0.0011	-0.0009	-0.0011	-0.0011	-0.0010	.
es42	Castilla-la Mancha	-0.0008	-0.0007	-0.0009	-0.0009	-0.0008	.
es43	Extremadura	-0.0005	-0.0004	-0.0005	-0.0005	-0.0005	.
es51	Cataluña	-0.0023	-0.0022	-0.0028	-0.0029	-0.0029	.
es52	Comunidad Valenciana	-0.0024	-0.0023	-0.0026	-0.0027	-0.0027	.
es53	Illes Balears	-0.0003	-0.0003	-0.0004	-0.0004	-0.0004	.
es61	Andalucia	-0.0031	-0.0033	-0.0037	-0.0038	-0.0038	.
es62	Murcia	-0.0006	-0.0006	-0.0007	-0.0008	-0.0008	.
es7	Canarias (ES)	-0.0007	-0.0007	-0.0008	-0.0009	-0.0009	.
fr1	Île-de-France	0.0295	0.0278	0.0238	0.0234	0.0235	0.0218
fr21	Champagne-Ardenne	0.0004	0.0003	0.0002	0.0002	0.0002	0.0000
fr22	Picardie	0.0006	0.0004	0.0002	0.0002	0.0002	-0.0001
fr23	Haute-Normandie	0.0009	0.0008	0.0005	0.0004	0.0004	0.0000
fr24	Centre	0.0008	0.0008	0.0004	0.0005	0.0004	-0.0001

fr25	Basse-Normandie	0.0002	0.0002	0.0000	-0.0002	-0.0002	-0.0004
fr26	Bourgogne	0.0004	0.0004	0.0002	0.0002	0.0001	-0.0002
fr3	Nord - Pas-de-Calais	0.0015	0.0013	0.0008	0.0006	0.0005	-0.0001
fr41	Lorraine	0.0009	0.0008	0.0004	0.0004	0.0004	-0.0001
fr42	Alsace	0.0015	0.0014	0.0010	0.0009	0.0009	0.0006
fr43	Franche-Comté	0.0003	0.0002	0.0001	0.0001	0.0001	-0.0002
fr51	Pays de la Loire	0.0006	0.0005	-0.0001	-0.0002	-0.0002	-0.0007
fr52	Bretagne	0.0005	0.0005	0.0000	-0.0002	-0.0003	-0.0006
fr53	Poitou-Charentes	0.0002	0.0001	-0.0001	-0.0001	-0.0001	-0.0004
fr61	Aquitaine	0.0005	0.0005	0.0002	0.0001	0.0001	-0.0005
fr62	Midi-Pyrénées	0.0006	0.0006	0.0002	0.0002	0.0002	-0.0003
fr63	Limousin	0.0001	0.0000	0.0000	0.0000	-0.0001	-0.0002
fr71	Rhône-Alpes	0.0037	0.0032	0.0022	0.0021	0.0021	0.0009
fr72	Auvergne	0.0002	0.0002	0.0000	0.0000	0.0000	-0.0002
fr81	Languedoc-Roussillon	0.0000	0.0001	-0.0001	-0.0004	-0.0002	-0.0005
fr82	Provence-Alpes-Côte d'Azur	0.0024	0.0015	0.0011	0.0012	0.0011	0.0004
fr83	Corse	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ie01	Border, Midlands and Western	-0.0003	-0.0003	-0.0002	-0.0002	-0.0002	-0.0002
ie02	Southern and Eastern	-0.0005	-0.0004	0.0000	-0.0003	0.0000	0.0000
itc1	Piemonte	-0.0007	0.0001	0.0003	-0.0001	-0.0001	-0.0007
itc2	Valle d'Aosta/Vallée d'Aoste	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
itc3	Liguria	-0.0002	0.0001	0.0002	0.0000	0.0000	-0.0002
itc4	Lombardia	-0.0011	0.0012	0.0016	0.0004	0.0007	-0.0006
itd1	Prov. Autonoma Bolzano-Bozen	.	.	.	.	.	.
itd2	Prov. Autonoma Trento	.	.	.	.	.	.
itd3	Veneto	-0.0014	-0.0004	-0.0002	-0.0007	-0.0007	-0.0013
itd4	Friuli-Venezia Giulia	-0.0002	0.0000	0.0001	-0.0001	-0.0001	-0.0003
itd5	Emilia-Romagna	-0.0008	0.0001	0.0003	-0.0002	-0.0002	-0.0009
ite1	Toscana	-0.0010	-0.0004	-0.0003	-0.0006	-0.0006	-0.0011
ite2	Umbria	-0.0003	-0.0001	-0.0001	-0.0002	-0.0002	-0.0003
ite3	Marche	-0.0005	-0.0003	-0.0002	-0.0004	-0.0004	-0.0005
ite4	Lazio	-0.0006	0.0007	0.0008	0.0001	0.0000	-0.0006
itf1	Abruzzo	-0.0004	-0.0002	-0.0002	-0.0003	-0.0003	-0.0004
itf2	Molise	-0.0001	0.0000	0.0000	0.0000	0.0000	-0.0001
itf3	Campania	-0.0020	-0.0012	-0.0011	-0.0014	-0.0014	-0.0017
itf4	Puglia	-0.0018	-0.0012	-0.0010	-0.0012	-0.0012	-0.0017
itf5	Basilicata	-0.0002	-0.0001	0.0000	-0.0001	-0.0001	-0.0002
itf6	Calabria	-0.0010	-0.0007	-0.0006	-0.0007	-0.0006	-0.0008
itg1	Sicilia	-0.0015	-0.0009	-0.0008	-0.0011	-0.0010	-0.0014
itg2	Sardegna	-0.0005	-0.0003	-0.0003	-0.0004	-0.0004	-0.0005
nl11	Groningen	0.0005	0.0004	0.0003	0.0003	0.0003	0.0003
nl12	Friesland	0.0003	0.0002	0.0001	0.0002	0.0002	0.0001
nl13	Drenthe	0.0003	0.0002	0.0001	0.0001	0.0002	0.0001
nl21	Overijssel	0.0007	0.0005	0.0003	0.0003	0.0004	0.0004
nl22	Gelderland	0.0014	0.0010	0.0007	0.0008	0.0010	0.0008
nl23	Flevoland	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
nl31	Utrecht	0.0015	0.0012	0.0010	0.0011	0.0012	0.0011
nl32	Noord-Holland	0.0033	0.0027	0.0021	0.0022	0.0025	0.0024
nl33	Zuid-Holland	0.0037	0.0030	0.0023	0.0025	0.0027	0.0025
nl34	Zeeland	0.0002	0.0002	0.0001	0.0001	0.0002	0.0001
nl41	Noord-Brabant	0.0019	0.0015	0.0010	0.0011	0.0013	0.0011
nl42	Limburg (NL)	0.0008	0.0006	0.0005	0.0005	0.0006	0.0005
at11	Burgenland	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001
at12	Niederösterreich	0.0008	0.0005	0.0002	0.0002	0.0003	0.0000

