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Cross-National Trends in Permanent Earnings Inequality and Earnings Instability in Europe 1994-2001*

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Abstract

Using a fully harmonized panel dataset across 14 European countries between the early-1990s and 2001, the European Community Household Panel, we fill a gap in the literature with a cross-national comparative study which explores the trends in persistent inequality and transitory inequality across countries belonging to a common economic area, but with different systems and with different rates of adaptation to the economic reality of the 1990s. The covariance structure of earnings is estimated using minimum distance methods. We find a substantial degree of convergence in the overall inequality among the Mediterranean, the Continental and the Anglo-Saxon countries, which reflects a convergence in both permanent and transitory inequality. Among the Nordic/Flexicurity countries we find a strong divergence in the overall inequality, driven by a divergence in both permanent and transitory inequality. Pooling most countries in Europe, we find evidence of a strong convergence in earnings instability. The Nordic/Flexicurity countries have a lower overall inequality, a lower persistent inequality and a higher earnings mobility. These cross-national differences in persistent inequality and earnings instability across Europe can be partly explained by the labour market policies and institutions linked with the wage-setting mechanism. The stricter the regulation in the labour and product market, the higher the persistent inequality. The higher the unionization, the degree of corporatism, and the tax wedge the lower persistent inequality. Corporatist systems are associated with a lower earnings instability than decentralized ones.

Keywords: earnings dynamics; permanent inequality; transitory inequality

JEL classification codes: C23 ; D31 ; J31

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1 Introduction

Understanding the source of earnings inequality has become a major research topic in economics over the past decades, fuelled by the rise in earnings inequality experienced by many developed countries during the 1980s and 1990s. In the US, there is a widespread consensus that wage inequality increased because the relative demand for skills rose faster than the relative supply due to the skill-biased technological change. Other factors include changes in international trade, changes in labour market institutions and changes in the labour force composition (e.g. Katz and Murphy (1992), Katz and Autor (1999), Haider (2001), Acemoglu (2002)). Across (continental) Europe, inequality did not increase, or increased much less over the same time period, despite experiencing the same technological developments (Freeman and Katz, 1994, Bell and Nickell, 1996, Katz et al, 1995). The difference in the inequality trends between Europe and the US is attributed, among other factors, to the rigidity of the European labour market institutions (Freeman and Katz, 1994, Acemoglu, 2002). The economic reality of the 1990s in Europe, however, increased the pressure on the European labour markets to become more flexible.[1] Since 1995, several reforms were implemented to increase wage flexibility, lower non-wage labour costs and allow relative wages to better reflect individual differences in productivity and local labour market conditions and induce wage modernization and competitive wage bargaining (OECD, 2004, Dew-Becker and Gordon, 2008, Keune, 2008).[2] As a result, real wage growth has been depressed and low pay and working poor have become major concerns (Keune, 2008). The pace of change was different across Europe, leading to an increased country-heterogeneity in welfare state characteristics and labour market institutions (Palier, 2010).

Recent evidence concerning this period in Europe reveals an increased cross-country heterogeneity also in the distribution and the structure of labour market income. The qualitative evidence indicates considerable cross-country differences in the level of inequality, the structure of inequality and the patterns of inter-temporal change in hourly earnings inequality in Europe (Cholezas and Tsakloglou, 2008, OECD, 1996, 1997). These inequality decompositions, however, neglect an important dimension of inequality: whether the source of cross-sectional inequality is permanent or transitory. The distinction between permanent (lifetime) earnings inequality and transitory inequality is useful in evaluating the welfare implications of changes in cross-sectional earnings inequality, as is emphasized in numerous recent studies for the US (Moffitt and Gottschalk, 1995, 1998, 2002, 2011, Baker, 1997, Haider, 2001), Canada (Baker and Solon, 2003), the UK (Dickens, 2000b, Kalwij and Alessie, 2003) and Europe (Cappellari, 2004, Ramos, 2003, Daly and Valletta, 2008, Gustavsson, 2007, 2008, Sologon and O'Donoghue, 2010).

[1]The 1990s in Europe are dominated by the implementation of the single market in 1992 and the preparation of the single currency (Maastricht criteria adopted in 1993).

[2]The 1994 OECD Job Strategy played a central role in the EU labour market policy changes in the 1990s.

The permanent component of earnings reflects persistent personal characteristics, such as ability, education and training. An increase in cross-sectional earnings inequality, triggered by an increase in permanent inequality (e.g. increasing returns to education, on-the-job training and other persistent abilities (Mincer, 1957, 1958, 1962, 1974, Hause, 1980) signals an increase in lifetime earnings inequality. As permanent or lifetime earnings are a measure of long-term resources which reflect individual consumption, increasing persistent differentials imply increasing consumption differentials, with a negative impact on social welfare for most social welfare functions (Friedman, 1957, Cutler and Katz, 1992, Attanasio and Davis, 1996, Blundell and Preston, 1998, Haider, 2001). The transitory component captures the volatility in the labour market, random events and other factors influencing earnings in a particular period, and is expected to average out over time (Friedman and Kuznets, 1954). If the increase in cross-sectional earnings inequality reflects an increase in transitory inequality, lifetime earnings inequality may have increased very little or not at all, but individuals are facing an increase in year-to-year earnings fluctuations (instability) (Baker and Solon, 2003).[3] The welfare implications for increasing earnings instability are not straightforward. Consumption is well insulated from transitory shocks, therefore increasing earnings instability is unlikely to reduce welfare through consumption (Attanasio and Davis, 1996). Increasing earnings instability reduces social welfare if individuals are averse to earnings variability and future risk (Blundell and Preston, 1998, Creedy and Wilhelm, 2002, Gottschalk and Spolaore, 2002).

While there have been a number of single country analyses, no studies have attempted to explore the trends in permanent and transitory inequality in a fully comparative fashion across Europe.[4] We aim to fill part of this gap in this paper. We explore the cross-national trends in persistent and transitory inequality across 14 EU countries using the 8 waves (1994-2001) of the European Community Household Panel (ECHP). The consistent comparative perspective on earnings dynamics across Europe offers valuable insight with respect to persistent earnings differentials and earnings instability in countries belonging to a common economic area, but with different systems and with different rates of adaptation to the economic reality of the 1990s.

The OECD indicators measuring the labour market policies/institutions linked to the wage-setting mechanism - union density, corporatism, employment protection legislation (EPL), the degree of labour market support in the form of unemployment benefits replacement rates (UBRR) and spending on labour market programs (ALMPs), non-wage labour costs (tax wedge) and product market regulation (PMR) -

[3]Increasing transitory inequality is attributed to the weakening of labour market institutions, increasing labour market instability, increasing competitiveness and an increasing temporary workforce insufficiently protected by collective agreements.

[4]The only cross-national comparative study on the trends in permanent and transitory inequality is Daly and Valletta (2008), which compares Germany, the UK and the US. The most representative single country studies for the UK and Europe are Dickens (2000b), Kalwij and Alessie (2003) and Ramos (2003) for the UK; Cappellari (2004) for Italy; Gustavsson (2008) for Sweden.

signal a high degree of country heterogeneity across Europe (Bassanini and Duval, 2006a,b).[5] We find that the institutional country-heterogeneity explains part of the cross-national differences persistent and transitory inequality.

Figure 1 shows the institutional country-heterogeneity in 2001. The indicators are re-scaled by setting the UK, a typical Anglo-Saxon model with the lowest regulation, the lowest labour market support, a low corporatism, among the lowest union densities and tax wedges, as the base. The OECD indicators are defined in Table A1. The Anglo-Saxon countries (UK and Ireland) have the lowest regulation in the labour market, the lowest tax wedge and a medium union density. They differ substantially from one another in the level of labour market support, in corporatism and PMR, with the UK having the lowest values in Europe. The Northern countries (the Scandinavian countries and the Netherlands), Austria[6] and Belgium, which adopted the "Flexicurity" model with relatively low levels of regulation in the labour market coupled with relatively high levels of unemployment benefits and ALMPs, also have a high corporatism, among the highest union densities (except the Netherlands) and tax wedges, and among the lowest PMR. Denmark and Netherlands, the pioneers of “Flexicurity” stand out with the highest levels of labour market support. The Continental countries (Germany, France and Luxembourg[7]) have a relatively stricter EPL and a substantially lower unionisation than the Nordic/Flexicurity countries. The degree of labour market support is lower than in Denmark and the Netherlands. In Germany, the other institutions are similar to the ones in the Nordic/Flexicurity countries. In France, PMR is higher and corporatism is lower than in Germany and the Nordic/Flexicurity countries. The Mediterranean countries (Portugal, Spain, Greece[8] and Italy) have among the strictest regulation in the labour and product market, among the lowest levels of labour market support, among the lowest union densities, an intermediate corporatism and medium-high tax wedges. Italy differs with a lower EPL and a high corporatism.

We use minimum distance methods to estimate the covariance structure of earnings and decompose earnings inequality into a permanent and a transitory component by cohort.[9] Blundell and Preston (1998) argue there are strong welfare grounds for analysis within cohorts as the evolution of the distribution within the whole population is influenced by changes in the age structure that obscure the role of permanent and transitory components of earnings. The aggregation to obtain the overall inequality from the within-cohort inequalities for each country follows the Shorrocks sub-group inequality decomposition

[5]The data was obtained by email from the authors (Bassanini and Duval, 2006a,b). Following Milberg and Winkler (2009), the labour market support indicator is computed as the arithmetic average of the spending on active labour market policies (ALMPs, as% of GDP) and the unemployment benefit replacement rate.

[6]The success of the “Flexicurity” model in Austria is discussed in Auer (2002) and European Commission (2006)

[7]Luxembourg has the highest union density among the Continental countries. The other institutional variables are missing.

[8]Greece has a higher EPL and union density than Portugal. The other indicators are missing.

[9]This is a well-established methodology implemented also by Dickens (2000b), Baker and Solon (2003), Ramos (2003), Kalwij and Alessie (2003), Cappellari (2004), Gustavsson (2007, 2008), Doris et al (2010a), Ostrovsky, (2010), Moffitt and Gottschalk (1995, 2002, 2011).

(Shorrocks, 1984, Chakravarty, 2001). Section 2 discusses the common parametric models of earnings dynamics that we use to estimate the covariance structure of earnings across Europe. Section 3 describes the consistent cross-national comparative panel and graphically inspects the variance-covariance structure of (log) hourly earnings over time across Europe. Section 4 discusses the trends in permanent inequality and earnings instability in Europe and the associations between the two components of earnings inequality and the labour market institutions. Section 5 concludes.

2 Parametric models of earnings dynamics

This section presents several models that have been used to model the dynamics of earnings over the past 30 years, which serve as the basis of our cross-national comparison. In order to differentiate life cycle effects from secular changes in earnings inequality, earnings differentials are explored by cohort. The empirical specification of earnings follows the structure:

$$Y_{ict} = \bar{Y}_{ct} + r_{ict}, t = 1, ..., T_i, i = 1, ..., N_c$$

Y_{ict} is the natural logarithm of real hourly earnings of the i-th individual, from the c-th cohort in the t-th year, $\bar{Y}_{ct}$ is the year-cohort specific mean and r_{ict} is the individual-specific deviation from the year-cohort specific mean.[10] The demeaned earnings, r_{ict}, are assumed to be independently distributed across individuals, but autocorrelated over time. The simplest specification in the literature decomposes earnings into a permanent time-invariant individual specific component, μ_i, (e.g. ability) and a transitory component, v_{it}, both independently distributed across individuals and over time:

$$r_{it} = \mu_i + v_{it}, \mu_i \sim iid(0, \sigma^2_\mu), v_{it} \sim iid(0, \sigma^2_v)$$

This model imposes rigid restrictions on the covariance structure of earnings. The variance of earnings at a certain point in time as a measure of earnings dispersion is: $\sigma^2_r = \sigma^2_\mu + \sigma^2_v$. The covariance $Cov(r_{it}, r_{is})$ = $\sigma^2_\mu, t \neq s$. σ^2_μ is the persistent dispersion of earnings or permanent earnings inequality. The transitory variance σ^2_v captures the transitory shocks.

The empirical evidence rejects the rigid restrictions imposed by this model. The models we estimate in this paper relax several restrictions. We summarizes the features of these models, as follows:

Model (1) = Canonical with time and cohort shifters

Model (2) = Model (1) + AR(1) in the transitory component

Model (3) = Model (2) + cohort-specific initial transitory variances

[10]The demeaned earnings r_{ict} adjusts for year, age and cohort effects in a less restrictive way than the preliminary regressions typically used, which assume that the age and cohort effects within any year can be approximated by a polynomial in age (Baker and Solon, 2003).

Model (4) = Model (2) + correction for left-censoring

Model (5) = Model (3) + random growth in age in the permanent component

Model (6) = Model (5) + correction for left-censoring.

We explain each model in turn. In Model (1), first, we allow the covariance structure of earnings to vary across cohorts, as suggested by Blundell and Preston (1998), which bring strong welfare arguments for the analysis within cohorts. Some studies reject the hypothesis that the return to education is the same across cohorts. These differences could be attributed either to cohort effects or to the larger impact of labour market shocks on younger than on older cohorts of workers (Katz and Autor, 1999). Freeman (1975)'s "active labour market" hypothesis postulates that earnings instability, determined by changes in labour market conditions, such as changes in the supply and demand for skills, affect the youngest generations of workers the most, as they have a weaker attachment to the labour market compared with senior workers, and a lower protection from the labour market institutions. The cohort effects are incorporated by cohort-specific shifters on both components ($\gamma_{jc}, j = 1, 2$) (Baker and Solon, 2003, Cappellari, 2004, Ramos, 2003, Kalwij and Alessie, 2003, Gustavsson, 2008, Sologon and O'Donoghue, 2010). Second, we allow the covariance structure of earnings to vary over time by incorporating time-specific loading factors on both components ($\lambda_{jt}, j = 1, 2$) (Katz, 1994, Moffitt and Gottschalk, 1995, Dickens, 2000b, Haider, 2001, Baker and Solon, 2003, Cappellari, 2004, Ramos, 2003, Gustavsson, 2007, 2008, Sologon and O'Donoghue, 2010). The first model we estimate is basically the canonical model with time and cohort shifters, and offers a general insight into the cross-national trends and differences in permanent and transitory inequality across Europe.

$$r_{ict} = \gamma_{1c}\lambda_{1t}\mu_i + \gamma_{2c}\lambda_{2t}v_{it}, Var(r_{it}) = \gamma_{1c}^2\lambda_{1t}^2\sigma_\mu^2 + \gamma_{2c}^2\lambda_{2t}^2\sigma_v^2 \tag{1}$$

λ_{1t} is interpreted as the time-varying return to skills or the skill price. A rise in λ_{1t} increases the permanent or long-run inequality, suggesting that the relative labour market advantage of high-skilled workers is enhanced. An increase in λ_{2t} increases transitory inequality, indicating an increase in earnings instability. λ_{1t} maintains the rank of the individuals in the earnings distribution, but causes a persistent increase in the spread of the distribution. An increase in λ_{2t} changes the rank of the individuals in the short-run (Katz and Autor, 1999). The time shifter λ_t in the first wave and the cohort shifter γ_c for the oldest cohort are normalized to 1 for identification.

We proceed by extending Model (1) with additional structural components. Model (2) is obtained from Model (1) by incorporating serial correlation in the transitory component of earnings. v_{it} is assumed to follow an AR(1) process (MaCurdy, 1982):

$$v_{it} = \rho v_{i,t-1} + \epsilon_{it}, \epsilon_{it} \sim iid(0, \sigma_\epsilon^2), v_{i0} \sim iid(0, \sigma_0^2) \tag{2}$$

ϵ_{it} is assumed to be white noise, the variance σ_0^2 measures the volatility of shocks in the first period and σ_ϵ^2 the volatility of shocks in subsequent years. ρ is the autoregressive parameter measuring the persistence of shocks.[11]

When working with ARMA(p,q) processes in the context of panel data, MaCurdy (1981, 1982), and Anderson and Hsiao (1982) underline the need for a treatment of initial conditions. The autoregressive process induces a recursive structure in the moments: the variance-covariance in year t depends on the transitory variance-covariance in year t-1. Tracking the recursion back to the first sample year for each cohort raises the question of what the initial transitory variance should be for each cohort. Earlier literature restricted the initial transitory variance to be equal across cohorts. In line with the recent literature, we acknowledge that earnings volatility varies across cohorts, and, in Model (3), we extend Model (2) by incorporating cohort-specific initial transitory variances. Following MaCurdy (1981, 1982), in Model (3) the cohort initial transitory variances are treated as 4 additional parameters to be estimated: $\sigma^2_{c,0}, c = 1/4$.

$$v_{it} = \rho v_{i,t-1} + \epsilon_{it}, \epsilon_{it} \sim iid(0, \sigma^2_\epsilon), v_{i0} \sim iid(0, \sigma^2_{c,0}) \tag{3}$$

Two recent studies (Ostrovsky, 2010, Moffitt and Gottschalk, 2011) argue that treating the initial transitory variances of each cohort as unrestricted parameters to be estimated may be problematic because it affects the time trend for the left-censored observations. To test the robustness of the predicted components to this problem, following Moffitt and Gottschalk (2011), we alter Model (2) by introducing an alternative parameter ξ which allows the transitory variances in the first wave to deviate from what they would be if $\lambda_{2t} = 1$ for the years before the first wave. Thus Model (4) is the same as Model (2), except that the transitory variance in the first wave is defined as:

$$\sigma^2_{0_{leftcensored}} = (1 + \xi(age_0 - 20))\sigma^2_0, \tag{4}$$

where age_0 is the central age of the cohort in the first wave. Next, in Model (5) we extend the specification of the permanent component. Starting from Model (3), which has a time-invariant permanent component, an AR(1) process with cohort-specific initial transitory variances in the transitory component, with time and cohort shifters on both components, we extend it by specifying the permanent component as a "random growth rate model" ("profile heterogeneity model") (Hause, 1977, Lillard and Weiss, 1979, MaCurdy, 1982, Baker, 1997, Cappellari, 2004, Ramos, 2003). The random growth model, which captures the persistent heterogeneity across individuals in their levels of earnings and their growth rates, is:

$$\begin{aligned} \mu_{it} &= \mu_i + \varphi_i(age_{it} - 20) \\ \mu_i &\sim iid(0, \sigma^2_\mu), \varphi_i \sim iid(0, \sigma^2_\varphi), Cov(\mu_i \varphi_i) = \sigma_{\mu\varphi}, \end{aligned} \tag{5}$$

[11] We experimented with an ARMA(1,1) in the transitory component, but in a few countries the parameter θ could not be identified or did not differ significantly from 0. In order to keep the same model across countries, we opted for the AR(1) process.

where age_{it} is the age of the individual in wave t. 20 is the youngest age in our sample. Each individual has a unique age-earning profile with an individual-specific intercept (initial earnings μ_i at age 20) and slope (earnings growth φ_i).[12] The variances σ^2_μ and σ^2_φ capture individual heterogeneity with respect to time-invariant characteristics and age-earnings profiles. The covariance between μ_i and φ_i, $\sigma_{\mu\varphi}$ represents a key element in the development of earnings differentials over the active life. A positive $\sigma_{\mu\varphi}$ implies a rising inequality in the permanent component over the life cycle. This is consistent with the school-matching models where the more tenure one individual accumulates, the more is revealed about his ability. Thus highly educated people are expected to experience a faster growth in their earnings as the quality of the match is revealed to their employers. A negative $\sigma_{\mu\varphi}$ implies that the two sources of heterogeneity offset each other, which is consistent with the on-the-job training hypothesis (Mincer, 1974, Hause, 1980). A negative covariance is expected to generate mobility within the distribution of permanent earnings (Cappellari, 2004).[13] In Model (6), we test the robustness of Model (5) to the left-censoring problem by incorporating the alternative method specified in equation (4).

For Model (5), the set of parameters to be estimated is:

$$\theta = (\gamma_{1,c1/c4}, \gamma_{2,c1/c4}, \lambda_{1,1994/2001}, \lambda_{2,1994/2001}, \sigma^2_\mu, \sigma^2_\varphi, \sigma_{\mu\varphi}, \rho, \sigma^2_{c1/c4,0})$$

Models (1) to (3) are nested in (5). For Model (6) we estimate the same parameters as for (5), except one common parameter σ^2_0 for all cohorts and the correction for left-censoring ξ. The parameters of the models are fit to the covariance structure for each cohort using equally weighted minimum distance methods of estimation, similar to Abowd and Card (1989), Moffitt and Gottschalk(1995, 1998, 2002, 2011), Baker (1997), Dickens (2000b), Cappellari (2004), Baker and Solon (2003), Ramos (2003), Kalwij and Alessie (2003), Gustavsson (2007, 2008), Sologon and O'Donoghue (2010). For a complete technical description of the estimation method, please refer to Sologon and O'Donoghue (2009) (also available in Sologon (2010)). In a nut shell, we fit the variances and autocovariances implied by Models (1) - (6) to the corresponding empirical moments in each country using minimum distance methods. The minimum distance estimator choses $\hat{\theta}$ to minimize the distance function $D(\hat{\theta}) = [m - f(\hat{\theta})]W[m - f(\hat{\theta})]'$, where m is a column vector of moments of dimension (144×1). W is the identity matrix, following (Altonji and Segal, 1996) and (Clark, 1996). For estimating the asymptotic standard errors of the parameter

[12]This structure is equivalent to a random coefficient model where the intercept and the coefficient on age are randomly distributed across individuals.

[13]An alternative specification which allows the permanent component to vary with age is the "random walk in age model" ("unit root model") which accommodates earnings shocks with permanent effects: the current value depends on the previous one and an innovation term π_a, which accommodates any permanent re-ranking of individuals in the earnings distribution (MaCurdy, 1982; Abowd and Card, 1989; Moffitt and Gottschalk, 1995, Dickens, 2000b, Baker and Solon, 2003, Gustavsson, 2008, Sologon and O'Donoghue, 2010). The estimates of this model can be provided upon request from the authors. Baker and Solon (2003) and Ramos (2003) incorporate both a random growth and a random walk in the specification of the permanent component. In this specification, however, the length of our panel prevented the identification of all parameters in the permanent component.

estimates, we apply the delta method, following Chamberlain (1984).

3 Data

3.1 Data description

In order to explore the cross-national trends in permanent inequality and earnings instability across Europe, we use a comparative panel dataset which contains earnings data for selected European countries. The European Community Household Panel (ECHP)[14] is a harmonised cross-national longitudinal survey across the individual countries of the European Union, with information on household income and living conditions, health, education, housing, migration, demographics and employment characteristics. Its standardization is the most valued feature of the ECHP, making it well-suited for cross-country comparisons within the EU in various socio-economic aspects, including cross-country comparisons of earnings dynamics (Behr et al, 2005). Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Italy, the Netherlands, Portugal, Spain and the UK took part between 1994 and 2001, Luxembourg and Austria between 1995 and 2001, and Finland starting with 1996.

Earnings are expressed in real log net hourly wage adjusted for CPI. The hourly earnings are constructed using the information on current net monthly wage and the number of hours worked per week.[15] We use hourly earnings as we want to separate the variance-covariance of earnings from the variance-covariance of the number of hours work. Hourly earnings are a measure of the productivity of the individual, whereas annual earnings are a measure of the productivity multiplied by the labour supply. Only observations with hourly wage lower than 50 Euros and higher than 1 Euro are considered in the analysis. Following the tradition of previous studies, our analysis focuses on men to avoid the selection bias typically associated with women's earnings. We restrict the analysis to male workers aged 20 to 57, born between 1940 and 1981, recording positive earnings at least once between 1994 and 2001. The individuals are allowed to exit and (re)enter the panel. The resulting sample for each country is an unbalanced panel. Table 1 shows the sample size with positive earnings for each country. The choice of using unbalanced panels for estimating the covariance structure of earnings is motivated by the need to mitigate the potential overestimation of earnings persistence that would arise from balanced panels, where the estimation is based only on people that have positive earnings for the entire sample period. Separate identification of age and time effects requires earnings observed at different phases of the life cycle in each year, which is achieved by exploiting the variation in age across birth cohorts, Individuals are tracked in cohorts over time. Each cohort is formed of men born in 10 adjacent years instead of 1

[14]The European Community Household Panel provided by Eurostat via the Department of Applied Economics at the Université Libre de Bruxelles.

[15]Hourly wage = Current net monthly wage/(4.33*Hours per week). For France, earnings are expressed in gross amounts.

year due to the limited number of observations. The two oldest cohorts contain men born between 1940 and 1950, and between 1951 and 1960. The youngest two cohorts contain men born between 1961 and 1970, and between 1971 and 1981.

One of the causes of movements out of the earnings sample is attrition over time. Several studies explore the extent of attrition in ECHP and its impact on a typical empirical analysis. Behr et al (2005) report that the extent and the determinants of panel attrition in ECHP vary between countries and across waves within one country, but these differences do not bias the analysis of income mobility via transition matrices, of individual rank stability measures, of standard cross-sectional measures of inequality such as the Gini-index or the ranking of national results. Ayala et al (2011) confirm that attrition does not seem to significantly affect the aggregated mobility indicators. In Sologon and O'Donoghue (2011b), we explore the correlations between several mobility indicators using the ECHP: the Shorrocks index, the Fields index (Fields, 2009), the Dickens index (Dickens, 2000a), the Immobility Ratio based on the transition matrix approach and the Immobility Ratio defined as the ratio between persistent and transitory inequality (Kalwij and Alessie, 2003). On aggregate, conclusions in relation to mobility are reasonably robust to the measure used, with a rank correlation of mobility measures over 0.8. Since overall inequality and earnings mobility are closely linked to the permanent and transitory components of earnings inequality, we expect the same limited impact of attrition also on permanent and transitory earnings. Ayala et al (2011) correct for attrition by applying alternative longitudinal weighting schemes and show that the income mobility indicators have a certain sensitivity to the weighting system. The weighting system applied in our study is the one recommended by the ECHP User Guide [16] and the Eurostat for conducting longitudinal studies, namely the "base weights" (at individual level only) of the last wave observed for each individual, bounded between 0.25 and 10.

Details on the inflows and outflows of the sample of positive earnings over time for each country are provided in Table 1. The third row shows the share of individuals present in the sample in year $t-1$ which record positive earnings in year t. The lowest shares are in Ireland, Italy, Greece and Spain, where less than 55% of those who are in the sample with positive earnings in the previous year record positive earnings in the current year.

The first two rows in Table 1 show the evolution of mean hourly earnings and the variance of log hourly earnings for the sample with positive earnings. Mean hourly earnings increase in all countries, except in Austria where they record a slight decrease. Overall inequality, measured by the variance of ln hourly earnings increases in Finland, the Netherlands, Luxembourg, Greece, Italy, and Portugal, and decreases in the rest. In 2001, Portugal has the highest inequality and Denmark the lowest.

[16] http://epunet.essex.ac.uk/echp_userguide_toc_content.htm

The panel length we rely on to estimate parameters of the covariance structure of earnings and to predict the permanent and the transitory inequality is 8 years. Whereas several established studies rely on a similar panel length to estimate the error component models and identify the persistent and transitory components of earnings inequality, such as Ramos (2003) for the UK, Biewen (2005) for East Germany, Daly and Valetta (2008) for the UK and Reunified Germany and Gustavsson (2007) for Sweden, Cervini-Pla and Ramos (2008, 2011) for Spain, most studies in the literature are based on panels longer than 10 years. Given that the permanent component is mainly identified from the longer-lag covariances, it is reasonable to question under what conditions 8 years of panel are sufficient to identify the two components of inequality. Doris et al (2010b) explore this question by evaluating the appropriateness of the ECHP for the GMM estimation of the covariance structure of earnings. They explore the sensitivity of the parameter estimates to the panel length, the degree of persistence of transitory shocks and the evolution of inequality. They consider a model similar to Model (3) (without cohort effects) and argue that the same conditions hold also for more complex models, e.g. incorporating a random-growth in age in the permanent component. The results presented in our paper largely meet the identification demands presented by Doris et al (2010b). They write: the "analysis shows that when ρ is less than or equal to 0.6, the model is well identified using relatively short panels (T = 8) for any reasonable set of time trends. The transitory inequality would have to increase by approximately 300% relative to the permanent variance over an 8 year period before problems of identification would arise". Meeting these conditions, together with the robustness of our findings to models with different levels of complexity, as we show in the results section, increases our confidence in the appropriateness of the ECHP for achieving the goals of this study.

Cross-national comparative studies, due to limitations in terms of sample size and study length, typically cannot compete with national specific analyses in terms of the complexity of the structure that can be estimated. In defining the national parameters for an error component structure, clearly long national panels are the gold standard: e.g. the PSID in the US (Moffitt and Gottschalk, 1995, 1998, 2002, 2011, Baker, 1997, Haider, 2001), the New Earnings Survey Panel in the UK (Dickens, 2000b, Kalwij and Alessie, 2003), the dataset from the Italian National Social Security Institute (Cappellari, 2004), the database developed by Statistics Canada from the T-4 Supplementary Tax File maintained by Revenue Canada (Baker and Solon, 2003), the Swedish longitudinal database LINDA (Longitudinal Individual Data for Sweden) (Gustavsson, 2008) and the professional career file from the General Inspectorate of Social Security in Luxembourg (Sologon and O'Donoghue, 2010). The national panels, however, are not harmonized, impeding the comparability of results across countries.

The ECHP covers a shorter period relative to the national datasets, but at the same time is the longest panel data which covers such a high number of countries, collected in a harmonized fashion, with consistency in definitions, periods of analysis and units of analysis. We believe there is scientific merit in undertaking this comparative cross-country analysis, particularly given the different labour market, policy and institutional conditions prevailing in each country. Much can be learned from this approach, as a complementary mechanism in parallel to more sophisticated national studies using longer panels.

3.2 The dynamic autocovariance structure of hourly earnings

We describe next the variance-covariance structure of individual log hourly earnings for 14 European countries. The model used to fit the autocovariance structure of earnings must be consistent with the trends observed in the dynamic autocovariance structure. Figure 2 displays the overall autocovariance structure of earnings.

The overall autocovariance structure of earnings displays both similar and diverging patterns across countries. Common to all countries, the autocovariances of all lags have, in general, a similar pattern to the variance. They are positive and quite large in magnitude relative to the variances, with the distance between autocovariances at consecutive lags falling at a decreasing rate. The variances reflect both the permanent and the transitory components of earnings, whereas higher order covariances reflect the permanent component of earnings. Therefore, the evolution of the covariances, at all orders, suggests the presence of a permanent individual component of wages and a transitory component which is serially correlated. The serial correlation in the transitory component is modelled by an AR(1) process. Both mean earnings (Table 1) and the autocovariances at different lags(Figure 2) vary over time, which signals the presence of nonstationarity in the dynamic structure of earnings. The non-stationarity is incorporated by time shifters on both components of earnings variation.

Although not reported here for reasons of brevity, Sologon and O'Donoghue (2009) and Sologon (2010) find that the autocovariances display different patterns across cohorts in all countries, supporting the hypothesis of cohort heterogeneity with respect to individual earnings dynamics. In most countries, the variance of earnings for all cohorts follows the evolution of the overall variance. Mixed trends across cohorts, however, are observed in a number of countries. The evolution of the variance is not monotonic and the rate of change differs among cohorts. In general, when a change in the variance is recorded, the older the cohort, the steeper the change. Moreover, the younger the cohort is, the lower are the autocovariances. Given that higher order autocovariances capture the permanent component of earnings, it is reasonable to expect that in all countries, for younger cohorts, the transitory variance plays a larger role in the earnings formation than the permanent component compared with older cohorts. For all cohorts, the autocovariances of all lags show, in general, a similar pattern as the variance, in line with the overall pattern. The cohort heterogeneity is incorporated by cohort-specific shifters on both components. Additionally, we consider cohort-specific initial transitory variances.

To look at life cycle effects, it is necessary to remove the time effect that is present in the within-cohort autocovariances. The smoothed life cycle profiles illustrate that, on average, the autocovariances of all lags increase with age at a decreasing rate, similar with Dickens (2000b). This is consistent with the presence of a permanent component of earnings that rises with age at a diminishing rate. This feature can be captured by modelling the persistent component as a random growth in age.

4 Results

4.1 Error component estimates

The general specifications of the common error component models outlined in Section 2, encompassing most of the important features of earnings dynamics, are fit to the elements of the variance-covariance matrix of each country, for all cohorts pooled together.[17] Similar to Dickens (2000b), all variances are restricted to be positive by estimating the variance equal to the exponent of the parameter. In the Appendix (Tables A2 - A7), we report and we discuss in detail the parameter estimates across the 14 European countries for all models in order to give an insight into the country-differences with respect to the main parameter estimates. The SE and the 95% confidence intervals are reported in parantheses. Before exploring the predicted persistent inequality and earnings instability across Europe, we briefly summarize the cross-country differences in a few parameter estimates.

Most parameter estimates are significant at 5% level. Overall, based on each model specification, we find many significant cross-national differences in the parameters estimates. Controlling for the time and the cohort effects, the country estimates of persistent inequality, σ_μ^2 (Tables A2 - A5), indicate a country clustering which mirrors the regional/institutional clustering identified in Figure 1. The Scandinavian countries, Denmark and Finland, have the lowest persistent inequality, followed by Belgium, the Netherlands and Austria. These countries form the Nordic/Flexicurity cluster. The highest is found in the Mediterranean countries (Portugal and Spain), followed by France. This ranking is, in general, consistent across models. Most country differences are statistically significant at 5% level, with a few exceptions that occur at least once across different models: Denmark and Finland, Belgium and the Netherlands, the UK and Ireland, Germany and Luxembourg. Consistent across models, the time shifters for persistent inequality indicate significant changes in persistent inequality between the early 1990s and 2001 in most countries. The t-tests indicate that the returns to persistent characteristics in 2001 differ significantly across most European countries, both within and between the institutional/regional clusters. More similarities are found within the Mediterranean cluster.

