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Fiscal stabilisers in Europe: The macroeconomic impact of tax and benefit systems

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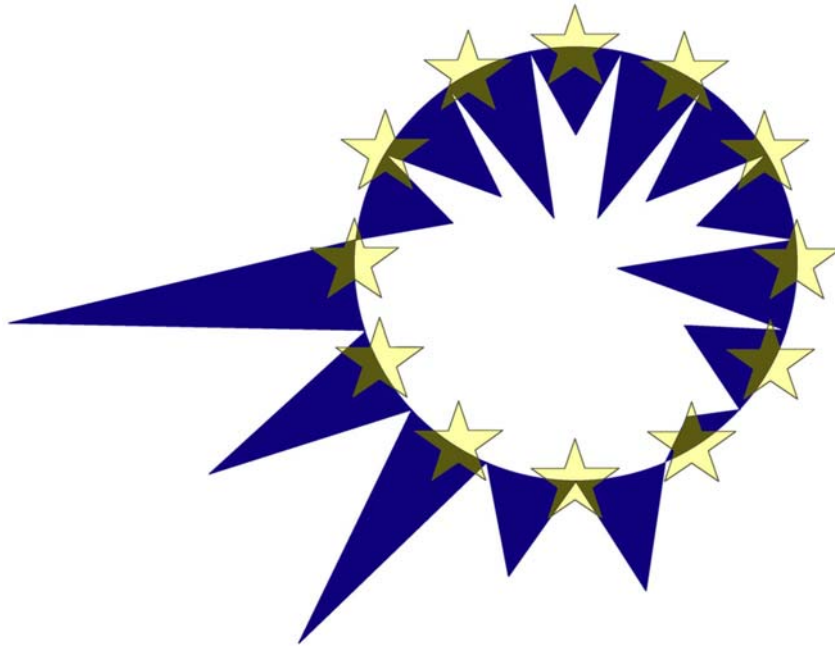
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**FISCAL STABILISERS IN EUROPE: THE
MACROECONOMIC IMPACT OF TAX AND
BENEFIT SYSTEMS**

Deborah Mabbett

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Abstract

Tax and benefit systems generate aggregate intertemporal effects in addition to their interpersonal redistributive effects. These intertemporal effects appear in the cyclical fluctuations in the government's fiscal position yielded by the 'automatic stabilisers'. Using EUROMOD, it is possible to produce estimates of the automatic stabilisers which focus on the stabilisation of household income rather than the budgetary effects of cyclical changes in taxes and benefits. These estimates are used to explore theoretical propositions about the role of the tax and benefit system in providing temporary income insurance to households, and to identify some of the possible effects of taxes and benefits on the speed of labour market adjustment over the cycle. The results show that the size of the stabilisers varies widely across the states participating in European Monetary Union (and the other EU-15 states). However, more analysis of the cross-cutting effects of private insurance and access to credit is needed to determine the implications for stabilisation policy.

JEL Classification: C81, D31, E32, H31, J68

Keywords: Automatic stabilisation, European Monetary Union, Insurance Unemployment, Microsimulation

Fiscal Stabilisers in Europe: The Macroeconomic Impact of Tax and Benefit Systems

Deborah Mabbett¹

1. Introduction

Tax and benefit systems generate aggregate intertemporal effects in addition to their interpersonal redistributive effects. These intertemporal effects appear in the cyclical fluctuations in the government's fiscal position yielded by the 'automatic stabilisers'. In successive commentaries in the journal *European Economy*, economists at the European Commission have set out a view of the appropriate role for countercyclical fiscal policy under monetary union in which the operation of automatic stabilisers has a central place. Discretionary fiscal expansion in recessions is rejected: 'long and uncertain lags, institutional constraints and irreversibility of fiscal decisions hamper the effectiveness of [discretionary] fiscal policy' (*European Economy*, No 3, 2001, p.59). Instead, 'the norm [...] should be to let automatic stabilisers operate freely'.

There are various political and institutional reasons why it is expedient to adopt this view and build it into the design of the Stability and Growth Pact (SGP) and successor arrangements. However, the endorsement of automatic stabilisation raises several

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EUROMOD relies on micro-data from twelve different sources for fifteen countries. These are the European Community Household Panel (ECHP) User Data Base made available by Eurostat; the Austrian version of the ECHP made available by the Interdisciplinary Centre for Comparative Research in the Social Sciences; the Panel Survey on Belgian Households (PSBH) made available by the University of Liège and the University of Antwerp; the Income Distribution Survey made available by Statistics Finland; the Enquête sur les Budgets Familiaux (EBF) made available by INSEE; the public use version of the German Socio Economic Panel Study (GSOEP) made available by the German Institute for Economic Research (DIW), Berlin; the Living in Ireland Survey made available by the Economic and Social Research Institute; the Survey of Household Income and Wealth (SHIW95) made available by the Bank of Italy; the Socio-Economic Panel for Luxembourg (SELL-2) made available by CEPS/INSTEAD; the Socio-Economic Panel Survey (SEP) made available by Statistics Netherlands through the mediation of the Netherlands Organisation for Scientific Research - Scientific Statistical Agency; the Income Distribution Survey made available by Statistics Sweden; and the Family Expenditure Survey (FES), made available by the UK Office for National Statistics (ONS) through the Data Archive. Material from the FES is Crown Copyright and is used by permission. Neither the ONS nor the Data Archive bears any responsibility for the analysis or interpretation of the data reported here. An equivalent disclaimer applies for all other data sources and their respective providers cited in this acknowledgement.

economic issues. First, there is an abundant literature which builds on the concept of Ricardian equivalence to suggest that fiscal deficits may not have expansionary effects on the economy, and more generally casting doubt on the efficacy of any fiscal policy. Second, the prevailing analysis of Europe's economic difficulties emphasises the need for supply-side adjustment. Stabilisers may postpone adjustment while stabilising demand, a dilemma recently formalised by Buti et al (2003). Third, it is argued that the level of automatic stabilisation generated by a country's tax and expenditure configuration is a product of decisions made about desired levels of redistribution, not stabilisation. On this view, there is no reason to suppose that the stabilisers will be the 'right' size or will respond in desired ways to macroeconomic shocks (Buti and van den Noord, 2004; Calmfors et al, n.d.).