at13	Vienna	0.0039	0.0033	0.0026	0.0026	0.0026	0.0022
at21	Kärnten	0.0003	0.0001	0.0000	0.0000	0.0000	-0.0001
at22	Steiermark	0.0006	0.0003	0.0000	0.0000	0.0000	-0.0003
at31	Oberösterreich	0.0011	0.0008	0.0005	0.0005	0.0005	0.0003
at32	Salzburg	0.0004	0.0002	0.0001	0.0001	0.0001	0.0000
at33	Tirol	0.0002	0.0001	0.0000	0.0000	-0.0001	-0.0002
at34	Vorarlberg	0.0002	0.0002	0.0001	0.0001	0.0001	0.0000
pt11	Norte	-0.0037	-0.0037	-0.0037	-0.0037	-0.0036	-0.0041
pt12	Centro (PT)	.	.	.	.	.	.
pt13	Lisboa e Vale do Tejo	.	.	.	.	.	.
pt14	Alentejo	.	.	.	.	.	.
pt15	Algarve	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004
pt2	Açores (PT)	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
pt3	Madeira (PT)	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
fi13	Itä-Suomi	0.0000	0.0000	-0.0001	-0.0001	-0.0001	-0.0003
fi14	Väli-Suomi	0.0001	0.0000	0.0000	-0.0001	-0.0001	-0.0003
fi15	Pohjois-Suomi	0.0001	0.0000	0.0000	0.0000	0.0000	-0.0002
fi16	Uusimaa (suuralue)	0.0011	0.0008	0.0006	0.0007	0.0007	0.0001
fi17	Etelä-Suomi	0.0004	0.0002	0.0000	0.0000	0.0000	-0.0007
fi2	Åland	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
se01	Stockholm	0.0009	0.0021	0.0021	0.0019	0.0021	0.0036
se02	Östra Mellansverige	0.0001	0.0007	0.0006	0.0004	0.0004	0.0007
se04	Sydsverige	0.0000	0.0006	0.0005	0.0004	0.0004	0.0007
se06	Norra Mellansverige	0.0000	0.0004	0.0003	0.0002	0.0002	0.0002
se07	Mellersta Norrland	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001
se08	Övre Norrland	0.0000	0.0002	0.0002	0.0001	0.0001	0.0001
se09	Småland med öarna	-0.0001	0.0003	0.0002	0.0001	0.0001	0.0002
se0a	Västsverige	0.0001	0.0010	0.0008	0.0006	0.0006	0.0009
be10	Région de Bruxelles	0.0036	0.0032	0.0027	0.0027	0.0029	0.0026
be21	Prov. Antwerpen	0.0026	0.0022	0.0019	0.0017	0.0019	0.0015
be22	Prov. Limburg (B)	0.0006	0.0004	0.0003	0.0003	0.0003	0.0002
be23	Prov. Oost-Vlaanderen	0.0011	0.0009	0.0007	0.0006	0.0007	0.0005
be24	Prov. Vlaams Brabant	0.0015	0.0013	0.0011	0.0011	0.0012	0.0010
be25	Prov. West-Vlaanderen	0.0007	0.0005	0.0003	0.0003	0.0004	0.0002
be31	Prov. Brabant Wallon	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003
be32	Prov. Hainaut	0.0009	0.0007	0.0005	0.0004	0.0005	0.0003
be33	Prov. Liège	0.0008	0.0007	0.0005	0.0004	0.0005	0.0003
be34	Prov. Luxembourg (B)	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000
be35	Prov. Namur	0.0003	0.0002	0.0001	0.0001	0.0001	0.0001
ukc1	Tees Valley and Durham	-0.0005	-0.0006	-0.0002	-0.0002	-0.0001	0.0000
ukc2	Northumberland, Tyne and Wear	-0.0008	-0.0009	-0.0005	-0.0003	-0.0003	-0.0001
ukd1	Cumbria	-0.0003	-0.0003	-0.0002	-0.0002	-0.0002	-0.0001
ukd2	Cheshire	-0.0006	-0.0006	-0.0002	-0.0001	0.0000	0.0003
ukd3	Greater Manchester	-0.0019	-0.0019	-0.0008	-0.0005	-0.0001	0.0003
ukd4	Lancashire	-0.0009	-0.0009	-0.0005	-0.0005	-0.0002	0.0000
ukd5	Merseyside	-0.0009	-0.0009	-0.0005	-0.0004	-0.0003	0.0000
uke1	East Riding and N.L.*	-0.0006	-0.0006	-0.0003	-0.0002	0.0001	0.0001
uke2	North Yorkshire	-0.0006	-0.0006	-0.0004	-0.0003	-0.0003	-0.0001
uke3	South Yorkshire	-0.0008	-0.0008	-0.0005	-0.0003	-0.0002	-0.0001
uke4	West Yorkshire	-0.0017	-0.0015	-0.0008	-0.0004	-0.0002	0.0002
ukf1	Derbyshire and Nottinghamshire	-0.0013	-0.0013	-0.0006	-0.0005	0.0001	0.0005
ukf2	Leicestershire, R. and N.**	-0.0011	-0.0010	-0.0004	0.0001	0.0003	0.0005
ukf3	Lincolnshire	-0.0005	-0.0004	-0.0003	-0.0003	-0.0002	-0.0002
ukg1	Herefordshire, W. and W.***	-0.0010	-0.0011	-0.0007	-0.0006	-0.0004	-0.0002