[17]There are 144 autocovariances for the countries observed over 8 waves, 122 for those with 7 waves and 84 for those with 6 waves.

We also find many significant cross-national differences for the parameter estimates of the transitory component. The autoregressive parameter, which captures the degree of persistence of transitory shocks, has values below or close to .6 in most countries and most models. Portugal has values close to .7 in three models, and Austria above .7 in most models. The time shifters for the transitory component indicate significant changes in transitory inequality over time across Europe. They signal a possible convergence in transitory inequality across Europe.

4.2 Trends in permanent inequality and earnings instability across Europe

We now use the estimated parameters in Tables A2 to A7 to decompose earnings inequality into permanent and transitory inequality in each country. Given that the labour market changes affect people differently at different life cycle stages, that young people are exposed to a larger extent to temporary contracts, more frequent promotions and more earnings volatility compared with older workers, inequality is decomposed by cohorts.[18] The predicted components by cohorts indicate a fairly common age effect across all countries: both in relative and absolute terms, the within-cohort earnings inequality contains a highly permanent component for the oldest three cohorts and a highly transitory component for the youngest cohort. This is consistent with the evidence of life cycle earnings divergence, showing that earnings volatility is higher at younger ages.[19]

The aggregated persistent and aggregated transitory inequality for each country is computed from the within-cohort persistent and transitory differentials using the Shorrocks sub-group inequality decomposition (Shorrocks 1984; Chakravarty 2001). The aggregated within-cohort overall inequality equals:

$$\sum_{c=1}^{4} s_c I_c = \sum_{c=1}^{4} (s_c PV_c) + \sum_{c=1}^{4} (s_c TV_c) \tag{6}$$

s_c, PV_c, TV_c are the share in the population, the permanent variance and the transitory variance of ln(earnings) of cohort c. The overall permanent inequality $\sum_{c=1}^{4} (s_c PV_c)$ and the overall transitory inequality $\sum_{c=1}^{4} (s_c TV_c)$ are the weighted average of permanent inequality and the weighted average of transitory inequality across cohorts.[20]

We compare first the trends in actual inequality measured by the aggregated within-cohort variance of log hourly earnings for men aged 20 to 57 (Figure 3). Inequality increases are recorded in Portugal,

[18] Our decompositions control for cohort effects, but age and period effects are confounded. Since our scope is to decompose the within-cohort inequality into the two components, the age effect is considered part of the permanent component, and thus its specific identification is disregarded.

[19] These results are similar to those found by Dickens (2000b) and Ramos (2003) for the UK, Cervini-Pla and Ramos (2008, 2011) for Spain and Cappellari (2004) for Italy.

[20] To control for the change in the share of each cohort in the population due to retirement or new entrants into the labour market, when we evaluate the evolution of the aggregated permanent and transitory inequality we maintain the shares of each cohort equal to their averages computed over the sample period.

Luxembourg, Greece, Germany, the Netherlands, Italy and Finland. These trends are, in general, confirmed by the predicted aggregated within-cohort inequality in all models, as shown in Table 2, which summarizes the evolution in actual and predicted earnings inequality, ranking countries by their inequality in 2001.[21] In 2001, Denmark, followed by Belgium, Austria and Finland have the lowest inequality, and Portugal, followed by Luxembourg, France, Spain and Greece the highest. The ranking is consistent across models, as confirmed by the high Spearman rank correlation between the actual and the predicted aggregate within-cohort inequality in Table 3: between .987 and 1 for Models (1) to (5) and .934 for Model (6). The rank correlation for Model (3) is equal to 1, showing that this model predicts perfectly the country ranking in overall inequality.

In Figure 3 we identify two country clusters. The upper cluster is formed by the Mediterranean countries, the Continental countries (Luxembourg, France, Germany) and the Anglo-Saxon countries, and has a consistently higher overall inequality between the early 1990s and 2001. We find a substantial degree of convergence in the overall inequality among these countries, except Portugal with a divergent increasing trend. As will be seen below in Table 7, this convergence is confirmed by the decrease of 17.4% in the coefficient of variation for the actual aggregated inequality among these countries (Continental/Anglo-Saxon/Mediterranean*). Is this convergence the result of converging trends within or between the regional / institutional country clusters? Figure 3 points to a convergence among countries belonging to different institutional clusters. France, Luxembourg and Spain converge in the early 2000s to a level lower than Portugal. The UK, Ireland, Germany and Greece converge to levels which are lower than the first group. To check whether the convergence occurs also within the regional/institutional clusters, Table 7 reports the evolution of the coefficient of variation for the overall inequality within each regional/institutional cluster, and for groupings of regional clusters. The Mediterranean countries (Portugal, Spain, Greece and Italy) record a divergent trend in their aggregated inequality (an increase of 23% in the coefficient of variation). The Continental countries (Germany, France and Luxembourg) converge in their overall inequality. The Anglo-Saxon countries record a strong convergence, confirmed by a decrease of 95% in the coefficient of variation. Within the Continental/Anglo-Saxon cluster we find a convergent trend, which amplifies when we add the Mediteranean countries (Spain, Greece and Italy) (Table 7). We conclude that the convergent trend occurs both within and between the regional/institutional clusters. All models confirm these trends in the aggregated inequality (Table 7).

The cluster with lower levels of aggregated inequality is formed by the Nordic countries (Denmark, Finland, the Netherlands) and the Continental Belgium and Austria. This is the Nordic/Flexicurity country cluster. Across these countries we find a divergent trend in overall inequality, confirmed by the

[21] Model (1) (canonical) predicts opposite trends for Germany and the UK. Model (2) predicts opposite trends for Germany.

increase of 32% in the coefficient of variation (Table 7). The coefficient of variation for the predicted aggregated inequality confirms this trend consistently across models (Table 7).

In order to see whether these converging and diverging trends in overall inequality across Europe reflect trends in permanent inequality or earnings instability, we explore the trends in persistent inequality and transitory inequality across Europe.

Trends in permanent inequality across Europe

The panels A.1 and A.2 in Figures 4 to 9 show the trends in permanent (long-term) inequality across Europe between the mid-1990s and the early 2000s predicted by the six models considered. The countries are grouped in two clusters. Cluster (1), which groups the Mediterranean, the Continental and the Anglo-Saxon countries, is represented in panel A.1; cluster (2), which groups the Nordic/Flexicurity countries, in panel A.2.

The graphical inspection of the trends in persistent inequality in A.1 (Figures 4 to 9) indicates a convergence in permanent inequality in the early 2000s between the Mediterranean, the Continental and the Anglo-Saxon countries. Portugal is the only country which diverges in this cluster, as it does in overall inequality. These are the same countries which start in the mid-1990s with a relatively higher persistent inequality and a higher overall inequality. Table 7 shows the coefficient of variation for permanent inequality within each regional/institutional cluster and for groupings of clusters, for each model. Within the Mediterranean cluster, the coefficient of variation in permanent inequality decreases over time, confirming the convergence between the early 1990s and 2001.[22] Within the Continental cluster we find an increasing coefficient of variation, implying a divergent trend.[23] Within the Anglo-Saxon cluster, Models (1), (3), (4) predict a convergent trend. Pooling the Continental/Anglo-Saxon countries, we find a strong divergent trend, confirmed across models. Pooling the Continental, the Anglo-Saxon and the Mediterranean countries (Portugal is excluded in order to isolate its strong divergence effect), we find a convergent trend in permanent inequality, confirmed by all models, but at different degrees: Model (1) predicts a decrease of 20% in the coefficient of variation, Model (4) a decrease of 6%, and Model (6) a decrease of 35% (Table 7). The convergence within this cluster stems mainly from the convergence between the regional/institutional clusters. We conclude that the convergence in overall inequality between the Mediterranean, the Continental and the Anglo-Saxon countries is partly due to a convergence in permanent differentials.

The graphical inspection of the trends in persistent inequality in panel A.2 (Figures 4 to 9) indicates

[22]Model (3) is an exception.
[23]Model (6) is an exception.

a divergence in permanent inequality in the early 2000s within the Nordic/Flexicurity cluster formed by the Scandinavian countries, the Netherlands, Austria and Belgium. The divergence is confirmed by the strong increase in the coefficient of variation in permanent inequality in all models (Table 7): e.g. Model (1) predicts an increase of 35%, Model (3) an increase of 30%, and Model (5) an increase of 36%. We conclude that the divergence in overall inequality within the Nordic/Flexicurity cluster is partly due to the divergence in permanent inequality.

The trends in persistent inequality are summarized in Table 4, which ranks countries by their actual inequality in 2001, the same as in Table 2. The trends in persistent inequality are, in general, consistent across models. Persistent inequality increased across Europe in the 1990s, except in Denmark, Belgium and Austria where it decreased. The canonical model for Spain, Ireland, Austria and Belgium, Model (5) for Spain, Model (2) for the UK, and Models (3), (4) for Germany indicate an opposite trend. The country ranking in the overall inequality in 2001 is reflected in the country ranking in permanent inequality, which suggests that the main determinant of the country differences in overall inequality is permanent inequality. The country ranking in permanent inequality is robust across all models, as confirmed by the high Spearman rank correlations (between .96 and .99) in Table 5. The countries identified as having the highest levels of overall inequality, also have the highest levels of permanent inequality. Portugal, followed by Luxembourg, France and Spain have among the highest persistent differentials. Next we find Ireland and the UK, followed by Greece, Germany and Italy. We identify a few small rank differences between models for Greece and Germany relative to the Anglo-Saxon countries. Denmark has the lowest persistent inequality, followed by Belgium, Austria, the Netherlands and Finland. Belgium and Austria switch ranks between models. Overall, the canonical model displays more rank differences relative to the other models (the rank correlations are slightly smaller for Model (1)).

The changes in the two components have implications for another distributional aspect, earnings mobility, defined as the degree to which individuals' ranks change within the wage distribution (Kalwij and Alessie, 2003). A large contribution of permanent inequality to overall inequality implies that individual earnings are highly correlated over time and individuals do not change their income position to a large extent, experiencing low rates of earnings mobility. To evaluate the degree of mobility across Europe, in Table 4 we summarize in parentheses the evolution of the share of persistent inequality in the overall inequality. In most countries where permanent inequality is high (the Mediterranean, the Continental and the Anglo-Saxon countries), the share of permanent inequality in the overall inequality is dominant (above 50%). Additionally, the dominance of persistent inequality is maintained over time. For the Nordic/Flexicurity countries, the shares of persistent inequality are, on average, lower. These findings are robust across models. The country ranking with respect to the share of permanent inequality in the overall inequality is, in general, robust across models as indicated by the high Spearman rank correlations (between 85% and 97%) for 2001.[24] The canonical model (Model (1)) has the highest degree of rank differences relative to the other models. In 2001, Portugal and Luxembourg, followed by Spain and France, have the highest persistent inequality and among the highest persistent shares in the overall inequality across Europe (between 78.7% and 68.7% based on Model (3)). Denmark, followed by Belgium, Austria and the Netherlands have the lowest absolute levels of persistent inequality and among the lowest shares in the overall inequality (between 42.4% and 49.4% based on Model (3)). Similar ranges are observed in the other models. Thus the Nordic/Flexicurity countries have among the lowest persistent inequality, both absolute and relative. Additionally, except for Finland, in these countries the share of permanent inequality in 2001 is below or close to 50% in all models. An exception is the canonical model which overestimates the share of the transitory component. These are the countries identified in Figure 1 as having a policy mix with relatively low levels of regulation in the labour market coupled with relatively high levels of unemployment benefits and ALMPs, a high corporatism, among the highest union densities (except the Netherlands) and tax wedges, and among the lowest PMR. This signals that "Flexicurity" has the potential to reduce persistent inequality. We return to this after discussing the trends in transitory inequality.

Trends in transitory inequality across Europe

The trends in transitory inequality are illustrated in panels B.1. and B.2. in Figures 4 to 9. The graphical inspection suggests a higher degree of convergence across Europe in the degree of earnings instability than for persistent inequality. The convergence in transitory inequality occurs among all regional/institutional country clusters. The degree of convergence appears more pronounced in Models (1), (5) and (6), than in Models (2), (3) and (4), where Greece and Portugal appear to diverge starting with 1997. Table 7 shows the evolution of the coefficient of variation for transitory inequality within each regional/institutional cluster and for clusters pooled together. The coefficient of variations for the Continental and for the Anglo-Saxon countries decreases over time in all models, suggesting a convergence within each cluster. Pooling these clusters, we find strong evidence of convergence between these countries. Pooling also the Mediterranean countries (except Greece and Portugal), the coefficient of variation decreases in all models, at different rates ranging between 25% (Model (3)) to 47% (Model (2)). This suggests a strong convergence in transitory inequality between these countries, which, together with the convergence in permanent inequality, contribute to the convergence in overall inequality between these countries.

Within the Nordic/Flexicurity cluster, the coefficient of variation increases over time signalling a

[24]Table 6 shows the Spearman rank correlation for the share of permanent inequality in the aggregate inequality in 2001 across models.

strong divergence, consistent across models. The largest increase is predicted by Model (3) (60%). We conclude that the divergence within the Nordic / Flexicurity cluster in the overall inequality is driven by a divergence in both persistent and transitory inequality.

Pooling all countries (except Portugal and Greece which diverge in a few models), we find evidence of a strong convergence across Europe in transitory inequality: the coefficient of variation of transitory inequality decreases in all models, at different rates, ranging between 22% and 40%.[25]

Table 4 summarizes the evolution of transitory inequality, ranking the countries by their actual inequality in 2001, the same as in Table 2. Increases in transitory inequality are recorded in Portugal, Greece[26], Germany[27] and the Netherlands. The other countries experience a decrease in transitory inequality, consistent across models.[28] In 2001, the country ranking in transitory inequality is less robust across models than the country ranking in persistent inequality. The rank correlations are still high, ranging between .8 and .98 (Table 5). Given that for Model (3), the Spearman rank correlation between the predicted aggregated inequality and the actual inequality is 1 and the rank correlation for the predicted permanent inequality is very high, we report the country ranking in transitory inequality based on Model (3). The highest levels of transitory inequality are recorded in Greece and Portugal, followed by Germany. The Netherlands records an increase in earnings instability, diverging from this cluster and reaching the fourth highest level of earnings instability across Europe in 2001. Next we find Spain and France, followed by the Anglo-Saxon countries. The lowest levels of earnings instability are in the Scandinavian countries and Italy, followed closely by Luxembourg, Austria and Belgium.

The Netherlands and Denmark have both gone down the "Flexicurity" route, but the earnings instability outcome is very different. Salverda (2008) shows that the Dutch model, which is based on part-time job flexibility, a relatively good social security and the fastest growing active labour market policies (ALMPs) in Europe, which reached in 2001 a level twice that of the Danish one (Figure 1), determined an impressive employment growth in the 1990s. The growth, however, was entirely in part-time jobs, which represent 70% of all low-wage workers. Salverda (2008) shows that this vulnerable segment of the economy suffered from insufficient protection from the collective agreements, reflected also by the low union density in Figure 1. This may explain the staggering increase in earnings instability. Thus the increase in low pay and working poverty has become a concern in the Netherlands.

[25]The CV decreases by 22% in Model 1, by 35% in Model (2), by 24% in Model (3), by 30% in Model (4), by 35% in Model (5) and by 40% in Model (6).

[26]Exceptions are Models (1), (5) and (6).

[27]Exceptions are Models (1) and (2).

[28]Exceptions are Models (2) and (3) for Belgium.

Labour market factors and the two inequality components

As a last step we relate the cross-country differences in the two components of inequality to the corresponding cross-country differences in the labour market policies/institutions linked to the wage-setting mechanism. Union density and the degree of corporatism are important institutional variables in the determination of wages and, implicitly, wage inequality (Calmfors, 1993, Teulings and Hartog, 2008). They are expected to be associated with more compressed wage distributions and with more stable earnings profiles. The employment protection legislation (EPL), which is considered a source of labour market rigidity as it increases the cost of layoffs and hirings, affects the two components of earnings inequality through its impact on permanent and fixed-term contacts (Cazes and Nesporova, 2004). The degree of labour market support, such as the unemployment benefits replacement rates (UBRR) and the spending on labour market programs (ALMPs), is aimed to improve job-matching and enhance human capital, thereby reducing persistent differentials and earnings instability for the vulnerable group (Bassanini and Duval, 2006a,b). Non-wage labour costs (tax wedge) influence the two components of wage inequality through their influence on human capital price (Weizsacker, 1993). As regulated sectors have on average more compressed wage structures and are better at capturing rents than non-regulated sectors, product market regulation (PMR) is expected to be associated with the two components of earnings inequality (Fortin and Lemieux, 1997).

To test the claims we made in the previous section regarding the link between the two components of earnings inequality and the labour market factors, we estimate the associations between the predicted components of earnings inequality and the labour market polices and institutions, pooling all years. We report only the correlations for Model (3) in Table 8.[29] The results are consistent across all models.

The selected labour market policies and institutions are significantly associated with permanent inequality. We find strong associations for union density (-.65) and corporatism (-.6), and moderate associations for the other factors (around .3 in absolute value). They show that the stricter the regulation in the labour market and in the product market, the higher the persistent inequality. A negative association is found for the remaining factors: the higher the labour market support, the higher the union density, the higher the degree of corporatism and the higher the tax wedge, the lower the permanent inequality. These labour market policies and institutions have the potential to help us understand the cross-national differences in persistent inequality across Europe. In Table 9 we test these association in an OLS setting including all factors and the time effects. The institutions are expressed in deviation from the sample mean, so that the parameter estimates capture the associations for a country with an average

[29]We choose Model (3) as the Spearman rank correlation between the predicted inequality based on Model (3) and actual inequality is 1.

mix of institutions and a low corporatism. Most factors maintain their sign and significance, except the labour market support which turns insignificant. Additionally, in Figures 10 and 11 we show the scatter plots for persistent inequality against the labour market factors in 2001, in order to gauge the possible non-linear relationships between these institutions and persistent inequality. We find evidence of a possible U-shaped relationship for the EPL and a hump-shaped relationship for corporatism. Thus, strict labour markets and intermediate levels of corporatism are associated with the highest levels of persistent inequality.

For transitory inequality, we find significant moderate negative associations for corporatism, union density, the tax wedge and the unemployment benefit replacement rate (Table 8). The European evidence suggests that the higher the protection of collective agreements and the higher the degree of coordination, the better the unemployment protection and the higher the tax wedge, the lower the earnings instability. The OLS estimates in Table 9 confirm the direction of these associations, but only the degree of corporatism maintains its significance. The scatter plots in Figures 10 and 11 indicate a possible U-shaped relationship between the EPL and transitory inequality, and a hump-shaped relationship with corporatism and the tax wedge.

These findings show that low to moderate levels of labour market regulation, coupled with a high degree of labour market support such as ALMPs and generous unemployment benefit replacement rates, with a high unionization and degree of corporatism, a low regulation in the product market and high tax wedges have the potential to keep both persistent and earnings instability low.

5 Conclusion

The economic reality of the 1990s in Europe increased the pressure on the European labour markets to change. In the context of a global and European economic integration, Europe has been moving towards more flexible labour markets with a declining power of trade unions, employment-friendly reforms which resulted in "wage modernisation becoming the norm in collective bargaining and wage setting in Europe" (Keune, 2008). The pace of the labour market reforms was different across the EU, leading to a continuous departure from the traditional welfare regimes, and, consequently, to an increased country heterogeneity across Europe in welfare state characteristics and labour market institutions (Palier, 2010, Dew-Becker and Gordon, 2008, OECD, 2004).

Using a fully harmonized panel dataset across 14 European countries between the early 1990s and 2001, the ECHP, we fill a gap in the literature with the first cross-national comparative study which explores the trends in persistent inequality and transitory inequality across Europe. The consistent comparative perspective on earnings dynamics across Europe enabled by the ECHP offers a valuable insight with respect to persistent earnings differentials and earnings instability in countries belonging to a common economic area, but with different systems and with different rates of adaptation to the economic reality of the 1990s.

Our comparative study of permanent inequality and earnings instability across Europe between the mid-1990s and the early 2000s reveals substantial similarities between countries, despite their differences in welfare regimes, labour market institutions and geographical region. We find a substantial degree of convergence in the overall inequality among the Mediterranean countries, the Continental countries (Germany, France and Luxembourg) and the Anglo-Saxon countries, which reflects a convergence in both permanent and transitory inequality among these countries. Among the Nordic/Flexicurity countries (Denmark, Finland, the Netherlands, Austria and Belgium) we find a strong divergence in the overall inequality which is driven by a divergence in both permanent and transitory inequality. Pooling most countries in Europe, we find evidence of a strong convergence in earnings instability.

The Nordic/Flexicurity countries have a lower overall inequality, a lower persistent inequality and a lower share of persistent inequality in the overall inequality. This suggests that these countries not only have the lowest annual and long-run inequality, but also the highest probability of individuals changing ranks within the wage distribution. Thus more flexible labour markets are associated with a higher earnings mobility.

We show that these cross-national differences in persistent inequality and earnings instability across Europe can be partly explained by the labour market policies and institutions linked to the wage-setting mechanism. We find many significant strong associations between these labour market policies and institutions and permanent inequality and earnings instability. The controlled associations indicate that the more deregulation in the labour and product markets, the higher the degree of unionisation, the higher the degree of corporatism and the higher the tax wedge, the lower the permanent inequality. For transitory inequality, we find that countries with a high degree of corporatism have on average a lower earnings instability than those with a low and an intermediate level.

The relationships between labour market factors and the two components of earnings inequality are more complex than these associations show. Labour market policies and institutions interact with each other and with macroeconomic shocks in shaping persistent inequality and earnings instability. The study of these complex interactions and their effect on persistent inequality and earnings instability is beyond the scope of this paper. However, these questions are explored using a non-linear least squares approach in Sologon and O'Donoghue (2011c,a). These studies reinforce our main findings regarding the associations between the two components of earnings inequality and labour market factors.

Labour market institutions do matter in shaping persistent inequality and earnings instability and further work is required to shed light on their potential to reduce earnings inequality and economic insecurity stemming from earnings instability .

Table 1: Summary Statistics

		1994	1995	1996	1997	1998	1999	2000	2001
UK	Mean	8,16	8,11	8,22	8,34	8,68	9,01	9,21	9,68
	Var(Ln Earnings)	0,189	0,188	0,177	0,174	0,174	0,167	0,172	0,171
	(%t-1 |Waget >0)		64,59	66,31	67,06	67,04	67,36	68,33	68,58
	N	1859	1882	1967	2059	2076	2066	2065	2021
Ireland	Mean	9,3	9,54	9,76	10,02	10,43	10,84	11,69	12,44
	Var(Ln Earnings)	0,249	0,237	0,226	0,213	0,206	0,179	0,167	0,164
	(%t-1 |Waget >0)		49,99	50,04	52,41	53,13	54,1	51,63	54,65
	N	1762	1561	1393	1348	1238	1081	891	764
Denmark	Mean	10,89	11,40	11,58	11,61	11,86	11,85	12,02	12,08
	Var(Ln Earnings)	0,091	0,077	0,084	0,08	0,07	0,08	0,079	0,069
	(%t-1 |Waget >0)		68,74	66,59	69,43	66,23	67,41	69,6	71,6
	N	1360	1339	1284	1224	1125	1051	1015	997
Finland	Mean			7,89	8,01	8,41	8,45	8,66	8,86
	Mean ln(wage)			2,07	2,08	2,13	2,13	2,16	2,18
	Var(Ln Earnings)			0,1	0,11	0,095	0,107	0,095	0,11
	(%t-1 |Waget >0)				55,95	57,2	59,29	53,83	64,16
	N			1613	1628	1606	1557	1293	1297
Netherlands	Mean	9,69	9,56	9,59	9,7	10,02	9,88	10,04	9,91
	Var(Ln Earnings)	0,119	0,126	0,14	0,125	0,114	0,106	0,114	0,152
	(%t-1 |Waget >0)		69,07	71,37	68,68	67,52	67,24	68,56	69,59
	N	2209	2390	2444	2416	2351	2379	2412	2371
Belgium	Mean	8,48	8,82	8,71	8,75	8,81	8,83	8,92	9,1
	Var(Ln Earnings)	0,121	0,097	0,101	0,105	0,096	0,101	0,092	0,103
	(%t-1 |Waget >0)		63,43	63,65	64,38	63,88	64,28	65,15	64,38
	N	1475	1410	1362	1304	1216	1153	1079	999
Austria	Mean		9,08	8,33	8,37	8,49	8,55	8,55	8,54
	Var(Ln Earnings)		0,137	0,117	0,111	0,096	0,097	0,095	0,101
	(%t-1 |Waget >0)			67,96	68,2	67,49	67,2	66,51	68,21
	N		1673	1673	1619	1520	1427	1309	1246
France[1]	Mean	10,23	9,92	9,87	10,05	10,33	10,6	10,55	10,87
	Var(Ln Earnings)	0,233	0,223	0,216	0,23	0,241	0,242	0,236	0,231
	(%t-1 |Waget >0)		62,47	64,76	62	52,08	54,24	55,54	60,8
	N	2960	2845	2865	2673	2146	2066	2030	2114
Germany	Mean	9,43	9,49	9,61	9,52	9,57	9,48	9,6	9,72
	Var(Ln Earnings)	0,176	0,183	0,174	0,169	0,165	0,182	0,177	0,17
	(%t-1 |Waget >0)		66,99	67,37	66,2	63,01	64,84	64,86	64,39
	N	3010	3147	3106	3025	2815	2802	2700	2550
Luxembourg	Mean		16,18	15,81	16,73	17,39	17,15	17,22	17,1
	Var(Ln Earnings)		0,214	0,23	0,225	0,213	0,24	0,249	0,233
	(%t-1 |Waget >0)			64,75	69,48	69,33	69,81	68,71	70,39
	N		1712	1436	1597	1475	1516	1363	1407
Italy	Mean	7,16	6,91	6,96	7,05	7,29	7,37	7,28	7,32
	Var(Ln Earnings)	0,118	0,109	0,117	0,114	0,125	0,122	0,122	0,123
	(%t-1 |Waget >0)		51,58	51,19	47,18	47,34	46,87	48,73	48,86
	N	3063	3107	3098	2858	2812	2616	2621	2433
Spain	Mean	6,83	6,95	7,09	6,89	7,18	7,37	7,45	7,42
	Var(Ln Earnings)	0,243	0,252	0,241	0,252	0,25	0,217	0,208	0,205
	(%t-1 |Waget >0)		47,6	48,29	48,49	48,63	52,13	52,12	56,06
	N	2905	2756	2696	2651	2530	2527	2451	2425
Portugal	Mean	9,08	8,33	8,37	8,49	8,55	8,55	8,54	9,08
	Var(Ln Earnings)	0,25	0,27	0,258	0,26	0,262	0,241	0,258	0,266
	(%t-1 |Waget >0)		57,84	57,5	57,32	56,98	59,12	60,83	62,16
	N	1912	2082	2180	2227	2253	2224	2199	2194
Greece	Mean	4,95	5,03	5,23	5,59	5,63	5,85	5,7	5,77
	Var(Ln Earnings)	0,179	0,184	0,176	0,197	0,199	0,221	0,215	0,205
	(%t-1 |Waget >0)		45,83	45,69	44,98	42,09	43,52	46,06	49,72
	N	1666	1656	1577	1500	1385	1355	1315	1365

Notes:
(i) Weighted statistics, except for N = un-weighted number of individuals with positive earnings
(ii) The mean refers to mean positive hourly earnings expressed in Euro. Var(Ln Earnings) refers to the variance of ln hourly earnings. (%t-1 | Waget >0) is the share of individuals present in the sample in year $t-1$ which record positive earnings in year t.
(ii) The amounts for France are gross.

Table 2: Evolution of the actual and predicted aggregate within-cohort inequality ranked by actual inequality (from highest to lowest) in 2001

Country	Period	Overall Aggregate Within Inequality						
		Actual	Predicted Model 1	Predicted Model 2	Predicted Model 3	Predicted Model 4	Predicted Model 5	Predicted Model 6
Portugal	1st Wave	0.196	0.196	0.197	0.192	0.194	0.196	0.192
	2001	0.275	0.274	0.275	0.275	0.275	0.272	0.273
Luxembourg	1st Wave	0.162	0.147	0.149	0.163	0.159	0.162	0.145
	2001	0.199	0.196	0.199	0.195	0.196	0.192	0.157
France	1st Wave	0.208	0.212	0.214	0.209	0.215	0.209	0.211
	2001	0.197	0.192	0.193	0.195	0.193	0.195	0.194
Spain	1st Wave	0.198	0.195	0.196	0.199	0.195	0.199	0.195
	2001	0.192	0.193	0.194	0.193	0.194	0.193	0.193
Greece	1st Wave	0.140	0.140	0.141	0.137	0.141	0.139	0.139
	2001	0.163	0.164	0.167	0.167	0.167	0.167	0.167
Germany	1st Wave	0.154	0.163	0.165	0.156	0.160	0.155	0.157
	2001	0.158	0.158	0.160	0.163	0.161	0.161	0.160
UK	1st Wave	0.160	0.156	0.158	0.159	0.159	0.160	0.158
	2001	0.156	0.158	0.158	0.157	0.157	0.159	0.158
Ireland	1st Wave	0.190	0.192	0.192	0.190	0.192	0.191	0.191
	2001	0.155	0.153	0.155	0.156	0.155	0.156	0.156
Netherlands	1st Wave	0.089	0.096	0.097	0.089	0.093	0.089	0.093
	2001	0.120	0.118	0.119	0.121	0.120	0.122	0.121
Italy	1st Wave	0.098	0.096	0.097	0.098	0.097	0.098	0.096
	2001	0.108	0.108	0.109	0.109	0.109	0.109	0.109
Finland	1st Wave	0.092	0.092	0.091	0.091	0.092	0.092	0.091
	2001	0.105	0.096	0.097	0.097	0.097	0.100	0.100
Austria	1st Wave	0.125	0.125	0.125	0.125	0.126	0.125	0.126
	2001	0.095	0.092	0.093	0.093	0.093	0.093	0.093
Belgium	1st Wave	0.100	0.097	0.100	0.100	0.101	0.100	0.099
	2001	0.090	0.093	0.092	0.093	0.092	0.093	0.093
Denmark	1st Wave	0.081	0.076	0.081	0.081	0.081	0.082	0.081
	2001	0.063	0.061	0.062	0.062	0.062	0.063	0.063

Table 3: The Spearman rank correlation between the actual and the predicted aggregate inequality across models

	Actual	Model 1	Model 2	Model 3	Model 4	Model 5
Model 1	0.9868*					
Model 2	0.9956*	0.9912*				
Model 3	1*	0.9868*	0.9956*			
Model 4	0.9956*	0.9912*	1*	0.9956*		
Model 5	0.9868*	0.9736*	0.9824*	0.9868*	0.9824*	
Model 6	0.9341*	0.9209*	0.9297*	0.9341*	0.9297*	0.9736*

Note: The symbol "*" marks the 0.05 significance level.

