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**A comparison of the fiscal and distributional
effects of alternative basic income
implementation modes across the EU28**

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Abstract

This paper examines the fiscal and distributional effects of a number of alternative basic income implementation modes across 28 European welfare states. The paper aims to make three contributions to the literature. Firstly, through the use of EUROMOD's advanced 'add-on' and 'loop' features, we develop an innovative methodological approach to comparing the effects of revenue neutral basic income reforms across countries. As a consequence, the study is more ambitious in scope than previous basic income microsimulation research. Our second contribution is to generate rich and detailed comparative data regarding the fiscal and distributional effects of different ways of implementing basic income, thus contributing to the burgeoning literature on policy design features and trade-offs. Thirdly, we compare these effects and trade-offs across a large sample of European countries, and thus derive some tentative insights into basic income's congruence with different types of welfare state.

JEL: C81, D31, H22, H55

Keywords: basic income, microsimulation, revenue-neutral, poverty, policy trade-offs

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1. Introduction

In recent years, basic income has ascended the policy agenda across the world. In this context, debates about practical issues of policy design and political feasibility have come to the fore (De Wispelaere and Noguera, 2012; De Wispelaere, 2016; Torry, 2016; Martinelli, 2017, 2019; Reed and Lansley, 2019).

According to proponents, basic income has a number of potential advantages over existing systems of welfare delivery, including, *inter alia*:

- the extension of income security to all as a matter of *right* (Standing, 2004);
- the alleviation of poverty and unemployment traps (Gamel et al., 2006; Van Parijs, 2004);
- the valorisation of unpaid work (Van Der Veen and Groot, 2006);
- the minimisation of ‘exclusion’ errors (i.e. more comprehensive substantive coverage of the poor) (Goodin, 1992);
- the facilitation of flexible working patterns (Groot and Van Der Veen, 2000) and resilience in the face of automation and labour market change (Srnicsek and Williams, 2015; Stern, 2016)
- the encouragement of entrepreneurship and creativity (Bregman, 2017);
- improvements in gender equality (McKay, 2001; Koslowski and Duvander, 2018); and
- ecological benefits (Van Parijs, 1992; Andersson, 2010).

On the other hand, opponents have advanced many objections to basic income. Some are ethical in nature, relating to the dissolution of *need* and *reciprocity* as principles underlying the organisation of welfare (Cruddas and Kibasi, 2016), while others are more pragmatic and relate to the practical feasibility of funding and implementing such a wide-ranging reform (Piachaud, 2018).

Recent analysis has demonstrated that fiscal and distributional goals are in tension when we consider basic income’s specific concrete policy design features. More specifically, there appears to be a ‘trilemma’ between the goals of affordability, adequacy, and securing the advantages that motivates basic income in the first place (Martinelli, 2019). Thus in seeking to determine the most appropriate ‘modes of implementation’, we face crucial choices about which benefits should be withdrawn or adjusted, and which should be retained, in order to best balance conflicting policy objectives. One of our research goals is to contribute to an understanding of the effects of different ‘modes of implementation’.

While the trade-offs that characterise different forms of basic income have been explored in the context of individual countries such as Spain (Pinilla-Pallejà and Sanzo-González, 2004), Italy (Colombino, 2015), Finland (Kela, 2016), the UK (Martinelli, 2017), Canada (Stevens and Simpson, 2017) and Australia (Ingles et al., 2019), this study is motivated by a desire to analyse them in comparative fashion. As Browne and Immervoll (2017) suggest, comparative research, unlike single country studies, “allows us to generalise in a way that is informative in the international debate”.

Thus, another research goal is to explore to what extent and how fiscal / distributional trade-offs vary in structurally diverse welfare states. As noted elsewhere (Martinelli and De Wispelaere, 2017), the manner in which basic income’s political feasibility and institutional ‘fit’ varies warrants careful consideration: the functions that welfare state fulfil, their fiscal cost, and the extent to which they provide income security and alleviate poverty, vary hugely. Thus, the way that basic income could substitute for the existing functions of the welfare state, the desirability of changes to the net income distribution, and the fiscal implications of replacing existing provisions with basic income will all vary as well. It is the nature and determinants of this variation with which we are concerned here. Our aim is to contribute to the broader literatures on comparative social policy and welfare state development, besides providing important empirical evidence on the feasibility of implementing different forms of basic income in different country contexts.