ukg2	Shropshire and Staffordshire	-0.0011	-0.0012	-0.0007	-0.0008	-0.0005	-0.0004
ukg3	West Midlands	-0.0019	-0.0019	-0.0007	-0.0003	-0.0001	0.0005
ukh1	East Anglia	-0.0015	-0.0015	-0.0011	-0.0009	-0.0004	-0.0003
ukh2	Bedfordshire, Hertfordshire	-0.0011	-0.0011	-0.0002	0.0000	0.0004	0.0008
ukh3	Essex	-0.0010	-0.0010	-0.0005	-0.0003	-0.0002	-0.0001
uki1	Inner London	0.0013	0.0019	0.0064	0.0087	0.0096	0.0142
uki2	Outer London	-0.0015	-0.0011	0.0008	0.0015	0.0023	0.0035
ukj1	Berkshire, Bucks and Oxfordshire	-0.0010	-0.0012	-0.0001	0.0005	0.0012	0.0021
ukj2	Surrey, East and West Sussex	-0.0014	-0.0015	-0.0005	-0.0001	0.0001	0.0003
ukj3	Hampshire and Isle of Wight	-0.0010	-0.0012	-0.0006	-0.0003	0.0000	0.0000
ukj4	Kent	-0.0009	-0.0010	-0.0006	-0.0004	-0.0003	0.0001
ukk1	Gloucestershire, W. and N.S.****	-0.0016	-0.0016	-0.0006	-0.0002	-0.0001	0.0002
ukk2	Dorset and Somerset	-0.0009	-0.0009	-0.0007	-0.0005	-0.0003	-0.0003
ukk3	Cornwall and Isles of Scilly	-0.0004	-0.0004	-0.0004	-0.0003	-0.0003	-0.0003
ukk4	Devon	-0.0008	-0.0008	-0.0005	-0.0004	-0.0004	-0.0003
ukl1	West Wales and The Valleys	-0.0010	-0.0011	-0.0006	-0.0004	-0.0003	-0.0001
ukl2	East Wales	-0.0007	-0.0007	-0.0002	-0.0001	0.0000	0.0002
ukm1	North Eastern Scotland	-0.0004	-0.0004	0.0000	0.0000	0.0002	0.0003
ukm2	Eastern Scotland	-0.0012	-0.0012	-0.0003	-0.0003	0.0001	0.0003
ukm3	South Western Scotland	-0.0015	-0.0015	-0.0006	-0.0004	-0.0001	0.0001
ukm4	Highlands and Islands	-0.0004	-0.0004	-0.0003	-0.0003	-0.0002	-0.0002
ukn0	Northern Ireland	-0.0012	-0.0012	-0.0008	-0.0007	-0.0006	-0.0004
cz01	Praha	-0.0017	-0.0018	-0.0018	-0.0018	-0.0017	-0.0018
cz02	Strední Cechy	-0.0010	-0.0010	-0.0010	-0.0010	-0.0010	-0.0011
cz03	Jihozápad	-0.0012	-0.0013	-0.0013	-0.0012	-0.0012	-0.0013
cz04	Severozápad	-0.0012	-0.0012	-0.0012	-0.0011	-0.0011	-0.0011
cz05	Severovýchod	-0.0015	-0.0016	-0.0015	-0.0015	-0.0014	-0.0015
cz06	Jihovýchod	-0.0017	-0.0017	-0.0017	-0.0017	-0.0016	-0.0017
cz07	Strední Morava	-0.0012	-0.0013	-0.0013	-0.0012	-0.0011	-0.0012
cz08	Moravskoslezko	-0.0013	-0.0014	-0.0014	-0.0013	-0.0012	-0.0013
sk01	Bratislavský	-0.0009	-0.0009	-0.0008	-0.0008	-0.0008	-0.0009
sk02	Západné Slovensko	-0.0014	-0.0014	-0.0014	-0.0014	-0.0013	-0.0015
sk03	Stredné Slovensko	-0.0010	-0.0010	-0.0010	-0.0010	-0.0009	-0.0010
sk04	Východné Slovensko	-0.0011	-0.0011	-0.0011	-0.0011	-0.0010	-0.0011
Number of Observations		**188**	**188**	**188**	**188**	**188**	**171**

** North Lincolnshire*
***Rutland and Northants*
*** *Worcestershire and Warks*
***** Wiltshire and North Somerset*

Table A.4 Regional Theil Elements, 1995-2000, Simulated Missing Observations

Code	Region/ Province	1995	1996	1997	1998	1999	2000
de1	Baden-Württemberg	0.0134	0.0111	0.0086	0.0083	0.0058	0.0052
de2	Bayern	0.0125	0.0105	0.0080	0.0078	0.0046	0.0039
de3	Berlin	0.0032	0.0027	0.0020	0.0019	0.0010	0.0007
de4	Brandenburg	0.0004	0.0002	-0.0001	-0.0001	-0.0005	-0.0006
de5	Bremen	0.0011	0.0009	0.0007	0.0006	0.0005	0.0004
de6	Hamburg	0.0032	0.0028	0.0022	0.0021	0.0016	0.0013
de7	Hessen	0.0080	0.0066	0.0051	0.0050	0.0034	0.0029
de8	Mecklenburg-Vorpommern	0.0001	0.0000	-0.0002	-0.0002	-0.0004	-0.0004
de9	Niedersachsen	0.0063	0.0052	0.0038	0.0037	0.0023	0.0018
dea	Nordrhein-Westfalen	0.0202	0.0168	0.0128	0.0119	0.0081	0.0070
deb	Rheinland-Pfalz	0.0035	0.0028	0.0021	0.0019	0.0011	0.0009
dec	Saarland	0.0010	0.0008	0.0006	0.0006	0.0004	0.0003
ded	Sachsen	0.0002	-0.0001	-0.0006	-0.0006	-0.0013	-0.0014
dee	Sachsen-Anhalt	0.0002	0.0000	-0.0003	-0.0003	-0.0005	-0.0006
def	Schleswig-Holstein	0.0019	0.0016	0.0011	0.0010	0.0005	0.0003
deg	Thüringen	0.0000	-0.0002	-0.0004	-0.0004	-0.0007	-0.0008
gr11	Anatoliki Makedonia, Thraki	-0.0003	-0.0003	-0.0003	-0.0003	-0.0002	-0.0003
gr12	Kentriki Makedonia	-0.0010	-0.0010	-0.0009	-0.0009	-0.0009	-0.0009
gr13	Dytiki Makedonia	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
gr14	Thessalia	-0.0003	-0.0003	-0.0003	-0.0003	-0.0002	-0.0003
gr21	Ipeiros	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
gr22	Ionia Nisia	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
gr23	Dytiki Ellada	-0.0003	-0.0003	-0.0003	-0.0003	-0.0002	-0.0002
gr24	Sterea Ellada	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
gr25	Peloponnisos	-0.0003	-0.0002	-0.0002	-0.0002	-0.0001	-0.0002
gr3	Attiki	-0.0025	-0.0023	-0.0022	-0.0023	-0.0026	-0.0025
gr41	Voreio Aigaio	-0.0001	-0.0001	-0.0001	-0.0001	0.0000	-0.0001
gr42	Notio Aigaio	-0.0002	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
gr43	Kriti	-0.0003	-0.0003	-0.0002	-0.0003	-0.0002	-0.0002
es11	Galicia	-0.0014	-0.0013	-0.0015	-0.0015	-0.0014	-0.0015
es12	Principado de Asturias	-0.0003	-0.0003	-0.0004	-0.0004	-0.0004	-0.0005
es13	Cantabria	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
es21	Pais Vasco	-0.0003	-0.0002	-0.0005	-0.0005	-0.0004	-0.0006
es22	Comunidad Foral de Navarra	-0.0002	-0.0001	-0.0002	-0.0002	-0.0002	-0.0002
es23	La Rioja	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001
es24	Aragón	-0.0005	-0.0004	-0.0005	-0.0005	-0.0005	-0.0006
es3	Comunidad de Madrid	-0.0012	-0.0011	-0.0015	-0.0015	-0.0014	-0.0020
es41	Castilla y León	-0.0011	-0.0009	-0.0011	-0.0011	-0.0010	-0.0011
es42	Castilla-la Mancha	-0.0008	-0.0007	-0.0009	-0.0009	-0.0008	-0.0009
es43	Extremadura	-0.0005	-0.0004	-0.0005	-0.0005	-0.0005	-0.0005
es51	Cataluña	-0.0023	-0.0022	-0.0028	-0.0029	-0.0029	-0.0034
es52	Comunidad Valenciana	-0.0024	-0.0023	-0.0026	-0.0027	-0.0027	-0.0029
es53	Illes Balears	-0.0003	-0.0003	-0.0004	-0.0004	-0.0004	-0.0004
es61	Andalucia	-0.0031	-0.0033	-0.0037	-0.0038	-0.0038	-0.0041
es62	Murcia	-0.0006	-0.0006	-0.0007	-0.0008	-0.0008	-0.0008
es7	Canarias (ES)	-0.0007	-0.0007	-0.0008	-0.0009	-0.0009	-0.0010
fr1	Île-de-France	0.0295	0.0278	0.0238	0.0234	0.0235	0.0217
fr21	Champagne-Ardenne	0.0004	0.0003	0.0002	0.0002	0.0002	0.0001
fr22	Picardie	0.0006	0.0004	0.0002	0.0002	0.0002	0.0000
fr23	Haute-Normandie	0.0009	0.0008	0.0005	0.0004	0.0004	0.0002
fr24	Centre	0.0008	0.0008	0.0004	0.0005	0.0004	0.0001