Table 4: Evolution of the aggregate persistent and transitory inequality ranked by actual inequality ranked by actual inequality in 2001

Country	Aggregate Permanent Inequality											
	Predicted Model 1		Predicted Model 2		Predicted Model 3		Predicted Model 4		Predicted Model 5		Predicted Model 6	
	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001
Portugal	0.154 (78.7%)	0.214 (78.3%)	0.156 (79.0%)	0.180 (65.6%)	0.145 (75.3%)	0.192 (69.7%)	0.146 (75.3%)	0.191 (69.4%)	0.144 (73.8%)	0.220 (80.8%)	0.147 (76.6%)	0.215 (78.7%)
Luxembourg	0.107 (72.9%)	0.151 (77.1%)	0.103 (69.4%)	0.149 (74.9%)	0.091 (55.9%)	0.154 (78.7%)	0.092 (58.0%)	0.153 (78.0%)	0.094 (57.9%)	0.159 (82.5%)	0.082 (56.3%)	0.119 (75.9%)
France	0.113 (53.1%)	0.141 (73.7%)	0.113 (52.8%)	0.137 (70.9%)	0.115 (55.0%)	0.135 (69.1%)	0.112 (51.9%)	0.137 (71.3%)	0.106 (50.7%)	0.146 (74.9%)	0.106 (50.0%)	0.146 (75.3%)
Spain	0.134 (68.8%)	0.135 (69.6%)	0.134 (68.6%)	0.132 (68.3%)	0.133 (66.7%)	0.133 (68.7%)	0.135 (69.1%)	0.132 (68.2%)	0.130 (65.4%)	0.134 (69.5%)	0.134 (68.8%)	0.132 (68.5%)
Greece	0.066 (46.7%)	0.106 (64.9%)	0.067 (47.6%)	0.086 (51.8%)	0.067 (49.3%)	0.080 (47.9%)	0.068 (48.3%)	0.085 (51.1%)	0.062 (44.6%)	0.108 (64.6%)	0.061 (43.7%)	0.108 (64.4%)
Germany	0.097 (59.6%)	0.112 (70.8%)	0.095 (58.0%)	0.107 (66.9%)	0.108 (69.6%)	0.098 (60.0%)	0.107 (67.2%)	0.100 (61.7%)	0.108 (69.7%)	0.113 (69.9%)	0.109 (69.2%)	0.112 (70.1%)
UK	0.100 (64.5%)	0.103 (65.6%)	0.108 (68.2%)	0.093 (59.2%)	0.092 (57.7%)	0.101 (64.2%)	0.092 (57.9%)	0.101 (64.1%)	0.094 (58.5%)	0.102 (64.4%)	0.094 (59.1%)	0.101 (64.2%)
Ireland	0.108 (56.3%)	0.106 (69.5%)	0.102 (53.1%)	0.104 (67.1%)	0.102 (53.4%)	0.103 (65.9%)	0.100 (52.2%)	0.104 (67.2%)	0.097 (50.8%)	0.112 (71.8%)	0.097 (50.6%)	0.112 (71.6%)
Netherlands	0.046 (47.5%)	0.065 (54.9%)	0.043 (44.9%)	0.062 (51.8%)	0.048 (54.1%)	0.060 (49.4%)	0.048 (51.5%)	0.060 (50.0%)	0.054 (60.2%)	0.060 (48.9%)	0.051 (54.8%)	0.061 (50.0%)
Italy	0.056 (58.9%)	0.078 (72.0%)	0.058 (60.0%)	0.075 (68.9%)	0.057 (58.3%)	0.075 (69.3%)	0.057 (59.1%)	0.075 (69.1%)	0.055 (55.8%)	0.078 (71.6%)	0.056 (57.9%)	0.077 (70.5%)
Finland	0.042 (45.2%)	0.062 (64.0%)	0.038 (41.2%)	0.064 (66.0%)	0.037 (41.0%)	0.064 (65.6%)	0.037 (40.4%)	0.064 (66.4%)	0.039 (42.2%)	0.065 (64.8%)	0.039 (43.0%)	0.064 (63.8%)
Austria	0.056 (44.7%)	0.064 (69.5%)	0.056 (44.6%)	0.050 (53.1%)	0.066 (52.9%)	0.043 (46.9%)	0.061 (48.4%)	0.047 (50.5%)	0.067 (53.5%)	0.044 (47.4%)	0.062 (49.2%)	0.047 (50.7%)
Belgium	0.053 (55.3%)	0.054 (58.3%)	0.057 (56.8%)	0.043 (46.1%)	0.052 (52.5%)	0.044 (48.0%)	0.050 (49.7%)	0.045 (49.2%)	0.052 (52.3%)	0.048 (52.0%)	0.051 (51.6%)	0.047 (50.3%)
Denmark	0.036 (46.8%)	0.033 (53.9%)	0.040 (48.9%)	0.026 (42.0%)	0.039 (47.6%)	0.026 (42.4%)	0.039 (48.0%)	0.026 (42.3%)	0.041 (50.6%)	0.027 (43.4%)	0.043 (53.6%)	0.027 (42.7%)
	Aggregate Transitory Inequality											
	Predicted Model 1		Predicted Model 2		Predicted Model 3		Predicted Model 4		Predicted Model 5		Predicted Model 6	
	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001
Portugal	0.042 (21.3%)	0.060 (21.7%)	0.041 (21.0%)	0.095 (34.4%)	0.048 (24.7%)	0.083 (30.3%)	0.048 (24.7%)	0.084 (30.6%)	0.051 (26.2%)	0.052 (19.2%)	0.045 (23.4%)	0.058 (21.3%)
Luxembourg	0.040 (27.1%)	0.045 (22.9%)	0.046 (30.6%)	0.050 (25.1%)	0.072 (44.1%)	0.042 (21.3%)	0.067 (42.0%)	0.043 (22.0%)	0.068 (42.1%)	0.034 (17.5%)	0.063 (43.7%)	0.038 (24.1%)
France	0.099 (46.9%)	0.050 (26.3%)	0.101 (47.2%)	0.056 (29.1%)	0.094 (45.0%)	0.060 (30.9%)	0.104 (48.1%)	0.055 (28.7%)	0.103 (49.3%)	0.049 (25.1%)	0.106 (50.0%)	0.048 (24.7%)
Spain	0.061 (31.2%)	0.059 (30.4%)	0.061 (31.4%)	0.061 (31.7%)	0.066 (33.3%)	0.060 (31.3%)	0.060 (30.9%)	0.062 (31.8%)	0.069 (34.6%)	0.059 (30.5%)	0.061 (31.2%)	0.061 (31.5%)
Greece	0.075 (53.3%)	0.057 (35.1%)	0.074 (52.4%)	0.081 (48.2%)	0.069 (50.7%)	0.087 (52.1%)	0.073 (51.7%)	0.082 (48.9%)	0.077 (55.4%)	0.059 (35.4%)	0.078 (56.3%)	0.059 (35.6%)
Germany	0.066 (40.4%)	0.046 (29.2%)	0.069 (42.0%)	0.053 (33.1%)	0.047 (30.4%)	0.065 (40.0%)	0.053 (32.8%)	0.062 (38.3%)	0.047 (30.3%)	0.048 (30.1%)	0.048 (30.8%)	0.048 (29.9%)
UK	0.055 (35.5%)	0.054 (34.4%)	0.050 (31.8%)	0.064 (40.8%)	0.067 (42.3%)	0.056 (35.8%)	0.067 (42.1%)	0.056 (35.9%)	0.067 (41.5%)	0.056 (35.6%)	0.065 (40.9%)	0.057 (35.8%)
Ireland	0.084 (43.7%)	0.047 (30.5%)	0.090 (46.9%)	0.051 (32.9%)	0.089 (46.6%)	0.053 (34.1%)	0.092 (47.8%)	0.051 (32.8%)	0.094 (49.2%)	0.044 (28.2%)	0.094 (49.4%)	0.044 (28.4%)
Netherlands	0.050 (52.5%)	0.053 (45.1%)	0.053 (55.1%)	0.057 (48.2%)	0.041 (45.9%)	0.061 (50.6%)	0.045 (48.5%)	0.060 (50.0%)	0.035 (39.8%)	0.062 (51.1%)	0.042 (45.2%)	0.060 (50.0%)
Italy	0.039 (41.1%)	0.030 (28.0%)	0.039 (40.0%)	0.034 (31.1%)	0.041 (41.7%)	0.033 (30.7%)	0.040 (40.9%)	0.034 (30.9%)	0.043 (44.2%)	0.031 (28.4%)	0.041 (42.1%)	0.032 (29.5%)
Finland	0.050 (54.8%)	0.035 (36.0%)	0.054 (58.8%)	0.033 (34.0%)	0.054 (59.0%)	0.033 (34.4%)	0.055 (59.6%)	0.033 (33.6%)	0.053 (57.8%)	0.035 (35.2%)	0.052 (57.0%)	0.036 (36.2%)
Austria	0.069 (55.3%)	0.028 (30.5%)	0.069 (55.4%)	0.044 (46.9%)	0.059 (47.1%)	0.049 (53.1%)	0.065 (51.6%)	0.046 (49.5%)	0.058 (46.5%)	0.049 (52.6%)	0.064 (50.8%)	0.046 (49.3%)
Belgium	0.043 (44.7%)	0.039 (41.7%)	0.043 (43.2%)	0.050 (53.9%)	0.047 (47.5%)	0.048 (52.0%)	0.051 (50.3%)	0.047 (50.8%)	0.048 (47.7%)	0.045 (48.0%)	0.048 (48.4%)	0.046 (49.7%)
Denmark	0.041 (53.2%)	0.028 (46.1%)	0.041 (51.1%)	0.036 (58.0%)	0.043 (52.4%)	0.036 (57.6%)	0.042 (52.0%)	0.036 (57.7%)	0.040 (49.4%)	0.036 (56.6%)	0.037 (46.4%)	0.036 (57.3%)

Table 5: The Spearman rank correlation for the predicted permanent and transitory inequality across models

Permanent Inequality					
	Model 1	Model 2	Model 3	Model 4	Model 5
Model 2	0.9824*				
Model 3	0.9560*	0.9824*			
Model 4	0.9648*	0.9868*	0.9956*		
Model 5	0.9780*	0.9912*	0.9780*	0.9736*	
Model 6	0.9736*	0.9824*	0.9604*	0.9648*	0.9824*
Transitory Inequality					
	Model 1	Model 2	Model 3	Model 4	Model 5
Model 2	0.9429*				
Model 3	0.8198*	0.8989*			
Model 4	0.8593*	0.9297*	0.9780*		
Model 5	0.7275*	0.8066*	0.8286*	0.7978*	
Model 6	0.8593*	0.8769*	0.8857*	0.8901*	0.9341*

Note: The symbol "*" marks the 0.05 significance level.

Table 6: The Spearman rank correlation for the share of permanent inequality in the aggregate inequality in 2001 across models

	Model 1	Model 2	Model 3	Model 4	Model 5
Model 2	0.7934*				
Model 3	0.7978*	0.8462*			
Model 4	0.8637*	0.9121*	0.9516*		
Model 5	0.8462*	0.8462*	0.9121*	0.9253*	
Model 6	0.9121*	0.8110*	0.8593*	0.9121*	0.9692*

Note: The symbol "*" marks the 0.05 significance level.

Table 7: Evolution of the coefficient of variation in overall, permanent and transitory inequality

	Aggregate Overall Within Inequality													
	Actual		Predicted Model 1		Predicted Model 2		Predicted Model 3		Predicted Model 4		Predicted Model 5		Predicted Model 6	
Country Cluster	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001
All*	0.321	0.323	0.325	0.327	0.320	0.326	0.322	0.325	0.321	0.325	0.322	0.319	0.320	0.306
Mediterranean	0.307	0.376	0.308	0.375	0.306	0.371	0.306	0.373	0.301	0.372	0.307	0.366	0.303	0.366
Continental	0.168	0.125	0.194	0.116	0.194	0.114	0.163	0.101	0.181	0.104	0.167	0.103	0.206	0.122
Anglo-Saxon	0.121	0.005	0.148	0.022	0.139	0.013	0.128	0.006	0.133	0.011	0.123	0.009	0.133	0.007
Nordic/Flexicurity	0.170	0.224	0.180	0.222	0.166	0.217	0.172	0.225	0.172	0.222	0.171	0.223	0.173	0.220
Cont/Anglo-Saxon	0.133	0.132	0.156	0.122	0.154	0.123	0.132	0.116	0.145	0.117	0.133	0.111	0.160	0.099
Cont/Anglo-Saxon/Medit*	0.222	0.195	0.234	0.191	0.232	0.191	0.221	0.188	0.228	0.188	0.221	0.185	0.234	0.177
Cont/Anglo-Saxon/Medit**	0.219	0.181	0.228	0.177	0.226	0.176	0.220	0.174	0.223	0.174	0.219	0.171	0.228	0.164
Cont/Anglo-Saxon/Medit	0.210	0.258	0.219	0.256	0.217	0.254	0.210	0.253	0.213	0.254	0.210	0.248	0.218	0.255
	Aggregate Permanent Within Inequality													
			Predicted Model 1		Predicted Model 2		Predicted Model 3		Predicted Model 4		Predicted Model 5		Predicted Model 6	
Country Cluster			1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001
All*			0.420	0.396	0.414	0.440	0.401	0.454	0.408	0.445	0.382	0.451	0.394	0.419
Mediterranean			0.477	0.442	0.467	0.406	0.444	0.456	0.446	0.438	0.470	0.453	0.481	0.444
Continental			0.075	0.154	0.086	0.165	0.116	0.221	0.100	0.211	0.074	0.171	0.152	0.144
Anglo-Saxon			0.054	0.019	0.037	0.076	0.073	0.013	0.059	0.023	0.024	0.068	0.023	0.071
Nordic/Flexicurity			0.179	0.242	0.196	0.314	0.240	0.313	0.205	0.306	0.221	0.300	0.179	0.297
Cont/Anglo-Saxon			0.060	0.179	0.064	0.200	0.101	0.211	0.089	0.207	0.068	0.194	0.111	0.144
Cont/Anglo-Saxon/Medit**			0.230	0.217	0.226	0.232	0.237	0.238	0.239	0.236	0.233	0.229	0.252	0.194
Cont/Anglo-Saxon/Medit*			0.260	0.206	0.252	0.238	0.258	0.254	0.257	0.244	0.263	0.218	0.281	0.182
Cont/Anglo-Saxon/Medit			0.291	0.311	0.289	0.287	0.280	0.318	0.282	0.307	0.289	0.319	0.308	0.312
	Aggregate Transitory Within Inequality													
			Predicted Model 1		Predicted Model 2		Predicted Model 3		Predicted Model 4		Predicted Model 5		Predicted Model 6	
Country Cluster			1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001	1st Wave	2001
All**			0.323	0.250	0.328	0.213	0.301	0.230	0.314	0.221	0.347	0.226	0.349	0.207
Mediterranean			0.308	0.276	0.314	0.389	0.248	0.375	0.264	0.359	0.256	0.265	0.305	0.260
Continental			0.435	0.061	0.387	0.059	0.329	0.223	0.354	0.177	0.388	0.200	0.410	0.132
Anglo-Saxon			0.290	0.106	0.402	0.164	0.195	0.041	0.221	0.075	0.241	0.174	0.264	0.171
Nordic/Flexicurity			0.219	0.283	0.214	0.226	0.154	0.248	0.175	0.244	0.197	0.246	0.207	0.221
Cont/Anglo-Saxon			0.339	0.079	0.340	0.106	0.252	0.160	0.272	0.131	0.298	0.181	0.316	0.145
Cont/Anglo-Saxon/Medit**			0.347	0.190	0.357	0.187	0.287	0.216	0.321	0.199	0.314	0.231	0.345	0.213
Cont/Anglo-Saxon/Medit*			0.320	0.187	0.329	0.239	0.265	0.281	0.296	0.256	0.289	0.229	0.318	0.212
Cont/Anglo-Saxon/Medit			0.335	0.186	0.347	0.297	0.277	0.289	0.305	0.279	0.295	0.214	0.333	0.205

Notes: (i) Anglo-Saxon = UK and Ireland; Nordic/Flexicurity = Denmark, Finland, the Netherlands, Belgium and Austria; Continental = France, Germany, Luxembourg; Mediterranean = Italy, Spain, Portugal and Greece. (ii) ** = Portugal and Greece are excluded; * = Portugal is excluded.

Table 8: The pairwise correlation between permanent and transitory inequality and the labour market policies and institutions

	Permanent Inequality	Transitory Inequality
EPL	0.3083*	0.19
ALMPs	-0.3235*	-0.1359
Unemploymnet benefit RR	-0.2654*	-0.2121*
Labour market support	-0.3301*	-0.1779
Union density	-0.6502*	-0.3773*
Corporatism	-0.5896*	-0.4593*
PMR	0.248*	0.0124
Tax wedge	-0.2823*	-0.2969*

Note: The symbol "*" marks the 0.05 significance level. The number of observations N=93.

Table 9: OLS regression between permanent and transitory inequality and the labour market policies and institutions

	(1) Permanent Inequality b/se	(2) Transitory Inequality b/se
EPL	0.009**	-0.001
	(0.004)	(0.002)
LM Support	-0.027	-0.002
	(0.017)	(0.009)
Union Density	-0.048***	-0.013
	(0.015)	(0.008)
High Corporatism	-0.048***	-0.011***
	(0.007)	(0.003)
PMR	0.011***	0.001
	(0.003)	(0.002)
Tax wedge	-0.178***	-0.033
	(0.044)	(0.023)
Constant	0.108***	0.065***
	(0.008)	(0.004)
Time effects	Yes	Yes
r2	0.791	0.448
N	93	93

* p<0.1, ** p<0.05, *** p<.01

Note: The variables for the labour market institutions are expressed in deviation from the sample mean, so that the constant captures the variances for a country with an average mix of institutions and low corporatism.

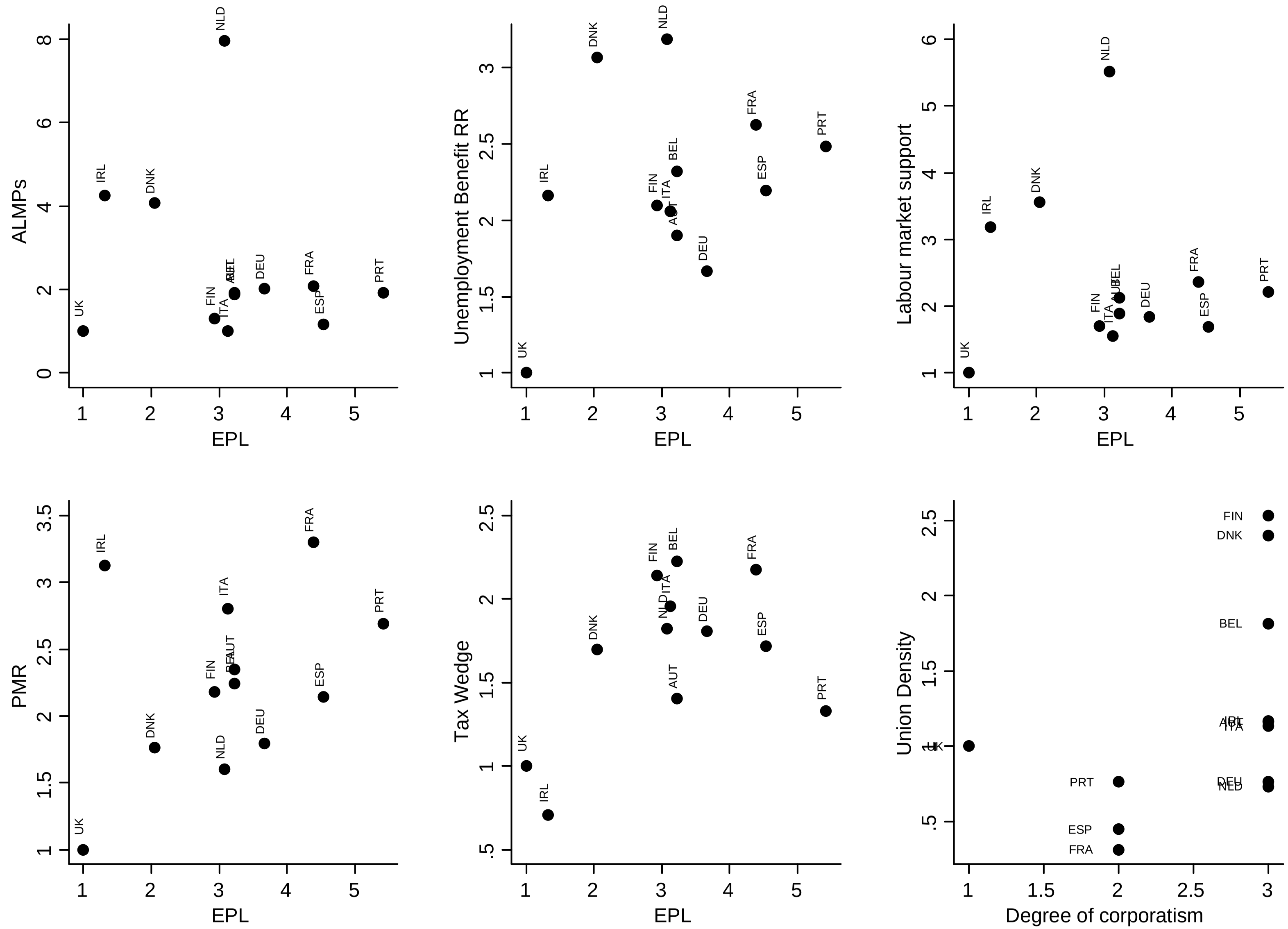

Figure 1: Labour Market Institutions in 2001

Notes: (i) The labour market indicators are re-scaled to set the UK as the base; (ii) EPL = Employment protection legislation, ALMPs = Spending on active labour market programs as share of GDP, RR = Replacement rate, PMR = Product market regulation. (iii) The labour market support is the arithmetic average of ALMPs and the Unemployment benefit RR.

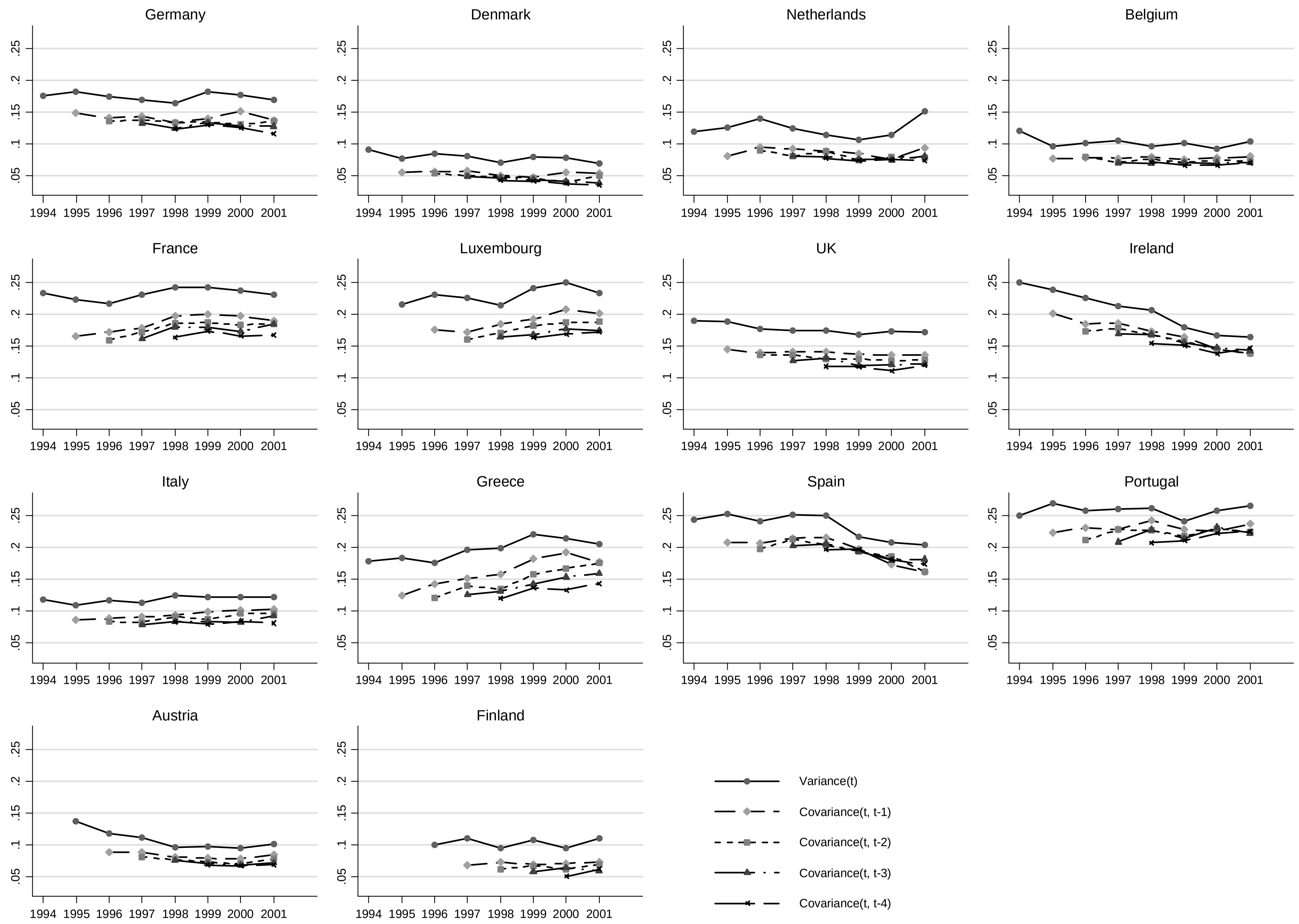

Figure 2: The Overall Autocovariance Structure of Hourly Earnings: 1994-2001

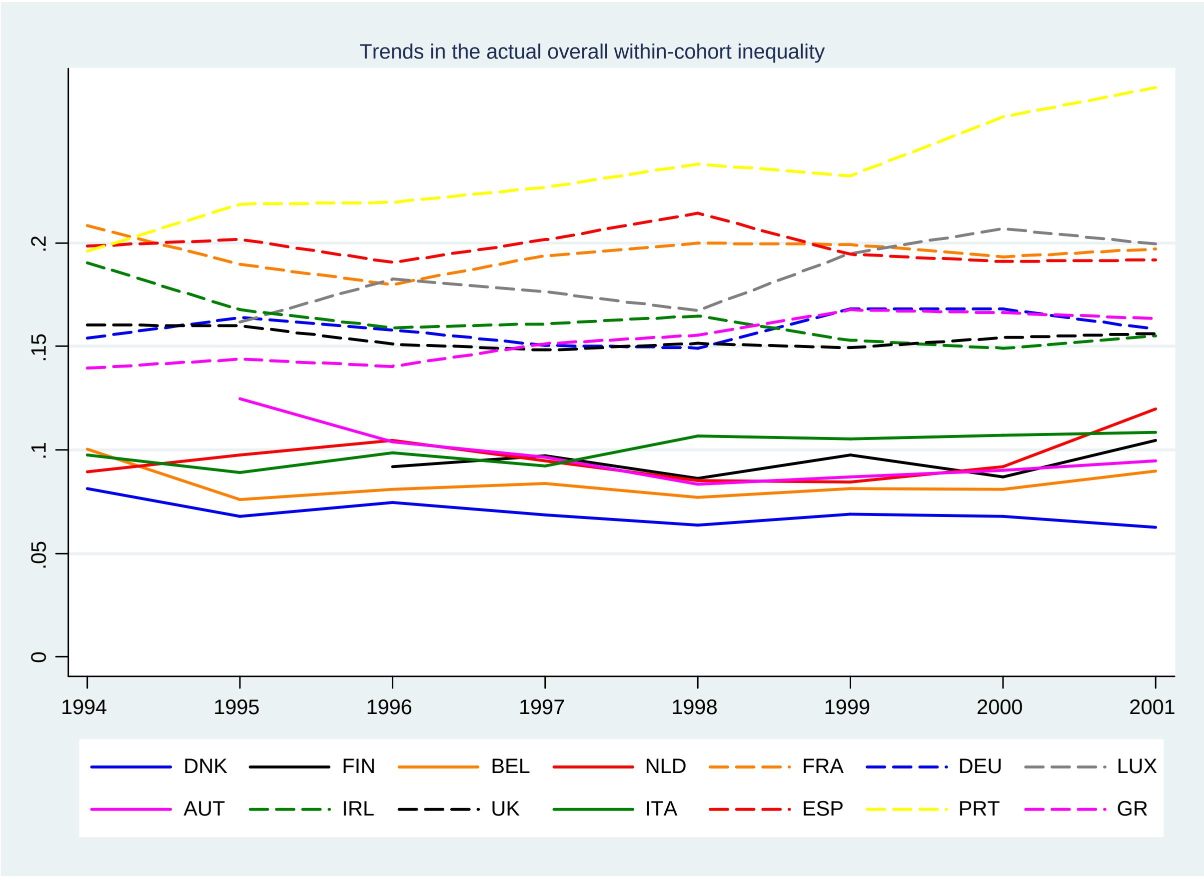

Figure 3: Trends in the actual aggregated within-cohort variance of log hourly earnings: Men 20-57

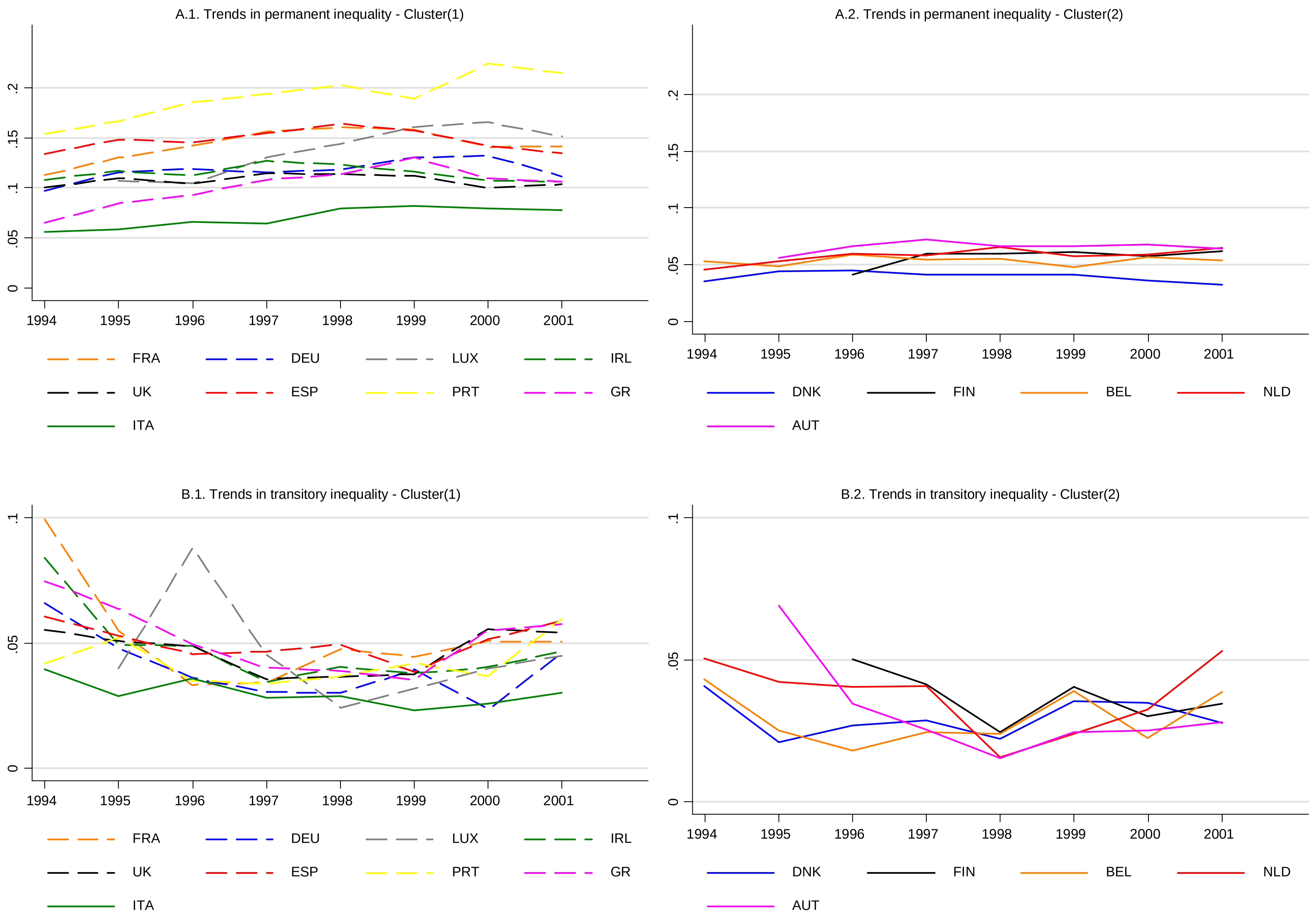

Figure 4: Trends in the aggregated permanent and transitory inequality - Model 1

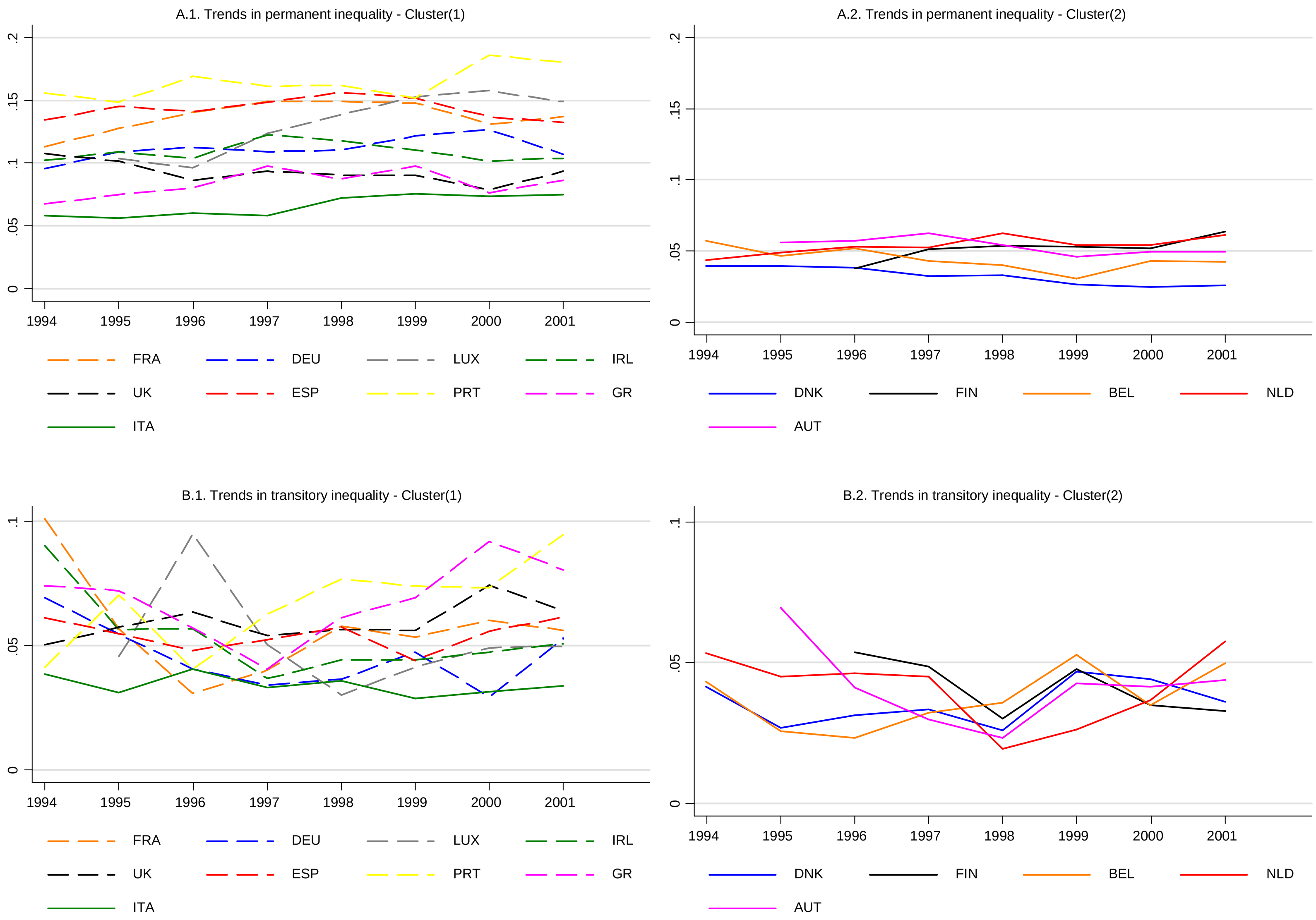

Figure 5: Trends in the aggregated permanent and transitory inequality - Model 2

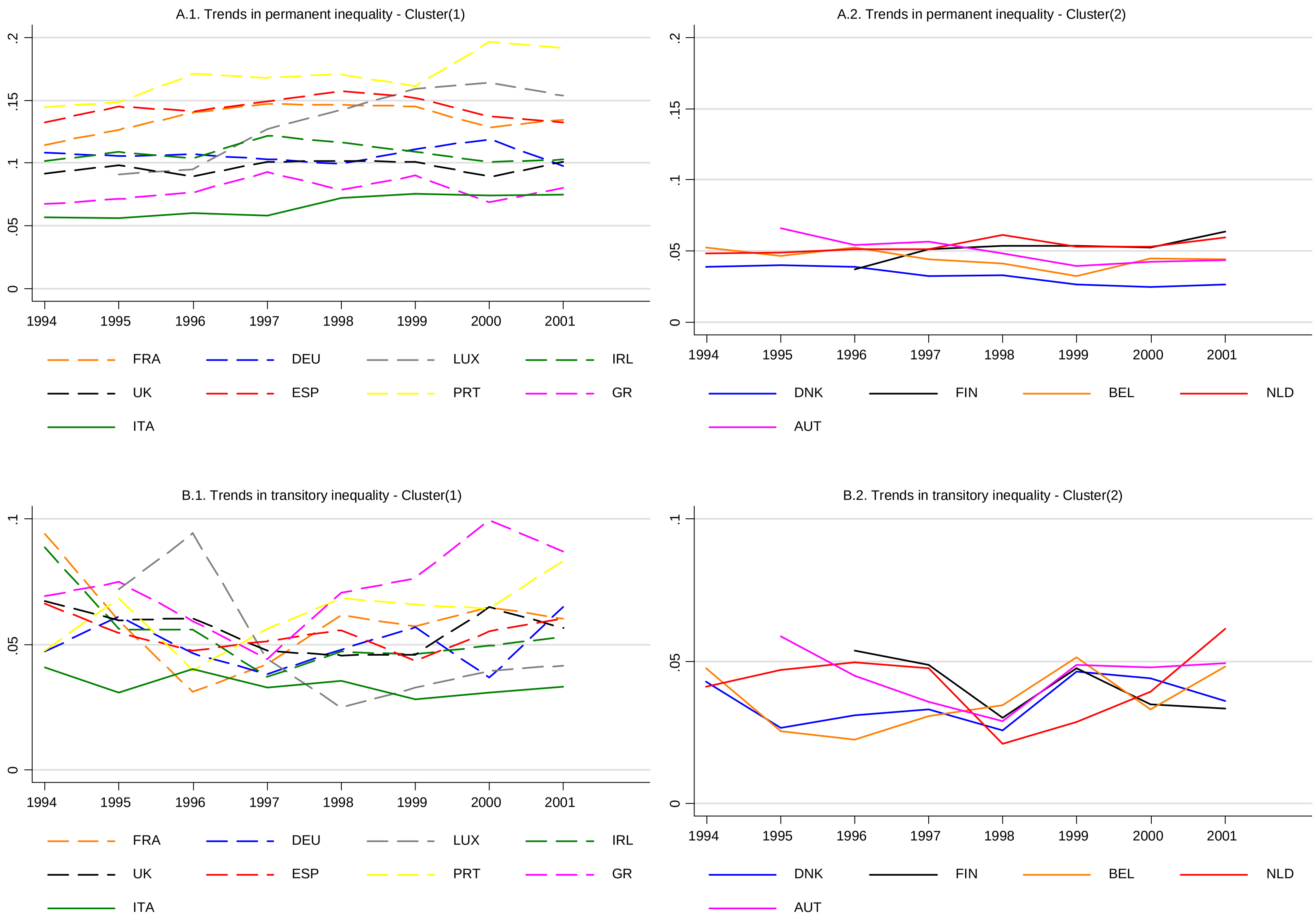

Figure 6: Trends in the aggregated permanent and transitory inequality - Model (3)