We are interested too in the politics of basic income (Van Der Veen and Groot, 2000; Caputo et al., 2012). Clearly, political feasibility depends, in part at least, upon levels of public support (De Wispelaere and Noguera, 2012). As Parolin and Siöland (2019) note, higher levels of support for basic

are found in countries with less developed welfare states. The authors identify these tensions as a ‘demand-capacity paradox’, meaning that countries in which the demand conditions are present for basic income are those in which there are the greatest barriers to implementation. We explore this contention through a comparison of fiscal and distributional trade-offs to determine whether, on average, countries which most need basic income to deal with gaps in coverage and inadequate levels of welfare (i.e. those which should in principle have high demand) also face the largest and most unacceptable fiscal costs (i.e. have low capacity). Fiscal affordability, as understood here, goes beyond the technical matter of identifying tax rates that permit a given spending increase; it also involves appreciation of political barriers involved in tax rises of varying magnitudes as they fall on specific demographic and income groups. Thus, we examine the potential role of fiscal and distributional trade-offs in the determination of basic income’s political prospects.

Analytical approach and research questions

To do this, we use microsimulation methods to model a range of basic income ‘modes of implementation’ across the EU28. The modes of implementation are ordered from minimal to maximal level of changes to other benefits – defined here as cash transfers – as follows:

- BI1. No adjustment to any benefits.
- BI2. Adjustment of means-tested benefits; retention of other benefits and pensions intact.
- BI3. Adjustment of all benefits and pensions.
- BI4. Elimination of means-tested benefits; adjustment of other benefits and pensions.
- BI5. Elimination of all benefits and pensions.

‘Adjustment’ refers here to the withdrawal of existing benefits (those received prior to the basic income reform) up to the maximum value of the basic income itself.

We examine each of these implementation modes for a basic income paid at 75% of the national (relative) poverty line for a single person living alone². Children are paid at the rate of 30% of the poverty line, in accordance with OECD equivalence scales. We wanted to examine the effects of ‘revenue-neutral’ reforms, which entailed introducing a new flat tax³ on intermediate (pre-basic income) disposable income to compensate for basic income’s net costs. In order to facilitate comparability of the schemes’ effects, our schemes had to be operationalised in like fashion across diverse welfare states

² It might be argued that this level of basic income is unrealistically high, and that therefore any findings relating to fiscal feasibility arising from this analysis are invalid or of limited use. However, while many basic income proponents would agree that paying a basic income at this level is infeasible (Van Parijs and Vanderborght, 2017) – at least in the immediate future – there are plenty of advocates who endorse schemes with payment levels pitched around the poverty line. E.g., the prominent advocate Scott Santens proposes \$1000 per month in the US (Santens, 2015); and debate around the Swiss referendum of 2016 focused attention on a payment of CHF 2500 (€2800) per month (Reuters, 2013). Secondly, regardless of whether the level is realistic or not, findings regarding the fiscal and distributional effects of a basic income paid at this level remain highly relevant to the comparative assessment of basic income. Indeed, the implications of the present analysis go far beyond an assessment of the feasibility of basic income per se and speak to the comparative welfare state literature more broadly. Specifically, comparison with a generous basic income lays bare inadequate levels of payment, gaps in coverage, and inequality in entitlements that afflict all contemporary welfare states (to a greater or lesser extent) via assessment of the distributional effects of reform.

It might also be argued that an obvious (and superior) alternative to comparing different modes of implementation with a single payment level would be to vary the payment level itself. This would indeed be a fruitful avenue for future research – and one we intend to pursue – but it would be excessively complex to compare across the payment level dimension as well as across implementation modes and countries within the same paper. The imposition of a single common payment level facilitates the two other forms of comparison: how different ways of doing basic income compare to one another (holding the level constant) and how feasibility constraints vary across structurally diverse welfare states.

³ The choice of a flat tax is due to practical, methodological reasons as well as those relating to ease of analysis and exposition of findings. It is more straightforward to impose a single rate for each country, and easier to compare the increased tax burden in this way. This constraint obviously has implications for the overall progressiveness of the schemes modelled herein. We intend to expand the scope of the tax changes required to maintain revenue neutral, including more progressive options, in future work.