fr25	Basse-Normandie	0.0002	0.0002	0.0000	-0.0002	-0.0002	-0.0003
fr26	Bourgogne	0.0004	0.0004	0.0002	0.0002	0.0001	-0.0001
fr3	Nord - Pas-de-Calais	0.0015	0.0013	0.0008	0.0006	0.0005	0.0002
fr41	Lorraine	0.0009	0.0008	0.0004	0.0004	0.0004	0.0001
fr42	Alsace	0.0015	0.0014	0.0010	0.0009	0.0009	0.0007
fr43	Franche-Comté	0.0003	0.0002	0.0001	0.0001	0.0001	-0.0001
fr51	Pays de la Loire	0.0006	0.0005	-0.0001	-0.0002	-0.0002	-0.0004
fr52	Bretagne	0.0005	0.0005	0.0000	-0.0002	-0.0003	-0.0004
fr53	Poitou-Charentes	0.0002	0.0001	-0.0001	-0.0001	-0.0001	-0.0003
fr61	Aquitaine	0.0005	0.0005	0.0002	0.0001	0.0001	-0.0003
fr62	Midi-Pyrénées	0.0006	0.0006	0.0002	0.0002	0.0002	-0.0001
fr63	Limousin	0.0001	0.0000	0.0000	0.0000	-0.0001	-0.0001
fr71	Rhône-Alpes	0.0037	0.0032	0.0022	0.0021	0.0021	0.0014
fr72	Auvergne	0.0002	0.0002	0.0000	0.0000	0.0000	-0.0001
fr81	Languedoc-Roussillon	0.0000	0.0001	-0.0001	-0.0004	-0.0002	-0.0003
fr82	Provence-Alpes-Côte d'Azur	0.0024	0.0015	0.0011	0.0012	0.0011	0.0007
fr83	Corse	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
ie01	Border, Midlands and Western	-0.0003	-0.0003	-0.0002	-0.0002	-0.0002	-0.0001
ie02	Southern and Eastern	-0.0005	-0.0004	0.0000	-0.0003	0.0000	0.0002
itc1	Piemonte	-0.0007	0.0001	0.0003	-0.0001	-0.0001	-0.0004
itc2	Valle d'Aosta/Vallée d'Aoste	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
itc3	Liguria	-0.0002	0.0001	0.0002	0.0000	0.0000	-0.0001
itc4	Lombardia	-0.0011	0.0012	0.0016	0.0004	0.0007	0.0001
itd1	Prov. Autonoma Bolzano-Bozen	.	.	.	.	.	.
itd2	Prov. Autonoma Trento	.	.	.	.	.	.
itd3	Veneto	-0.0014	-0.0004	-0.0002	-0.0007	-0.0007	-0.0009
itd4	Friuli-Venezia Giulia	-0.0002	0.0000	0.0001	-0.0001	-0.0001	-0.0002
itd5	Emilia-Romagna	-0.0008	0.0001	0.0003	-0.0002	-0.0002	-0.0005
ite1	Toscana	-0.0010	-0.0004	-0.0003	-0.0006	-0.0006	-0.0008
ite2	Umbria	-0.0003	-0.0001	-0.0001	-0.0002	-0.0002	-0.0003
ite3	Marche	-0.0005	-0.0003	-0.0002	-0.0004	-0.0004	-0.0004
ite4	Lazio	-0.0006	0.0007	0.0008	0.0001	0.0000	-0.0002
itf1	Abruzzo	-0.0004	-0.0002	-0.0002	-0.0003	-0.0003	-0.0003
itf2	Molise	-0.0001	0.0000	0.0000	0.0000	0.0000	-0.0001
itf3	Campania	-0.0020	-0.0012	-0.0011	-0.0014	-0.0014	-0.0014
itf4	Puglia	-0.0018	-0.0012	-0.0010	-0.0012	-0.0012	-0.0014
itf5	Basilicata	-0.0002	-0.0001	0.0000	-0.0001	-0.0001	-0.0001
itf6	Calabria	-0.0010	-0.0007	-0.0006	-0.0007	-0.0006	-0.0007
itg1	Sicilia	-0.0015	-0.0009	-0.0008	-0.0011	-0.0010	-0.0011
itg2	Sardegna	-0.0005	-0.0003	-0.0003	-0.0004	-0.0004	-0.0004
nl11	Groningen	0.0005	0.0004	0.0003	0.0003	0.0003	0.0003
nl12	Friesland	0.0003	0.0002	0.0001	0.0002	0.0002	0.0002
nl13	Drenthe	0.0003	0.0002	0.0001	0.0001	0.0002	0.0001
nl21	Overijssel	0.0007	0.0005	0.0003	0.0003	0.0004	0.0004
nl22	Gelderland	0.0014	0.0010	0.0007	0.0008	0.0010	0.0009
nl23	Flevoland	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
nl31	Utrecht	0.0015	0.0012	0.0010	0.0011	0.0012	0.0012
nl32	Noord-Holland	0.0033	0.0027	0.0021	0.0022	0.0025	0.0025
nl33	Zuid-Holland	0.0037	0.0030	0.0023	0.0025	0.0027	0.0027
nl34	Zeeland	0.0002	0.0002	0.0001	0.0001	0.0002	0.0002
nl41	Noord-Brabant	0.0019	0.0015	0.0010	0.0011	0.0013	0.0013
nl42	Limburg (NL)	0.0008	0.0006	0.0005	0.0005	0.0006	0.0005
at11	Burgenland	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001
at12	Niederösterreich	0.0008	0.0005	0.0002	0.0002	0.0003	0.0001