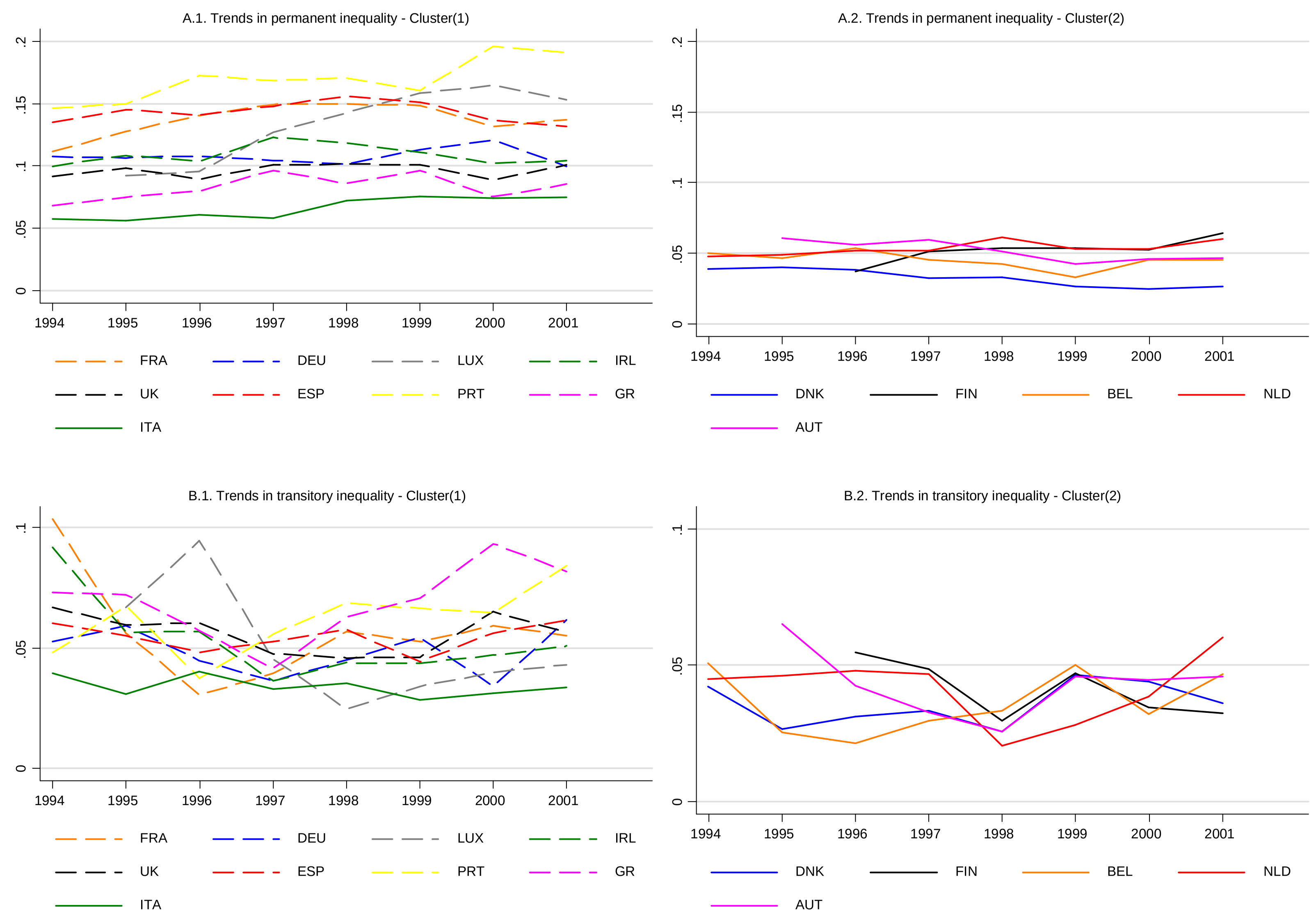

Figure 7: Trends in the aggregated permanent and transitory inequality - Model 4

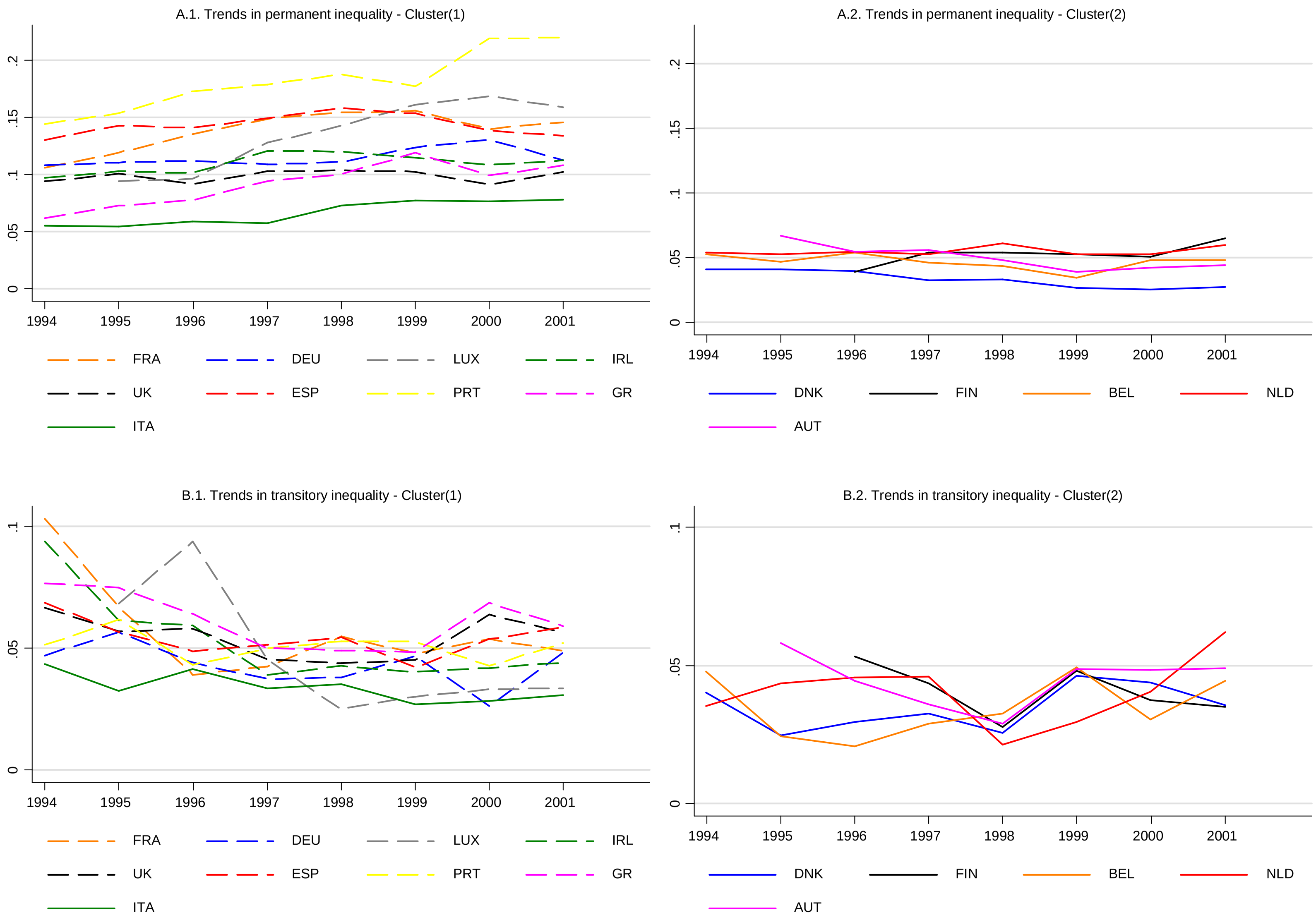

Figure 8: Trends in the aggregated permanent and transitory inequality - Model 5

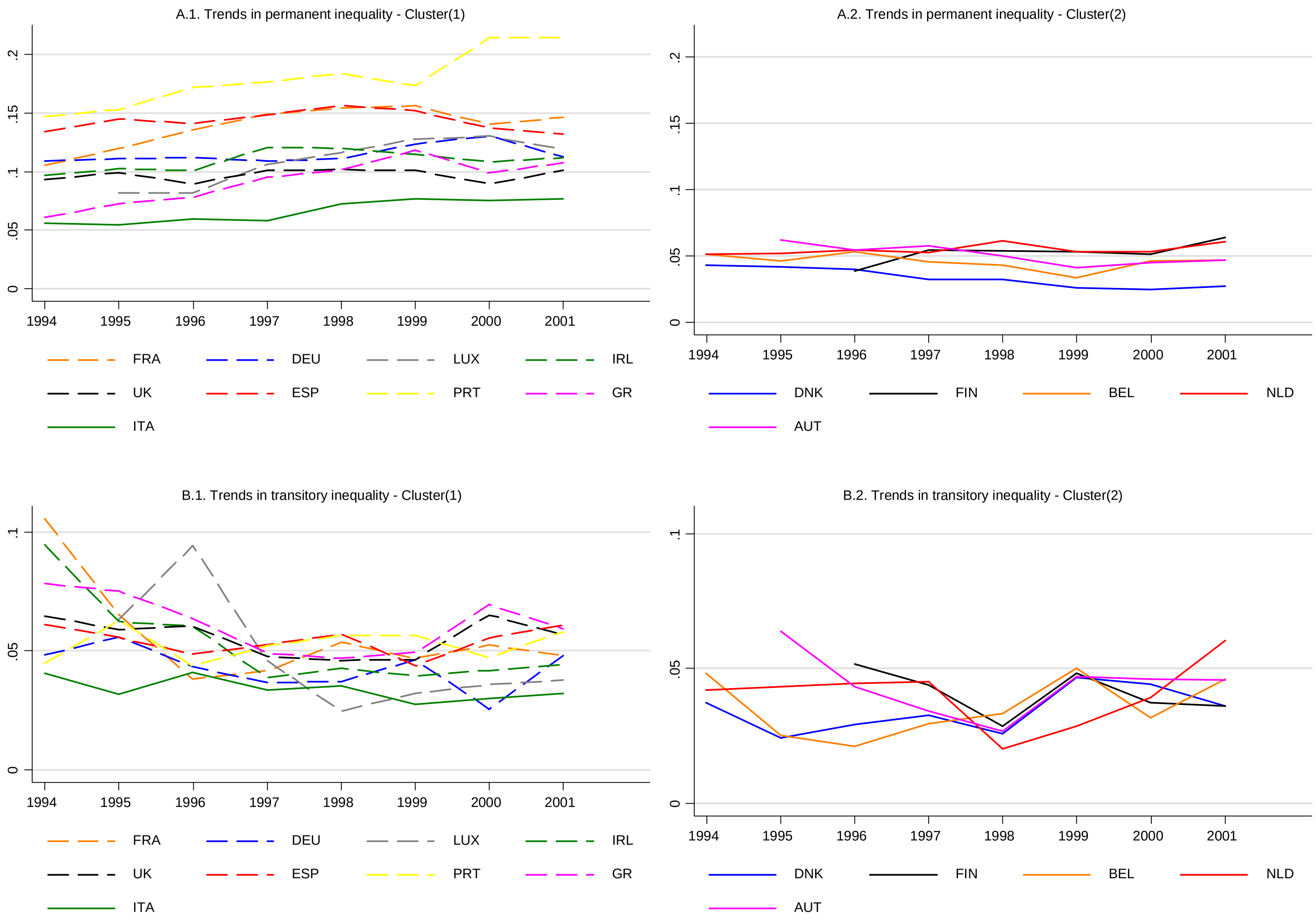

Figure 9: Trends in the aggregated permanent and transitory inequality - Model 6

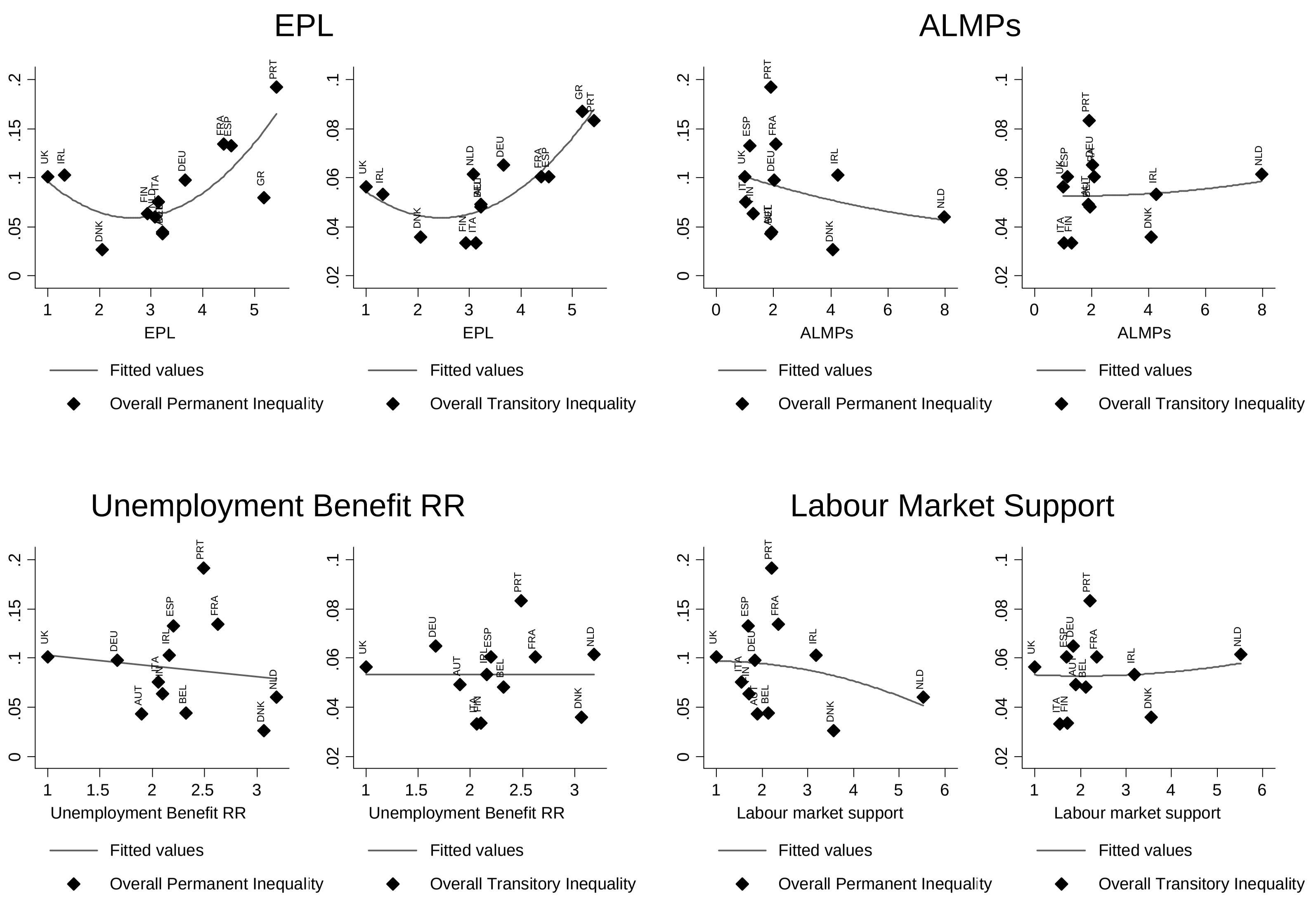

Figure 10: Scatter plots - Permanent and transitory inequality against labour market institutions in 2001

Notes: (i) The labour market indicators are re-scaled to set the UK as the base; (ii) The labour market support is the arithmetic average of ALMPs and the Unemployment benefit RR. (iii) The predicted components are based on Model (3).

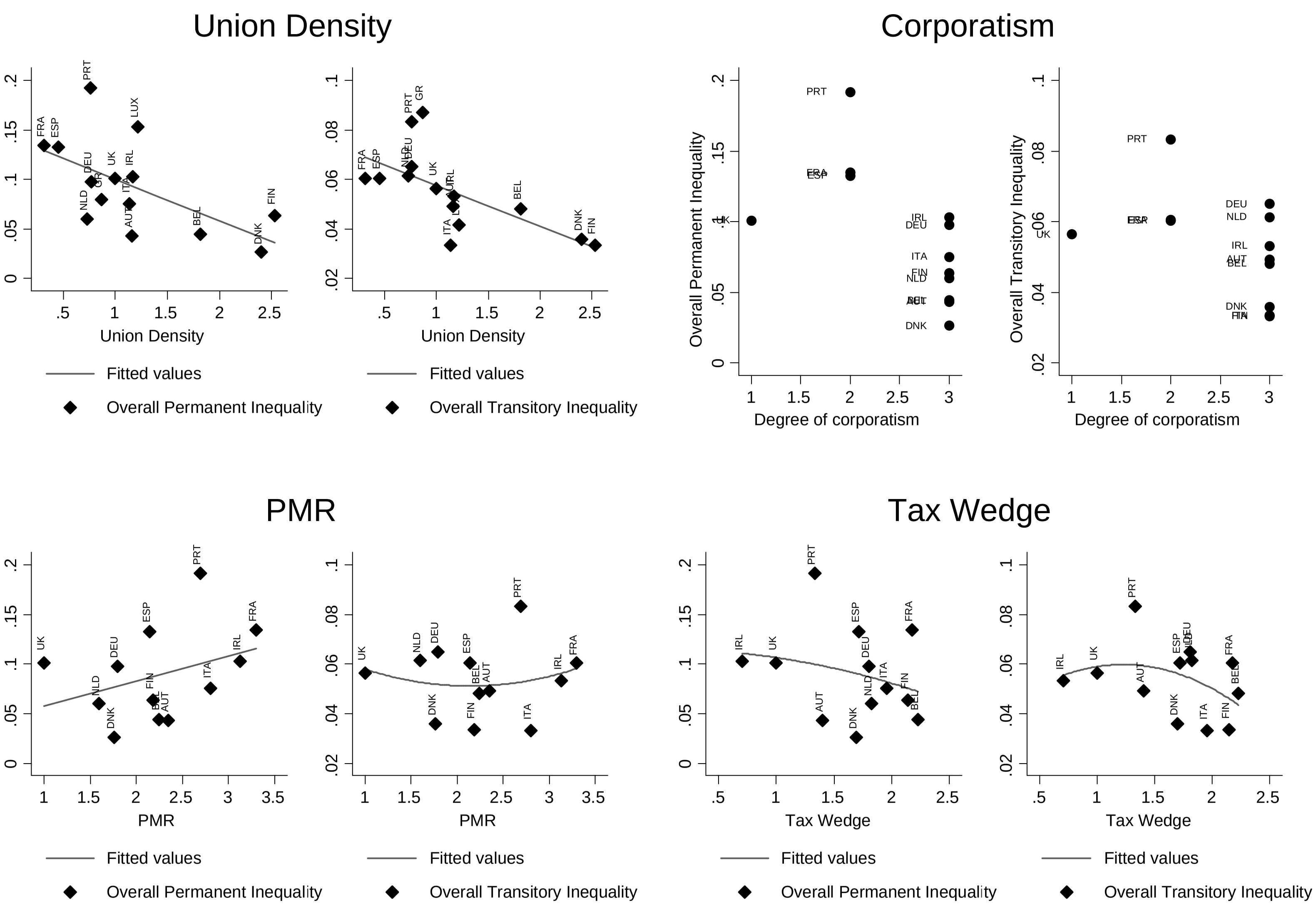

Figure 11: Scatter plots - Permanent and transitory inequality against labour market institutions in 2001
Notes: (i) The labour market indicators are re-scaled to set the UK as the base.(ii) The predicted components are based on Model (3).

References

Abowd JM, Card D (1989) On the covariance structure of earnings and hours changes. Econometrica 57(2):411–445

Acemoglu D (2002) Technical change, inequality, and the labor market. Journal of Economic Literature 40(1):7–72

Altonji JG, Segal LM (1996) Small sample bias in GMM estimation of covariance structures. Journal of Business and Economic Statistics 14(3):353–67

Anderson TW, Hsiao C (1982) Formulation and estimation of dynamic models using panel data. Journal of Econometrics

Attanasio O, Davis SJ (1996) Relative wage movements and the distribution of consumption. Journal of Political Economy 104(6):1227–62

Auer P (2002) Flexicurity and security: labour market policy in Austria, Denmark, Ireland and the Netherlands. In: Schmid G, Gazier B (eds) The Dynamics of Full Employment, Cheltenham, Edward Elgar, pp 81–105

Ayala L, Navarro C, Sastre M (2011) Cross-country income mobility comparisons under panel attrition: the relevance of weighting schemes. Applied Economics 43(25):3495–3521

Baker M (1997) Growth-rate heterogeneity and the covariance structure of life-cycle earnings. Journal of Labor Economics 15(2):338–375

Baker M, Solon G (2003) Earnings dynamics and inequality among Canadian men, 1976-1992: evidence from longitudinal income tax records. Journal of Labor Economics 21(2):289–321

Bassanini A, Duval R (2006a) The determinants of unemployment across OECD countries: Reassessing the role of policies and institutions. OECD Economics Studies 42

Bassanini A, Duval R (2006b) Employment patterns in OECD countries: Reassessing the role of policies and institutions. OECD Economics Department Working Papers 486

Behr A, Bellgardt E, Rendtel U (2005) Extent and determinants of panel attrition in the European Community Household Panel. European Sociological Review 21(5):489–512

Bell B, Nickell S (1996) Would cutting payroll taxes on the unskilled have a significant effect on unemployment? CEP Discussion Papers dp0276, Centre for Economic Performance, LSE

Biewen M (2005) The covariance structure of east and west german incomes and its implications for the persistence of poverty and inequality. German Economic Review 6(4):445–469

Blundell R, Preston I (1998) Consumption inequality and income uncertainty. Open Access publications from University College London http://eprints.ucl.ac.uk/, University College London

Calmfors L (1993) Centralisation of wage bargaining and macroeconomic performance - a survey. OECD Economic Studies 21

Cappellari L (2004) The dynamics and inequality of Italian men's earnings. The Journal of Human Resources XXXIX

Cazes S, Nesporova A (2004) Labour markets in transition: balancing flexibility and security in central and eastern europe. Revue de l'OFCE 5:23–54

Cervini-Pla M, Ramos X (2008) Permanent and transitory earnings inequality in spain, 1993-2000. IZA Discussion Papers 3538

Cervini-Pla M, Ramos X (2011) Long-term earnings inequality, earnings instability and temporary employment in spain: 1993-2000. British Journal of Industrial Relations pp no–no

Chakravarty SR (2001) The variance as a subgroup decomposable measure of inequality. Social Indicators Research 53:79–95

Chamberlain G (1984) Panel data. In: Grilichesâ Z, Intriligator MD (eds) Handbook of Econometrics, Handbook of Econometrics, vol 2, Elsevier, chap 22, pp 1247–1318

Cholezas I, Tsakloglou P (2008) Earnings inequality in europe: structure and patterns of inter-temporal changes. IZA Working Series No. 2636

Clark TE (1996) Small sample properties of estimators of non-linear models of covariance structure. Journal of Business and Economic Statistics 14:367–73

European Commission (2006) Flexicurity: combining flexibility and security. Social Agenda pp 15–20

Creedy J, Wilhelm M (2002) Income mobility, inequality and social welfare. Australian Economic Papers 41(2):140–150

Cutler DM, Katz LF (1992) Rising inequality? changes in the distribution of income and consumption in the 1980's. American Economic Review 82(2):546–51

Daly MC, Valletta RG (2008) Cross-national trends in earnings instability and earnings inequality. Economic Letters 99(2):215–219

Dew-Becker I, Gordon RJ (2008) The role of labor market changes in the slowdown of european productivity growth. NBER Working Papers No. 13840

Dickens R (2000a) Caught in a trap? wage mobility in great britain: 1975-1994. Economica (67):477–497

Dickens R (2000b) The evolution of individual male earnings in Great Britain: 1975-95. The Economic Journal 110(460):27–49

Doris A, O'Neil D, Sweetman O (2010a) Aggregate earnings inequality in Europe: permanent differences and transitory fluctuations. NUI Maynooth Working Paper N211-10

Doris A, O'Neil D, Sweetman O (2010b) Identification of the covariance structure of earnings using the GMM estimator. IZA Discussion Papers Series 4952

Fields GS (2009) Does income mobility equalize longer-term incomes? new measures of an old concept. Journal of Economic Inequality 8(4):409–427

Fortin NM, Lemieux T (1997) Institutional changes and rising wage inequality: Is there a linkage? Journal of Economic Perspectives 11(2):75–96

Freeman RB (1975) Overinvestment in college training? Journal of human resources 10:287–311

Freeman RB, Katz LF (1994) Rising wage inequality: the United States vs. other advanced countries. In: Working under different rules, Russel Sage Foundation, New York, pp 29–62

Friedman M (1957) A Theory of the Consumption Function. No. frie57-1 in NBER Books, National Bureau of Economic Research, Inc

Friedman M, Kuznets S (1954) Income from independent professional practice. New York, NBER

Gottschalk P, Spolaore E (2002) On the evaluation of economic mobility. Review of Economic Studies 68:191–208

Gustavsson M (2007) The 1990s rise in swedish earnings inequality – persistent or transitory? Applied Economics 39(1):25–30

Gustavsson M (2008) A new picture of Swedish earnings inequality: persistent and transitory components, 1960-1990. Review of Income and Wealth 54, Number 3

Haider S (2001) Earnings instability and earnings inequlaity of males in the United States: 1967-1991. Journal of Labor Economics 19(4, October):799–836

Hause JC (1977) The covariance structure of earnings and on-the-job training hypothesis. Annals of Economic and Social Measurement pp 335–366

Hause JC (1980) The fine structure of earnings and the on-the-job training hypothesis. Econometrica 48(4):1013–1029

Kalwij A, Alessie R (2003) Permanent and transitory wage inequality of British men, 1975-2001: year, age and cohort effect. Journal of Applied Econometrics 22:1063–1093

Katz LF (1994) Comments and discussion. Brookings Papers on Economic Activity (2):255–61

Katz LF, Autor DH (1999) Changes in the wage structure and earnings inequality. In: Ashenfelter O, Card D (eds) Handbook of Labor Economics, Handbook of Labor Economics, vol 3, Elsevier, chap 26, pp 1463–1555

Katz LF, Murphy K (1992) Changes in relative wages: supply and demand factors. Quarterly Journal of Economics CVII:35–78

Katz LF, Loveman GW, Blanchflower DG (1995) A comparison of changes in the structure of wages in four oecd countries. In: Differences and Changes in Wage Structures, NBER Chapters, National Bureau of Economic Research, Inc, pp 25–66

Keune M (2008) Introduction: Wage moderation, decentralisation of collective bargaining and low pay. In: Keune M, Galgoczi B (eds) Wages and wage bargaining in Europe, ETUI-REHS, Brussels., chap Introduction: Wage moderation, decentralisation of collective bargaining and low pay

Lillard LA, Weiss Y (1979) Components of variation in panel earnings data: American scientists 1960-70. Econometrica 47(2):437–54

MaCurdy TE (1981) Time series models applied to panel data. Stanford University

MaCurdy TE (1982) The use of time series processes to model the error structure of earnings in a longitudinal data analysis. Journal of Econometrics 18(1):83–114

Milberg W, Winkler D (2009) Globalization, offshoring and economic insecurity in industrialized countries. DESA Working Paper 87

Mincer J (1957) A study of income distribution. Columbia University

Mincer J (1958) Investment in human capital and personal income distribution. Joournal of Political Economy 66(4):281–302

Mincer J (1962) On-the-job training: costs, returns and some implications. Journal of Political Economy 70(5, Part 2):S50–S79

Mincer J (1974) Schooling, experience and earnings. NY: NBER, New York

Moffitt R, Gottschalk P (1995) Trends in the covariance structure of earnings in the United States: 1969-1987. Institute for Research on Poverty Discussion Papers 1001-93, University of Wisconsin Institute for Research on Poverty

Moffitt R, Gottschalk P (1998) Trends in the variances of permanent and transitory earnings in the U.S. and their relation to earnings mobility. Boston College Working Papers No. 444

Moffitt R, Gottschalk P (2002) Trends in the transitory variance of earnings in the United States. The Economic Journal 112(478):C68–C73

Moffitt RA, Gottschalk P (2011) Trends in the transitory variance of male earnings in the u.s., 1970-2004. Working Paper 16833, National Bureau of Economic Research

OECD (1996) Earnings inequality, low paid employment and earnings mobility. In: Employment Outlook, OECD, Paris, pp 59–99

OECD (1997) Earnings mobility: taking a longer view. In: Employment Outlook, OECD, Paris

OECD (2004) Chapter 2. Employment protection regulation and labour market performance. In: Employment Outlook, OECD, Paris

Ostrovsky Y (2010) Long-run earnings inequality and earnings instability among canadian men revisited, 1985-2005. The BE Journal of Economic Analysis and Policy 10(20)

Palier B (ed) (2010) A Long Goodbye to Bismark? The Politics of Welfare Reform in Continental Europe. Amsterdam University Press, Amsterdam

Ramos X (2003) The covariance structure of earnings in Great Britain, 1991-1999. Economica vol. 70(278):353–374

Salverda W (2008) The bite and effects of wage bargaining in the netherlands. In: Keune M, Galgoczi B (eds) Wages and wage bargaining in Europe

Shorrocks AF (1984) Inequality decomposition by population subgroups. Econometrica 52(6):1369–1385

Sologon DM (2010) Earnings dynamics in europe. PhD thesis, Boekenplan, Maastricht University

Sologon DM, O'Donoghue C (2009) Earnings dynamics and inequality among men across 14 EU countries: evidence from ECHP. IZA Working Series (more recent versions: Earnings dynamics and inequality in EU: 1994-2001, 2010, CEPS/INSTEAD Working Paper Series, No 2010-34; 2010, MGSOG Working Series 2009-003, Maastricht University) No. 4012

Sologon DM, O'Donoghue C (2010) Earnings dynamics and inequality among men in Luxembourg, 1988-2004: Evidence from administrative data. IZA Discussion Papers 5014, Institute for the Study of Labor (IZA)

Sologon DM, O'Donoghue C (2011a) Shaping earnings instability: labour market policy and institutional factors. UNU-MERIT Working Papers 2011-077

Sologon DM, O'Donoghue C (2011b) Shaping earnings mobility: Policy and institutional factors. The European Journal of Comparative Economics 8(2):175–202

Sologon DM, O'Donoghue C (2011c) Shaping persistent inequality: labour market policy and institutional factors. CEPS/INSTEAD Working Paper Series 2011-22, CEPS/INSTEAD

Teulings C, Hartog J (2008) Corporatism or competition? Labour contracts, institutions and wage structures in international comparison. Cambridge University Press

Weizsacker RKV (1993) A theory of earnings distributions. Cambridge University Press, New York

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A Appendix

A.1 OECD Labour Market Indicators

Table A1: Description of OECD Variables.