– and relatively straightforwardly – in the EUROMOD microsimulation programme. This required the utilisation of EUROMOD’s advanced *add-on* and *loop* functions.

As well as comparing modes of implementation and countries in terms of their fiscal and distributional effects, we also examine the nature of trade-offs across welfare regime types and by characteristics such as the level of coverage and the extent to which benefits are earnings related. In this way, basic income is used as a lens through which to view the fiscal and distributional strengths and weaknesses of existing welfare systems – for example, their level of coverage of the poor, and how well-targeted / redistributive the welfare system – in comparison to a generous, flat-rate universal payment. In this sense, following Browne and Immervoll (2017), we seek to “shed light on the features, strengths and weaknesses of existing, and much more complex, policy designs” – and also, to identify welfare state configurations in which trade-offs may be relatively favourable for the implementation of some form of basic income.

The research fills a number of important gaps in the literature. A number of recent studies (Browne and Immervoll, 2017; IMF, 2017; Ortiz et al., 2018) have attempted to analyse basic income’s fiscal and / or distributional effects in comparative fashion, while others (Levy et al., 2007; Vandenbroucke et al., 2012) have tackled ‘cognate’ policies. However, existing studies have a number of limitations which we hope to address. Firstly, as a result of an innovative methodological approach to comparing the effects of policy reforms across countries, the study is more ambitious in scope than previous comparative basic income microsimulation research (Browne and Immervoll, 2017; IMF, 2017), covering all 28 EU member states. This allows us analyse variation across broader classifications of welfare state. Other studies (e.g. Ortiz et al., 2018) have comprehensive coverage but do not examine distributional issues alongside fiscal costs. Browne and Immervoll (2017), to which we are indebted, take a different approach to the specification of a basic income that is comparable across countries. In their article, payments are determined with the restriction that tax rates cannot be adjusted upwards (instead the basic income payment is levelled downwards). In this study, payment are set in relation to national poverty lines, and we model the tax rises required to render scenarios budget neutral. This enables direct comparison across countries on the basis of a ‘like-for-like’ basic income. Finally, the aforementioned studies do not attempt to identify the determinants of cross-national variation in systematic fashion, as we do here (albeit exploratorily).

In sum, the research questions we address in this paper are as follows:

RQ1: How do the fiscal and distributional implications of basic income compare across different modes of implementation?

RQ2: How do the fiscal and distributional implications of basic income, and of specific modes of implementation in particular, compare across the diverse welfare systems of EU countries?

RQ3: How do feasibility constraints relate to the political demand-side conditions for implementing basic income, and is basic income necessarily subject to a ‘demand-capacity paradox’?

The paper is structured as follows. In section 2 we review the theoretical and empirical literature on the issues of fiscal and distributional trade-offs and their cross-national determinants. Section 3 presents the research design and methodology, including the comparative strategy, and specification of the basic income schemes modelled here. Our findings are presented in section 4. A comparison of the alternative mode of implementation is presented first, followed by cross-national comparisons of fiscal and then distributional implications. Using exploratory descriptive and correlational analysis, we explore the attributes that determine basic income’s congruence or otherwise in different types of welfare state. Section 5 concludes with a summary of the implications of our analysis, and connects to broader issues of political feasibility.

2. Literature review

Fiscal and distributional trade-offs in basic income policy design

Basic income refers to an overarching family of policies representing a wide range of specific *schemes*. Basic income schemes vary with respect to a number of important parameters (De Wispelaere and Stirton, 2004; IMF, 2017; Martinelli and De Wispelaere, 2017), but perhaps most significantly with respect to payment level and their interactions with the wider welfare system.

Basic income is usually understood to replace existing welfare transfers at least partially. The manner in which other payments are replaced can vary in nature and extent. It is possible to think about two main ways to adjust specific benefits in order to constrain the additional net costs associated with basic income: by eliminating them entirely, and by adjusting their payment levels downwards to take into account the basic income transfer (Martinelli, 2019). Related to this, we may contrast ‘full’ basic income schemes – pitched at levels that permit most other payments to be eliminated wholesale – with ‘partial’ schemes, which are pitched at levels designed to replace fewer benefits and / or may leave them in payment, with the levels of transfer adjusted downwards to take into account additional basic income payments (Kela, 2016)⁴.