This paper addresses these issues by using a dataset on European tax and benefit systems to estimate the automatic stabilisers and analyse aspects of their operation. In so doing, it takes a particular view of the process of automatic stabilisation through fiscal institutions, focusing on the efficacy of the tax and benefit system in providing temporary income insurance to households (for analyses which show how income tax provides insurance, see Varian (1980) and Eaton and Rosen (1980)). This perspective enables the three issues outlined above to be addressed. If stabilisation is generated by insurance, it follows that redistribution and stabilisation are not necessarily separate functions: the provision of temporary income insurance is stabilising while also generating *ex post* redistribution. Nor should the supply side (meaning basically the labour market institutions) necessarily be treated as exogenous to the provision of social insurance (Agell, 2002). Furthermore, Ricardian equivalence itself depends on the completeness of the insurance and credit markets that enable households to act on their expectations of future income; if the government counteracts market failure by providing social insurance, rational households should incorporate such provisions into their expected future incomes.

The literature on automatic stabilisation contains two distinct strands of economic analysis. One strand comes from Keynesian economics and focuses on the ways that taxes and benefits reduce the volatility of households' disposable income relative to their market income. The other strand has its origins in the largely inductive analysis of the relationship between economic stability, public sector size, and other variables, notably the openness of the economy. Section 2 reviews the insights into the political economy of stabilisation which this latter strand has generated, and makes the case for focusing on the government's role as provider of insurance in interpreting the empirical evidence of a relationship between government size and stabilisation. Section 3 turns to the supply-side argument that stabilisation may postpone adjustment. The estimates of the stabilisers are extended to include unemployment benefit effects, and it is shown that there is no correlation between the estimates and the persistence of unemployment. Section 4 concludes by drawing out the implications of the analysis for future stabilisation policy, particularly in the light of the growth in private insurance and credit markets, which may be partial substitutes for the social insurance mechanisms which drive automatic stabilisation.

2. Stabilisation and redistribution

To what extent are stabilisation and redistribution separate functions? The possibility that the size of the public sector might be explained by stabilisation motives was raised by Cameron (1978), who tested several theories about the determinants of the expansion of

the ‘public economy’ between 1960 and 1975, measured as the average annual increase in the share of government revenue in GDP. He found that the openness of the economy in 1960 was the best single predictor of the expansion of the public economy in subsequent years, and suggested that government spending programmes served a stabilising and protective function for small countries which had to remain competitive in world markets. His insights have been carried forward by Rodrik (1998), Fatás and Mihov (1999), Agell (2002), and Andrés et al (2004), who have shown that more open economies have larger public sectors, that openness generates volatility, and that larger public sectors reduce volatility.

These authors give an eclectic account of the ways in which the public sector may stabilise the economy. Rodrik offers a view in which the government (as a whole) is conceived of as a ‘safe’ sector generating relatively stable income flows for households (e.g. through employment) as well as through transfers. However, he also tests the idea pursued here, that in high-income, developed countries the government plays its risk-mitigating role primarily through the provision of social security rather than through consumption and employment, and finds it strongly supported by the statistical evidence (1998, pp.1019-21).

Fatás and Mihov (1999) set out to test and expand on the ‘resource absorption’ account of government stabilisation implicit in real business cycle models. In these models there is no scope for the traditional Keynesian stabilisation mechanism, whereby taxes and transfers stabilise disposable income. Instead, the negative relationship between government size and volatility must work through effects on the determinants of GDP itself. The resource absorption account starts from the simple proposition that, provided government expenditure does not change procyclically, larger values for the government share must mean that volatility in other components of income has less effect on aggregate income volatility. Fatás and Mihov reject this account, finding that larger governments reduce volatility in various components of private sector economic activity.

The insurance-based account of government stabilisation has clear normative implications. Governments are conceived as counteracting failures in the private insurance and credit markets which mean that households cannot maintain a stable consumption path in the face of fluctuations in income (Flemming, 1973). Inter alia, this means that private consumption is more stable than it would be in the absence of insurance. With more complete protection against risk, households may be more entrepreneurial and the economy more efficient (Sinn, 1996). Openness, economic dynamism and the provision of insurance might go together, whereas the resource absorption and safe sector views imply a more traditional account of trade-offs between efficiency and stability.

Different methods for measuring the size of automatic stabilisers provide a way of distinguishing between the insurance and safe sector aspects of government stabilisation. If government size and economic openness are related by ‘risk mitigation’ motives, a measure of temporary income insurance provided through the tax and benefit system should have a stronger relationship to openness than other measures of government size, which are confounded by activities which do not have such a clear insurance function.

Measuring temporary income insurance

The analysis of temporary income insurance focuses on the relationship between households' market income and their disposable income, which is mediated by taxes, social insurance contributions and transfer payments (benefits). By treating transfer payments to households (benefits) as negative taxation, we can define disposable income y_d as equal to $(1-\tau)y$, where benefits are incorporated in the functional operator τ and y is household market income. For the analysis of cyclical stabilisation, we need to estimate τ in the vicinity of equilibrium income y_e . If we can make the assumption that, over a period of years, changes in y represent fluctuations of y_t around y_e , then the coefficient of cyclical stabilisation can be measured as $\tau=1-\Delta y_d/\Delta y$.

It is possible to derive estimates of the ratio of $\Delta y_d/\Delta y$ directly from time series data, as has been done by Sachs and Sala-i-Martin (1992) and Bayoumi and Masson (1995). These analyses have yielded 'ballpark' figures for income stabilisation in the USA of 30-40%; in other words, the volatility of disposable income is 60-70% of the volatility of gross income. However, these studies do not attempt to distinguish between automatic stabilisers and the effects of discretionary adjustments to fiscal policy; nor do they provide a framework for linking specific policy parameters to the magnitude of fiscal stabilisation.

It is possible to use a tax-benefit simulation model to calculate how much disposable income changes when market income is changed by a chosen amount. Simulation methods were used in a study by Auerbach and Feenberg (2000) to arrive at estimates of automatic stabilisation for the USA of 25-30%. Auerbach and Feenberg sought to establish whether levels of automatic stabilisation had changed through time as a result of tax reforms. They used the TAXSIM model, in which policy changes are recorded (the model parameters are reset annually) and conducted simulations on the model for a succession of years from the early 1960s.

The European tax-benefit model, EUROMOD, can be used to derive stabilisation coefficients for Europe which are directly comparable to those of Auerbach and Feenberg. Immervoll et al (forthcoming) conducted simulations of the effect of an increase in unemployment, increases in real earnings, and increases in earnings inequality. The following discussion is based on their results for the effects of growth in real earnings; the results for unemployment are discussed in section 3. Their aim was to examine how poverty rates were affected by macroeconomic changes; here the results are re-analysed to determine the extent to which households are insured in the face of changes in income and unemployment.