Source: Bassanini and Duval (2006a,b)	
EPL= Employment Protection Legislation	OECD summary indicator of the stringency of Employment Protection Legislation. EPL ranges from 0 to 6.
Union Density	Trade union density rate, i.e. the share of workers affiliated to a trade union, in %.
Degree of Corporatism	Indicator of the degree of centralisation/co-ordination of the wage bargaining processes, which takes values 1 for decentralised and unco-ordinated processes, and 2 and 3 for intermediate and high
Tax Wedge	The tax wedge expresses the sum of personal income tax and all social security contributions as a percentage of total labour cost.
PMR= Product Market Regulation	OECD summary indicator of regulatory impediments to product market competition in seven non-manufacturing industries. The data used in this paper cover regulations and market conditions in seven energy and service industries. PMR ranges from 0 to 6.
ALMPs = Public expenditures on active labour market policies	Public expenditures on active labour market programmes per unemployed worker as a share of GDP per capita, in %.
Average unemployment benefit replacement rate	Average unemployment benefit replacement rate across two income situations (100% and 67% of APW earnings), three family situations (single, with dependent spouse, with spouse in work)
Labour Market Support	Following Milberg and Winkler (2009), the labour market support indicator is computed as the arithmetic average of the spending on active labour market policies (ALMPs, as% of GDP) and the unemployment benefit replacement rate.

A.2 Error component estimates

A.2.1 The Canonical Model: $\lambda_{1,t}\gamma_{1,c}[\sigma^2_\mu]+\lambda_{2,t}\gamma_{2,c}[\sigma^2_\epsilon]$

Table A2 reports the estimation results for the canonical model with time and cohort shifters in equation (1). The SE and the 95% confidence intervals are reported in parantheses. Most parameter estimates are highly significant at 5% level.

The country estimates of persistent inequality, σ^2_μ, indicate a country clustering which mirrors the regional/institutional clustering identified in Figure 1. The Scandinavian countries, Denmark and Finland, have the lowest persistent inequality, followed by Belgium, the Netherlands and Austria. These countries form the Nordic/Flexicurity cluster. The highest is found in the Mediterranean countries (Portugal and Spain), followed by France. Most t-tests for the country differences in persistent inequality indicate significant differences across Europe at 5% level of significance, confirming the country rankings. We fail to reject the null hypothesis that persistent inequality σ^2_μ is equal between Belgium and the Netherlands, between Austria and Italy, and between Germany and Luxembourg. The time shifters for the permanent component have values close to 1 and indicate a significant increase in persistent inequality between 1994 and 2001 across Europe, except in Denmark where it decreases, and in Belgium, Ireland, the UK and Spain where the increase is not significant.

The variance of the transitory shocks, σ^2_ϵ, does not indicate the same regional clustering as the estimates for σ^2_μ. The t-tests indicate that Denmark has the lowest variance of transitory shocks and France the highest. The time shifters for the transitory component are lower than for the permanent component in most countries and indicate a significant decrease in transitory inequality over time across Europe, except in Luxembourg, the Netherlands, UK and Spain, where the change is not significant.

The cohort shifters indicate a significantly higher persistent inequality for older cohorts and a significantly higher earnings instability for younger cohorts in all countries. These trends confirm the expectation that permanent earnings differentials play a larger role in the formation of earnings differentials of older cohorts compared with younger ones, which experience a higher earnings instability due to temporary contracts and more frequent job changes.

A.2.2 Model 2: $\lambda_{1,t}\gamma_{1,c}[\sigma^2_\mu]$+$\lambda_{2,t}\gamma_{2,c}$[AR(1), σ^2_0]

Next we extend the model by incorporating an AR(1) process in the transitory component, with an initial transitory variance common across cohorts (equation (2)). Table A3 reports the estimation results. The country estimates of persistent inequality, σ^2_μ confirm the regional clustering and the overall country ranking found using the canonical model. The Scandinavian countries have a significantly lower persistent variance than all other European countries, followed by the Netherlands, Belgium and Austria. The highest persistent variance is in Portugal and Spain, followed by France. The Scandinavian countries do not differ significantly in their persistent variance. We find the same between Belgium and Austria, between the UK and Ireland, and between Germany and Luxembourg. Consistent with the canonical model, the time shifters confirm that most countries experience a significant increase in persistent inequality. Denmark, Belgium and the UK experience a significant decrease. The change is not significant in Austria, Ireland and Spain.

The returns to the persistent characteristics differ significantly across Europe, both within and between the regional/institutional clusters. Within the Nordic / Flexicurity cluster, the evolution of the time shifters indicate a divergence in persistent inequality: in 2001, the returns become significantly higher in Finland and the Netherlands than in Denmark, Belgium and Austria. Within the Continental cluster, the returns become significantly higher in Luxembourg than in Germany and France. The returns in Ireland become significantly higher than in the UK. Within the Mediterranean cluster, only Spain differs significantly, with a lower return than Portugal, Greece and Italy. These findings suggest a potential divergence in persistent inequality within each cluster, except the Mediterranean cluster.

We also find many significant differences between countries belonging to different regional/institutional clusters. The Nordic/Flexicurity countries differ significantly from most countries. More similarities are found between some countries belonging to the other institutional clusters: e.g between France and the Mediterranean countries (Portugal, Greece and Italy), between Ireland and Spain, and between Germany and Portugal.[30] We expect a potential convergence in persistent inequality within the Continental/Anglo-Saxon/Mediterranean cluster.

The variance of initial transitory shocks are significantly lower than the variance of subsequent transitory shocks in most countries. We find evidence that the persistence of transitory shocks varies significantly across Europe. Portugal has a significantly higher autoregressive parameter than the other countries, followed by Austria and Belgium, which do not differ significantly from each other. At a significantly lower level we find Greece and the UK with similar values. At significantly lower levels of shocks persistence we find Denmark, then Italy, Germany and France with similar levels. The lowest level is in Spain, which differs significantly from most countries, except Finland, Ireland and Luxembourg. The time shifters for the transitory component reconfirm the decreasing trends in transitory inequality, except for Luxembourg where it increases, and Finland, the Netherlands and Ireland where the change is not significant.

A.2.3 Model 3: $\lambda_{1,t}\gamma_{1,c}[\sigma^2_\mu]$+$\lambda_{2,t}\gamma_{2,c}$[AR(1), $\sigma^2_{0,c}$

Next we allow the initial transitory variances to vary by cohort. Table A4 reports the estimation results. The country estimates of persistent inequality, σ^2_μ, confirm, in general, the country rankings found in the previous models: the Nordic/Flexicurity countries have the lowest persistent inequality, whereas the Portugal and Spain, followed by France have the highest. Most country differences are statistically significant, except between Denmark and Finland, between Belgium and the Netherlands, between Ireland and Germany, and between Luxembourg, the UK and Greece.

Consistent with the previous models, the time trends indicate a significant increase in persistent inequality in most countries, and a significant decrease in Denmark, Austria, Belgium, and Germany. Insignificant changes are found in Ireland and Spain.[31] Overall we find evidence that the returns to the persistent characteristics differ significantly between countries, both within and between the regional/institutional clusters. Consistent with the previous model, the time shifters indicate a divergent trend in the returns to the persistent characteristics between countries within the Nordic/Flexicurity cluster: in 2001 the returns become significantly higher in Finland than in all other countries, followed by the Netherlands, Belgium, and, lastly, Denmark and Austria. The returns differ significantly between these countries, except between the latter two. The returns differ significantly between the Continental countries: Luxembourg has the highest and Germany lowest returns in 2001. Within the Mediterranean cluster, only Spain differs significantly in 2001. The returns in the Anglo-Saxon countries do not differ significantly. Most country differences between these regional/institutional clusters are consistent with the previous model.

We find evidence of many significant differences between countries with respect to the persistence of transitory shocks ρ. Compared with the previous model, some countries shuffle their ranks, but the jumps are small. The highest levels of persistence are still in Austria, Portugal, Greece, Belgium. Portugal and Greece do not differ significantly. Next we find Denmark and Germany with similar levels (which do not differ significantly); then the UK with a significantly lower persistence, followed by two country clusters within which countries do not differ significantly. Luxembourg, Finland and Spain is the cluster with the lowest persistence in Europe. The trends in the time shifters of the transitory component are consistent with the previous model, except for the Netherlands and Ireland where the decrease becomes significant.

[30] By similarities, we mean that we fail to reject the null hypothesis that the country differences are significant at 5 % level of significance.

[31] Germany and the UK switch trends.

We find evidence of three country clusters which differ significantly in the estimated time shifters in 2001. Within each cluster, we failed to reject the null hypotheses that the parameter estimates are the same at 5% level of significance. Denmark, Austria, Belgium, France, Germany, Italy form the cluster with the lowest time shifter in 2001[32]. Spain and Portugal form the second cluster, the Netherlands, the UK, Ireland and Finland the third cluster. the Netherlands, however, is not statistically significant from Spain and Portugal. The 2001 time shifters for Greece and Luxembourg differ significantly from the other countries. We expect to find a convergence in the predicted transitory variances across Europe.

A.2.4 Model 4: $\lambda_{1,t}\gamma_{1,c}[\sigma_\mu^2]+\lambda_{2,t}\gamma_{2,c}$[AR(1), σ_0^2, correction left-censoring]

Next we introduce the correction for left-censoring (Table A5). The estimate of ξ is significantly different from 0 in seven countries. The parameter estimates of the permanent and transitory components are robust to the correction for left-censoring. The trends, magnitudes and significance are consistent with the model with cohort-specific initial transitory variances. The country ranking with respect to the estimated persistent inequality σ_μ^2 confirms the country ranking from the previous model.

The estimates of the autoregressive parameters are consistent with the previous models. Overall, the ranks are maintained. Austria, Portugal, Belgium, Greece, Denmark and Germany still hold the highest ranks. The country differences in the estimated autoregressive parameter are significantly different from 0, except for Austria and Portugal, Greece and Belgium, Denmark and Germany. At a lower rank we find the UK with a significantly lower parameter than the other countries. Luxembourg has the lowest autoregressive parameter, significantly different from the other European countries, expect Finland, which in turn is significantly lower than the other countries except Ireland and Spain. The time shifters for the transitory component are robust to the correction for left-censoring. The trends and the levels are consistent with the model with cohort-specific initial transitory variances. The three country clusters with respect to the estimated time shifters in 2001 are, in general, confirmed by this model.

A.2.5 Model 5: $\lambda_{1,t}\gamma_{1,c}$[RG]+$\lambda_{2,t}\gamma_{2,c}$[AR(1), $\sigma_{c,0}^2$]

Next we extend the previous model by incorporating a random growth in age in the permanent component of earnings (Table A6). Most estimates are highly significant. In addition to the previous models, this specification identifies the heterogeneity in age-earnings profiles and the covariance between initial heterogeneity and life cycle heterogeneity. We find a high degree of similarity across the European countries with respect to the heterogeneity in the individual growth rates.[33] Italy, Spain, Austria, Denmark, Finland and France have among the lowest variances in the earnings earnings growth rates and do not differ significantly. Greece and Ireland have a significantly higher variance than Denmark, Finland and Italy, but not the rest. The Netherlands has a significantly higher heterogeneity in earnings growth rates than Denmark, Finland, Italy and the UK. At a significant higher level we find Belgium, then a cluster formed by Luxembourg, Germany and Portugal with similar levels which do not differ significantly. The estimates imply that, for example, in Denmark the hourly earnings growth for an individual located one standard deviation above the mean in the distribution of φ is with .93% ($= 100 * \sqrt{\sigma_\varphi^2}$) faster than the cohort mean, in the UK with 1.08%, in Belgium with 2.4% and in Germany with 4.8% faster than the cohort mean.

Most countries record a significant negative covariance between the heterogeneity in initial earnings and the heterogeneity in the slope of the earnings growth $cov(\mu\varphi)$, which suggests the presence of mobility in the distribution of permanent earnings over the life cycle. Denmark and Spain record a negative but insignificant covariance. France and Italy record a significant positive covariance which implies a positive association between initial and life cycle heterogeneity, equivalent to increasing persistent dif-

[32]The equality in the estimates between Denmark and Austria is rejected at 5% significance level, but not at 1%.

[33]The level of confidence is 0.05, unless mentioned otherwise.

ferentials over the life cycle. Austria, Ireland and the UK have a positive but insignificant covariance. Considering only the significant parameters, the t-test for the country differences reveal that most differences are significant, except for the difference between Germany, Luxembourg and Portugal, between Finland and Greece, and between France and Italy.

Controlling for the age effect, the time trend indicates a significant widening of persistent differentials between the first and the last wave in Belgium, Germany, Luxembourg and Portugal, and a significant decrease in the rest of Europe. In Finland, Italy and Spain the change is not significant. The t-tests bring evidence of many significant cross-country differences in the estimates of the 2001 time shifters, confirming the divergent trend in persistent differentials identified in the previous models. Among the countries identified in the previous models as having a low overall persistent inequality, Denmark, Finland, Belgium, the Netherlands, Austria and Italy, most cross-country differences in the estimates of the time shifter in 2001 are significant. Exceptions are Denmark and Austria, Finland and Italy. Most differences are significant also among the countries identified as having a high overall persistent inequality. Exceptions are the UK and Ireland, Luxembourg and Portugal.

The estimates of the transitory component are precisely estimated. The variances of initial transitory shocks are, in general, lower than the variance of subsequent transitory shocks. The autoregressive parameter which captures the degree of shocks persistence varies significantly across Europe. The levels of the estimated ρ are consistent with the previous models, except for Portugal, Greece, Germany and France which drop to .54, .46, .35, .25 in this specification. Portugal's rank is still in the top, after Austria and Belgium, at a level significantly higher than the other EU countries. Denmark and Portugal do not differ significantly. Greece drops to a level which does not differ significantly from the UK, and which is significantly higher than the other countries. Germany drops to the same level as Italy, which is significantly higher than the other countries. Consistent with the previous model, Luxembourg has the lowest autoregressive parameter, followed by Spain, France, Ireland and Finland with similar levels which do not differ significantly at 5% level.

The time loading factors for the transitory component decline significantly over the sample period in most countries, except in Luxembourg where they increase, and Ireland where the change is not significant, confirming most trends from the previous models. The country homogeneity in the 2001 time factor identified in the previous model is confirmed as well. The country clusters are shuffled slightly compared with the previous models . Denmark, Belgium and Germany are not statistically different. The same holds for the Netherlands, Portugal, France, Greece, Italy and Germany. Spain and Finland differ significantly from most countries, except Portugal, the Netherlands and the UK. The remaining countries differ significantly from the other European countries, with isolated exceptions.

A.2.6 Model 6: $\lambda_{1,t}\gamma_{1,c}$[RG]+$\lambda_{2,t}\gamma_{2,c}$[AR(1), σ_0^2, correction left-censoring]

As a last step, the cohort-specific initial transitory variances are replaced by a specification that corrects for left-censoring. The results are displayed in Table A7. The correction parameter is significantly different from 0 in 9 countries. The parameters estimates of the permanent component are robust. We find evidence of many significant country differences in the variance of time-invariant characteristics at the start of the career. But we find a higher degree of similarity across the European countries with respect to the heterogeneity in the individual growth rates compared with the previous model. Germany, Portugal and Luxembourg have a significantly higher variance in the earnings growth rates than most countries. Finland has a significantly higher variance than the Netherlands, Ireland and Greece. The sign and the magnitude of the covariance between the heterogeneity in initial earnings and the heterogeneity in the slope of the earnings growth are maintained, but the covariance is estimated to be different from zero in 11 countries.

The estimate of the autoregressive parameter, the trends and the magnitude of the time shifters for the transitory component are consistent with the previous model.

Table A2: Error Component Estimates - Canonical Model: $\lambda_{1,t}\gamma_{1,c}[\sigma_{\mu}^2]+\lambda_{2,t}\gamma_{2,c}[\sigma_{\epsilon}^2]$

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Permanent Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = σ_{μ}^2	-2.189	-1.949	-3.138	-2.949	-2.720	-2.699	-2.558	-1.844	-2.038	-2.078	-2.527	-1.689	-1.434	-2.360
	[0.020]	[0.032]	[0.040]	[0.038]	[0.029]	[0.020]	[0.032]	[0.028]	[0.026]	[0.022]	[0.023]	[0.025]	[0.028]	[0.027]
	(-2.228,-2.149)	(-2.012,-1.886)	(-3.217,-3.059)	(-3.023,-2.875)	(-2.778,-2.662)	(-2.738,-2.661)	(-2.622,-2.495)	(-1.898,-1.789)	(-2.089,-1.988)	(-2.121,-2.035)	(-2.572,-2.483)	(-1.738,-1.639)	(-1.489,-1.378)	(-2.413,-2.307)
<u>Time shifters</u>														
$\lambda_{1,1995}$	1.045	1.039	1.110	.	1.082	0.954	.	1.075	1.091	.	1.018	1.051	1.040	1.136
	[0.007]	[0.010]	[0.019]	[.]	[0.017]	[0.010]	[.]	[0.013]	[0.009]	[.]	[0.009]	[0.008]	[0.011]	[0.011]
	(1.031,1.060)	(1.020,1.059)	(1.072,1.148)	(., .)	(1.049,1.116)	(0.935,0.973)	(., .)	(1.050,1.099)	(1.073,1.109)	(., .)	(1.001,1.035)	(1.036,1.066)	(1.018,1.062)	(1.114,1.158)
$\lambda_{1,1996}$	1.018	1.018	1.120	.	1.143	1.054	1.090	1.123	1.108	0.987	1.081	1.042	1.097	1.192
	[0.008]	[0.011]	[0.019]	[.]	[0.018]	[0.008]	[0.017]	[0.012]	[0.010]	[0.019]	[0.010]	[0.008]	[0.012]	[0.013]
	(1.003,1.033)	(0.996,1.039)	(1.083,1.156)	(., .)	(1.109,1.178)	(1.037,1.070)	(1.057,1.123)	(1.101,1.146)	(1.089,1.127)	(0.949,1.024)	(1.061,1.101)	(1.026,1.057)	(1.074,1.119)	(1.166,1.217)
$\lambda_{1,1997}$	1.068	1.083	1.073	1.197	1.131	1.012	1.137	1.177	1.090	1.103	1.068	1.074	1.121	1.285
	[0.008]	[0.012]	[0.019]	[0.019]	[0.015]	[0.010]	[0.018]	[0.012]	[0.010]	[0.017]	[0.010]	[0.009]	[0.012]	[0.015]
	(1.052,1.084)	(1.060,1.107)	(1.036,1.109)	(1.159,1.234)	(1.102,1.160)	(0.993,1.032)	(1.101,1.173)	(1.153,1.201)	(1.070,1.109)	(1.070,1.136)	(1.048,1.088)	(1.056,1.091)	(1.097,1.144)	(1.255,1.314)
$\lambda_{1,1998}$	1.063	1.066	1.073	1.199	1.202	1.018	1.088	1.193	1.104	1.159	1.189	1.105	1.146	1.313
	[0.009]	[0.014]	[0.020]	[0.019]	[0.014]	[0.011]	[0.019]	[0.014]	[0.016]	[0.018]	[0.011]	[0.009]	[0.013]	[0.015]
	(1.046,1.081)	(1.039,1.093)	(1.033,1.112)	(1.162,1.237)	(1.174,1.230)	(0.997,1.039)	(1.051,1.126)	(1.165,1.220)	(1.073,1.135)	(1.124,1.194)	(1.167,1.212)	(1.086,1.124)	(1.120,1.171)	(1.284,1.343)
$\lambda_{1,1999}$	1.056	1.035	1.072	1.213	1.122	0.950	1.092	1.186	1.159	1.224	1.205	1.083	1.107	1.409
	[0.009]	[0.013]	[0.019]	[0.021]	[0.015]	[0.011]	[0.019]	[0.015]	[0.012]	[0.020]	[0.013]	[0.010]	[0.015]	[0.016]
	(1.038,1.073)	(1.010,1.061)	(1.034,1.110)	(1.173,1.253)	(1.094,1.151)	(0.929,0.971)	(1.054,1.130)	(1.157,1.214)	(1.135,1.183)	(1.185,1.264)	(1.180,1.230)	(1.063,1.103)	(1.078,1.137)	(1.378,1.441)
$\lambda_{1,2000}$	0.998	0.995	1.002	1.175	1.135	1.032	1.102	1.118	1.166	1.242	1.188	1.029	1.205	1.291
	[0.010]	[0.017]	[0.022]	[0.020]	[0.015]	[0.013]	[0.022]	[0.016]	[0.013]	[0.027]	[0.013]	[0.012]	[0.017]	[0.017]
	(0.978,1.018)	(0.963,1.028)	(0.959,1.045)	(1.136,1.214)	(1.106,1.164)	(1.008,1.057)	(1.058,1.146)	(1.086,1.150)	(1.141,1.191)	(1.190,1.294)	(1.163,1.212)	(1.006,1.052)	(1.172,1.239)	(1.258,1.323)
$\lambda_{1,2001}$	1.016	0.991	0.956	1.219	1.190	1.005	1.073	1.119	1.072	1.188	1.175	1.001	1.179	1.273
	[0.010]	[0.019]	[0.019]	[0.024]	[0.019]	[0.012]	[0.023]	[0.017]	[0.017]	[0.019]	[0.015]	[0.013]	[0.017]	[0.018]
	(0.996,1.036)	(0.954,1.028)	(0.918,0.994)	(1.172,1.265)	(1.153,1.226)	(0.981,1.030)	(1.029,1.117)	(1.087,1.152)	(1.040,1.105)	(1.152,1.224)	(1.146,1.203)	(0.976,1.027)	(1.146,1.213)	(1.238,1.307)
<u>Cohort shifters</u>														
$\gamma_{1,51-60}$	1.011	0.980	0.953	0.918	0.891	1.015	0.882	0.863	0.963	0.955	0.922	0.985	0.922	0.912
	[0.012]	[0.021]	[0.020]	[0.021]	[0.013]	[0.012]	[0.017]	[0.014]	[0.015]	[0.018]	[0.014]	[0.015]	[0.017]	[0.012]
	(0.988,1.034)	(0.939,1.021)	(0.914,0.993)	(0.877,0.960)	(0.866,0.917)	(0.991,1.040)	(0.848,0.915)	(0.836,0.890)	(0.933,0.994)	(0.920,0.991)	(0.894,0.949)	(0.957,1.014)	(0.889,0.954)	(0.889,0.935)
$\gamma_{1,61-70}$	0.946	0.875	0.830	0.837	0.735	0.808	0.840	0.796	0.755	0.942	0.722	0.788	0.801	0.721
	[0.012]	[0.019]	[0.014]	[0.015]	[0.010]	[0.010]	[0.022]	[0.013]	[0.012]	[0.018]	[0.011]	[0.012]	[0.016]	[0.009]
	(0.923,0.970)	(0.838,0.912)	(0.803,0.858)	(0.807,0.867)	(0.716,0.755)	(0.789,0.826)	(0.797,0.883)	(0.771,0.821)	(0.731,0.778)	(0.907,0.977)	(0.699,0.744)	(0.763,0.812)	(0.771,0.832)	(0.703,0.739)
$\gamma_{1,71-80}$	0.702	0.643	0.781	0.740	0.595	0.490	0.632	0.560	0.484	0.617	0.594	0.488	0.454	0.590
	[0.013]	[0.020]	[0.018]	[0.024]	[0.014]	[0.009]	[0.015]	[0.014]	[0.012]	[0.017]	[0.012]	[0.010]	[0.010]	[0.013]
	(0.676,0.727)	(0.603,0.683)	(0.745,0.817)	(0.692,0.787)	(0.568,0.622)	(0.473,0.508)	(0.603,0.660)	(0.532,0.587)	(0.460,0.508)	(0.583,0.650)	(0.571,0.617)	(0.468,0.508)	(0.435,0.474)	(0.564,0.615)

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

Continued: Error Component Estimates - Canonical Model: $\lambda_{1,t}\gamma_{1,c}[\sigma^2_\mu]$+$\lambda_{2,t}\gamma_{2,c}[\sigma^2_\epsilon]$

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Transitory Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = σ^2_ϵ	-2.845	-2.651	-3.557	-2.945	-3.327	-3.128	-2.615	-2.307	-2.825	-3.278	-3.396	-2.933	-2.973	-2.549
	[0.034]	[0.050]	[0.048]	[0.056]	[0.069]	[0.034]	[0.054]	[0.050]	[0.052]	[0.074]	[0.041]	[0.050]	[0.065]	[0.030]
	(-2.912,-2.779)	(-2.750,-2.552)	(-3.651,-3.463)	(-3.055,-2.836)	(-3.461,-3.192)	(-3.196,-3.061)	(-2.720,-2.509)	(-2.405,-2.209)	(-2.927,-2.723)	(-3.422,-3.133)	(-3.477,-3.315)	(-3.031,-2.834)	(-3.100,-2.845)	(-2.608,-2.490)
Time shifters														
$\lambda_{2,1995}$	0.958	0.767	0.720	.	0.914	0.764	.	0.743	0.854	.	0.856	0.934	1.118	0.924
	[0.022]	[0.019]	[0.027]	[.]	[0.044]	[0.018]	[.]	[0.030]	[0.026]	[.]	[0.019]	[0.026]	[0.031]	[0.017]
	(0.914,1.001)	(0.731,0.804)	(0.667,0.773)	(., .)	(0.827,1.001)	(0.727,0.800)	(., .)	(0.684,0.801)	(0.803,0.905)	(., .)	(0.818,0.893)	(0.882,0.985)	(1.056,1.179)	(0.890,0.957)
$\lambda_{2,1996}$	0.938	0.764	0.814	.	0.895	0.645	0.708	0.579	0.740	1.484	0.954	0.866	0.915	0.814
	[0.020]	[0.018]	[0.030]	[.]	[0.036]	[0.013]	[0.025]	[0.028]	[0.025]	[0.067]	[0.027]	[0.024]	[0.030]	[0.013]
	(0.898,0.978)	(0.729,0.799)	(0.755,0.874)	(., .)	(0.824,0.966)	(0.620,0.670)	(0.659,0.756)	(0.523,0.634)	(0.691,0.790)	(1.352,1.615)	(0.901,1.008)	(0.820,0.913)	(0.856,0.973)	(0.789,0.839)
$\lambda_{2,1997}$	0.803	0.642	0.841	0.905	0.898	0.753	0.607	0.587	0.681	1.065	0.846	0.877	0.899	0.733
	[0.017]	[0.017]	[0.027]	[0.031]	[0.042]	[0.016]	[0.022]	[0.025]	[0.024]	[0.042]	[0.020]	[0.024]	[0.030]	[0.013]
	(0.770,0.835)	(0.608,0.675)	(0.788,0.895)	(0.845,0.965)	(0.816,0.980)	(0.722,0.784)	(0.564,0.651)	(0.538,0.636)	(0.634,0.727)	(0.983,1.147)	(0.807,0.885)	(0.830,0.923)	(0.839,0.958)	(0.708,0.757)
$\lambda_{2,1998}$	0.814	0.695	0.739	0.700	0.559	0.743	0.470	0.693	0.675	0.779	0.856	0.902	0.938	0.721
	[0.015]	[0.018]	[0.028]	[0.027]	[0.023]	[0.018]	[0.015]	[0.028]	[0.024]	[0.037]	[0.022]	[0.025]	[0.029]	[0.013]
	(0.785,0.843)	(0.660,0.730)	(0.684,0.795)	(0.648,0.752)	(0.513,0.605)	(0.708,0.778)	(0.441,0.499)	(0.638,0.748)	(0.628,0.722)	(0.707,0.852)	(0.813,0.900)	(0.853,0.951)	(0.880,0.996)	(0.696,0.746)
$\lambda_{2,1999}$	0.824	0.673	0.932	0.896	0.689	0.952	0.596	0.670	0.773	0.891	0.768	0.797	1.003	0.689
	[0.016]	[0.018]	[0.030]	[0.033]	[0.030]	[0.019]	[0.023]	[0.030]	[0.023]	[0.034]	[0.021]	[0.022]	[0.034]	[0.012]
	(0.792,0.856)	(0.638,0.707)	(0.874,0.991)	(0.831,0.960)	(0.630,0.747)	(0.915,0.989)	(0.550,0.642)	(0.611,0.728)	(0.728,0.819)	(0.825,0.958)	(0.727,0.810)	(0.753,0.840)	(0.936,1.069)	(0.665,0.712)
$\lambda_{2,2000}$	1.002	0.694	0.924	0.774	0.802	0.722	0.602	0.715	0.598	0.998	0.811	0.922	0.940	0.859
	[0.019]	[0.019]	[0.027]	[0.024]	[0.033]	[0.014]	[0.021]	[0.026]	[0.018]	[0.037]	[0.020]	[0.025]	[0.033]	[0.014]
	(0.964,1.040)	(0.657,0.731)	(0.871,0.978)	(0.727,0.822)	(0.737,0.868)	(0.694,0.750)	(0.562,0.643)	(0.664,0.765)	(0.563,0.633)	(0.925,1.070)	(0.771,0.851)	(0.872,0.971)	(0.875,1.005)	(0.831,0.887)
$\lambda_{2,2001}$	0.990	0.746	0.829	0.830	1.025	0.946	0.639	0.713	0.837	1.061	0.876	0.984	1.194	0.877
	[0.018]	[0.023]	[0.025]	[0.029]	[0.038]	[0.026]	[0.022]	[0.027]	[0.024]	[0.035]	[0.021]	[0.027]	[0.039]	[0.016]
	(0.956,1.024)	(0.702,0.790)	(0.779,0.878)	(0.773,0.887)	(0.950,1.100)	(0.895,0.997)	(0.596,0.682)	(0.659,0.766)	(0.791,0.883)	(0.992,1.130)	(0.835,0.918)	(0.932,1.037)	(1.117,1.271)	(0.846,0.908)
Cohort shifters														
$\gamma_{2,51-60}$	0.874	0.970	1.060	0.876	1.060	0.984	0.864	0.901	1.032	0.902	1.005	1.010	0.769	0.904
	[0.014]	[0.031]	[0.019]	[0.022]	[0.027]	[0.014]	[0.028]	[0.022]	[0.027]	[0.028]	[0.018]	[0.021]	[0.026]	[0.013]
	(0.846,0.901)	(0.909,1.030)	(1.024,1.097)	(0.833,0.919)	(1.007,1.114)	(0.957,1.010)	(0.809,0.920)	(0.859,0.944)	(0.978,1.085)	(0.848,0.956)	(0.970,1.040)	(0.968,1.052)	(0.719,0.819)	(0.879,0.930)
$\gamma_{2,61-70}$	0.991	1.100	1.177	0.928	1.086	0.916	0.933	0.869	0.933	1.037	1.106	1.019	0.859	1.029
	[0.015]	[0.031]	[0.019]	[0.022]	[0.026]	[0.012]	[0.029]	[0.019]	[0.023]	[0.036]	[0.018]	[0.020]	[0.026]	[0.014]
	(0.961,1.021)	(1.038,1.161)	(1.141,1.214)	(0.884,0.972)	(1.035,1.138)	(0.893,0.939)	(0.875,0.990)	(0.832,0.905)	(0.888,0.978)	(0.966,1.108)	(1.070,1.142)	(0.978,1.059)	(0.809,0.909)	(1.001,1.057)
$\gamma_{2,71-80}$	1.078	1.228	1.759	1.201	1.796	1.219	1.159	1.451	1.510	1.322	1.306	1.293	1.013	0.973
	[0.018]	[0.033]	[0.028]	[0.033]	[0.045]	[0.018]	[0.039]	[0.035]	[0.039]	[0.050]	[0.025]	[0.025]	[0.030]	[0.019]
	(1.044,1.113)	(1.163,1.292)	(1.705,1.814)	(1.135,1.266)	(1.708,1.883)	(1.183,1.254)	(1.084,1.235)	(1.382,1.521)	(1.434,1.586)	(1.223,1.421)	(1.258,1.355)	(1.243,1.343)	(0.955,1.071)	(0.936,1.010)
SSR	0.017	0.037	0.014	0.006	0.014	0.011	0.009	0.031	0.025	0.031	0.005	0.014	0.044	0.032