at13	Vienna	0.0039	0.0033	0.0026	0.0026	0.0026	0.0022
at21	Kärnten	0.0003	0.0001	0.0000	0.0000	0.0000	0.0000
at22	Steiermark	0.0006	0.0003	0.0000	0.0000	0.0000	-0.0001
at31	Oberösterreich	0.0011	0.0008	0.0005	0.0005	0.0005	0.0004
at32	Salzburg	0.0004	0.0002	0.0001	0.0001	0.0001	0.0001
at33	Tirol	0.0002	0.0001	0.0000	0.0000	-0.0001	-0.0001
at34	Vorarlberg	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001
pt11	Norte	-0.0037	-0.0037	-0.0037	-0.0037	-0.0036	-0.0036
pt12	Centro (PT)	.	.	.	.	.	.
pt13	Lisboa e Vale do Tejo	.	.	.	.	.	.
pt14	Alentejo	.	.	.	.	.	.
pt15	Algarve	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004	-0.0004
pt2	Açores (PT)	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
pt3	Madeira (PT)	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002	-0.0002
fi13	Itä-Suomi	0.0000	0.0000	-0.0001	-0.0001	-0.0001	-0.0003
fi14	Väli-Suomi	0.0001	0.0000	0.0000	-0.0001	-0.0001	-0.0002
fi15	Pohjois-Suomi	0.0001	0.0000	0.0000	0.0000	0.0000	-0.0001
fi16	Uusimaa (suuralue)	0.0011	0.0008	0.0006	0.0007	0.0007	0.0003
fi17	Etelä-Suomi	0.0004	0.0002	0.0000	0.0000	0.0000	-0.0005
fi2	Åland	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
se01	Stockholm	0.0009	0.0021	0.0021	0.0019	0.0021	0.0036
se02	Östra Mellansverige	0.0001	0.0007	0.0006	0.0004	0.0004	0.0008
se04	Sydsverige	0.0000	0.0006	0.0005	0.0004	0.0004	0.0008
se06	Norra Mellansverige	0.0000	0.0004	0.0003	0.0002	0.0002	0.0003
se07	Mellersta Norrland	0.0000	0.0001	0.0001	0.0001	0.0001	0.0001
se08	Övre Norrland	0.0000	0.0002	0.0002	0.0001	0.0001	0.0002
se09	Småland med öarna	-0.0001	0.0003	0.0002	0.0001	0.0001	0.0003
se0a	Västsverige	0.0001	0.0010	0.0008	0.0006	0.0006	0.0010
be10	Région de Bruxelles	0.0036	0.0032	0.0027	0.0027	0.0029	0.0026
be21	Prov. Antwerpen	0.0026	0.0022	0.0019	0.0017	0.0019	0.0016
be22	Prov. Limburg (B)	0.0006	0.0004	0.0003	0.0003	0.0003	0.0002
be23	Prov. Oost-Vlaanderen	0.0011	0.0009	0.0007	0.0006	0.0007	0.0006
be24	Prov. Vlaams Brabant	0.0015	0.0013	0.0011	0.0011	0.0012	0.0010
be25	Prov. West-Vlaanderen	0.0007	0.0005	0.0003	0.0003	0.0004	0.0003
be31	Prov. Brabant Wallon	0.0004	0.0003	0.0003	0.0003	0.0003	0.0003
be32	Prov. Hainaut	0.0009	0.0007	0.0005	0.0004	0.0005	0.0003
be33	Prov. Liège	0.0008	0.0007	0.0005	0.0004	0.0005	0.0003
be34	Prov. Luxembourg (B)	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000
be35	Prov. Namur	0.0003	0.0002	0.0001	0.0001	0.0001	0.0001
ukc1	Tees Valley and Durham	-0.0005	-0.0006	-0.0002	-0.0002	-0.0001	0.0001
ukc2	Northumberland, Tyne and Wear	-0.0008	-0.0009	-0.0005	-0.0003	-0.0003	0.0000
ukd1	Cumbria	-0.0003	-0.0003	-0.0002	-0.0002	-0.0002	-0.0001
ukd2	Cheshire	-0.0006	-0.0006	-0.0002	-0.0001	0.0000	0.0004
ukd3	Greater Manchester	-0.0019	-0.0019	-0.0008	-0.0005	-0.0001	0.0006
ukd4	Lancashire	-0.0009	-0.0009	-0.0005	-0.0005	-0.0002	0.0001
ukd5	Merseyside	-0.0009	-0.0009	-0.0005	-0.0004	-0.0003	0.0001
uke1	East Riding and N.L.*	-0.0006	-0.0006	-0.0003	-0.0002	0.0001	0.0001
uke2	North Yorkshire	-0.0006	-0.0006	-0.0004	-0.0003	-0.0003	-0.0001
uke3	South Yorkshire	-0.0008	-0.0008	-0.0005	-0.0003	-0.0002	0.0000
uke4	West Yorkshire	-0.0017	-0.0015	-0.0008	-0.0004	-0.0002	0.0004
ukf1	Derbyshire and Nottinghamshire	-0.0013	-0.0013	-0.0006	-0.0005	0.0001	0.0007
ukf2	Leicestershire, R. and N.**	-0.0011	-0.0010	-0.0004	0.0001	0.0003	0.0007
ukf3	Lincolnshire	-0.0005	-0.0004	-0.0003	-0.0003	-0.0002	-0.0001
ukg1	Herefordshire, W. and W.***	-0.0010	-0.0011	-0.0007	-0.0006	-0.0004	-0.0001