Two objections are frequently raised in response to basic income: that it is *unaffordable*, and the uniform payment structure is *inadequate* to cover the complex array of circumstances and needs for which social security systems are designed (Martinelli, 2019). Basic income involves the expansion of coverage to include substantive (rather than nominal) universality and the minimisation (or elimination) of ‘exclusion errors’. While this is undoubtedly a positive characteristic of basic income, it implies that the policy will be costly in comparison to more partial, conditional systems. As a result, the (at least partial) removal of existing benefits appears to be a prerequisite to basic income’s practical feasibility, because it enables the state to offset (or ‘claw back’) a proportion of basic income’s considerable gross cost.

Under the assumption that basic income is intended to replace most or all other welfare benefits, there is clear tension between affordability and adequacy (Hirsh, 2015; Work and Pension Select Committee, 2017; Piachaud, 2018; Martinelli, 2019). Unless the basic income were paid at a very substantial level, withdrawing wholesale all other payments alongside implementation would lead to some poor, benefit-reliant households being worse off. Of course, the more substantial the payment level, the less affordable the basic income would be.

On the other hand, if benefits were simply left in payment and adjusted downwards such that existing recipients were not to lose out then effects on overall poverty and inequality levels are more favourable for a given level of expenditure. However, in this case many of basic income’s purported advantages would no longer materialise – such schemes only provide income security in a very limited sense, and that they fail to liberate large numbers from means testing – and fiscal savings would be less substantial (Martinelli, 2019).

Consequently, there appears to be a clear trade-off between the minimisation of additional net costs, and achievement of desirable distributional outcomes (specifically, the maximisation of gains and the minimisation of losses, especially among poor households). Simply put, a basic income scheme will have more desirable distributional outcomes the more it costs. The challenge is to design schemes which

⁴ This definition of ‘full’ and ‘partial’, which is highly contested, integrates two elements – the level of payment and the interaction with existing benefits. It stands to reason that partial basic incomes would tend to be less generous than full basic incomes, although this is not certainly not true as a matter of definition (Martinelli, 2017). Some progressive proponents of partial schemes propose very generous payments supplemented by a full complement of additional benefits targeted towards those with additional needs and for social insurance / consumption smoothing motivations (e.g. Van Parijs and Vanderborght, 2017), while some proponents of full schemes propose rather residual schemes (e.g. Murray, 2008). Thus, ‘partial’ and ‘full’ should not be seen as indicative of ‘progressiveness’ *per se*, since specific basic income schemes should also be viewed in relation to the wider constellation of policies and institutions in which they are situated.

have positive distributional outcomes, but whose fiscal costs fall within acceptable boundaries, defined in political as well as economic terms.

What determines the congruence between (different forms of) basic income and specific welfare state configurations?

In Martinelli and De Wispelaere (2017), we coined the phrase ‘varieties of basic income’ to indicate two conceptual features of our work. Firstly, we dispensed with the idea of basic income as a simple, unified concept and instead focused on basic income as a multidimensional policy proposal that varies extensively in terms of goals, design features, and implementation trajectories. Secondly, incorporating the comparative literature on the politics of the “new welfare state”, we explored the role of pre-existing welfare state constellations and trajectories in determining congruence with basic income proposals, and thus structuring (delimiting and potentiating) basic income’s political prospects. We outlined a number of important features of political ‘supply and demand’ (Beramendi et al., 2015) that we argued to be pertinent to the possibility of basic income’s success, and the forms it might take:

On the supply side, these include fiscal capacities, the existing structure of welfare benefits, and whether there are any institutional veto players such as trade unions that could thwart reforms that work against their members’ interests. On the demand side, they include the nature and extent of labour market dysfunction, and the numbers of ‘dissatisfied’ potential basic income supporters, the magnitude of the schism between ‘insiders’ and ‘outsiders’ and the political dynamics that dualism reproduces, and prevailing normative attitudes to working age welfare and conditionality (Martinelli and De Wispelaere, 2017: 12).