While simulation is a powerful instrument, it introduces some issues and limitations which analyses based on historic data can avoid. The most obvious advantage of simulation is that there is no identification problem, but we are constrained to examine changes in income, benefits and taxation relative to the model baseline, rather than being able to estimate equilibrium income. The microdata in EUROMOD were collected in different years in the 1990s. All the data are adjusted to 1998 values, but countries were not all at the same point in their economic cycles when the data were collected, so the deviations discussed below are not from the same cyclical position. This might affect the results if there are significant non-linearities in aggregate tax and benefit responses to changes in income.

Actual changes in income may be distributed in various ways across the components of household income, and will be accompanied by changes in labour force participation and unemployment. In a simulation analysis, decisions have to be made about how changes in income and unemployment will be modelled which inevitably have some arbitrary elements. Auerbach and Feenberg conducted their simulations by raising all components of income by 1%. In the EUROMOD real income simulations, earned income is raised by 10%. The rationale for focusing on earned income, rather than all components of income, is that cyclical volatility is most likely to be channelled through fluctuations in earnings. The question of how big a change to simulate is a difficult one. Small changes may mean that potentially significant policy parameters do not come into play, but large changes may make the assumption of policy stability unrealistic. In the current exercise, the key question is whether tax and social contribution thresholds would be adjusted in the face of a significant increase in earnings. States may have statutory provisions which ensure that they make automatic or semi-automatic adjustments for inflation to either or both the tax and SIC system (Immervoll, 2004, pp.16-17). However, governments generally have discretion in adjusting system parameters in response to changes in real income.

Relationship to other measures of automatic stabilisation

The measures for automatic stabilisation reported here are explicitly based on the government's tax-benefit 'redistributive' activity. As noted in the introduction, insurance generates stabilisation and redistribution as joint products. This approach to the stabilisers contrasts with that taken by the European Commission and the OECD, where automatic stabilisation is conceived in terms of the cyclical sensitivity of the government budget. There is now a substantial body of research on the cyclical sensitivity of EU states' budgetary positions. Using a variety of econometric methods, studies estimate 's' defined as follows:

$$(1) \quad \gamma(y_t) - \tau(y_t) = [\gamma(y_e) - \tau(y_e)] + s(y_e - y_t)$$

where $\gamma(y_t) = g$ (government expenditure) and $\tau(y_t) = t$ (tax revenue). In this general form, both g and t may have income-responsive elements captured within the relationships $\gamma(y)$ and $\tau(y)$ respectively. $\gamma(y_t) - \tau(y_t)$ is the current government deficit; $\gamma(y_e) - \tau(y_e)$ is the cyclically-adjusted ('structural') fiscal position and s measures the cyclical sensitivity of the government budget to variations in income around the equilibrium level y_e .

In a simple economy in which government expenditure is exogenous to income and taxes are proportional to the tax base ($t=\tau.y$), it follows that $s=\tau$. In practice, the estimation of 's' is considerably more complex than this. The main problem is that taxes do not have a single relationship to cyclical fluctuations in income. Different components of the tax base fluctuate quite differently. Van den Noord (2000) found that the base for corporate tax is more volatile than GDP, while the personal income and social security tax bases are less volatile. Indirect taxes are roughly proportional to consumption, which has similar volatility to income. Based on these estimates, van den Noord calculated 's' as the weighted average of the responsiveness of the four components to changes in GDP, plus a small unemployment benefit expenditure component:

$$(2) \quad s = \omega_c \varepsilon_c + \omega_p \varepsilon_p + \omega_s \varepsilon_s + \omega_i \varepsilon_i - \omega_e \varepsilon_e$$

where ω represents the share in y or GDP of each component (corporate tax, personal income tax, social security contributions, indirect tax and unemployment benefit expenditure) and ε represents the income elasticity of each component. This methodology is widely accepted; the European Commission has used a similar approach (European Commission, 2002). Van den Noord's estimates for 's' (change in government net lending relative to change in GDP) are shown in Table 1.

It is evident that a range of diverse factors affect 's', and different elements within 's' will have different stabilisation effects in response to different types of shock (Brunila et al, 2003). Some components, notably corporate tax receipts, are unlikely to act as automatic stabilisers. As Auerbach and Feenberg put it in their analysis of automatic stabilisation in the USA, 'any changes in tax payments must translate into changes in aggregate demand for automatic stabilisers to succeed. For corporate taxes, the effect on consumption is tenuous..' (2000, p.18). Of course the estimates have some significance in their own right for budget management, but they contain elements which are unlikely to have a stabilising impact on aggregate demand or income through the channels under discussion here.²

Results

Table 1 shows the effect of a 10% increase in earnings on gross (market) income, benefits, employees' social insurance contributions (SICs), taxes and disposable income for the 15 member states. The ratio of changes in benefits and taxes in relation to the change in gross income is given in the row labelled 'stabilisation coefficient (τ):' the values range from 0.31 for Spain to 0.57 for Denmark. In general the tax and benefit system reduces the volatility of disposable income by one-third to one-half. These results are consistent with the estimates by Sachs and Sala-i-Martin and Bayoumi and Masson for the USA.

Table 2 examines the estimated stabilisation coefficients in the light of the debate about openness and government size introduced above. The first three rows and columns show the relationship between the estimates of automatic stabilisation and other measures of government size. As would be expected, given that the estimates for the stabilisers focus on the household sector, the stabilisers are more closely correlated with the share of SICs and taxes in household income than with the share of general government revenue in GDP. There is also more variation across the EU states in the household share measure than the general measure, as states with large government sectors also tend to rely more on taxes on the household sector relative to the corporate sector.

Given that the relationship between government size and economic openness is found to be well-established and robust by Rodrik (1998), it is striking that this dataset does not replicate this finding, at least for 1998. The correlations between the size and stabilisation measures (for 1998) and openness in 1960 are much higher. The strongest correlation is with the measure of income stabilisation, supporting the insurance hypothesis rather than

²The fiscal nexus between the government and the corporate sector may contribute to stabilisation if the corporate tax take is highly cyclically responsive and allows the corporate sector to act as a provider of temporary income insurance by hoarding labour. This issue is touched on in s.3 below, but is not taken further here.

the ‘safe sector’ or resource absorption views.

One explanation for the weak correlations in 1998 is that the openness of the southern European states and Ireland increased rapidly in the 1980s and 1990s, but these countries still have the legacy of the government institutions and insurance arrangements of less open economies. The relationship between openness and insurance is mediated by the development of appropriate institutions. Section 3 below takes up this idea by focusing on labour market flexibility. The central idea is that labour market institutions in an open economy must allow labour to be reallocated in response to changing competitive conditions, and that insurance provision to achieve income security without job or trade protection may be part of the development of appropriate institutions.