ukg2	Shropshire and Staffordshire	-0.0011	-0.0012	-0.0007	-0.0008	-0.0005	-0.0003
ukg3	West Midlands	-0.0019	-0.0019	-0.0007	-0.0003	-0.0001	0.0008
ukh1	East Anglia	-0.0015	-0.0015	-0.0011	-0.0009	-0.0004	-0.0001
ukh2	Bedfordshire, Hertfordshire	-0.0011	-0.0011	-0.0002	0.0000	0.0004	0.0010
ukh3	Essex	-0.0010	-0.0010	-0.0005	-0.0003	-0.0002	0.0000
uki1	Inner London	0.0013	0.0019	0.0064	0.0087	0.0096	0.0139
uki2	Outer London	-0.0015	-0.0011	0.0008	0.0015	0.0023	0.0037
ukj1	Berkshire, Bucks and Oxfordshire	-0.0010	-0.0012	-0.0001	0.0005	0.0012	0.0022
ukj2	Surrey, East and West Sussex	-0.0014	-0.0015	-0.0005	-0.0001	0.0001	0.0005
ukj3	Hampshire and Isle of Wight	-0.0010	-0.0012	-0.0006	-0.0003	0.0000	0.0002
ukj4	Kent	-0.0009	-0.0010	-0.0006	-0.0004	-0.0003	0.0002
ukk1	Gloucestershire, W. and N.S.****	-0.0016	-0.0016	-0.0006	-0.0002	-0.0001	0.0004
ukk2	Dorset and Somerset	-0.0009	-0.0009	-0.0007	-0.0005	-0.0003	-0.0002
ukk3	Cornwall and Isles of Scilly	-0.0004	-0.0004	-0.0004	-0.0003	-0.0003	-0.0002
ukk4	Devon	-0.0008	-0.0008	-0.0005	-0.0004	-0.0004	-0.0002
ukl1	West Wales and The Valleys	-0.0010	-0.0011	-0.0006	-0.0004	-0.0003	0.0000
ukl2	East Wales	-0.0007	-0.0007	-0.0002	-0.0001	0.0000	0.0003
ukm1	North Eastern Scotland	-0.0004	-0.0004	0.0000	0.0000	0.0002	0.0004
ukm2	Eastern Scotland	-0.0012	-0.0012	-0.0003	-0.0003	0.0001	0.0004
ukm3	South Western Scotland	-0.0015	-0.0015	-0.0006	-0.0004	-0.0001	0.0003
ukm4	Highlands and Islands	-0.0004	-0.0004	-0.0003	-0.0003	-0.0002	-0.0001
ukn0	Northern Ireland	-0.0012	-0.0012	-0.0008	-0.0007	-0.0006	-0.0002
cz01	Praha	-0.0017	-0.0018	-0.0018	-0.0018	-0.0017	-0.0016
cz02	Střední Cechy	-0.0010	-0.0010	-0.0010	-0.0010	-0.0010	-0.0010
cz03	Jihozápad	-0.0012	-0.0013	-0.0013	-0.0012	-0.0012	-0.0012
cz04	Severozápad	-0.0012	-0.0012	-0.0012	-0.0011	-0.0011	-0.0010
cz05	Severovýchod	-0.0015	-0.0016	-0.0015	-0.0015	-0.0014	-0.0014
cz06	Jihovýchod	-0.0017	-0.0017	-0.0017	-0.0017	-0.0016	-0.0016
cz07	Střední Morava	-0.0012	-0.0013	-0.0013	-0.0012	-0.0011	-0.0011
cz08	Moravskoslezko	-0.0013	-0.0014	-0.0014	-0.0013	-0.0012	-0.0012
sk01	Bratislavský	-0.0009	-0.0009	-0.0008	-0.0008	-0.0008	-0.0008
sk02	Západné Slovensko	-0.0014	-0.0014	-0.0014	-0.0014	-0.0013	-0.0013
sk03	Stredné Slovensko	-0.0010	-0.0010	-0.0010	-0.0010	-0.0009	-0.0010
sk04	Východné Slovensko	-0.0011	-0.0011	-0.0011	-0.0011	-0.0010	-0.0010
Number of Observations		**188**	**188**	**188**	**188**	**188**	**188**

** North Lincolnshire*
***Rutland and Northants*
*** *Worcestershire and Warks*
***** Wiltshire and North Somerset*

Table A.5 Theil's T Statistic Country Level by Regions and Sectors, 1995-2000

Country		1995	1996	1997	1998	1999	2000
Germany	Between Groups	0.0069	0.0067	0.0065	0.0064	0.0061	0.0062
	Within Groups	0.0080	0.0080	0.0088	0.0094	0.0184	0.0202
	Total	0.0149	0.0148	0.0153	0.0157	0.0245	0.0265
Greece	Between Groups	0.0005	0.0007	0.0008	0.0005	0.0031	0.0003
	Within Groups	0.0524	0.0484	0.0515	0.0537	0.0591	0.0555
	Total	0.0529	0.0491	0.0522	0.0542	0.0622	0.0558
Spain	Between Groups	0.0057	0.0053	0.0058	0.0062	0.0061	·
	Within Groups	0.0509	0.0504	0.0501	0.0496	0.0481	·
	Total	0.0566	0.0556	0.0559	0.0558	0.0542	·
France	Between Groups	0.0139	0.0134	0.0134	0.0139	0.0141	0.0147
	Within Groups	0.0237	0.0246	0.0260	0.0264	0.0274	0.0259
	Total	0.0376	0.0380	0.0394	0.0403	0.0416	0.0406
Ireland	Between Groups	0.0009	0.0010	0.0009	0.0003	0.0007	0.0006
	Within Groups	0.0349	0.0374	0.0352	0.0354	0.0331	0.0284
	Total	0.0357	0.0384	0.0362	0.0357	0.0338	0.0290
Italy	Between Groups	0.0038	0.0028	0.0026	0.0027	0.0028	0.0028
	Within Groups	0.0539	0.0587	0.0574	0.0549	0.0523	0.0516
	Total	0.0577	0.0616	0.0600	0.0576	0.0551	0.0545
Netherlands	Between Groups	0.0010	0.0010	0.0009	0.0009	0.0009	0.0009
	Within Groups	0.0120	0.0124	0.0129	0.0128	0.0133	0.0131
	Total	0.0130	0.0134	0.0138	0.0138	0.0143	0.0141
Austria	Between Groups	0.0069	0.0074	0.0079	0.0077	0.0082	0.0078
	Within Groups	0.0266	0.0272	0.0314	0.0300	0.0278	0.0271
	Total	0.0334	0.0346	0.0393	0.0378	0.0360	0.0349
Portugal	Between Groups	0.0007	0.0007	0.0008	0.0009	0.0007	0.0011
	Within Groups	0.0739	0.0725	0.0754	0.0727	0.0719	0.0741
	Total	0.0746	0.0732	0.0763	0.0736	0.0726	0.0752
Finland	Between Groups	0.0022	0.0016	0.0016	0.0021	0.0020	0.0032
	Within Groups	0.0093	0.0100	0.0099	0.0105	0.0110	0.0165
	Total	0.0115	0.0116	0.0115	0.0126	0.0130	0.0197
Sweden	Between Groups	0.0011	0.0010	0.0014	0.0018	0.0022	0.0048
	Within Groups	0.0154	0.0151	0.0164	0.0176	0.0179	0.0192
	Total	0.0164	0.0160	0.0177	0.0194	0.0201	0.0240
Belgium	Between Groups	0.0048	0.0053	0.0055	0.0058	0.0062	0.0061
	Within Groups	0.0271	0.0296	0.0326	0.0312	0.0313	0.0295
	Total	0.0319	0.0349	0.0381	0.0369	0.0374	0.0356
UK	Between Groups	0.0068	0.0081	0.0092	0.0109	0.0101	0.0118
	Within Groups	0.0598	0.0532	0.0529	0.0521	0.0477	0.0457
	Total	0.0666	0.0613	0.0621	0.0630	0.0578	0.0575
Czech Republic	Between Groups	0.0140	0.0128	0.0170	0.0160	0.0184	0.0245
	Within Groups	0.0316	0.0286	0.0295	0.0269	0.0291	0.0321
	Total	0.0457	0.0414	0.0465	0.0429	0.0475	0.0566
Slovakia	Between Groups	0.0051	0.0050	0.0098	0.0073	0.0094	0.0154
	Within Groups	0.0597	0.0617	0.0386	0.0425	0.0377	0.0580
	Total	0.0648	0.0667	0.0484	0.0498	0.0471	0.0734
Bulgaria	Between Groups	·	0.0151	0.0122	0.0158	0.0146	0.0072
	Within Groups	·	0.0990	0.0852	0.1066	0.1384	0.1123
	Total	·	0.1141	0.0973	0.1224	0.1530	0.1194