In this paper, we compare the static fiscal and distributional consequences of different forms of basic income across countries and types of welfare state, and in doing so, connect to these more general institutional and political considerations.

There are two ways to offset the gross cost of a basic income: through adjustments (reductions) to existing benefits, and through tax increases. These changes, combined with the payment of the basic income, generate the policy’s fiscal and distributional effects. Essentially, we are concerned with the difference between *net social transfers* under the existing system and under basic income – both at the household level, and on aggregate.

At the household level, net losses occur when reductions in benefit payments and increased taxes outweigh the UBI payment, and vice versa for net gains. Equivalised household incomes are used to derive poverty and inequality indicators, upon which we can compare the effects of basic income vis-à-vis the prevailing *status quo* or alternative policy reforms. Patterns of household gains and losses, and their implications for poverty and inequality – what we call ‘distributional effects’ – are crucial to the ethical desirability but also the political feasibility of basic income.

The aggregate change in net social transfers relates directly to the additional fiscal effort required to implement a basic income. Fiscal effects can be understood in terms of increased spending requirements or in terms of changes in tax rates required to ensure ‘revenue neutrality’⁵. Under the constraint of the latter, aggregate net losses must approximately equal net gains – there cannot be ‘winners’ without making some households becoming poorer – and thus, it is whether the requisite tax rises are ‘affordable’ for the households burdened with higher liabilities that determines whether a basic income scheme is fiscally feasible.

It follows from the above that households below a certain disposable income level will gain in net terms from the basic income – they will be ‘net beneficiaries’ – while above a certain income threshold, they will pay more in additional taxes than they receive as a basic income, and will thus be ‘net contributors’.

⁵ The term ‘revenue neutrality’ can mean different things. For some, it means a policy change that implies no increase in net expenditure (and thus, requires no additional revenue to be generated). We use it in a less restrictive sense, following Torry (2016), to mean a policy change that does not exacerbate budget deficits (i.e. *net* revenue does not change) – which does not preclude increases in net spending, provided they are (roughly) matched by increased tax receipts.

Changes to benefit entitlement will also affect into which of the categories they fall. The more expansive the group of net beneficiaries, the greater the aggregate losses of the net contributors.

How does this relate to welfare state characteristics? The welfare state influences the distribution of net incomes and thus delimits the set of (low-income) households who could directly benefit⁶ from a basic income, and determines the potential for savings through offsetting benefit reductions, and the extent to which households might lose out through withdrawn benefits (where these are more generous than the basic income). The patterns of net beneficiaries and contributors will thus depend upon the specifics of the basic income scheme being considered – in terms of the extent to and manner in which other benefits are adjusted or withdrawn – as well as upon the nature of the prevailing system.

A demand-capacity paradox?

If existing poverty and inequality levels rates are high (either through gaps in the coverage of welfare provisions or through ungenerous payments), then basic income paid through flat or progressive taxes has the potential to alleviate the situation relatively profoundly. On the other hand, the larger the aggregate income shortfall (the number of households experiencing an income shortfall multiplied by the average size of the shortfall), then higher basic income payments, and more substantial tax increases for net contributors, will be required to achieve the same reduction in poverty rates. In addition, the relative lack of existing welfare provisions means that, for modes of implementation that claw back a proportion of the basic income's gross cost through benefit withdrawal, net costs will be larger than compared to countries with comprehensive and generous welfare⁷. In an abstract sense, there is thus likely to be an incongruence between fiscal and distributional feasibility: countries with the most to gain in distributional terms also face the most profound fiscal constraints in implementing a basic income.

In some countries, poverty may be widespread – as a result of gaps in social security coverage, or at least as a result of inadequate payments to poor households – despite high levels of spending on social transfers. This is likely to be the case if welfare entitlements are based on social insurance principles and are strongly earnings related. This relates to the phenomenon of 'dualisation' (Häusermann and Schwander, 2011; Palier, 2010; Rueda, 2014)⁸. In the case of pronounced dualisation of entitlement between generous, earnings-related contributory benefits and pensions for labour market 'insiders' and very low levels of social assistance (or worse, no provisions at all) for labour market 'outsiders', social spending will not tend to be well-targeted towards poor households, and may even be regressive. For example, OECD (2017) report that in Italy and Greece, the poorest income quintile receive less than half of the average social transfer, while the richest quintile receive over 150% of the average. Eliminating such strongly earnings related transfers would enable the government to offset a very substantial proportion of a basic income's gross cost. In this way, high-spending but 'regressive' welfare states with high levels of poverty may be able to 'escape' the demand-capacity paradox outlined above.