As illustrated by van den Noord’s decomposition (eqn 1 above), the estimates of automatic stabilisation under discussion here are the product of the elasticity of the system and its size or weight. *A priori*, we would expect some systems to be more elastic than others. In particular, Bismarckian social insurance systems may be expected to be large and inelastic, due to the large role of social insurance and high share of pension expenditure. For example, social insurance contributions (SICs) are often bounded by ceilings which reduce their elasticity with respect to income. The Scandinavian countries might be expected to generate higher elasticities as there is less reliance on social insurance and a lower share for pensions in expenditure.

The decomposition of the estimates into elasticity and weight is shown in Figure 1, where the hyperbola marks out values for the elasticity of SICs, taxes and transfers (Y-axis) and revenue share (X-axis) which yield the EU average value of 0.43 for the stabilisation coefficient. Figure 1 is most striking for what it does not show: the pension-oriented and contribution-financed systems of continental Europe do not demonstrate lower elasticity than the Scandinavian countries. The reasons are apparent in Table 1. As expected, SICs rise by less than 10% in response to a 10% rise in earnings in all states except Ireland, showing that SIC systems are relatively inelastic. However, most tax systems are highly elastic, and the weighted average elasticity is greater than 1 for most states. Furthermore, there is no relationship between the weighted average elasticity of taxes and SICs and the share of SICs in revenue, suggesting that tax structures are designed around SIC structures to achieve mildly progressive revenue-raising outcomes in most states, although the structure of SICs presents issues for some states.

The main thing that Figure 1 shows is that states with larger shares of taxes and contributions in household income are more stabilising, although their tax and contribution structures tend to be slightly less elastic. Only Ireland approaches the case of a small government sector which achieves a high degree of stabilisation (though still below the EU average) due to high progressivity. The three states with the largest government sectors (Finland, Sweden and Denmark) show low progressivity, perhaps because it is necessary to tax middle incomes heavily in order to raise high levels of revenue. From the perspective of stabilisation, size and elasticity are functional equivalents, but size dominates in these data.

The starting point for this paper is that insurance systems generate stabilisation and redistribution as joint products. It is possible to imagine different insurance contracts which generate more or less stabilisation for a given redistributive impact. One of the

aims of Italianer and Pisani-Ferry (1994) was to show how a stabilisation contract could be written for the states in a monetary union that would have a limited *ex post* redistributive impact. Similar ideas about the possibility of a highly-g geared stabilisation arrangement were advanced by Fatás (1998)³.

The key feature of the Italianer and Pisani-Ferry proposal was that allocations from stabilisation funds would be based on *changes* in economic activity rather than *levels* of economic activity. Thus a country would receive allocations during a downturn but not when stuck in recession, and low income countries would not systematically receive allocations from high income countries. Analogous arrangements for individuals and households could involve imposing time limits on benefits and calculating benefit entitlements with reference to previous earnings rather than with reference to a subsistence baseline or other fixed point. Both time limits and earnings-related payments are found in social insurance *benefit* systems. However, nothing similar is found in tax and SIC *revenue* systems, where liability is always based on current income or earnings rather than changes in income or earnings. So long as this is the case, it is not possible to separate stabilisation and redistribution in practice.

Benefit effects are largely absent from the results reported in this section, because none of the European countries has a large-scale benefit system which responds to changes in income alone. Instead, benefits are awarded on the basis of status criteria (whether the claimant is unemployed, disabled, elderly etc) as well as, or instead of, income. To get a picture of how benefits might be paid or withdrawn as a household's income changes, we need to introduce changes in the status of household members. Unemployment is the most relevant status for this study. Households may seek other statuses in the face of a fall in income and loss of employment, for example by taking early retirement or obtaining disability benefits. However, even if cyclical conditions provide a spur to such status changes, the exit rates from these benefits are low, so the insurance they provide is permanent, not temporary.

3. Unemployment and the supply-side effects of the stabilisers

As noted in the Introduction, the standard account of the need for supply-side flexibility in Europe suggests that the automatic stabilisers may absorb demand shocks but postpone necessary supply-side adjustments. Buti and van den Noord (2004) advance an analysis in which the progressivity of the tax system makes the supply side of the economy less elastic, so that an increase in demand is more likely to lead to inflation than higher output. Similar ideas are taken up by Immervoll (2000). Auerbach and Feenberg (2000) take a somewhat different approach, looking at the effect of tax changes on individual labour supply decisions rather than on wages determined by bargaining. They suggest that the tax system will tend to generate reduced labour supply in booms and increases in recessions, and they see this as having a stabilising impact, because cycles in output will be restrained by countercyclical labour supply behaviour. Ljungqvist and Uhlig (2000) also argue that progressivity in the income tax system is stabilising on the supply side. Their argument is that 'keeping up with the Joneses' leads households

³ Fatás argues that 'a very high level of insurance can be achieved with a small budget where taxes and transfers are very reactive to income changes' (1998, p.185). It should be noted that he uses a particular concept of synchronic interregional insurance which he distinguishes from intertemporal stabilisation. In the present discussion, the concept of insurance is not restricted to synchronic arrangements (cf. Bean's comment (Fatás 1998, p.198)).

to work and consume too much in a boom, and a procyclical tax on labour can counter this tendency. In summary, the different commentators agree that a progressive tax system may make aggregate supply less elastic over the cycle, but they disagree on whether this is stabilising or destabilising.

The starting point for the discussion in this section is that the ideas about supply-side flexibility which are relevant to cycles caused by supply shocks concern the speed with which labour can be reallocated from shrinking to expanding sectors. The central question for automatic stabilisation is whether the tax and benefit system speeds up or slows down this reallocation. For example, the traditional view is that unemployment benefits may reduce individual incentives to seek jobs in growing areas of the economy, with the result that unemployment persists.

Recent work by Agell (2002) and Bertola and Koeniger (2004), among others, suggests that labour market arrangements affecting supply-side flexibility, such as restrictions on worker dismissals, are linked to other institutions including social insurance provision. Young (2003) examined whether the strength of employment protection legislation (EPL) is inversely correlated with unemployment benefit provision. There does seem to be a negative relationship between EPL and UB provision (2003, p.29), but Young is cautious in interpreting this result. The available estimates of EPL involve qualitative judgments in which different aspects of employment rights (which often point in divergent directions) have to be weighted and combined in a single indicator.