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

Table A3: Error Component Estimates - Model 2: $\lambda_{1,t}\gamma_{1,c}[\sigma^2_\mu]$+$\lambda_{2,t}\gamma_{2,c}$[AR(1), σ^2_0]

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Permanent Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = σ^2_μ	-2.075	-1.994	-2.926	-3.043	-2.727	-2.567	-2.512	-1.823	-2.044	-2.108	-2.473	-1.676	-1.362	-2.243
	[0.025]	[0.035]	[0.042]	[0.046]	[0.033]	[0.022]	[0.045]	[0.029]	[0.028]	[0.024]	[0.024]	[0.026]	[0.030]	[0.033]
	(-2.124,-2.026)	(-2.063,-1.924)	(-3.009,-2.844)	(-3.133,-2.953)	(-2.792,-2.661)	(-2.611,-2.524)	(-2.600,-2.424)	(-1.880,-1.765)	(-2.098,-1.990)	(-2.154,-2.061)	(-2.519,-2.426)	(-1.727,-1.626)	(-1.422,-1.303)	(-2.308,-2.178)
Time shifters														
$\lambda_{1,1995}$	0.971	1.033	1.003	.	1.064	0.905	.	1.061	1.069	.	0.983	1.040	0.977	1.056
	[0.009]	[0.010]	[0.020]	[.]	[0.019]	[0.011]	[.]	[0.013]	[0.009]	[.]	[0.009]	[0.008]	[0.012]	[0.014]
	(0.954,0.989)	(1.013,1.053)	(0.963,1.042)	(., .)	(1.026,1.101)	(0.883,0.927)	(., .)	(1.035,1.087)	(1.052,1.087)	(., .)	(0.965,1.001)	(1.024,1.056)	(0.953,1.000)	(1.029,1.083)
$\lambda_{1,1996}$	0.894	1.010	0.986	.	1.103	0.955	1.011	1.114	1.087	0.963	1.021	1.026	1.041	1.092
	[0.011]	[0.011]	[0.020]	[.]	[0.020]	[0.011]	[0.024]	[0.013]	[0.011]	[0.021]	[0.012]	[0.009]	[0.012]	[0.018]
	(0.873,0.916)	(0.987,1.032)	(0.946,1.025)	(., .)	(1.064,1.141)	(0.934,0.977)	(0.963,1.059)	(1.088,1.140)	(1.066,1.108)	(0.923,1.004)	(0.997,1.044)	(1.009,1.043)	(1.017,1.066)	(1.057,1.127)
$\lambda_{1,1997}$	0.932	1.096	0.906	1.164	1.102	0.870	1.057	1.147	1.070	1.092	1.001	1.051	1.018	1.203
	[0.013]	[0.014]	[0.021]	[0.022]	[0.018]	[0.013]	[0.029]	[0.015]	[0.011]	[0.019]	[0.013]	[0.010]	[0.014]	[0.022]
	(0.906,0.957)	(1.067,1.124)	(0.865,0.947)	(1.121,1.208)	(1.066,1.138)	(0.844,0.895)	(1.001,1.113)	(1.117,1.176)	(1.048,1.092)	(1.055,1.129)	(0.976,1.026)	(1.032,1.071)	(0.990,1.045)	(1.160,1.245)
$\lambda_{1,1998}$	0.918	1.074	0.912	1.191	1.199	0.838	0.984	1.147	1.076	1.157	1.115	1.080	1.019	1.139
	[0.015]	[0.016]	[0.024]	[0.026]	[0.018]	[0.014]	[0.029]	[0.017]	[0.017]	[0.020]	[0.015]	[0.011]	[0.016]	[0.023]
	(0.888,0.947)	(1.043,1.105)	(0.865,0.959)	(1.141,1.241)	(1.164,1.233)	(0.810,0.866)	(0.927,1.041)	(1.113,1.181)	(1.043,1.110)	(1.117,1.197)	(1.086,1.144)	(1.059,1.101)	(0.988,1.049)	(1.094,1.184)
$\lambda_{1,1999}$	0.916	1.039	0.818	1.187	1.118	0.733	0.908	1.143	1.129	1.215	1.141	1.063	0.987	1.205
	[0.015]	[0.016]	[0.024]	[0.031]	[0.018]	[0.014]	[0.038]	[0.018]	[0.014]	[0.023]	[0.016]	[0.011]	[0.017]	[0.025]
	(0.885,0.946)	(1.009,1.070)	(0.770,0.865)	(1.125,1.249)	(1.083,1.153)	(0.705,0.761)	(0.834,0.982)	(1.108,1.178)	(1.102,1.156)	(1.170,1.260)	(1.110,1.172)	(1.041,1.085)	(0.954,1.021)	(1.157,1.253)
$\lambda_{1,2000}$	0.857	0.999	0.789	1.175	1.118	0.868	0.940	1.076	1.152	1.234	1.128	1.010	1.092	1.066
	[0.016]	[0.019]	[0.024]	[0.028]	[0.018]	[0.015]	[0.039]	[0.019]	[0.014]	[0.029]	[0.016]	[0.013]	[0.019]	[0.024]
	(0.826,0.888)	(0.961,1.037)	(0.741,0.837)	(1.121,1.230)	(1.082,1.154)	(0.839,0.897)	(0.864,1.017)	(1.039,1.112)	(1.124,1.179)	(1.176,1.292)	(1.097,1.158)	(0.985,1.035)	(1.054,1.131)	(1.019,1.114)
$\lambda_{1,2001}$	0.932	1.009	0.814	1.303	1.190	0.864	0.942	1.099	1.059	1.199	1.137	0.993	1.076	1.133
	[0.015]	[0.021]	[0.022]	[0.030]	[0.022]	[0.015]	[0.038]	[0.018]	[0.018]	[0.021]	[0.017]	[0.013]	[0.020]	[0.024]
	(0.903,0.961)	(0.967,1.051)	(0.771,0.857)	(1.245,1.361)	(1.148,1.233)	(0.835,0.894)	(0.867,1.018)	(1.063,1.135)	(1.024,1.094)	(1.159,1.240)	(1.104,1.169)	(0.966,1.019)	(1.037,1.115)	(1.085,1.181)
Cohort shifters														
$\gamma_{1,51-60}$	1.007	0.983	0.923	0.929	0.884	1.007	0.892	0.861	0.966	0.958	0.918	0.985	0.934	0.894
	[0.013]	[0.022]	[0.020]	[0.024]	[0.014]	[0.014]	[0.020]	[0.014]	[0.016]	[0.019]	[0.015]	[0.015]	[0.018]	[0.013]
	(0.981,1.033)	(0.939,1.027)	(0.884,0.963)	(0.882,0.976)	(0.857,0.911)	(0.981,1.034)	(0.853,0.931)	(0.833,0.889)	(0.934,0.999)	(0.921,0.995)	(0.889,0.947)	(0.956,1.015)	(0.899,0.969)	(0.867,0.920)
$\gamma_{1,61-70}$	0.918	0.866	0.774	0.844	0.714	0.773	0.835	0.790	0.749	0.939	0.705	0.781	0.769	0.635
	[0.013]	[0.020]	[0.015]	[0.017]	[0.011]	[0.010]	[0.026]	[0.013]	[0.013]	[0.018]	[0.012]	[0.013]	[0.016]	[0.010]
	(0.892,0.944)	(0.827,0.906)	(0.745,0.803)	(0.810,0.878)	(0.693,0.735)	(0.753,0.793)	(0.784,0.887)	(0.764,0.816)	(0.724,0.774)	(0.903,0.975)	(0.681,0.729)	(0.756,0.806)	(0.737,0.801)	(0.615,0.655)
$\gamma_{1,71-80}$	0.605	0.624	0.548	0.687	0.503	0.133	0.459	0.508	0.410	0.582	0.543	0.458	0.314	0.520
	[0.018]	[0.024]	[0.031]	[0.029]	[0.019]	[0.041]	[0.029]	[0.017]	[0.017]	[0.019]	[0.015]	[0.012]	[0.020]	[0.019]
	(0.569,0.640)	(0.577,0.671)	(0.486,0.609)	(0.629,0.744)	(0.465,0.541)	(0.054,0.213)	(0.402,0.517)	(0.474,0.541)	(0.377,0.444)	(0.545,0.620)	(0.514,0.573)	(0.434,0.481)	(0.274,0.354)	(0.483,0.557)

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

Continued: Error Component Estimates - Model 2: $\lambda_{1,t}\gamma_{1,c}[\sigma^2_\mu]$+$\lambda_{2,t}\gamma_{2,c}$[AR(1), σ^2_0]

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Transitory Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = σ^2_0	-3.073	-2.536	-3.621	-2.837	-3.302	-3.199	-2.588	-2.325	-2.707	-3.122	-3.418	-2.940	-3.152	-2.683
	[0.051]	[0.055]	[0.049]	[0.056]	[0.070]	[0.036]	[0.065]	[0.053]	[0.055]	[0.070]	[0.046]	[0.054]	[0.097]	[0.040]
	(-3.173,-2.973)	(-2.644,-2.429)	(-3.718,-3.524)	(-2.947,-2.726)	(-3.439,-3.165)	(-3.270,-3.128)	(-2.716,-2.461)	(-2.430,-2.221)	(-2.815,-2.599)	(-3.259,-2.985)	(-3.508,-3.327)	(-3.045,-2.836)	(-3.343,-2.961)	(-2.762,-2.604)
Exp(estimate) = σ^2_ϵ	-1.731	-3.078	-1.468	-3.340	-3.025	-0.615	-0.728	-0.253	-1.708	-3.638	-0.693	-1.596	-1.353	-0.833
	[0.192]	[0.207]	[0.260]	[0.219]	[0.205]	[0.170]	[0.181]	[0.581]	[0.410]	[0.199]	[0.506]	[0.346]	[0.207]	[0.192]
	(-2.107,-1.355)	(-3.484,-2.673)	(-1.978,-0.958)	(-3.769,-2.911)	(-3.427,-2.623)	(-0.948,-0.282)	(-1.083,-0.373)	(-1.391,0.884)	(-2.512,-0.904)	(-4.028,-3.247)	(-1.686,0.299)	(-2.274,-0.918)	(-1.758,-0.948)	(-1.208,-0.457)
ρ	0.589	0.314	0.542	0.283	0.326	0.646	0.701	0.357	0.402	0.302	0.400	0.271	0.778	0.611
	[0.012]	[0.026]	[0.013]	[0.020]	[0.011]	[0.009]	[0.029]	[0.027]	[0.022]	[0.017]	[0.017]	[0.015]	[0.015]	[0.015]
	(0.565,0.613)	(0.262,0.365)	(0.516,0.568)	(0.243,0.322)	(0.304,0.348)	(0.628,0.664)	(0.644,0.758)	(0.304,0.410)	(0.359,0.444)	(0.270,0.335)	(0.367,0.433)	(0.242,0.301)	(0.749,0.808)	(0.582,0.640)
Time shifters														
$\lambda_{2,1995}$	0.523	0.960	0.270	.	0.770	0.208	.	0.264	0.524	.	0.228	0.479	0.506	0.380
	[0.051]	[0.094]	[0.033]	[.]	[0.070]	[0.019]	[.]	[0.078]	[0.107]	[.]	[0.058]	[0.083]	[0.053]	[0.037]
	(0.423,0.623)	(0.776,1.143)	(0.204,0.335)	(., .)	(0.632,0.908)	(0.171,0.246)	(., .)	(0.110,0.418)	(0.314,0.734)	(., .)	(0.114,0.343)	(0.315,0.642)	(0.403,0.609)	(0.307,0.453)
$\lambda_{2,1996}$	0.490	0.987	0.260	.	0.769	0.169	0.293	0.185	0.430	1.740	0.243	0.436	0.312	0.295
	[0.051]	[0.104]	[0.035]	[.]	[0.083]	[0.015]	[0.029]	[0.055]	[0.089]	[0.171]	[0.062]	[0.077]	[0.037]	[0.030]
	(0.390,0.589)	(0.783,1.190)	(0.191,0.329)	(., .)	(0.607,0.930)	(0.139,0.198)	(0.236,0.350)	(0.077,0.293)	(0.256,0.603)	(1.405,2.075)	(0.122,0.365)	(0.285,0.586)	(0.240,0.384)	(0.235,0.354)
$\lambda_{2,1997}$	0.436	0.794	0.260	1.151	0.756	0.188	0.209	0.209	0.391	1.296	0.218	0.454	0.354	0.238
	[0.044]	[0.080]	[0.035]	[0.121]	[0.079]	[0.016]	[0.022]	[0.062]	[0.082]	[0.136]	[0.055]	[0.078]	[0.038]	[0.025]
	(0.351,0.522)	(0.637,0.952)	(0.192,0.329)	(0.915,1.388)	(0.601,0.910)	(0.155,0.220)	(0.165,0.253)	(0.088,0.330)	(0.230,0.552)	(1.029,1.562)	(0.109,0.326)	(0.301,0.608)	(0.279,0.429)	(0.189,0.287)
$\lambda_{2,1998}$	0.441	0.874	0.228	0.922	0.496	0.194	0.172	0.251	0.404	1.004	0.226	0.476	0.372	0.288
	[0.043]	[0.084]	[0.031]	[0.104]	[0.049]	[0.017]	[0.020]	[0.072]	[0.085]	[0.090]	[0.057]	[0.081]	[0.040]	[0.028]
	(0.356,0.525)	(0.709,1.038)	(0.168,0.288)	(0.718,1.127)	(0.399,0.592)	(0.161,0.226)	(0.134,0.211)	(0.109,0.392)	(0.239,0.570)	(0.828,1.179)	(0.114,0.337)	(0.317,0.634)	(0.295,0.450)	(0.233,0.343)
$\lambda_{2,1999}$	0.438	0.871	0.305	1.163	0.579	0.233	0.227	0.241	0.461	1.175	0.202	0.416	0.355	0.304
	[0.042]	[0.081]	[0.039]	[0.120]	[0.060]	[0.020]	[0.022]	[0.069]	[0.097]	[0.106]	[0.051]	[0.071]	[0.037]	[0.029]
	(0.357,0.520)	(0.712,1.030)	(0.228,0.382)	(0.927,1.399)	(0.461,0.696)	(0.194,0.272)	(0.183,0.271)	(0.105,0.377)	(0.271,0.650)	(0.966,1.383)	(0.103,0.302)	(0.277,0.556)	(0.283,0.428)	(0.247,0.362)
$\lambda_{2,2000}$	0.503	0.903	0.297	0.995	0.684	0.189	0.220	0.256	0.362	1.280	0.212	0.469	0.348	0.350
	[0.049]	[0.088]	[0.039]	[0.102]	[0.070]	[0.016]	[0.022]	[0.074]	[0.076]	[0.116]	[0.053]	[0.080]	[0.036]	[0.034]
	(0.408,0.598)	(0.730,1.076)	(0.221,0.372)	(0.796,1.195)	(0.546,0.821)	(0.157,0.220)	(0.177,0.263)	(0.110,0.401)	(0.212,0.511)	(1.052,1.508)	(0.108,0.316)	(0.312,0.627)	(0.277,0.419)	(0.283,0.417)
$\lambda_{2,2001}$	0.468	0.935	0.268	0.966	0.854	0.225	0.225	0.247	0.486	1.290	0.220	0.491	0.392	0.327
	[0.045]	[0.096]	[0.035]	[0.105]	[0.088]	[0.019]	[0.023]	[0.072]	[0.103]	[0.122]	[0.055]	[0.084]	[0.040]	[0.032]
	(0.378,0.557)	(0.747,1.124)	(0.199,0.337)	(0.760,1.172)	(0.683,1.026)	(0.188,0.262)	(0.180,0.270)	(0.106,0.388)	(0.284,0.688)	(1.051,1.529)	(0.112,0.328)	(0.326,0.657)	(0.314,0.471)	(0.265,0.390)
Cohort shifters														
$\gamma_{2,51-60}$	0.954	0.951	1.133	0.852	1.069	1.021	0.841	0.909	0.972	0.898	1.009	1.006	0.780	0.980
	[0.017]	[0.033]	[0.023]	[0.022]	[0.028]	[0.016]	[0.025]	[0.022]	[0.028]	[0.027]	[0.019]	[0.023]	[0.038]	[0.018]
	(0.920,0.987)	(0.886,1.016)	(1.088,1.177)	(0.809,0.896)	(1.015,1.123)	(0.990,1.052)	(0.791,0.891)	(0.866,0.952)	(0.917,1.027)	(0.846,0.950)	(0.971,1.048)	(0.962,1.050)	(0.705,0.855)	(0.944,1.015)
$\gamma_{2,61-70}$	1.076	1.101	1.220	0.887	1.122	0.968	0.899	0.905	0.909	1.027	1.093	1.037	1.010	1.142
	[0.018]	[0.034]	[0.019]	[0.023]	[0.028]	[0.012]	[0.028]	[0.020]	[0.024]	[0.036]	[0.020]	[0.022]	[0.040]	[0.021]
	(1.040,1.112)	(1.034,1.168)	(1.182,1.258)	(0.842,0.932)	(1.067,1.177)	(0.944,0.991)	(0.844,0.953)	(0.866,0.944)	(0.862,0.957)	(0.957,1.096)	(1.055,1.132)	(0.993,1.080)	(0.932,1.088)	(1.101,1.184)
$\gamma_{2,71-80}$	1.178	1.161	1.848	1.188	1.815	1.283	1.198	1.478	1.442	1.276	1.325	1.315	1.107	0.995
	[0.022]	[0.035]	[0.031]	[0.033]	[0.046]	[0.019]	[0.042]	[0.036]	[0.041]	[0.047]	[0.027]	[0.028]	[0.041]	[0.023]
	(1.135,1.221)	(1.092,1.229)	(1.787,1.909)	(1.124,1.252)	(1.725,1.905)	(1.246,1.321)	(1.116,1.279)	(1.407,1.549)	(1.362,1.521)	(1.185,1.368)	(1.272,1.377)	(1.261,1.369)	(1.027,1.187)	(0.950,1.040)
SSR	0.009	0.033	0.007	0.005	0.011	0.005	0.005	0.025	0.020	0.026	0.002	0.011	0.029	0.020

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

Table A4: Error Component Estimates - Model 3: $\lambda_{1,t}\gamma_{1,c}[\sigma^2_\mu]$+$\lambda_{2,t}\gamma_{2,c}$[AR(1), $\sigma^2_{c,0}$]

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Permanent Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = σ^2_μ	-2.264	-1.988	-2.949	-3.047	-2.615	-2.662	-2.352	-1.800	-1.924	-2.234	-2.488	-1.689	-1.459	-2.213
	[0.023]	[0.037]	[0.046]	[0.044]	[0.030]	[0.025]	[0.054]	[0.029]	[0.026]	[0.025]	[0.024]	[0.026]	[0.038]	[0.038]
	(-2.310,-2.219)	(-2.061,-1.916)	(-3.038,-2.860)	(-3.132,-2.961)	(-2.673,-2.557)	(-2.711,-2.614)	(-2.458,-2.246)	(-1.858,-1.743)	(-1.976,-1.872)	(-2.284,-2.185)	(-2.536,-2.441)	(-1.740,-1.638)	(-1.533,-1.385)	(-2.287,-2.138)
Time shifters														
$\lambda_{1,1995}$	1.035	1.035	1.014	.	1.006	0.942	.	1.051	0.988	.	0.989	1.046	1.013	1.030
	[0.009]	[0.011]	[0.021]	[.]	[0.016]	[0.012]	[.]	[0.013]	[0.009]	[.]	[0.009]	[0.008]	[0.014]	[0.016]
	(1.018,1.052)	(1.013,1.057)	(0.974,1.055)	(., .)	(0.975,1.038)	(0.919,0.965)	(., .)	(1.026,1.076)	(0.969,1.006)	(., .)	(0.971,1.008)	(1.030,1.061)	(0.985,1.041)	(0.999,1.061)
$\lambda_{1,1996}$	0.988	1.012	0.999	.	1.033	1.004	0.908	1.106	0.994	1.022	1.029	1.032	1.088	1.067
	[0.010]	[0.012]	[0.021]	[.]	[0.018]	[0.012]	[0.030]	[0.013]	[0.012]	[0.022]	[0.012]	[0.009]	[0.016]	[0.021]
	(0.969,1.006)	(0.988,1.036)	(0.959,1.040)	(., .)	(0.997,1.068)	(0.980,1.028)	(0.848,0.967)	(1.080,1.131)	(0.970,1.018)	(0.978,1.065)	(1.006,1.051)	(1.016,1.049)	(1.056,1.119)	(1.025,1.109)
$\lambda_{1,1997}$	1.050	1.095	0.919	1.171	1.031	0.922	0.928	1.134	0.976	1.181	1.010	1.060	1.078	1.174
	[0.011]	[0.015]	[0.023]	[0.020]	[0.015]	[0.014]	[0.032]	[0.014]	[0.013]	[0.021]	[0.012]	[0.010]	[0.018]	[0.026]
	(1.028,1.071)	(1.066,1.125)	(0.874,0.964)	(1.132,1.210)	(1.002,1.060)	(0.894,0.951)	(0.865,0.991)	(1.106,1.162)	(0.951,1.001)	(1.140,1.222)	(0.985,1.034)	(1.040,1.079)	(1.043,1.113)	(1.122,1.226)
$\lambda_{1,1998}$	1.054	1.069	0.926	1.198	1.126	0.892	0.856	1.130	0.957	1.249	1.125	1.089	1.087	1.081
	[0.013]	[0.017]	[0.026]	[0.024]	[0.014]	[0.016]	[0.036]	[0.017]	[0.018]	[0.022]	[0.015]	[0.011]	[0.019]	[0.028]
	(1.029,1.079)	(1.036,1.102)	(0.876,0.976)	(1.151,1.245)	(1.098,1.155)	(0.860,0.923)	(0.785,0.926)	(1.096,1.163)	(0.922,0.992)	(1.206,1.293)	(1.096,1.154)	(1.068,1.110)	(1.049,1.125)	(1.027,1.135)
$\lambda_{1,1999}$	1.050	1.036	0.831	1.197	1.048	0.785	0.773	1.126	1.012	1.320	1.152	1.071	1.056	1.156
	[0.013]	[0.017]	[0.025]	[0.027]	[0.015]	[0.016]	[0.038]	[0.018]	[0.015]	[0.025]	[0.016]	[0.011]	[0.021]	[0.029]
	(1.025,1.075)	(1.003,1.068)	(0.781,0.881)	(1.143,1.251)	(1.018,1.078)	(0.754,0.817)	(0.698,0.848)	(1.090,1.161)	(0.983,1.041)	(1.272,1.369)	(1.120,1.184)	(1.049,1.092)	(1.015,1.097)	(1.098,1.214)
$\lambda_{1,2000}$	0.986	0.996	0.802	1.183	1.046	0.925	0.802	1.058	1.048	1.342	1.139	1.018	1.165	1.011
	[0.013]	[0.020]	[0.027]	[0.026]	[0.016]	[0.017]	[0.040]	[0.019]	[0.014]	[0.031]	[0.016]	[0.013]	[0.024]	[0.029]
	(0.960,1.012)	(0.956,1.035)	(0.749,0.854)	(1.133,1.233)	(1.015,1.078)	(0.891,0.958)	(0.723,0.881)	(1.021,1.095)	(1.021,1.076)	(1.281,1.404)	(1.108,1.171)	(0.993,1.043)	(1.118,1.212)	(0.954,1.068)
$\lambda_{1,2001}$	1.050	1.006	0.826	1.306	1.112	0.921	0.811	1.084	0.949	1.298	1.147	1.000	1.152	1.090
	[0.013]	[0.022]	[0.024]	[0.029]	[0.018]	[0.016]	[0.040]	[0.019]	[0.019]	[0.022]	[0.017]	[0.014]	[0.024]	[0.029]
	(1.025,1.075)	(0.962,1.050)	(0.779,0.872)	(1.250,1.362)	(1.076,1.148)	(0.890,0.951)	(0.733,0.889)	(1.048,1.121)	(0.913,0.986)	(1.254,1.341)	(1.113,1.181)	(0.973,1.026)	(1.106,1.199)	(1.033,1.147)
Cohort shifters														
$\gamma_{1,51-60}$	1.017	0.978	0.924	0.926	0.882	1.013	0.903	0.859	0.985	0.956	0.918	0.986	0.938	0.886
	[0.013]	[0.022]	[0.020]	[0.024]	[0.014]	[0.014]	[0.021]	[0.014]	[0.018]	[0.019]	[0.015]	[0.015]	[0.020]	[0.014]
	(0.991,1.043)	(0.934,1.022)	(0.884,0.965)	(0.880,0.973)	(0.855,0.908)	(0.986,1.040)	(0.863,0.943)	(0.832,0.886)	(0.951,1.020)	(0.919,0.993)	(0.889,0.947)	(0.957,1.015)	(0.899,0.976)	(0.858,0.913)
$\gamma_{1,61-70}$	0.940	0.860	0.775	0.841	0.710	0.778	0.843	0.780	0.746	0.940	0.706	0.782	0.786	0.606
	[0.013]	[0.020]	[0.015]	[0.017]	[0.011]	[0.010]	[0.026]	[0.013]	[0.014]	[0.018]	[0.012]	[0.013]	[0.018]	[0.012]
	(0.914,0.966)	(0.821,0.899)	(0.745,0.804)	(0.807,0.874)	(0.689,0.731)	(0.757,0.798)	(0.791,0.895)	(0.754,0.805)	(0.719,0.773)	(0.904,0.976)	(0.682,0.730)	(0.757,0.807)	(0.751,0.821)	(0.583,0.629)
$\gamma_{1,71-80}$	0.640	0.620	0.551	0.687	0.501	0.142	0.427	0.500	0.360	0.593	0.542	0.458	0.332	0.500
	[0.017]	[0.025]	[0.032]	[0.029]	[0.019]	[0.039]	[0.033]	[0.018]	[0.024]	[0.018]	[0.015]	[0.012]	[0.019]	[0.021]
	(0.608,0.673)	(0.572,0.668)	(0.489,0.613)	(0.629,0.744)	(0.463,0.539)	(0.067,0.218)	(0.362,0.491)	(0.465,0.535)	(0.313,0.407)	(0.557,0.629)	(0.513,0.572)	(0.435,0.481)	(0.296,0.368)	(0.458,0.541)

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

Continued: Error Component Estimates - Model 3: $\lambda_{1,t}\gamma_{1,c}[\sigma^2_\mu]+\lambda_{2,t}\gamma_{2,c}[\text{AR(1)}, \sigma^2_{c,0}]$

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Transitory Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = $\sigma^2_{40-50,0}$	-2.369	-2.402	-3.400	-2.783	-3.781	-2.750	-2.920	-2.264	-3.873	-2.587	-3.364	-3.129	-2.439	-2.569
	[0.036]	[0.066]	[0.079]	[0.064]	[0.095]	[0.044]	[0.107]	[0.049]	[0.187]	[0.064]	[0.060]	[0.092]	[0.096]	[0.056]
	(-2.441,-2.298)	(-2.531,-2.272)	(-3.555,-3.244)	(-2.908,-2.659)	(-3.967,-3.594)	(-2.835,-2.664)	(-3.130,-2.710)	(-2.360,-2.168)	(-4.240,-3.506)	(-2.712,-2.462)	(-3.482,-3.245)	(-3.309,-2.949)	(-2.627,-2.251)	(-2.679,-2.458)
Exp(estimate) = $\sigma^2_{51-60,0}$	-2.613	-2.839	-3.871	-2.912	-3.736	-3.333	-2.844	-2.394	-2.546	-2.241	-3.426	-2.649	-2.543	-3.338
	[0.063]	[0.105]	[0.082]	[0.073]	[0.123]	[0.066]	[0.150]	[0.090]	[0.086]	[0.111]	[0.062]	[0.074]	[0.243]	[0.102]
	(-2.737,-2.490)	(-3.045,-2.632)	(-4.033,-3.710)	(-3.054,-2.770)	(-3.978,-3.494)	(-3.463,-3.203)	(-3.138,-2.550)	(-2.571,-2.217)	(-2.716,-2.377)	(-2.458,-2.023)	(-3.548,-3.303)	(-2.795,-2.503)	(-3.020,-2.066)	(-3.538,-3.139)
Exp(estimate) = $\sigma^2_{61-70,0}$	-2.991	-2.804	-3.546	-2.927	-3.805	-3.239	-2.685	-3.023	-3.275	-2.700	-3.201	-2.637	-3.426	-2.697
	[0.084]	[0.095]	[0.067]	[0.080]	[0.088]	[0.054]	[0.123]	[0.084]	[0.108]	[0.114]	[0.051]	[0.062]	[0.216]	[0.052]
	(-3.156,-2.826)	(-2.990,-2.618)	(-3.678,-3.415)	(-3.083,-2.771)	(-3.977,-3.632)	(-3.344,-3.134)	(-2.926,-2.444)	(-3.189,-2.858)	(-3.486,-3.063)	(-2.923,-2.478)	(-3.302,-3.101)	(-2.759,-2.515)	(-3.849,-3.003)	(-2.799,-2.594)
Exp(estimate) = $\sigma^2_{71-80,0}$	-3.390	-2.628	-3.669	-2.881	-3.121	-3.361	-2.317	-2.348	-2.197	-3.794	-3.526	-2.997	-3.432	-2.522
	[0.081]	[0.101]	[0.070]	[0.095]	[0.093]	[0.060]	[0.102]	[0.097]	[0.069]	[0.122]	[0.085]	[0.088]	[0.095]	[0.074]
	(-3.548,-3.233)	(-2.825,-2.430)	(-3.807,-3.532)	(-3.067,-2.695)	(-3.303,-2.938)	(-3.477,-3.244)	(-2.517,-2.116)	(-2.537,-2.159)	(-2.332,-2.062)	(-4.033,-3.555)	(-3.692,-3.360)	(-3.170,-2.824)	(-3.619,-3.245)	(-2.666,-2.378)
Exp(estimate) = σ^2_ϵ	-2.993	-3.149	-1.542	-3.463	-2.694	-1.411	-0.116	-0.227	-0.180	-3.987	-1.240	-1.978	-2.249	-1.447
	[0.108]	[0.189]	[0.275]	[0.214]	[0.208]	[0.152]	[0.232]	[0.578]	[0.525]	[0.167]	[0.387]	[0.293]	[0.192]	[0.146]
	(-3.205,-2.781)	(-3.519,-2.779)	(-2.081,-1.004)	(-3.882,-3.044)	(-3.101,-2.287)	(-1.709,-1.112)	(-0.570,0.338)	(-1.360,0.906)	(-1.208,0.849)	(-4.315,-3.659)	(-2.000,-0.481)	(-2.553,-1.403)	(-2.626,-1.872)	(-1.734,-1.160)
ρ	0.480	0.341	0.538	0.275	0.342	0.628	0.778	0.399	0.573	0.239	0.397	0.263	0.719	0.677
	[0.013]	[0.025]	[0.014]	[0.021]	[0.011]	[0.010]	[0.019]	[0.025]	[0.021]	[0.016]	[0.015]	[0.014]	[0.016]	[0.013]
	(0.455,0.504)	(0.293,0.390)	(0.511,0.566)	(0.234,0.315)	(0.320,0.364)	(0.608,0.648)	(0.741,0.816)	(0.350,0.449)	(0.532,0.615)	(0.207,0.271)	(0.367,0.427)	(0.234,0.291)	(0.687,0.750)	(0.651,0.704)
Time shifters														
$\lambda_{2,1995}$	0.921	0.915	0.274	.	0.685	0.294	.	0.252	0.290	.	0.299	0.590	0.730	0.503
	[0.043]	[0.081]	[0.036]	[.]	[0.067]	[0.023]	[.]	[0.074]	[0.076]	[.]	[0.058]	[0.087]	[0.060]	[0.036]
	(0.837,1.005)	(0.756,1.075)	(0.204,0.344)	(., .)	(0.554,0.816)	(0.250,0.338)	(., .)	(0.107,0.397)	(0.142,0.438)	(., .)	(0.185,0.412)	(0.420,0.759)	(0.613,0.847)	(0.432,0.574)
$\lambda_{2,1996}$	0.923	0.931	0.264	.	0.680	0.240	0.240	0.170	0.221	1.977	0.319	0.540	0.483	0.385
	[0.054]	[0.090]	[0.037]	[.]	[0.074]	[0.018]	[0.029]	[0.050]	[0.057]	[0.149]	[0.062]	[0.080]	[0.048]	[0.030]
	(0.818,1.028)	(0.754,1.109)	(0.191,0.336)	(., .)	(0.536,0.824)	(0.204,0.275)	(0.184,0.297)	(0.071,0.269)	(0.109,0.333)	(1.686,2.269)	(0.197,0.441)	(0.383,0.697)	(0.389,0.577)	(0.327,0.443)
$\lambda_{2,1997}$	0.816	0.761	0.265	1.197	0.664	0.268	0.171	0.196	0.193	1.440	0.285	0.560	0.542	0.314
	[0.045]	[0.071]	[0.037]	[0.125]	[0.071]	[0.020]	[0.021]	[0.057]	[0.051]	[0.138]	[0.055]	[0.081]	[0.053]	[0.025]
	(0.728,0.905)	(0.621,0.901)	(0.193,0.336)	(0.952,1.443)	(0.526,0.803)	(0.228,0.307)	(0.131,0.212)	(0.084,0.309)	(0.092,0.293)	(1.170,1.710)	(0.177,0.394)	(0.401,0.719)	(0.439,0.645)	(0.266,0.363)
$\lambda_{2,1998}$	0.801	0.857	0.231	0.963	0.442	0.278	0.140	0.237	0.214	1.082	0.296	0.583	0.580	0.388
	[0.040]	[0.075]	[0.032]	[0.106]	[0.045]	[0.021]	[0.017]	[0.068]	[0.057]	[0.092]	[0.056]	[0.083]	[0.056]	[0.028]
	(0.722,0.880)	(0.709,1.005)	(0.168,0.294)	(0.755,1.171)	(0.354,0.531)	(0.237,0.319)	(0.106,0.174)	(0.105,0.370)	(0.102,0.326)	(0.902,1.261)	(0.185,0.407)	(0.420,0.746)	(0.471,0.689)	(0.333,0.442)
$\lambda_{2,1999}$	0.804	0.848	0.310	1.213	0.514	0.337	0.172	0.228	0.232	1.242	0.264	0.515	0.562	0.399
	[0.040]	[0.072]	[0.042]	[0.124]	[0.054]	[0.026]	[0.021]	[0.065]	[0.062]	[0.102]	[0.050]	[0.074]	[0.053]	[0.028]
	(0.727,0.882)	(0.706,0.989)	(0.229,0.392)	(0.969,1.457)	(0.408,0.621)	(0.287,0.387)	(0.132,0.213)	(0.101,0.356)	(0.111,0.353)	(1.043,1.442)	(0.166,0.362)	(0.370,0.660)	(0.458,0.665)	(0.344,0.454)
$\lambda_{2,2000}$	0.954	0.879	0.302	1.040	0.604	0.270	0.166	0.243	0.186	1.364	0.277	0.581	0.551	0.453
	[0.052]	[0.077]	[0.041]	[0.106]	[0.064]	[0.020]	[0.020]	[0.070]	[0.050]	[0.113]	[0.052]	[0.084]	[0.052]	[0.032]
	(0.853,1.055)	(0.727,1.031)	(0.222,0.382)	(0.832,1.247)	(0.480,0.728)	(0.231,0.310)	(0.127,0.205)	(0.107,0.380)	(0.088,0.284)	(1.143,1.585)	(0.174,0.379)	(0.417,0.744)	(0.449,0.653)	(0.390,0.516)
$\lambda_{2,2001}$	0.890	0.911	0.273	1.018	0.754	0.326	0.166	0.235	0.248	1.400	0.287	0.608	0.625	0.423
	[0.049]	[0.084]	[0.037]	[0.108]	[0.079]	[0.026]	[0.020]	[0.068]	[0.067]	[0.119]	[0.055]	[0.088]	[0.059]	[0.030]
	(0.795,0.986)	(0.746,1.077)	(0.200,0.345)	(0.806,1.230)	(0.599,0.909)	(0.275,0.376)	(0.127,0.205)	(0.102,0.367)	(0.117,0.378)	(1.166,1.634)	(0.180,0.394)	(0.436,0.780)	(0.509,0.742)	(0.364,0.482)
Cohort shifters														
$\gamma_{2,51-60}$	0.931	1.055	1.170	0.875	1.072	1.055	0.819	0.938	0.808	0.857	1.014	0.965	0.747	1.033
	[0.019]	[0.040]	[0.029]	[0.026]	[0.029]	[0.019]	[0.028]	[0.029]	[0.024]	[0.036]	[0.021]	[0.022]	[0.040]	[0.022]
	(0.895,0.968)	(0.977,1.133)	(1.113,1.226)	(0.823,0.927)	(1.014,1.130)	(1.018,1.093)	(0.765,0.873)	(0.881,0.996)	(0.762,0.855)	(0.788,0.927)	(0.973,1.055)	(0.922,1.008)	(0.669,0.824)	(0.990,1.075)
$\gamma_{2,61-70}$	1.072	1.213	1.236	0.914	1.132	1.000	0.854	1.047	0.862	1.044	1.076	0.991	0.995	1.156
	[0.021]	[0.045]	[0.023]	[0.026]	[0.030]	[0.014]	[0.028]	[0.030]	[0.023]	[0.043]	[0.021]	[0.021]	[0.041]	[0.025]
	(1.031,1.113)	(1.124,1.301)	(1.191,1.280)	(0.864,0.964)	(1.073,1.192)	(0.972,1.027)	(0.799,0.909)	(0.987,1.106)	(0.818,0.907)	(0.960,1.129)	(1.035,1.117)	(0.949,1.033)	(0.915,1.075)	(1.108,1.204)
$\gamma_{2,71-80}$	1.236	1.228	1.889	1.210	1.717	1.357	1.071	1.512	1.199	1.432	1.342	1.299	1.180	0.980
	[0.025]	[0.050]	[0.036]	[0.036]	[0.046]	[0.023]	[0.045]	[0.046]	[0.035]	[0.060]	[0.030]	[0.027]	[0.045]	[0.025]
	(1.187,1.286)	(1.131,1.326)	(1.819,1.960)	(1.139,1.281)	(1.626,1.808)	(1.311,1.403)	(0.983,1.159)	(1.421,1.603)	(1.129,1.268)	(1.315,1.548)	(1.283,1.401)	(1.247,1.352)	(1.092,1.269)	(0.931,1.030)
SSR	0.007	0.032	0.007	0.005	0.010	0.005	0.005	0.024	0.017	0.022	0.002	0.011	0.027	0.019