Table A.6 Average Wages 16 NACE Rev 1.1 Sectors for 22 Countries, 2000

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
Austria	14.2	:	49.6	34.3	62.7	30.7	28.9	21.5	35.9	49.6	27.3	39.7	36.1	28.0	30.2	47.8
Belgium	13.6	:	:	43.0	77.9	34.1	33.5	19.1	40.1	60.2	37.9	36.2	40.1	31.4	30.6	14.5
Bulgaria	1.8	:	3.5	2.1	4.4	2.5	1.8	1.8	2.9	4.8	2.3	8.1	1.8	1.8	1.5	:
Czech R.	6.1	5.0	7.5	6.4	8.3	6.4	7.5	4.3	5.7	10.9	12.0	7.2	5.3	5.1	5.5	2.0
Denmark	23.0	47.8	53.8	36.8	45.1	41.4	32.8	20.7	37.4	51.3	37.8	40.1	36.2	31.0	33.8	14.9
Estonia	4.1	3.4	6.1	4.4	5.6	5.0	5.7	2.4	6.9	10.1	7.0	5.7	5.6	5.2	5.4	:
Finland	21.7	22.0	33.3	35.1	38.1	33.0	26.7	21.0	30.9	43.1	35.2	29.2	31.8	27.4	27.9	12.4
France	20.9	24.9	40.7	35.7	48.0	31.1	29.7	27.8	31.0	55.9	42.4	37.6	32.3	24.6	21.9	19.0
Germany	:	:	49.2	38.3	52.2	23.8	:	:	30.1	41.0	25.5	36.2	:	:	:	:
Greece	6.9	17.0	25.7	16.1	27.7	13.0	13.5	13.9	20.1	29.4	12.4	27.6	23.2	18.1	15.1	7.5
Hungary	5.2	4.2	4.1	6.8	8.9	5.0	6.6	4.6	7.2	11.1	12.3	8.5	5.2	6.2	6.1	:
Ireland	16.1	:	38.8	30.8	46.3	35.1	24.9	17.6	32.1	42.4	30.7	40.3	34.2	32.2	19.1	13.3
Italy	12.4	13.2	32.0	28.6	46.4	22.5	23.3	28.3	36.9	50.8	26.2	33.4	31.2	32.1	24.4	7.9
Latvia	1.5	1.0	4.3	4.5	6.8	3.1	3.1	1.7	5.7	10.7	5.7	5.6	3.8	3.0	3.3	:
Lithuania	4.0	2.5	6.6	4.6	6.9	4.7	3.8	3.0	5.4	8.4	5.2	8.3	4.3	3.6	2.5	:
Portugal	6.6	7.6	12.1	10.5	25.0	11.7	11.1	10.7	21.3	30.5	12.5	20.0	24.1	18.6	14.8	4.5
Slovakia	4.2	:	5.0	5.8	7.5	4.6	4.6	5.3	5.9	9.2	7.1	10.1	3.7	4.2	6.7	:
Slovenia	8.4	8.5	25.4	12.5	19.0	10.4	11.7	10.6	15.8	22.2	14.4	21.0	17.1	15.8	15.4	:
Spain	8.2	20.6	21.9	24.0	39.2	20.6	15.6	20.9	30.0	41.7	28.1	20.6	28.5	26.5	23.7	8.6
Sweden	23.5	15.6	40.8	42.6	43.5	39.8	33.6	21.6	39.5	50.3	45.0	37.4	29.3	28.8	28.0	24.2
Netherlands	27.0	:	62.1	37.6	47.4	35.3	31.2	24.4	38.8	50.4	35.2	45.6	43.6	31.1	34.0	:
UK	20.3	:	51.6	46.6	61.2	31.0	22.5	18.4	47.1	41.2	32.6	38.8	34.5	27.1	33.0	:

Table A.7 Within-Country Between-Sectors Theil's T Statistic, 1995-2000

Country	1995	1996	1997	1998	1999	2000
Austria	0.022	0.022	0.023	0.023	0.021	0.02
Belgium	0.024	0.027	0.03	0.029	0.029	0.027
Bulgaria	0.116	0.078	0.061	0.081	0.106	0.11
Czech Republic	0.026	0.02	0.025	0.022	0.023	0.025
Denmark	0.011	0.011	0.012	0.012	0.012	0.012
Estonia	0.03	0.029	0.032	0.027	0.02	0.024
Finland	0.009	0.009	0.009	0.01	0.01	0.011
France	0.022	0.023	0.024	0.025	0.026	0.024
Germany	0.009	0.009	0.01	0.01	0.019	0.021
Greece	0.053	0.049	0.052	0.054	0.05	0.056
Hungary	0.022	0.032	0.029	0.036	0.034	0.029
Ireland	0.032	0.034	0.032	0.033	0.03	0.026
Italy	0.051	0.056	0.054	0.052	0.05	0.049
Latvia	0.051	0.061	0.052	0.062	0.06	0.072
Lithuania	0.082	0.068	0.05	0.059	0.049	0.039
Netherlands	0.011	0.011	0.012	0.012	0.013	0.012
Portugal	0.071	0.07	0.073	0.069	0.069	0.072
Slovakia	0.043	0.045	0.027	0.026	0.027	0.037
Slovenia	0.026	0.029	0.028	0.025	0.024	0.025
Spain	0.049	0.048	0.049	0.048	0.046	0.046
Sweden	0.014	0.014	0.015	0.017	0.017	0.019
UK	0.053	0.047	0.047	0.045	0.041	0.04