There are also difficulties in deriving a good aggregate measure of the extent of unemployment insurance. The usual way to estimate the extent to which households with an unemployed member (henceforth: unemployed households) are insured is to calculate replacement ratios (see Immervoll and O'Donoghue, 2003, for a discussion of alternative methods of calculating 'insurance' and 'living standards' ratios). However, replacement ratios vary considerably across different household types and earnings profiles, and for macroeconomic analysis an average figure has to be generated in an arbitrary way (for example, by averaging over different household types). Furthermore, replacement ratios need to be adjusted for the coverage of insurance. Young (2003, Chart 4.1) created a measure of expenditure on unemployment benefits per unemployed person which is sensitive to coverage, as the denominator includes people who are surveyed as unemployed but not eligible for benefits. However, this measure relies on the functional classification of unemployment benefits and therefore excludes insurance in other forms, such as social assistance and the effects of changes in tax.

Another method is to use a household survey dataset to compare the disposable income of unemployed households with that of employed households. Ideally, the comparison would focus on those most at risk of unemployment. EUROMOD provides a way of doing this comparison in a form which allows us to identify the impact of unemployment on gross income as well as disposable income, and therefore to calculate an insurance or stabilisation coefficient $\tau=1-\Delta y_d/\Delta y$ which is comparable to that described in the previous section. The procedure is to generate a change in gross income by re-weighting the household data so that, in effect, a proportion of employed households are 'made unemployed' (Immervoll et al, forthcoming). While the households at greatest risk of unemployment cannot be identified with any precision, the re-weighting can select households with similar demographic characteristics to the currently unemployed

households (see Appendix 2 of Immervoll et al for a list of the characteristics which are controlled for).

Currently unemployed households include those containing members who are actively seeking and available for work (the standard ILO survey definition of unemployment) as well as those receiving unemployment benefits. The changes in gross and disposable income generated by reweighting are, therefore, sensitive to differences in the coverage of unemployment benefits. Unemployment was raised by a uniform amount (5 percentage points) in the simulation, but the effects on unemployment benefit expenditure varied widely. Furthermore, social assistance and other benefits received by unemployed households also increased in the simulation.

The results in Table 3 show that there is wide variation across the EU states in the extent to which unemployment is insured. The outliers at each end of the spectrum are as might be expected: Denmark and Sweden with high levels of insurance and Greece, Italy and Spain with low levels. Belgium and Germany stand out from the other continental states in having relatively high levels of provision. There is some indirect evidence of the extent to which unemployment has a significant impact on household income: the results for Greece possibly reflect a high rate of youth unemployment which is 'self-insured' by households, with the result that the effect of an increase in unemployment on household disposable income is small, despite the weaknesses of the tax-benefit response. The states where unemployment is most underinsured from this perspective are the UK, Ireland and Italy, where disposable income falls by 2% or more in response to the 5-point increase in unemployment.

These measurements of the extent to which the tax-benefit system provides income insurance in situations of unemployment do not indicate the extent to which unemployment-related expenditure varies with GDP; in other words, they do not measure the unemployment component of the cyclical sensitivity of the government budget. To calculate budget effects, it is necessary to determine the response of unemployment to changes in GDP as well as the level of insurance.⁴ With a fixed labour force, the response of unemployment to changes in output is measured by the Okun's Law coefficient, OLC. As the matrix below shows, there are several possible combinations for budgetary effects (BE) and volatility of household disposable income (VoldI). Given variations in the OLC, the budgetary effects of the high-insurance case (2) and the low-insurance case (3) are similar, although the expected outcomes for disposable income and volatility are quite different. Furthermore, case (1) indicates that income stability may be achieved in the absence of automatic stabilisers, if the OLC is low.

⁴ Van den Noord's estimate of the unemployment benefit component in equation (1) above is the product of estimates of the output elasticity of unemployment and the share of unemployment-related expenditure in government expenditure, assuming that unemployment-related expenditure is proportional to unemployment (van den Noord, 2000, p.25). Auerbach and Feenberg (2000) arrive at a comparable estimate by straightforward induction from the data, examining the extent to which unemployment benefit expenditure varies with changes in GDP.

	Low insurance	High insurance
Low OLC	(1) BE: low VolDI: low	(2) BE: medium VolDI: low
High OLC	(3) BE: medium VolDI: high	(4) BE: high VolDI: low

From a supply-side perspective, the possibility that insurance and the OLC are positively correlated (i.e. that states tend to fall along the axis from cases (1) to (4)) is highly significant. A low value for OLC implies that firms hoard labour in downturns and do not recruit extensively in upturns, behaviour which is likely to generate persistent (though not necessarily high) unemployment. Conversely, a high value for OLC may be associated with a more flexible supply side in which unemployment is volatile (although not necessarily low).

Figure 2 follows Young (2003) in looking for a relationship between the measure of unemployment insurance generated by EUROMOD and the OECD's ranking of employment protection legislation (a higher rank indicates more protective legislation; see Young, 2003, Table 4.2). It is clear that there are some traces of a relationship between the Southern European and Scandinavian 'poles'. However, there is no relationship in the middle cluster of continental European states, while the UK and Ireland stand out as offering a lower level of protection against risk by either means. In Portugal, relatively recent increases in provision for the unemployed had not, at the time the data were assembled, been matched by any reduction in EPL.

The possibility of an insurance-EPL relationship provides one reason not to expect that high levels of insurance will necessarily associated with suppressed supply-side responses and lack of structural adjustment. The issue can be examined more directly by looking for a relationship between the level of insurance and the volatility of unemployment. Figure 3 shows that there is no obvious relationship. Italy and Spain provide examples of states with persistent unemployment and low levels of insurance; conversely Sweden has combined high volatility with high levels of insurance. On this evidence, there is no reason to assume that strong stabilisers will be associated with weak adjustment.

4. Conclusion

This paper has suggested that stabilisation and redistribution are not necessarily separate functions. While the current fashion in political economy is to see the welfare state as an instrument for pure redistribution (Meltzer and Richard, 1981), there is a well-established alternative account that the welfare state compensates for private market failures by providing insurance (Barr, 2004). *Ex post*, insurance and redistribution are indistinguishable; *ex ante*, insurance may be an instrument of macroeconomic stabilisation. Furthermore, if insurance contributes to the development of flexible labour

market institutions, there may not be a tradeoff between demand stabilisation and supply-side adjustment.

This paper has shown that there are wide differences across the European states in the size of their automatic stabilisers. The analysis of the connections between openness, welfare state size and stabilisation may be taken to suggest that some of the states which have experienced the fastest increases in openness (particularly Ireland and the southern European states) lack the institutions for managing risk in an open economy and responding to the accompanying pressures of market liberalisation. There is some evidence that the southern states are over-reliant on employment protection legislation as a substitute for social insurance (section 3). However, it does not follow that their economies suffer from excessive consumption volatility due to the weakness of automatic stabilisers. In the 1980s and 1990s, the Scandinavian economies were, if anything, more volatile than those of southern Europe.