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

Table A5: Error Component Estimates - Model 4: $\lambda_{1,t}\gamma_{1,c}[\sigma^2_\mu]$+$\lambda_{2,t}\gamma_{2,c}$[AR(1), σ^2_0, correction left-censoring]

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Permanent Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = σ^2_μ	-2.261	-2.014	-2.943	-3.059	-2.628	-2.711	-2.433	-1.836	-1.936	-2.216	-2.485	-1.671	-1.446	-2.224
	[0.024]	[0.037]	[0.045]	[0.044]	[0.030]	[0.026]	[0.045]	[0.029]	[0.027]	[0.025]	[0.024]	[0.026]	[0.040]	[0.035]
	(-2.308,-2.214)	(-2.087,-1.941)	(-3.030,-2.855)	(-3.145,-2.973)	(-2.686,-2.570)	(-2.763,-2.660)	(-2.522,-2.345)	(-1.893,-1.778)	(-1.989,-1.882)	(-2.265,-2.167)	(-2.533,-2.437)	(-1.722,-1.619)	(-1.524,-1.368)	(-2.293,-2.155)
<u>Time shifters</u>														
$\lambda_{1,1995}$	1.034	1.041	1.011	.	1.014	0.961	.	1.068	0.996	.	0.989	1.037	1.013	1.048
	[0.009]	[0.011]	[0.020]	[.]	[0.016]	[0.012]	[.]	[0.013]	[0.009]	[.]	[0.009]	[0.008]	[0.013]	[0.015]
	(1.017,1.051)	(1.020,1.063)	(0.971,1.051)	(., .)	(0.982,1.046)	(0.937,0.985)	(., .)	(1.043,1.094)	(0.978,1.014)	(., .)	(0.971,1.007)	(1.022,1.052)	(0.986,1.039)	(1.019,1.077)
$\lambda_{1,1996}$	0.986	1.021	0.995	.	1.043	1.032	0.958	1.122	1.003	1.020	1.028	1.022	1.086	1.082
	[0.010]	[0.012]	[0.020]	[.]	[0.018]	[0.012]	[0.025]	[0.013]	[0.011]	[0.022]	[0.012]	[0.008]	[0.014]	[0.019]
	(0.967,1.006)	(0.997,1.045)	(0.955,1.034)	(., .)	(1.007,1.079)	(1.009,1.055)	(0.910,1.007)	(1.097,1.147)	(0.981,1.025)	(0.977,1.063)	(1.005,1.051)	(1.006,1.038)	(1.058,1.114)	(1.044,1.120)
$\lambda_{1,1997}$	1.048	1.109	0.915	1.176	1.040	0.951	0.988	1.156	0.987	1.176	1.009	1.048	1.073	1.189
	[0.012]	[0.015]	[0.022]	[0.020]	[0.015]	[0.015]	[0.028]	[0.014]	[0.012]	[0.020]	[0.012]	[0.010]	[0.016]	[0.024]
	(1.025,1.071)	(1.079,1.139)	(0.871,0.959)	(1.137,1.214)	(1.010,1.069)	(0.921,0.980)	(0.934,1.043)	(1.129,1.184)	(0.963,1.010)	(1.136,1.216)	(0.985,1.033)	(1.028,1.067)	(1.042,1.105)	(1.142,1.236)
$\lambda_{1,1998}$	1.051	1.088	0.921	1.205	1.135	0.920	0.918	1.157	0.972	1.246	1.124	1.076	1.079	1.121
	[0.013]	[0.017]	[0.025]	[0.024]	[0.014]	[0.016]	[0.027]	[0.017]	[0.017]	[0.022]	[0.015]	[0.010]	[0.017]	[0.025]
	(1.025,1.077)	(1.055,1.122)	(0.873,0.970)	(1.159,1.252)	(1.107,1.164)	(0.889,0.952)	(0.866,0.970)	(1.125,1.190)	(0.940,1.005)	(1.203,1.288)	(1.096,1.153)	(1.055,1.096)	(1.047,1.112)	(1.071,1.171)
$\lambda_{1,1999}$	1.048	1.053	0.827	1.204	1.056	0.814	0.835	1.153	1.025	1.313	1.150	1.059	1.048	1.188
	[0.014]	[0.017]	[0.025]	[0.028]	[0.015]	[0.017]	[0.034]	[0.017]	[0.013]	[0.024]	[0.016]	[0.011]	[0.019]	[0.027]
	(1.021,1.075)	(1.020,1.085)	(0.778,0.875)	(1.150,1.258)	(1.026,1.086)	(0.782,0.847)	(0.768,0.901)	(1.119,1.187)	(0.999,1.051)	(1.266,1.361)	(1.119,1.182)	(1.038,1.080)	(1.011,1.085)	(1.135,1.241)
$\lambda_{1,2000}$	0.984	1.012	0.798	1.191	1.055	0.954	0.866	1.086	1.061	1.338	1.137	1.006	1.157	1.050
	[0.013]	[0.020]	[0.026]	[0.025]	[0.016]	[0.018]	[0.035]	[0.018]	[0.012]	[0.031]	[0.016]	[0.012]	[0.020]	[0.027]
	(0.958,1.010)	(0.972,1.052)	(0.747,0.850)	(1.142,1.240)	(1.024,1.086)	(0.919,0.988)	(0.798,0.934)	(1.050,1.121)	(1.037,1.085)	(1.276,1.399)	(1.105,1.168)	(0.982,1.031)	(1.119,1.195)	(0.997,1.102)
$\lambda_{1,2001}$	1.048	1.021	0.823	1.317	1.122	0.951	0.875	1.108	0.963	1.290	1.145	0.989	1.143	1.118
	[0.013]	[0.023]	[0.023]	[0.029]	[0.018]	[0.016]	[0.035]	[0.018]	[0.017]	[0.021]	[0.017]	[0.013]	[0.020]	[0.026]
	(1.023,1.073)	(0.977,1.065)	(0.777,0.868)	(1.261,1.374)	(1.086,1.158)	(0.919,0.982)	(0.807,0.943)	(1.073,1.144)	(0.929,0.996)	(1.248,1.332)	(1.111,1.179)	(0.963,1.015)	(1.105,1.182)	(1.066,1.169)
<u>Cohort shifters</u>														
$\gamma_{1,51-60}$	1.016	0.983	0.924	0.928	0.881	1.017	0.900	0.861	0.983	0.949	0.918	0.986	0.938	0.891
	[0.013]	[0.022]	[0.020]	[0.024]	[0.014]	[0.014]	[0.020]	[0.014]	[0.017]	[0.019]	[0.015]	[0.015]	[0.019]	[0.013]
	(0.991,1.042)	(0.940,1.027)	(0.884,0.964)	(0.882,0.975)	(0.855,0.908)	(0.990,1.045)	(0.861,0.939)	(0.833,0.889)	(0.949,1.017)	(0.911,0.986)	(0.889,0.947)	(0.956,1.015)	(0.900,0.975)	(0.865,0.917)
$\gamma_{1,61-70}$	0.940	0.866	0.775	0.843	0.712	0.781	0.844	0.789	0.751	0.934	0.705	0.781	0.782	0.631
	[0.013]	[0.020]	[0.015]	[0.017]	[0.011]	[0.011]	[0.026]	[0.013]	[0.014]	[0.018]	[0.012]	[0.013]	[0.017]	[0.010]
	(0.913,0.966)	(0.827,0.905)	(0.745,0.804)	(0.809,0.877)	(0.691,0.733)	(0.760,0.802)	(0.792,0.896)	(0.764,0.815)	(0.725,0.778)	(0.898,0.970)	(0.681,0.729)	(0.756,0.807)	(0.749,0.816)	(0.611,0.652)
$\gamma_{1,71-80}$	0.640	0.622	0.549	0.687	0.501	0.165	0.444	0.508	0.372	0.592	0.544	0.457	0.340	0.519
	[0.017]	[0.024]	[0.032]	[0.029]	[0.019]	[0.033]	[0.031]	[0.017]	[0.023]	[0.018]	[0.015]	[0.012]	[0.018]	[0.019]
	(0.607,0.673)	(0.575,0.670)	(0.487,0.611)	(0.630,0.744)	(0.463,0.539)	(0.100,0.229)	(0.383,0.505)	(0.474,0.542)	(0.327,0.416)	(0.556,0.627)	(0.514,0.573)	(0.434,0.481)	(0.305,0.375)	(0.481,0.556)

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

Continued: Error Component Estimates - Model 4: $\lambda_{1,t}\gamma_{1,c}[\sigma^2_\mu]$+$\lambda_{2,t}\gamma_{2,c}$[AR(1), σ^2_0, correction left-censoring]

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Transitory Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = σ^2_0	-3.463	-2.649	-3.638	-2.891	-3.113	-3.454	-2.387	-2.380	-2.219	-4.144	-3.464	-2.897	-3.681	-2.655
	[0.087]	[0.095]	[0.072]	[0.098]	[0.094]	[0.066]	[0.097]	[0.101]	[0.067]	[0.163]	[0.076]	[0.078]	[0.186]	[0.062]
	(-3.634,-3.292)	(-2.835,-2.463)	(-3.779,-3.497)	(-3.083,-2.698)	(-3.298,-2.929)	(-3.583,-3.325)	(-2.577,-2.198)	(-2.577,-2.183)	(-2.349,-2.088)	(-4.463,-3.825)	(-3.613,-3.315)	(-3.049,-2.744)	(-4.044,-3.317)	(-2.777,-2.533)
Exp(estimate) = σ^2_ϵ	-2.977	-3.366	-1.534	-3.454	-2.715	-1.526	-0.340	-0.487	-0.057	-4.419	-1.008	-1.437	-1.910	-0.739
	[0.119]	[0.180]	[0.268]	[0.210]	[0.206]	[0.143]	[0.199]	[0.543]	[0.572]	[0.178]	[0.456]	[0.368]	[0.322]	[0.201]
	(-3.210,-2.744)	(-3.719,-3.013)	(-2.060,-1.008)	(-3.865,-3.043)	(-3.119,-2.310)	(-1.806,-1.245)	(-0.729,0.049)	(-1.551,0.576)	(-1.179,1.065)	(-4.769,-4.069)	(-1.902,-0.114)	(-2.157,-0.716)	(-2.542,-1.278)	(-1.133,-0.346)
ξ	0.069	0.009	0.003	0.003	-0.021	0.035	-0.011	0.005	-0.028	0.153	0.005	-0.004	0.083	-0.003
	[0.010]	[0.005]	[0.004]	[0.004]	[0.003]	[0.006]	[0.003]	[0.005]	[0.001]	[0.032]	[0.004]	[0.003]	[0.029]	[0.003]
	(0.049,0.089)	(-0.001,0.019)	(-0.005,0.011)	(-0.005,0.012)	(-0.027,-0.016)	(0.023,0.047)	(-0.017,-0.005)	(-0.004,0.013)	(-0.030,-0.025)	(0.090,0.216)	(-0.003,0.013)	(-0.010,0.003)	(0.026,0.139)	(-0.009,0.003)
ρ	0.481	0.309	0.540	0.273	0.337	0.616	0.742	0.350	0.546	0.223	0.395	0.274	0.719	0.621
	[0.013]	[0.024]	[0.014]	[0.020]	[0.011]	[0.011]	[0.025]	[0.025]	[0.022]	[0.017]	[0.015]	[0.014]	[0.017]	[0.015]
	(0.455,0.507)	(0.262,0.357)	(0.512,0.567)	(0.233,0.313)	(0.315,0.360)	(0.596,0.637)	(0.693,0.791)	(0.300,0.400)	(0.504,0.589)	(0.190,0.256)	(0.365,0.424)	(0.246,0.303)	(0.686,0.752)	(0.592,0.650)
Time shifters														
$\lambda_{2,1995}$	0.913	1.066	0.277	.	0.694	0.315	.	0.291	0.271	.	0.265	0.446	0.630	0.363
	[0.047]	[0.091]	[0.035]	[.]	[0.067]	[0.022]	[.]	[0.080]	[0.078]	[.]	[0.060]	[0.083]	[0.087]	[0.037]
	(0.821,1.005)	(0.887,1.245)	(0.208,0.347)	(., .)	(0.563,0.826)	(0.271,0.359)	(., .)	(0.134,0.449)	(0.119,0.423)	(., .)	(0.146,0.383)	(0.283,0.608)	(0.460,0.801)	(0.290,0.436)
$\lambda_{2,1996}$	0.913	1.115	0.267	.	0.687	0.254	0.259	0.204	0.208	2.180	0.283	0.406	0.402	0.280
	[0.058]	[0.104]	[0.037]	[.]	[0.075]	[0.018]	[0.027]	[0.057]	[0.059]	[0.170]	[0.065]	[0.076]	[0.063]	[0.030]
	(0.800,1.026)	(0.910,1.319)	(0.195,0.340)	(., .)	(0.541,0.834)	(0.219,0.290)	(0.206,0.313)	(0.093,0.316)	(0.092,0.324)	(1.847,2.514)	(0.156,0.409)	(0.257,0.555)	(0.279,0.525)	(0.221,0.339)
$\lambda_{2,1997}$	0.808	0.895	0.268	1.202	0.676	0.287	0.186	0.231	0.182	1.610	0.253	0.423	0.459	0.227
	[0.049]	[0.080]	[0.037]	[0.122]	[0.072]	[0.020]	[0.020]	[0.063]	[0.053]	[0.154]	[0.058]	[0.077]	[0.071]	[0.024]
	(0.713,0.904)	(0.738,1.052)	(0.197,0.340)	(0.963,1.442)	(0.535,0.817)	(0.247,0.327)	(0.146,0.226)	(0.107,0.355)	(0.078,0.285)	(1.307,1.912)	(0.140,0.366)	(0.272,0.575)	(0.320,0.597)	(0.179,0.275)
$\lambda_{2,1998}$	0.794	0.983	0.235	0.964	0.448	0.299	0.152	0.278	0.200	1.190	0.262	0.443	0.494	0.276
	[0.044]	[0.084]	[0.032]	[0.104]	[0.045]	[0.021]	[0.017]	[0.074]	[0.058]	[0.102]	[0.059]	[0.080]	[0.076]	[0.028]
	(0.707,0.880)	(0.819,1.147)	(0.172,0.297)	(0.760,1.168)	(0.359,0.537)	(0.258,0.341)	(0.118,0.185)	(0.132,0.423)	(0.086,0.314)	(0.990,1.389)	(0.147,0.378)	(0.286,0.599)	(0.344,0.643)	(0.222,0.330)
$\lambda_{2,1999}$	0.796	0.982	0.314	1.216	0.523	0.364	0.194	0.267	0.220	1.400	0.235	0.388	0.478	0.290
	[0.043]	[0.082]	[0.041]	[0.121]	[0.055]	[0.026]	[0.020]	[0.071]	[0.064]	[0.116]	[0.052]	[0.071]	[0.073]	[0.029]
	(0.711,0.881)	(0.822,1.142)	(0.233,0.395)	(0.978,1.453)	(0.415,0.631)	(0.313,0.415)	(0.155,0.233)	(0.127,0.406)	(0.095,0.345)	(1.172,1.627)	(0.132,0.337)	(0.250,0.527)	(0.335,0.621)	(0.234,0.347)
$\lambda_{2,2000}$	0.944	1.018	0.306	1.040	0.614	0.291	0.188	0.283	0.174	1.512	0.246	0.437	0.468	0.333
	[0.056]	[0.089]	[0.041]	[0.103]	[0.064]	[0.020]	[0.019]	[0.076]	[0.051]	[0.125]	[0.055]	[0.080]	[0.072]	[0.033]
	(0.835,1.054)	(0.845,1.192)	(0.226,0.385)	(0.838,1.241)	(0.488,0.740)	(0.251,0.331)	(0.150,0.226)	(0.134,0.432)	(0.074,0.274)	(1.268,1.756)	(0.138,0.354)	(0.281,0.593)	(0.327,0.609)	(0.268,0.398)
$\lambda_{2,2001}$	0.881	1.059	0.276	1.010	0.766	0.351	0.188	0.273	0.234	1.573	0.255	0.457	0.533	0.311
	[0.053]	[0.097]	[0.037]	[0.104]	[0.080]	[0.026]	[0.020]	[0.074]	[0.068]	[0.136]	[0.057]	[0.083]	[0.083]	[0.031]
	(0.777,0.984)	(0.869,1.248)	(0.204,0.348)	(0.806,1.215)	(0.609,0.922)	(0.300,0.403)	(0.149,0.227)	(0.128,0.419)	(0.100,0.368)	(1.306,1.839)	(0.143,0.367)	(0.294,0.621)	(0.370,0.695)	(0.250,0.373)
Cohort shifters														
$\gamma_{2,51-60}$	0.939	0.957	1.132	0.858	1.061	1.004	0.811	0.914	0.833	1.034	1.013	1.000	0.750	0.987
	[0.017]	[0.035]	[0.022]	[0.023]	[0.028]	[0.014]	[0.025]	[0.024]	[0.024]	[0.031]	[0.020]	[0.022]	[0.033]	[0.019]
	(0.906,0.972)	(0.888,1.025)	(1.088,1.176)	(0.813,0.902)	(1.005,1.117)	(0.975,1.032)	(0.762,0.861)	(0.868,0.961)	(0.786,0.880)	(0.974,1.094)	(0.974,1.053)	(0.956,1.043)	(0.686,0.814)	(0.950,1.024)
$\gamma_{2,61-70}$	1.073	1.128	1.224	0.897	1.089	0.983	0.844	0.916	0.809	1.218	1.104	1.028	0.997	1.141
	[0.019]	[0.039]	[0.021]	[0.025]	[0.029]	[0.013]	[0.029]	[0.027]	[0.022]	[0.048]	[0.022]	[0.023]	[0.041]	[0.023]
	(1.036,1.110)	(1.051,1.205)	(1.184,1.264)	(0.847,0.947)	(1.031,1.146)	(0.958,1.007)	(0.787,0.901)	(0.864,0.968)	(0.767,0.852)	(1.123,1.312)	(1.062,1.146)	(0.983,1.072)	(0.916,1.078)	(1.097,1.186)
$\gamma_{2,71-80}$	1.239	1.201	1.857	1.208	1.720	1.349	1.111	1.509	1.223	1.590	1.340	1.301	1.164	0.989
	[0.024]	[0.045]	[0.032]	[0.035]	[0.046]	[0.022]	[0.046]	[0.044]	[0.036]	[0.071]	[0.031]	[0.027]	[0.049]	[0.025]
	(1.191,1.286)	(1.112,1.290)	(1.794,1.920)	(1.138,1.277)	(1.630,1.810)	(1.305,1.393)	(1.021,1.200)	(1.423,1.594)	(1.153,1.293)	(1.452,1.729)	(1.280,1.400)	(1.248,1.355)	(1.069,1.260)	(0.940,1.038)
SSR	0.007	0.033	0.007	0.005	0.011	0.005	0.005	0.025	0.018	0.023	0.002	0.011	0.028	0.020

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

Table A6: Error Component Estimates - Model 6: $\lambda_{1,t}\gamma_{1,c}$[RG]+$\lambda_{2,t}\gamma_{2,c}$[AR(1), $\sigma^2_{c,0}$]

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Permanent Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = σ^2_μ	-4.910	-5.374	-4.676	-5.121	-3.010	-0.144	-3.532	-5.926	1.089	0.740	-4.477	-0.686	1.211	-5.769
	[0.241]	[0.349]	[0.245]	[0.536]	[0.130]	[0.125]	[0.874]	[0.562]	[0.081]	[0.214]	[0.381]	[0.575]	[0.129]	[0.182]
	(-5.382,-4.438)	(-6.058,-4.690)	(-5.157,-4.196)	(-6.172,-4.070)	(-3.265,-2.755)	(-0.389,0.101)	(-5.244,-1.820)	(-7.028,-4.825)	(0.931,1.246)	(0.321,1.159)	(-5.224,-3.730)	(-1.813,0.441)	(0.959,1.463)	(-6.126,-5.411)
Exp(estimate) = σ^2_φ	-9.040	-8.740	-9.368	-9.349	-8.716	-7.457	-9.977	-9.168	-6.033	-6.463	-10.332	-9.859	-6.059	-8.822
	[0.103]	[0.143]	[0.209]	[0.140]	[0.080]	[0.173]	[1.972]	[0.395]	[0.097]	[0.257]	[0.808]	[3.659]	[0.166]	[0.052]
	(-9.242,-8.838)	(-9.021,-8.459)	(-9.778,-8.959)	(-9.623,-9.075)	(-8.872,-8.560)	(-7.797,-7.118)	(-13.841,-6.112)	(-9.942,-8.394)	(-6.223,-5.843)	(-6.967,-5.960)	(-11.915,-8.748)	(-17.031,-2.687)	(-6.384,-5.735)	(-8.924,-8.719)
$Cov(\mu\varphi)$	0.0002	0.0003	-0.0004	-0.0005	-0.0019	-0.0221	0.0004	0.0017	-0.0833	-0.0564	0.0008	-0.0063	-0.0874	-0.0003
	[0.0002]	[0.0003]	[0.0003]	[0.0002]	[0.0002]	[0.0033]	[0.0011]	[0.0005]	[0.0075]	[0.0134]	[0.0003]	[0.0077]	[0.0130]	[0.0001]
	(-0.0001,0.001)	(-0.0002,0.001)	(-0.0009,0.000)	(-0.0009,-0.000)	(-0.0023,-0.001)	(-0.0285,-0.016)	(-0.0017,0.003)	(0.0007,0.003)	(-0.0979,-0.069)	(-0.0827,-0.030)	(0.0002,0.001)	(-0.0215,0.009)	(-0.1128,-0.062)	(-0.0005,-0.000)
Time shifters														
$\lambda_{1,1995}$	0.992	0.978	0.960	.	0.974	0.994	.	1.013	1.073	.	0.967	1.067	1.082	1.026
	[0.008]	[0.011]	[0.021]	[.]	[0.016]	[0.012]	[.]	[0.013]	[0.008]	[.]	[0.011]	[0.014]	[0.013]	[0.013]
	(0.975,1.008)	(0.956,1.001)	(0.919,1.000)	(., .)	(0.943,1.005)	(0.971,1.017)	(., .)	(0.988,1.037)	(1.057,1.090)	(., .)	(0.946,0.987)	(1.040,1.095)	(1.056,1.109)	(1.001,1.052)
$\lambda_{1,1996}$	0.907	0.923	0.907	.	0.975	1.123	0.883	1.032	1.150	1.070	0.984	1.080	1.211	1.008
	[0.010]	[0.013]	[0.022]	[.]	[0.017]	[0.014]	[0.037]	[0.014]	[0.011]	[0.022]	[0.017]	[0.025]	[0.015]	[0.016]
	(0.887,0.927)	(0.898,0.948)	(0.864,0.950)	(., .)	(0.941,1.008)	(1.096,1.151)	(0.810,0.956)	(1.004,1.060)	(1.128,1.172)	(1.028,1.112)	(0.950,1.017)	(1.031,1.129)	(1.181,1.240)	(0.977,1.039)
$\lambda_{1,1997}$	0.923	0.960	0.795	1.126	0.933	1.101	0.880	1.039	1.203	1.299	0.946	1.136	1.303	1.056
	[0.013]	[0.017]	[0.025]	[0.019]	[0.016]	[0.018]	[0.050]	[0.017]	[0.014]	[0.022]	[0.020]	[0.037]	[0.018]	[0.018]
	(0.898,0.947)	(0.927,0.993)	(0.746,0.844)	(1.089,1.164)	(0.902,0.964)	(1.066,1.136)	(0.781,0.979)	(1.005,1.073)	(1.175,1.231)	(1.256,1.343)	(0.906,0.986)	(1.063,1.208)	(1.268,1.338)	(1.020,1.091)
$\lambda_{1,1998}$	0.894	0.914	0.773	1.078	0.988	1.118	0.800	1.020	1.272	1.445	1.038	1.188	1.396	1.039
	[0.015]	[0.018]	[0.029]	[0.023]	[0.017]	[0.022]	[0.064]	[0.022]	[0.021]	[0.025]	[0.027]	[0.048]	[0.022]	[0.018]
	(0.865,0.922)	(0.878,0.950)	(0.717,0.829)	(1.032,1.123)	(0.954,1.021)	(1.075,1.161)	(0.675,0.926)	(0.977,1.062)	(1.230,1.314)	(1.396,1.494)	(0.985,1.091)	(1.093,1.282)	(1.353,1.439)	(1.003,1.075)
$\lambda_{1,1999}$	0.857	0.856	0.669	1.017	0.896	1.045	0.708	0.989	1.408	1.604	1.047	1.190	1.420	1.081
	[0.015]	[0.019]	[0.025]	[0.027]	[0.018]	[0.024]	[0.068]	[0.025]	[0.019]	[0.031]	[0.032]	[0.061]	[0.029]	[0.018]
	(0.827,0.887)	(0.818,0.894)	(0.621,0.717)	(0.964,1.071)	(0.860,0.932)	(0.999,1.092)	(0.575,0.842)	(0.941,1.038)	(1.371,1.445)	(1.543,1.664)	(0.984,1.111)	(1.070,1.310)	(1.363,1.476)	(1.044,1.117)
$\lambda_{1,2000}$	0.780	0.793	0.627	0.955	0.875	1.292	0.722	0.908	1.515	1.728	1.022	1.154	1.655	0.946
	[0.016]	[0.022]	[0.027]	[0.027]	[0.019]	[0.030]	[0.080]	[0.027]	[0.022]	[0.037]	[0.036]	[0.073]	[0.033]	[0.018]
	(0.748,0.812)	(0.751,0.835)	(0.574,0.680)	(0.903,1.008)	(0.837,0.913)	(1.234,1.351)	(0.565,0.879)	(0.855,0.961)	(1.472,1.559)	(1.655,1.801)	(0.951,1.092)	(1.010,1.298)	(1.591,1.720)	(0.912,0.981)
$\lambda_{1,2001}$	0.798	0.777	0.630	1.030	0.910	1.364	0.724	0.898	1.474	1.754	1.008	1.155	1.736	0.944
	[0.018]	[0.025]	[0.028]	[0.031]	[0.021]	[0.034]	[0.090]	[0.029]	[0.028]	[0.038]	[0.041]	[0.088]	[0.037]	[0.018]
	(0.764,0.832)	(0.728,0.826)	(0.575,0.685)	(0.969,1.090)	(0.869,0.950)	(1.298,1.430)	(0.547,0.901)	(0.841,0.955)	(1.419,1.529)	(1.680,1.828)	(0.928,1.089)	(0.983,1.326)	(1.663,1.809)	(0.909,0.979)
Cohort shifters														
$\gamma_{1,51-60}$	1.413	1.359	1.374	1.382	1.275	0.531	1.105	1.117	0.440	0.464	1.131	0.781	0.473	1.324
	[0.030]	[0.044]	[0.069]	[0.049]	[0.042]	[0.022]	[0.208]	[0.043]	[0.014]	[0.035]	[0.064]	[0.093]	[0.021]	[0.022]
	(1.354,1.472)	(1.273,1.446)	(1.239,1.509)	(1.287,1.477)	(1.192,1.358)	(0.487,0.575)	(0.696,1.513)	(1.032,1.202)	(0.412,0.468)	(0.396,0.532)	(1.005,1.257)	(0.599,0.963)	(0.431,0.515)	(1.281,1.367)
$\gamma_{1,61-70}$	2.046	2.013	1.962	2.440	1.317	0.267	1.280	1.568	0.203	0.277	1.156	0.520	0.253	1.936
	[0.099]	[0.162]	[0.228]	[0.170]	[0.114]	[0.015]	[0.491]	[0.139]	[0.009]	[0.028]	[0.139]	[0.113]	[0.015]	[0.077]
	(1.852,2.240)	(1.695,2.331)	(1.516,2.408)	(2.106,2.774)	(1.093,1.541)	(0.238,0.297)	(0.317,2.243)	(1.296,1.840)	(0.186,0.220)	(0.222,0.331)	(0.884,1.428)	(0.298,0.742)	(0.224,0.283)	(1.785,2.088)
$\gamma_{1,71-80}$	2.451	2.981	1.651	2.979	0.789	0.061	0.751	2.265	0.086	0.128	1.276	0.270	0.091	3.852
	[0.243]	[0.500]	[0.159]	[0.797]	[0.070]	[0.006]	[0.369]	[0.340]	[0.005]	[0.015]	[0.231]	[0.081]	[0.007]	[0.462]
	(1.974,2.929)	(2.002,3.960)	(1.340,1.962)	(1.416,4.542)	(0.651,0.927)	(0.048,0.073)	(0.029,1.474)	(1.599,2.931)	(0.077,0.095)	(0.098,0.157)	(0.823,1.729)	(0.112,0.429)	(0.078,0.104)	(2.947,4.758)