However, this doesn't mean that dualised systems are necessarily fertile ground for basic income. In fact, the basic income does not conform closely to the Piggy Bank principle associated with contributory social insurance benefits (Barr, 2001). These benefits are highly conditional in terms of prior labour market status and performance (gauged via contribution record). Furthermore, the concept of income-related benefits runs counter to basic income's flat rate payment structure. Basic income simply does

⁶ It should be pointed out that this analysis only relates to direct (financial) gains and losses. In contrast, many of basic income's key advantages – for example relating to security against risk; spill-over effects on public health outcomes; reduction of intra-household power differentials; social solidarity; etc. – still accrue to the net contributors. In this way, a narrow focus on inter-household distributional outcomes may understate basic income's advantages.

⁷ This does not necessarily mean that it will be easy to 'claw back' costs in practice. As suggested below, welfare spending might be tied up in forms that are difficult to adjust or eliminate. This would be the case, for example, with social insurance schemes (to which workers have paid contributions and thus gained a legal entitlement to benefits).

⁸ While the phenomenon arguably pertains to all advanced welfare states to some degree, it is more pronounced in Conservative and Southern welfare regimes (see Häusermann and Schwander, 2011: 6-7).

not function very effectively at consumption smoothing, because for relatively well-paid individuals it would still leave very significant income shortfalls in comparison to previous income. There are also likely to be additional political barriers to replacing social insurance benefits with a basic income, for two reasons (Noguera, 2001). Firstly, people have built up entitlements and have expectation of more generous benefits than those who have not contributed. Secondly, besides normative and political opposition from labour market ‘insiders’ on the demand-side, there may be supply-side constraints, due to the funding mechanisms and administrative management of corporatist social insurance schemes, which may grant actual or de facto veto power to ‘social partners’.

These issues connect to the role and prevalence of contributory social insurance benefits in the welfare system, and the coverage and relative adequacy of means-tested social assistance schemes. In this way, we expect that different ways of classifying welfare states, such as the regime typology (Esping-Andersen, 1990), should have some explanatory value in relation to cross-national patterns of fiscal and distributional effects. In particular, we are concerned with the extent to which differential effects may be observed between welfare systems based on the prevalence of (non-) coverage and on the ‘earnings-relatedness’ of welfare provisions.

Cross-national comparative studies of basic income’s effects

IMF (2017) model a basic income paid at 25 percent of median per capita income, and compare the implications across eight different countries (France, Poland, UK, Brazil, Egypt, Mexico, South Africa, and US) using Luxembourg Income Study (LIS) microdata. However, for this exercise they do not impose the constraint of revenue neutrality or indeed make any changes to existing benefits. In this case, reported distributional effects are poor approximations of the ‘real’ effects of a basic income as implemented.

Turning to the substantive findings of the study, IMF (2017) point out that distributional effects (reductions in poverty and inequality) are likely to be relatively pronounced in countries in which poverty is more widespread (p. 17). The authors also acknowledge that

if the fiscal envelope dedicated to the UBI equals the sum of existing [...] transfers, then the generosity of the UBI will be larger in advanced economies than in emerging markets and low-income countries. The distributive impact of replacing existing transfers with a UBI will also depend on the coverage and progressivity of the existing transfer system—in other words, on how well the current system covers and targets the vulnerable population. A UBI distributes existing transfers uniformly across the population, thus potentially improving coverage of lower-income households, but it may do so at the expense of the generosity of benefits for those lower-income households that receive transfers under the current system (pp. 17-18).

In other words, their findings are consistent with expectation of a trade-off between affordability and adequacy across countries; richer countries (with more comprehensive welfare systems and lower poverty rates, are likely to have greater fiscal capacity to implement basic income, but the policy will tend to have less favourable (and possibly adverse) distributional effects.