It is arguable that the growth of private insurance and credit markets has weakened the relationship between the provision of social insurance and macroeconomic stability. The traditional Keynesian argument for stabilisation through taxes and benefits was that households are not sufficiently self-insured or privately insured to maintain a stable consumption path in the face of unemployment. Failures in the markets for insurance and credit lead to fluctuations in consumption (Flemming, 1973). Auerbach and Feenberg (2000), in their study of automatic stabilisers in the USA, emphasise that the stabilising effects of automatic fiscal adjustments are expected to work via their effects on household disposable income and thence consumption (although they also consider possible stabilising labour supply effects of the tax system). They suggest that the multiplier effects of the stabilisers depend on the proportion of households which are unable to behave according to the permanent income hypothesis and maintain a stable consumption path. In their view, a significant part of the household sector in the USA is not liquidity constrained. This means that the multiplier effects of any income shock will be small, provided households interpret income shocks as cyclical and not permanent (the 'no myopia' assumption). They also endeavour to estimate the share of aggregate income tax changes which go to households with high wealth, and conclude that more than half of any automatic change in personal and social security taxes goes to households which are unlikely to change their consumption behaviour in response.

However, this still leaves a subgroup of consumers, concentrated among those with low wealth, for whom consumption may depend on current income. Andrés et al (2004) suggest that their results for the stabilising effects of government expenditure on the private sector are consistent with the presence of some 'rule of thumb' consumers who spend all their current income. The share of 'rule of thumb' consumers in the household population may not be large; nonetheless, the presence of this group would mean that government expenditure and tax changes could generate stabilising effects on private consumption.

Blanchard (1990) discusses some evidence for the view that consumption is dominated by factors other than current income. He reviews the experience of the Danish fiscal consolidation, which apparently led to increased consumption, and contrasts it with the Irish case where the opposite happened. His account emphasises the importance of consumer credit in Denmark, which made it possible for households to implement

forward-looking consumption decisions. It is important to recall that extensive schemes of temporary income insurance were developed in a period when domestic credit markets were regulated and international capital flows were also controlled. If state insurance is a substitute for access to credit, the deregulation of these markets may undermine the case for state insurance. Alternatively, the growth in households' access to credit can be seen as presenting new challenges to the design of income insurance schemes. Research in the USA suggests that low income households are sometimes heavily indebted and this may reduce their ability to maintain a stable consumption path in the face of unemployment or other adverse events (Wagmillar, 2003). Households' consumption may be conditional on employment, not only because employment generates a regular income stream but also because access to credit may be conditional on employment.

If households are able to act in a forward-looking way, the effects of the automatic stabilisers may be different to the effects of discretionary fiscal policy. The automatic stabilisers are, by their very design, predictable. Rational households should incorporate the tax and benefit parameters which drive the stabilisers into their expectations of permanent income, as well as utilising the income smoothing provided by the tax and benefit system. One implication is that, if markets are complete, households can adjust to any set of tax and benefit parameters. Households faced with weak stabilisers would substitute the use of credit markets and active management of asset portfolios; those insulated by strong stabilisers would make less use of these mechanisms. The implication of this view is that automatic stabilisers make no difference to household consumption (being fully discounted into household plans), yet at the same time significant economic effects might occur if the stabilisers were not allowed to operate fully or if unexpected changes were made to the parameters.

The growth of private credit and insurance markets cannot be taken as a signal that these markets necessarily function perfectly. Problems of market failure remain, potentially creating new types of pressures on fiscal stability arising for example from contingent claims from private insurers and lenders. Managing these claims and responding to the predicament of highly-indebted poor households is likely to be an important challenge for stabilisation policy in the coming decades. These issues are already recognised within social policy as key problems for income maintenance, highlighting the close links between macroeconomic management and social policy in economies where the welfare state exerts a strong influence on the pattern of economic activity.

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Table 1

	AT	BE	DK	FI	FR	GE	GR	IR	IT	LU	NL	PT	SP	SW	UK
A 10% increase in earnings															
Percentage change from baseline value															
Market income	9.7	9.1	9.4	8.1	8.7	9.6	8.7	9.8	8.1	9.1	8.7	9.3	9.5	8.2	8.5
Benefits	0.0	-0.3	-0.6	-0.2	-0.6	-0.6	0.0	-0.5	-0.3	0.0	-0.4	-0.4	0.0	-0.5	-0.5
Employee social contributions (SICs)	7.7	8.5	8.1	8.3	8.1	7.5	5.3	10.9	8.4	6.9	5.8	8.5	3.8	4.7	9.0
Taxes	16.4	13.7	11.4	11.3	9.1	17.5	14.7	18.8	11.2	16.1	19.0	14.4	16.4	10.7	12.0
Disposable income	5.1	4.4	5.3	3.7	5.6	5.0	6.3	5.8	4.8	5.2	5.4	6.4	6.0	4.2	5.9
Stabilisation coefficient (τ)	0.46	0.51	0.58	0.55	0.33	0.51	0.32	0.39	0.41	0.40	0.46	0.33	0.32	0.49	0.33
Weighted average income elasticity of SICs and taxes	1.22	1.20	1.07	1.07	0.85	1.30	0.99	1.74	1.05	1.27	1.10	1.20	1.32	0.95	1.13
Share of SICs and taxes in gross household income	0.36	0.38	0.49	0.42	0.31	0.36	0.28	0.21	0.31	0.29	0.35	0.25	0.22	0.42	0.25
's' from van den Noord, 2000, p.19	0.31	0.67	0.85	0.63	0.46	0.51	0.42	0.32	0.48		0.76	0.38	0.40	0.79	0.50

Table 2 Correlation matrix

N=14 (excl LU)	Share of govt revenue in GDP	Share of SICs & taxes in household income	Automatic stabilisation	Openness 1998	Openness 1960	Share of EU GDP
Share of govt revenue in GDP	1.00	0.91	0.73	0.02	0.28	-0.01
Share of SICs & taxes in household income		1.00	0.89	0.08	0.42	-0.13
Automatic stabilisation			1.00	0.36	0.58	-0.13
Openness 1998				1.00	0.81	-0.43
Openness 1960					1.00	-0.32
Share of EU GDP						1.00
Coefficient of variation	0.14	0.25	0.22	0.48	0.48	

Source: EUROMOD (share of taxes and SICs and automatic stabilisation); European Economy Statistical Annex