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

Continued: Error Component Estimates - Model 6: $\lambda_{1,t}\gamma_{1,c}$[RG]+$\lambda_{2,t}\gamma_{2,c}$[AR(1), $\sigma^2_{c,0}$]

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Transitory Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = $\sigma^2_{40-50,0}$	-2.572	-2.646	-3.559	-2.900	-3.782	-2.888	-2.966	-2.367	-5.419	-2.844	-3.439	-3.171	-2.888	-2.553
	[0.044]	[0.082]	[0.096]	[0.074]	[0.091]	[0.052]	[0.119]	[0.052]	[0.732]	[0.105]	[0.065]	[0.093]	[0.148]	[0.049]
	(-2.658,-2.487)	(-2.808,-2.484)	(-3.746,-3.372)	(-3.046,-2.755)	(-3.961,-3.604)	(-2.990,-2.787)	(-3.200,-2.732)	(-2.470,-2.265)	(-6.853,-3.985)	(-3.050,-2.638)	(-3.566,-3.313)	(-3.354,-2.988)	(-3.179,-2.597)	(-2.648,-2.458)
Exp(estimate) = $\sigma^2_{51-60,0}$	-2.540	-2.677	-3.772	-2.834	-3.609	-3.298	-2.800	-2.254	-2.879	-2.425	-3.305	-2.592	-2.713	-2.775
	[0.060]	[0.097]	[0.076]	[0.070]	[0.121]	[0.061]	[0.135]	[0.080]	[0.089]	[0.108]	[0.059]	[0.075]	[0.187]	[0.064]
	(-2.658,-2.421)	(-2.866,-2.488)	(-3.921,-3.622)	(-2.972,-2.697)	(-3.845,-3.372)	(-3.417,-3.179)	(-3.065,-2.536)	(-2.411,-2.096)	(-3.053,-2.705)	(-2.636,-2.214)	(-3.421,-3.190)	(-2.738,-2.446)	(-3.079,-2.347)	(-2.901,-2.649)
Exp(estimate) = $\sigma^2_{61-70,0}$	-2.590	-2.363	-3.434	-2.649	-4.493	-3.025	-2.636	-2.442	-3.173	-2.660	-3.056	-2.533	-2.652	-2.288
	[0.068]	[0.087]	[0.077]	[0.073]	[0.207]	[0.052]	[0.126]	[0.073]	[0.094]	[0.107]	[0.055]	[0.066]	[0.139]	[0.041]
	(-2.723,-2.456)	(-2.533,-2.192)	(-3.585,-3.283)	(-2.791,-2.506)	(-4.900,-4.087)	(-3.126,-2.924)	(-2.883,-2.390)	(-2.585,-2.299)	(-3.357,-2.989)	(-2.869,-2.450)	(-3.163,-2.949)	(-2.663,-2.404)	(-2.925,-2.379)	(-2.368,-2.207)
Exp(estimate) = $\sigma^2_{71-80,0}$	-3.463	-2.525	-3.685	-3.071	-3.204	-3.384	-2.292	-2.146	-2.486	-3.691	-3.499	-2.930	-3.539	-2.665
	[0.118]	[0.101]	[0.080]	[0.110]	[0.096]	[0.060]	[0.103]	[0.090]	[0.068]	[0.118]	[0.084]	[0.089]	[0.123]	[0.117]
	(-3.694,-3.232)	(-2.724,-2.326)	(-3.842,-3.528)	(-3.286,-2.856)	(-3.393,-3.016)	(-3.502,-3.266)	(-2.493,-2.091)	(-2.323,-1.970)	(-2.619,-2.353)	(-3.923,-3.460)	(-3.664,-3.334)	(-3.104,-2.755)	(-3.780,-3.299)	(-2.895,-2.435)
Exp(estimate) = σ^2_{ϵ}	-2.656	-3.558	-0.689	-2.891	-2.070	-1.078	-0.078	-1.853	-1.356	-4.411	-2.028	-2.455	-2.230	-1.764
	[0.111]	[0.165]	[0.737]	[0.220]	[0.310]	[0.189]	[0.312]	[0.318]	[0.574]	[0.194]	[0.256]	[0.219]	[0.189]	[0.140]
	(-2.874,-2.439)	(-3.881,-3.235)	(-2.135,0.756)	(-3.321,-2.460)	(-2.677,-1.464)	(-1.449,-0.707)	(-0.690,0.533)	(-2.476,-1.230)	(-2.481,-0.230)	(-4.792,-4.030)	(-2.529,-1.527)	(-2.885,-2.026)	(-2.601,-1.860)	(-2.039,-1.490)
ρ	0.451	0.291	0.546	0.290	0.329	0.591	0.787	0.257	0.358	0.201	0.391	0.248	0.545	0.466
	[0.012]	[0.023]	[0.013]	[0.020]	[0.012]	[0.012]	[0.018]	[0.022]	[0.022]	[0.017]	[0.015]	[0.015]	[0.021]	[0.015]
	(0.427,0.476)	(0.246,0.336)	(0.522,0.571)	(0.252,0.329)	(0.306,0.352)	(0.567,0.614)	(0.751,0.823)	(0.214,0.299)	(0.315,0.402)	(0.168,0.234)	(0.361,0.421)	(0.219,0.277)	(0.504,0.586)	(0.436,0.495)
Time shifters														
$\lambda_{2,1995}$	0.821	1.227	0.182	.	0.494	0.251	.	0.630	0.453	.	0.452	0.766	0.710	0.645
	[0.042]	[0.094]	[0.068]	[.]	[0.076]	[0.025]	[.]	[0.100]	[0.130]	[.]	[0.057]	[0.083]	[0.065]	[0.040]
	(0.740,0.903)	(1.043,1.411)	(0.049,0.315)	(., .)	(0.345,0.642)	(0.202,0.300)	(., .)	(0.434,0.826)	(0.199,0.708)	(., .)	(0.341,0.564)	(0.603,0.930)	(0.582,0.838)	(0.567,0.723)
$\lambda_{2,1996}$	0.814	1.279	0.175	.	0.484	0.203	0.239	0.476	0.380	2.388	0.485	0.706	0.548	0.563
	[0.047]	[0.105]	[0.066]	[.]	[0.077]	[0.020]	[0.038]	[0.076]	[0.109]	[0.212]	[0.062]	[0.077]	[0.056]	[0.039]
	(0.720,0.907)	(1.073,1.485)	(0.046,0.304)	(., .)	(0.333,0.635)	(0.164,0.242)	(0.163,0.314)	(0.327,0.626)	(0.167,0.593)	(1.972,2.804)	(0.363,0.607)	(0.554,0.857)	(0.439,0.657)	(0.486,0.640)
$\lambda_{2,1997}$	0.718	1.043	0.178	0.885	0.484	0.229	0.171	0.496	0.348	1.779	0.433	0.723	0.576	0.492
	[0.041]	[0.082]	[0.065]	[0.098]	[0.076]	[0.022]	[0.027]	[0.077]	[0.101]	[0.181]	[0.054]	[0.078]	[0.057]	[0.036]
	(0.638,0.797)	(0.883,1.204)	(0.051,0.304)	(0.693,1.076)	(0.336,0.632)	(0.186,0.273)	(0.118,0.225)	(0.344,0.648)	(0.150,0.545)	(1.423,2.134)	(0.326,0.539)	(0.571,0.875)	(0.465,0.687)	(0.422,0.561)
$\lambda_{2,1998}$	0.702	1.092	0.157	0.707	0.329	0.241	0.139	0.563	0.351	1.321	0.443	0.745	0.589	0.485
	[0.036]	[0.085]	[0.055]	[0.081]	[0.050]	[0.023]	[0.022]	[0.088]	[0.101]	[0.125]	[0.056]	[0.080]	[0.057]	[0.035]
	(0.632,0.773)	(0.925,1.260)	(0.048,0.265)	(0.548,0.866)	(0.230,0.428)	(0.195,0.286)	(0.096,0.181)	(0.392,0.735)	(0.153,0.550)	(1.077,1.565)	(0.333,0.552)	(0.588,0.901)	(0.477,0.702)	(0.417,0.554)
$\lambda_{2,1999}$	0.714	1.059	0.210	0.930	0.388	0.294	0.171	0.527	0.389	1.455	0.388	0.655	0.588	0.482
	[0.038]	[0.082]	[0.077]	[0.096]	[0.061]	[0.028]	[0.027]	[0.082]	[0.112]	[0.133]	[0.049]	[0.071]	[0.057]	[0.034]
	(0.640,0.788)	(0.899,1.220)	(0.059,0.360)	(0.743,1.118)	(0.269,0.506)	(0.238,0.350)	(0.118,0.224)	(0.365,0.688)	(0.169,0.608)	(1.194,1.715)	(0.291,0.484)	(0.517,0.794)	(0.476,0.699)	(0.416,0.549)
$\lambda_{2,2000}$	0.848	1.082	0.204	0.819	0.454	0.231	0.165	0.558	0.292	1.524	0.398	0.740	0.528	0.574
	[0.048]	[0.088]	[0.075]	[0.086]	[0.071]	[0.022]	[0.026]	[0.088]	[0.084]	[0.139]	[0.051]	[0.080]	[0.051]	[0.041]
	(0.754,0.943)	(0.910,1.253)	(0.057,0.350)	(0.650,0.988)	(0.315,0.593)	(0.188,0.274)	(0.114,0.216)	(0.386,0.730)	(0.127,0.457)	(1.252,1.796)	(0.299,0.498)	(0.583,0.896)	(0.428,0.629)	(0.493,0.654)
$\lambda_{2,2001}$	0.798	1.109	0.184	0.794	0.563	0.279	0.163	0.532	0.396	1.533	0.415	0.774	0.584	0.533
	[0.045]	[0.097]	[0.067]	[0.085]	[0.088]	[0.028]	[0.026]	[0.086]	[0.115]	[0.144]	[0.053]	[0.084]	[0.058]	[0.040]
	(0.709,0.886)	(0.920,1.299)	(0.052,0.316)	(0.627,0.961)	(0.391,0.735)	(0.224,0.335)	(0.112,0.214)	(0.364,0.700)	(0.171,0.621)	(1.251,1.815)	(0.311,0.519)	(0.609,0.939)	(0.471,0.697)	(0.454,0.611)
Cohort shifters														
$\gamma_{2,51-60}$	0.895	0.989	1.110	0.861	1.046	1.050	0.800	0.901	0.955	0.879	1.005	0.955	0.829	0.936
	[0.017]	[0.035]	[0.026]	[0.025]	[0.029]	[0.019]	[0.025]	[0.026]	[0.030]	[0.036]	[0.021]	[0.023]	[0.052]	[0.017]
	(0.862,0.928)	(0.920,1.058)	(1.060,1.161)	(0.811,0.910)	(0.988,1.103)	(1.013,1.087)	(0.751,0.849)	(0.849,0.953)	(0.896,1.013)	(0.808,0.950)	(0.963,1.047)	(0.910,1.000)	(0.727,0.931)	(0.902,0.969)
$\gamma_{2,61-70}$	0.994	1.099	1.155	0.871	1.118	0.958	0.830	0.935	0.964	1.072	1.059	0.975	0.903	1.014
	[0.018]	[0.040]	[0.025]	[0.025]	[0.031]	[0.016]	[0.028]	[0.028]	[0.027]	[0.046]	[0.022]	[0.023]	[0.051]	[0.018]
	(0.958,1.029)	(1.020,1.178)	(1.106,1.204)	(0.822,0.921)	(1.057,1.179)	(0.927,0.988)	(0.775,0.884)	(0.880,0.990)	(0.912,1.017)	(0.982,1.163)	(1.016,1.102)	(0.929,1.020)	(0.802,1.003)	(0.979,1.049)
$\gamma_{2,71-80}$	1.190	1.153	1.837	1.207	1.728	1.356	1.056	1.427	1.383	1.486	1.334	1.277	1.253	0.941
	[0.022]	[0.046]	[0.034]	[0.035]	[0.046]	[0.024]	[0.044]	[0.041]	[0.041]	[0.067]	[0.030]	[0.029]	[0.066]	[0.027]
	(1.146,1.234)	(1.063,1.243)	(1.769,1.904)	(1.139,1.275)	(1.637,1.819)	(1.310,1.403)	(0.970,1.143)	(1.346,1.507)	(1.303,1.464)	(1.355,1.617)	(1.275,1.394)	(1.221,1.334)	(1.124,1.382)	(0.888,0.994)
SSR	0.006	0.027	0.007	0.004	0.010	0.005	0.005	0.018	0.014	0.021	0.002	0.010	0.024	0.015

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

Table A7: Error Component Estimates - Model 7: $\lambda_{1,t}\gamma_{1,c}$[RG]+$\lambda_{2,t}\gamma_{2,c}$[AR(1), σ_0^2, correction left-censoring]

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Permanent Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = σ_μ^2	-4.384	-5.395	-4.308	-4.981	-3.344	-0.700	-4.040	-5.976	1.070	0.355	-3.970	-1.007	1.098	-5.805
	[0.324]	[0.371]	[0.138]	[0.454]	[0.127]	[0.304]	[1.142]	[0.523]	[0.082]	[0.294]	[0.403]	[0.554]	[0.151]	[0.206]
	(-5.019,-3.749)	(-6.122,-4.669)	(-4.578,-4.038)	(-5.871,-4.092)	(-3.594,-3.094)	(-1.295,-0.104)	(-6.279,-1.801)	(-7.001,-4.952)	(0.909,1.230)	(-0.222,0.931)	(-4.759,-3.181)	(-2.093,0.079)	(0.803,1.394)	(-6.209,-5.402)
Exp(estimate) = σ_φ^2	-9.732	-8.792	-9.167	-9.378	-8.949	-8.385	-11.101	-9.028	-6.051	-6.872	-10.753	-10.150	-6.204	-8.885
	[0.473]	[0.156]	[0.145]	[0.143]	[0.110]	[0.598]	[7.569]	[0.278]	[0.099]	[0.366]	[1.417]	[2.483]	[0.200]	[0.056]
	(-10.658,-8.806)	(-9.097,-8.487)	(-9.451,-8.883)	(-9.658,-9.097)	(-9.164,-8.733)	(-9.558,-7.213)	(-25.936,3.733)	(-9.572,-8.484)	(-6.244,-5.857)	(-7.591,-6.154)	(-13.530,-7.977)	(-15.017,-5.282)	(-6.596,-5.813)	(-8.996,-8.774)
$Cov(\mu\varphi)$	0.0009	0.0004	-0.0007	-0.0005	-0.0012	-0.0107	0.0010	0.0015	-0.0818	-0.0381	0.0008	-0.0037	-0.0767	-0.0002
	[0.0004]	[0.0003]	[0.0002]	[0.0002]	[0.0002]	[0.0046]	[0.0014]	[0.0004]	[0.0075]	[0.0128]	[0.0003]	[0.0048]	[0.0135]	[0.0001]
	(0.0002,0.002)	(-0.0002,0.001)	(-0.0012,-0.000)	(-0.0009,-0.000)	(-0.0016,-0.001)	(-0.0196,-0.002)	(-0.0018,0.004)	(0.0006,0.002)	(-0.0964,-0.067)	(-0.0633,-0.013)	(0.0002,0.002)	(-0.0132,0.006)	(-0.1032,-0.050)	(-0.0004,-0.000)
Time shifters														
$\lambda_{1,1995}$	0.996	0.979	0.946	.	0.986	0.987	.	1.014	1.070	.	0.971	1.050	1.070	1.037
	[0.009]	[0.012]	[0.019]	[.]	[0.016]	[0.012]	[.]	[0.013]	[0.008]	[.]	[0.011]	[0.014]	[0.013]	[0.013]
	(0.977,1.014)	(0.956,1.002)	(0.909,0.984)	(., .)	(0.955,1.017)	(0.962,1.011)	(., .)	(0.989,1.039)	(1.054,1.086)	(., .)	(0.949,0.993)	(1.023,1.078)	(1.044,1.095)	(1.012,1.062)
$\lambda_{1,1996}$	0.919	0.924	0.892	.	0.989	1.107	0.917	1.032	1.145	1.058	0.992	1.049	1.191	1.022
	[0.014]	[0.013]	[0.019]	[.]	[0.017]	[0.016]	[0.035]	[0.014]	[0.011]	[0.021]	[0.019]	[0.025]	[0.015]	[0.016]
	(0.892,0.946)	(0.899,0.949)	(0.854,0.930)	(., .)	(0.955,1.023)	(1.075,1.139)	(0.848,0.986)	(1.005,1.059)	(1.124,1.166)	(1.017,1.099)	(0.954,1.029)	(1.000,1.097)	(1.163,1.220)	(0.992,1.053)
$\lambda_{1,1997}$	0.946	0.964	0.777	1.131	0.948	1.069	0.921	1.037	1.196	1.273	0.956	1.089	1.272	1.073
	[0.019]	[0.017]	[0.021]	[0.020]	[0.016]	[0.022]	[0.053]	[0.016]	[0.013]	[0.021]	[0.023]	[0.036]	[0.018]	[0.018]
	(0.910,0.983)	(0.930,0.998)	(0.737,0.818)	(1.093,1.170)	(0.916,0.980)	(1.026,1.113)	(0.817,1.025)	(1.005,1.068)	(1.170,1.223)	(1.231,1.314)	(0.910,1.002)	(1.019,1.160)	(1.236,1.308)	(1.038,1.109)
$\lambda_{1,1998}$	0.925	0.918	0.754	1.084	1.003	1.074	0.843	1.017	1.265	1.405	1.051	1.130	1.356	1.060
	[0.022]	[0.019]	[0.024]	[0.024]	[0.018]	[0.028]	[0.070]	[0.020]	[0.021]	[0.026]	[0.032]	[0.047]	[0.022]	[0.018]
	(0.881,0.969)	(0.881,0.955)	(0.708,0.801)	(1.038,1.130)	(0.969,1.038)	(1.019,1.130)	(0.706,0.980)	(0.977,1.056)	(1.224,1.305)	(1.353,1.456)	(0.989,1.113)	(1.039,1.221)	(1.312,1.400)	(1.024,1.096)
$\lambda_{1,1999}$	0.899	0.861	0.650	1.032	0.910	0.991	0.749	0.985	1.397	1.542	1.062	1.125	1.374	1.095
	[0.025]	[0.020]	[0.020]	[0.028]	[0.020]	[0.032]	[0.078]	[0.022]	[0.018]	[0.034]	[0.038]	[0.058]	[0.029]	[0.019]
	(0.850,0.948)	(0.823,0.900)	(0.610,0.691)	(0.978,1.086)	(0.872,0.949)	(0.928,1.053)	(0.596,0.901)	(0.941,1.029)	(1.361,1.433)	(1.475,1.609)	(0.987,1.136)	(1.011,1.238)	(1.318,1.430)	(1.058,1.131)
$\lambda_{1,2000}$	0.825	0.798	0.610	0.970	0.889	1.213	0.764	0.903	1.504	1.645	1.037	1.081	1.598	0.960
	[0.027]	[0.022]	[0.023]	[0.027]	[0.021]	[0.044]	[0.093]	[0.024]	[0.021]	[0.041]	[0.042]	[0.068]	[0.034]	[0.018]
	(0.772,0.877)	(0.754,0.841)	(0.565,0.655)	(0.917,1.023)	(0.848,0.929)	(1.127,1.298)	(0.582,0.945)	(0.855,0.951)	(1.462,1.546)	(1.565,1.725)	(0.954,1.120)	(0.948,1.214)	(1.532,1.664)	(0.925,0.995)
$\lambda_{1,2001}$	0.856	0.782	0.612	1.039	0.924	1.267	0.769	0.892	1.460	1.652	1.028	1.073	1.669	0.959
	[0.031]	[0.025]	[0.025]	[0.031]	[0.023]	[0.055]	[0.106]	[0.026]	[0.027]	[0.046]	[0.048]	[0.080]	[0.039]	[0.018]
	(0.797,0.916)	(0.732,0.832)	(0.564,0.661)	(0.978,1.100)	(0.880,0.968)	(1.159,1.375)	(0.561,0.978)	(0.841,0.943)	(1.408,1.512)	(1.562,1.742)	(0.933,1.122)	(0.916,1.230)	(1.594,1.745)	(0.923,0.995)
Cohort shifters														
$\gamma_{1,51-60}$	1.291	1.351	1.425	1.363	1.240	0.618	1.076	1.131	0.446	0.536	1.091	0.867	0.497	1.317
	[0.056]	[0.045]	[0.070]	[0.048]	[0.045]	[0.048]	[0.240]	[0.038]	[0.014]	[0.051]	[0.074]	[0.101]	[0.025]	[0.022]
	(1.182,1.400)	(1.263,1.439)	(1.287,1.562)	(1.268,1.457)	(1.152,1.329)	(0.524,0.711)	(0.606,1.546)	(1.058,1.205)	(0.418,0.474)	(0.436,0.636)	(0.945,1.237)	(0.669,1.064)	(0.448,0.546)	(1.273,1.361)
$\gamma_{1,61-70}$	1.626	1.963	2.068	2.275	1.344	0.340	1.272	1.627	0.207	0.335	1.049	0.611	0.271	1.857
	[0.152]	[0.158]	[0.247]	[0.162]	[0.122]	[0.043]	[0.560]	[0.122]	[0.009]	[0.046]	[0.146]	[0.130]	[0.018]	[0.079]
	(1.327,1.925)	(1.654,2.272)	(1.584,2.551)	(1.957,2.593)	(1.106,1.583)	(0.257,0.424)	(0.176,2.369)	(1.388,1.865)	(0.189,0.224)	(0.245,0.426)	(0.763,1.335)	(0.357,0.866)	(0.235,0.306)	(1.702,2.012)
$\gamma_{1,71-80}$	1.686	2.892	1.465	2.618	0.908	0.072	0.866	2.388	0.087	0.157	1.058	0.327	0.095	3.570
	[0.250]	[0.485]	[0.128]	[0.531]	[0.083]	[0.013]	[0.511]	[0.318]	[0.005]	[0.025]	[0.214]	[0.095]	[0.008]	[0.449]
	(1.195,2.176)	(1.942,3.841)	(1.215,1.715)	(1.576,3.659)	(0.745,1.071)	(0.047,0.097)	(-0.135,1.868)	(1.765,3.012)	(0.078,0.096)	(0.108,0.207)	(0.638,1.477)	(0.141,0.513)	(0.079,0.111)	(2.689,4.450)

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

Continued: Error Component Estimates - Model 7: $\lambda_{1,t}\gamma_{1,c}$[RG]+$\lambda_{2,t}\gamma_{2,c}$[AR(1), σ_0^2, correction left-censoring]

	UK	Ireland	Denmark	Finland	Netherlands	Belgium	Austria	France	Germany	Luxembourg	Italy	Spain	Portugal	Greece
Transitory Component	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate	Estimate
Exp(estimate) = σ_0^2	-3.286	-2.419	-3.685	-3.026	-3.192	-3.327	-2.288	-2.160	-2.439	-3.934	-3.429	-2.880	-3.431	-2.436
	[0.092]	[0.090]	[0.085]	[0.108]	[0.100]	[0.063]	[0.100]	[0.092]	[0.068]	[0.143]	[0.076]	[0.085]	[0.134]	[0.067]
	(-3.466,-3.106)	(-2.596,-2.242)	(-3.851,-3.518)	(-3.238,-2.815)	(-3.387,-2.997)	(-3.451,-3.202)	(-2.484,-2.092)	(-2.340,-1.981)	(-2.572,-2.306)	(-4.214,-3.654)	(-3.578,-3.279)	(-3.046,-2.714)	(-3.694,-3.167)	(-2.568,-2.304)
Exp(estimate) = σ_ϵ^2	-2.723	-3.390	-0.236	-3.019	-2.076	-1.152	-0.291	-1.901	-1.199	-4.685	-1.459	-1.652	-2.097	-1.715
	[0.109]	[0.166]	[0.875]	[0.227]	[0.313]	[0.171]	[0.268]	[0.317]	[0.606]	[0.198]	[0.384]	[0.349]	[0.221]	[0.135]
	(-2.936,-2.510)	(-3.714,-3.065)	(-1.951,1.479)	(-3.464,-2.574)	(-2.689,-1.463)	(-1.486,-0.817)	(-0.816,0.234)	(-2.522,-1.280)	(-2.386,-0.012)	(-5.072,-4.297)	(-2.212,-0.706)	(-2.336,-0.967)	(-2.530,-1.663)	(-1.981,-1.450)
ξ	0.044	-0.007	0.001	0.006	-0.019	0.021	-0.015	-0.007	-0.032	0.102	0.003	-0.004	0.032	-0.004
	[0.008]	[0.003]	[0.004]	[0.005]	[0.003]	[0.005]	[0.003]	[0.003]	[0.001]	[0.021]	[0.004]	[0.003]	[0.012]	[0.003]
	(0.028,0.059)	(-0.014,-0.000)	(-0.007,0.010)	(-0.004,0.017)	(-0.025,-0.014)	(0.011,0.031)	(-0.020,-0.010)	(-0.013,-0.000)	(-0.034,-0.029)	(0.061,0.143)	(-0.004,0.011)	(-0.011,0.003)	(0.008,0.055)	(-0.010,0.002)
ρ	0.474	0.297	0.554	0.276	0.317	0.605	0.760	0.251	0.360	0.196	0.388	0.265	0.590	0.462
	[0.013]	[0.023]	[0.012]	[0.019]	[0.012]	[0.012]	[0.022]	[0.022]	[0.023]	[0.017]	[0.015]	[0.015]	[0.022]	[0.015]
	(0.449,0.499)	(0.251,0.342)	(0.530,0.578)	(0.238,0.314)	(0.294,0.341)	(0.583,0.628)	(0.716,0.803)	(0.208,0.294)	(0.316,0.405)	(0.163,0.229)	(0.359,0.418)	(0.236,0.294)	(0.548,0.632)	(0.433,0.491)
<u>Time shifters</u>														
$\lambda_{2,1995}$	0.831	1.151	0.144	.	0.501	0.272	.	0.644	0.421	.	0.335	0.499	0.668	0.633
	[0.042]	[0.089]	[0.064]	[.]	[0.078]	[0.024]	[.]	[0.102]	[0.127]	[.]	[0.064]	[0.088]	[0.072]	[0.039]
	(0.748,0.914)	(0.977,1.325)	(0.019,0.270)	(., .)	(0.349,0.654)	(0.224,0.319)	(., .)	(0.445,0.843)	(0.171,0.670)	(., .)	(0.209,0.461)	(0.326,0.671)	(0.528,0.808)	(0.556,0.709)
$\lambda_{2,1996}$	0.819	1.186	0.139	.	0.489	0.217	0.262	0.488	0.352	2.503	0.357	0.455	0.501	0.549
	[0.046]	[0.098]	[0.062]	[.]	[0.079]	[0.019]	[0.038]	[0.078]	[0.106]	[0.219]	[0.068]	[0.080]	[0.059]	[0.038]
	(0.728,0.909)	(0.995,1.378)	(0.018,0.260)	(., .)	(0.334,0.644)	(0.179,0.255)	(0.187,0.336)	(0.335,0.640)	(0.144,0.561)	(2.073,2.933)	(0.223,0.491)	(0.297,0.612)	(0.386,0.616)	(0.475,0.624)
$\lambda_{2,1997}$	0.724	0.954	0.142	0.928	0.492	0.246	0.189	0.509	0.321	1.867	0.320	0.472	0.530	0.477
	[0.040]	[0.075]	[0.062]	[0.106]	[0.078]	[0.022]	[0.028]	[0.079]	[0.098]	[0.185]	[0.061]	[0.082]	[0.061]	[0.034]
	(0.646,0.801)	(0.808,1.101)	(0.021,0.263)	(0.721,1.136)	(0.339,0.644)	(0.203,0.288)	(0.134,0.244)	(0.355,0.664)	(0.129,0.514)	(1.503,2.231)	(0.201,0.438)	(0.311,0.633)	(0.411,0.649)	(0.410,0.543)
$\lambda_{2,1998}$	0.709	1.002	0.125	0.748	0.329	0.257	0.153	0.578	0.324	1.370	0.328	0.492	0.546	0.465
	[0.035]	[0.078]	[0.053]	[0.087]	[0.051]	[0.022]	[0.022]	[0.089]	[0.098]	[0.125]	[0.062]	[0.085]	[0.062]	[0.033]
	(0.640,0.778)	(0.849,1.154)	(0.021,0.230)	(0.577,0.920)	(0.229,0.429)	(0.213,0.300)	(0.109,0.196)	(0.404,0.753)	(0.131,0.517)	(1.125,1.616)	(0.206,0.451)	(0.325,0.659)	(0.423,0.668)	(0.401,0.529)
$\lambda_{2,1999}$	0.712	0.964	0.167	0.971	0.390	0.312	0.193	0.540	0.361	1.567	0.291	0.430	0.544	0.476
	[0.037]	[0.075]	[0.073]	[0.103]	[0.062]	[0.027]	[0.027]	[0.084]	[0.110]	[0.138]	[0.055]	[0.074]	[0.062]	[0.032]
	(0.639,0.785)	(0.818,1.110)	(0.025,0.310)	(0.770,1.173)	(0.269,0.511)	(0.259,0.366)	(0.141,0.245)	(0.376,0.705)	(0.146,0.576)	(1.297,1.837)	(0.182,0.399)	(0.285,0.576)	(0.422,0.665)	(0.413,0.540)
$\lambda_{2,2000}$	0.844	0.993	0.163	0.857	0.458	0.249	0.187	0.572	0.269	1.655	0.302	0.485	0.496	0.565
	[0.048]	[0.080]	[0.071]	[0.093]	[0.072]	[0.022]	[0.026]	[0.089]	[0.082]	[0.143]	[0.058]	[0.084]	[0.056]	[0.039]
	(0.750,0.937)	(0.836,1.150)	(0.024,0.302)	(0.675,1.039)	(0.316,0.600)	(0.206,0.292)	(0.137,0.237)	(0.397,0.747)	(0.109,0.429)	(1.375,1.934)	(0.189,0.415)	(0.322,0.649)	(0.387,0.606)	(0.489,0.642)
$\lambda_{2,2001}$	0.787	1.022	0.147	0.843	0.568	0.299	0.184	0.546	0.367	1.696	0.313	0.508	0.550	0.523
	[0.045]	[0.089]	[0.064]	[0.093]	[0.090]	[0.028]	[0.025]	[0.087]	[0.112]	[0.156]	[0.060]	[0.087]	[0.063]	[0.038]
	(0.699,0.874)	(0.848,1.197)	(0.022,0.273)	(0.660,1.026)	(0.392,0.744)	(0.245,0.354)	(0.134,0.234)	(0.375,0.717)	(0.147,0.587)	(1.391,2.002)	(0.196,0.430)	(0.337,0.679)	(0.426,0.674)	(0.448,0.597)
<u>Cohort shifters</u>														
$\gamma_{2,51-60}$	0.936	0.961	1.092	0.880	1.047	0.990	0.793	0.910	0.975	1.008	1.019	1.001	0.837	0.903
	[0.017]	[0.036]	[0.021]	[0.023]	[0.028]	[0.015]	[0.024]	[0.025]	[0.030]	[0.033]	[0.020]	[0.023]	[0.048]	[0.015]
	(0.904,0.968)	(0.890,1.032)	(1.051,1.133)	(0.835,0.925)	(0.991,1.102)	(0.961,1.019)	(0.745,0.841)	(0.862,0.958)	(0.916,1.034)	(0.944,1.072)	(0.980,1.058)	(0.956,1.046)	(0.742,0.932)	(0.873,0.933)
$\gamma_{2,61-70}$	1.060	1.130	1.163	0.929	1.060	0.944	0.812	0.887	0.914	1.226	1.109	1.028	0.939	1.043
	[0.019]	[0.038]	[0.024]	[0.025]	[0.030]	[0.014]	[0.028]	[0.026]	[0.025]	[0.051]	[0.022]	[0.024]	[0.051]	[0.019]
	(1.023,1.096)	(1.055,1.205)	(1.116,1.211)	(0.880,0.978)	(1.002,1.118)	(0.917,0.972)	(0.757,0.867)	(0.836,0.938)	(0.865,0.964)	(1.126,1.326)	(1.067,1.151)	(0.981,1.075)	(0.839,1.040)	(1.007,1.080)
$\gamma_{2,71-80}$	1.217	1.130	1.827	1.214	1.724	1.305	1.069	1.433	1.388	1.594	1.340	1.298	1.240	0.925
	[0.023]	[0.045]	[0.032]	[0.036]	[0.046]	[0.022]	[0.042]	[0.041]	[0.042]	[0.077]	[0.031]	[0.029]	[0.066]	[0.026]
	(1.171,1.262)	(1.041,1.219)	(1.763,1.890)	(1.143,1.284)	(1.634,1.814)	(1.261,1.349)	(0.987,1.151)	(1.353,1.513)	(1.305,1.470)	(1.443,1.745)	(1.279,1.400)	(1.240,1.356)	(1.111,1.369)	(0.873,0.976)
SSR	0.007	0.027	0.007	0.004	0.010	0.005	0.005	0.019	0.015	0.022	0.002	0.011	0.024	0.015

Notes: The SEs and the 5% confidence intervals are displayed in brackets.

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