Table A.8 List of Regions Included in the Pan-European Theil's T Statistic

Obs	Code	Obs	Code	Obs	Code	Obs	Code	Obs	Code	Obs	Code	Obs	Code
1	de1	32	es13	63	fr63	94	nl13	125	fi2	156	ukf1	187	cz06
2	de2	33	es21	64	fr71	95	nl21	126	se01	157	ukf2	188	cz07
3	de3	34	es22	65	fr72	96	nl22	127	se02	158	ukf3	189	cz08
4	de4	35	es23	66	fr81	97	nl23	128	se04	159	ukg1	190	sk01
5	de5	36	es24	67	fr82	98	nl31	129	se06	160	ukg2	191	sk02
6	de6	37	es3	68	fr83	99	nl32	130	se07	161	ukg3	192	sk03
7	de7	38	es41	69	ie01	100	nl33	131	se08	162	ukh1	193	sk04
8	de8	39	es42	70	ie02	101	nl34	132	se09	163	ukh2		
9	de9	40	es43	71	itc1	102	nl41	133	se0a	164	ukh3		
10	dea	41	es51	72	itc2	103	nl42	134	be10	165	uki1		
11	deb	42	es52	73	itc3	104	at11	135	be21	166	uki2		
12	dec	43	es53	74	itc4	105	at12	136	be22	167	ukj1		
13	ded	44	es61	75	itd1(na)	106	at13	137	be23	168	ukj2		
14	dee	45	es62	76	itd2(na)	107	at21	138	be24	169	ukj3		
15	def	46	es7	77	itd3	108	at22	139	be25	170	ukj4		
16	deg	47	fr1	78	itd4	109	at31	140	be31	171	ukk1		
17	gr11	48	fr21	79	itd5	110	at32	141	be32	172	ukk2		
18	gr12	49	fr22	80	ite1	111	at33	142	be33	173	ukk3		
19	gr13	50	fr23	81	ite2	112	at34	143	be34	174	ukk4		
20	gr14	51	fr24	82	ite3	113	pt11	144	be35	175	ukl1		
21	gr21	52	fr25	83	ite4	114	pt12(na)	145	ukc1	176	ukl2		
22	gr22	53	fr26	84	itf1	115	pt13(na)	146	ukc2	177	ukm1		
23	gr23	54	fr3	85	itf2	116	pt14(na)	147	ukd1	178	ukm2		
24	gr24	55	fr41	86	itf3	117	pt15	148	ukd2	179	ukm3		
25	gr25	56	fr42	87	itf4	118	pt2	149	ukd3	180	ukm4		
26	gr3	57	fr43	88	itf5	119	pt3	150	ukd4	181	ukn0		
27	gr41	58	fr51	89	itf6	120	fi13	151	ukd5	182	cz01		
28	gr42	59	fr52	90	itg1	121	fi14	152	uke1	183	cz02		
29	gr43	60	fr53	91	itg2	122	fi15	153	uke2	184	cz03		
30	es11	61	fr61	92	nl11	123	fi16	154	uke3	185	cz04		
31	es12	62	fr62	93	nl12	124	fi17	155	uke4	186	cz05		

Table A.9 Pan-European Theil's T Statistic for 188 Regions and 16 Sectors, 1995-2000

		1995	1996	1997	1998	1999	2000
By Regions	**Between Groups**	0.0672	0.0579	0.0476	0.0459	0.0414	0.0407
	Within Groups	0.0311	0.0317	0.0333	0.0332	0.0340	0.0326
	Total	0.0983	0.0896	0.0809	0.0790	0.0755	0.0733
By Sectors	**Between Groups**	0.0266	0.0262	0.0255	0.0255	0.0237	0.0206
	Within Groups	0.0717	0.0634	0.0555	0.0535	0.0518	0.0528
	Total	0.0983	0.0896	0.0809	0.0790	0.0755	0.0733
Number of Regions		188	188	188	188	188	171
Missing Observations							Es

Table A.10 Pan-European Theil's T Statistic for 188 Regions and 16 Sectors, Constant Observations

		1995	1996	1997	1998	1999	2000
By Regions	**Between Groups**	0.0672	0.0579	0.0476	0.0459	0.0414	0.0419
	Within Groups	0.0311	0.0317	0.0333	0.0332	0.0340	0.0338
	Total	0.0983	0.0896	0.0809	0.0790	0.0755	0.0757
By Sectors	**Between Groups**	0.0266	0.0262	0.0255	0.0255	0.0237	0.0227
	Within Groups	0.0717	0.0634	0.0555	0.0535	0.0518	0.0530
	Total	0.0983	0.0896	0.0809	0.0790	0.0755	0.0757
Number of Regions		188	188	188	188	188	188

Table A.11 Pan-European Theil's T Statistic for 16 Countries and 16 Sectors, 1995-2000

		1995	1996	1997	1998	1999	2000
By Countries	**Between Groups**	0.059	0.050	0.040	0.038	0.033	0.032
	Within Groups	0.029	0.029	0.031	0.030	0.031	0.030
	Total	0.088	0.079	0.070	0.068	0.064	0.062
By Sectors	**Between Groups**	0.026	0.026	0.025	0.025	0.023	0.021
	Within Groups	0.062	0.054	0.045	0.043	0.041	0.041
	Total	0.088	0.079	0.070	0.068	0.064	0.062
Number of Countries		16	16	16	16	16	15
Missing Observations							Es

Table A.12 Pan-European Theil's T Statistic for 16 Counties and 16 Sectors, Constant Observations

		1995	1996	1997	1998	1999	2000
By Countries	**Between Groups**	0.059	0.050	0.040	0.038	0.033	0.033
	Within Groups	0.029	0.029	0.031	0.030	0.031	0.031
	Total	0.088	0.079	0.070	0.068	0.064	0.064
By Sectors	**Between Groups**	0.026	0.026	0.025	0.025	0.023	0.023
	Within Groups	0.062	0.054	0.045	0.043	0.041	0.042
	Total	0.088	0.079	0.070	0.068	0.064	0.064
Number of Counties		16	16	16	16	16	16

Table A.13 Pan-European Theil's T Statistic for 22 Countries and 16 Sectors

		1995	1996	1997	1998	1999	2000
By Countries	**Between Groups**	0.101	0.090	0.076	0.072	0.066	0.066
	Within Groups	0.029	0.029	0.031	0.030	0.031	0.030
	Total	0.130	0.119	0.107	0.102	0.097	0.096
By Sectors	**Between Groups**	0.027	0.026	0.025	0.025	0.023	0.021
	Within Groups	0.103	0.093	0.082	0.077	0.074	0.075
	Total	0.130	0.119	0.107	0.102	0.097	0.096
Number of Countries		22	22	22	22	22	22