Fig 1: Elasticities and size of government: Real earnings growth simulation

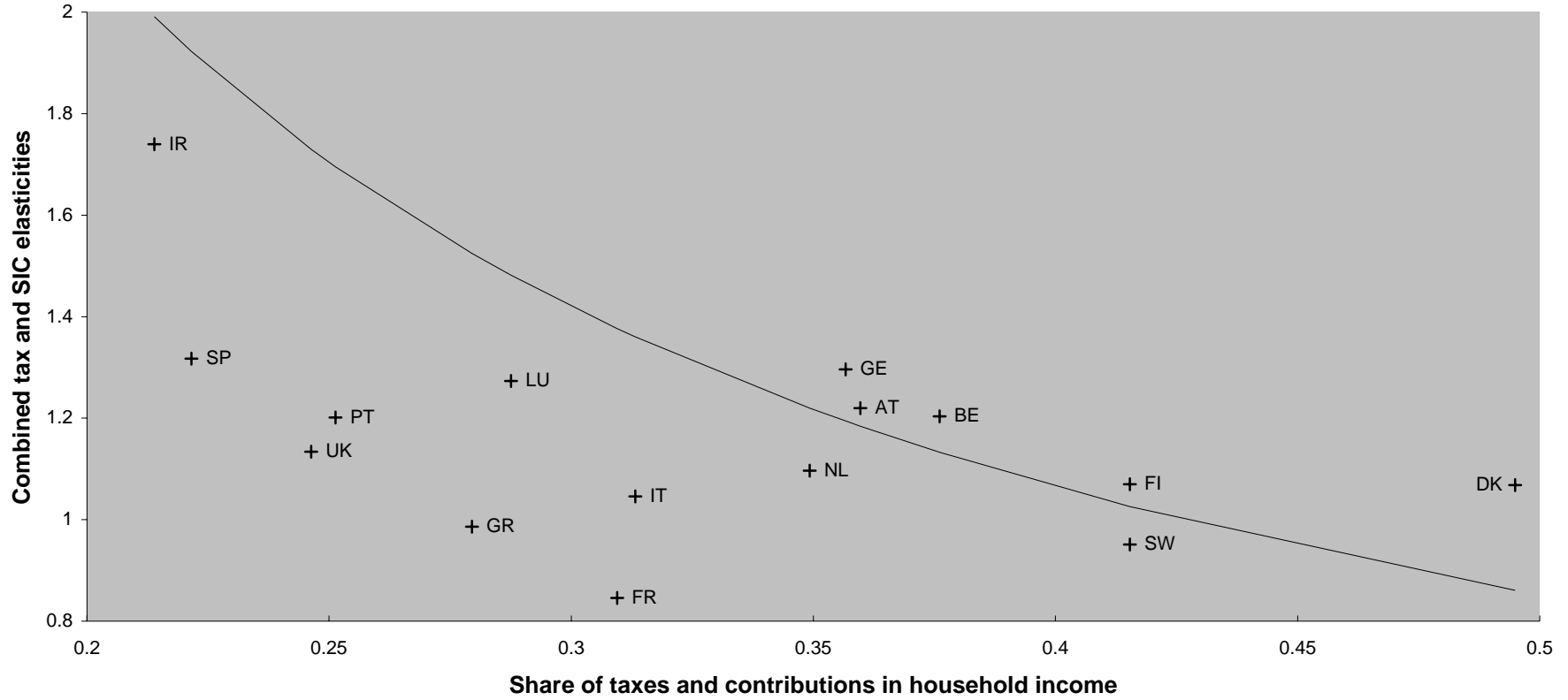
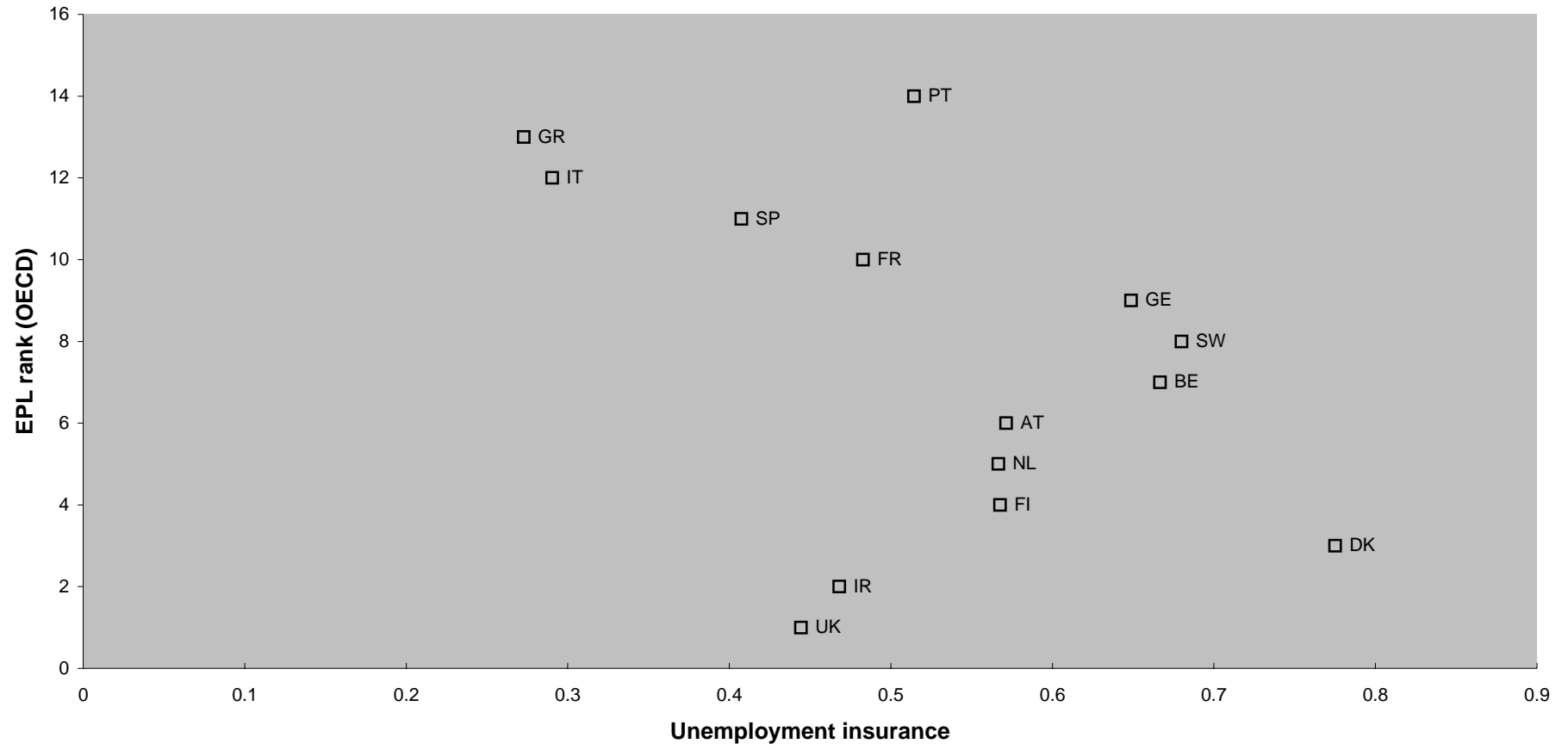


Table 3

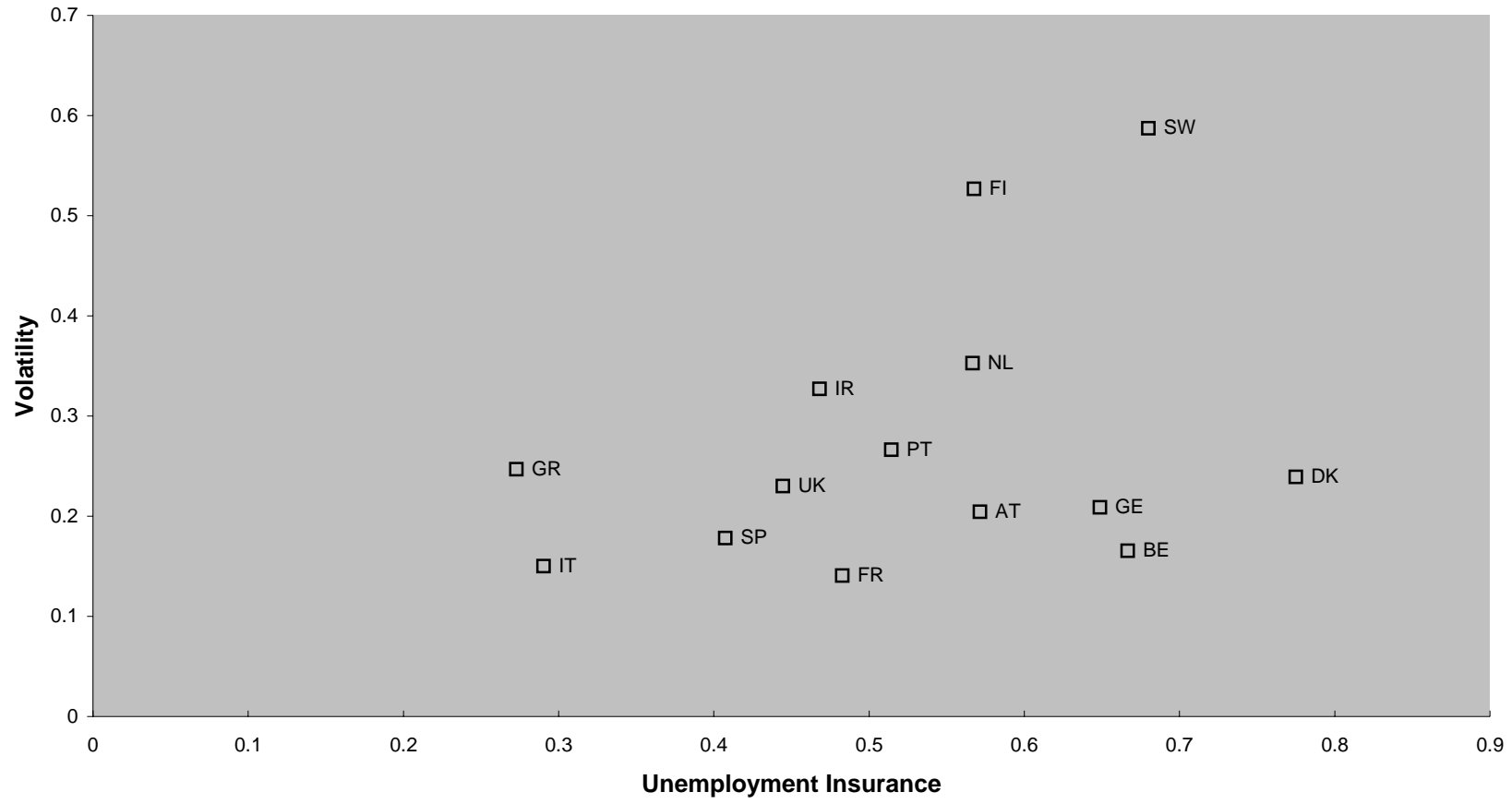
	AT	BE	DK	FI	FR	GE	GR	IR	IT	LU	NL	PT	SP	SW	UK
A 5% increase in unemployment															
Market income	-2.1	-3.0	-3.0	-3.7	-3.0	-3.5	-1.0	-4.9	-3.1	-2.0	-2.6	-3.4	-2.9	-2.5	-3.5
Benefits	1.1	2.4	6.4	2.5	2.1	3.1	0.0	5.7	0.0	1.9	4.2	3.0	1.4	2.9	3.7
Employee social contributions (SICs)	-1.8	-2.6	-2.2	-2.4	-2.7	-2.9	-0.7	-5.5	-3.6	-1.0	-1.6	-2.8	-3.8	0.0	-3.6
Taxes	-3.3	-3.1	-1.5	-2.7	-1.8	-4.4	-1.4	-5.3	-2.6	-2.3	-1.9	-4.6	-3.9	-1.2	-3.0
Disposable income	-0.9	-1.0	-0.9	-1.6	-1.5	-1.3	-0.8	-2.5	-2.2	-0.8	-1.3	-1.7	-1.6	-0.8	-2.0
Stabilisation coefficient (τ)	0.57	0.67	0.78	0.57	0.48	0.65	0.27	0.47	0.29	0.58	0.57	0.51	0.41	0.68	0.44
EPL rank (OECD 1999 in Young 2003)	6	7	3	4	10	9	13	2	12	-	5	14	11	8	1
Unemployment volatility (coeff of variation, 1981-2001, EUROSTAT definition)															
Source: European Economy Statistical Annex	0.20	0.16	0.24	0.53	0.14	0.21	0.25	0.33	0.15	-	0.35	0.27	0.18	0.59	0.23

Fig 2: Employment protection and unemployment insurance



Source: see Table 3

Fig 3: Unemployment volatility and unemployment insurance



Source: see Table 3