Ortiz et al. (2018) provide cost estimates for two alternative forms of basic income for 130 countries across the world: one paid at 100% of the poverty line, and another with the same for adults, but with payments for children paid at half that level. They aggregate costs by region and income levels, finding (for the first scenario) that the MENA region has the lowest average costs at around 20% of GDP. Sub-Saharan Africa is found to have the highest costs at over 60% of GDP, amidst a global average of 39.4%. High income countries have higher average costs than middle income countries, although this is a consequence of divergence in the ways in which poverty lines are calculated (p. 15). In any case, they do not allow for any offsetting changes to existing benefits, nor examine the associated distributional effects of their scenarios. In this sense, their costings are rather abstract and detached from more recent debates around policy design features and associated fiscal and distributional trade-offs that motivate this paper.

Vandenbroucke et al. (2016) analyse the redistributive effort — i.e. the level of additional fiscal resources — required to implement a minimum income standard (set at 40% or 60% of the median income) across the EU. While their study simulates a means-tested top-up — which would imply a

much lower gross fiscal cost compared to a non-means-tested — their findings are directly relevant to our concerns. As noted above, under specific circumstances, a means-tested transfer can be shown to have equivalent distributional effects to a universal transfer; under the universal scheme, the gross fiscal cost is higher but taxes can be set such that the overall net cost and the financial position of each household are identical. Second, we are most concerned here with *variation* in the necessary additional fiscal resources across diverse welfare states. It is fair to assume that the cross-national pattern of affordability would be similar for a basic income that sought to replace existing social assistance transfers, as it would for the minimum income standard that Vandenbroucke et al. (2016) explicitly model. The important conclusion, as it pertains to our cross-national analysis of the fiscal feasibility of basic income, is that the countries required to make relatively large redistributive efforts are those with “relatively inefficient systems” or “low levels of social spending” such as Italy, Spain and Greece in Western Europe and Romania, Estonia, Bulgaria, Latvia and Lithuania in Eastern Europe.

In a similar fashion, Levy et al. (2007) compare the implications of a different levels of basic income for children across the EU. Rather than model the level of fiscal resources required to ensure all households meet a given (relative) minimum income threshold, Levy et al. (2007) investigate the levels of payment and fiscal resources required to reduce child poverty (defined as the proportion of children living in households below 60% of median equivalised income) by a specified proportion (50%) and to a specified level (5% of all children). The authors first identify benefits that households receive by virtue of the presence of each child, and ‘top-up’ this amount to the level of the specific basic income scheme. They find — unsurprisingly — that the level of (additional) payment, and the gross fiscal cost required to achieve the same poverty alleviation outcomes, vary hugely across the EU27. Similarly, basic incomes of equivalent value have very different impacts on poverty rates. The diversity is due to variation in the incidence of child poverty and in the existing systems of payments for children.

Focusing explicitly on basic income, Browne and Immervoll’s (2017) study is closer to the focus of this paper in policy terms, although they restrict analysis to four countries – Finland, France, Italy and the UK. In their paper, the basic income is restricted to children and working age adults. Whereas we impose a common level of payment in relation to national poverty lines and compare the fiscal and distributional effects of doing so, Browne and Immervoll (2017) instead compare basic incomes that are ‘budget neutral’ (in the sense described above), after replacing existing child and working age benefits, and personal income tax allowances, entirely. For each country, the authors report the level of payment, in relation to the national poverty line, that is ‘affordable’ under their criteria. Therefore, the main difference between their analysis and ours is the way in which we conceptualise a ‘comparable’ level of basic income⁹. They find that in Finland, France, and Italy, a GMI-level basic income replacing existing benefits and tax allowances would be roughly budget neutral (with a small shortfall for France). In the UK, the budget-neutral basic income amount would be substantially (28%) below GMI levels. Therefore, in the low spending UK, a basic income of a given level is less fiscally feasible, *ceteris paribus*, compared to countries in which payment levels are relatively high. At the same time, “there are few benefits that provide support at levels that are higher than the GMI”, and gains from increased coverage rates – correcting for non-take-up of highly conditional benefits – would be large. In contrast in Finland, where welfare is both well-targeted and generous, and there are fewer gaps in coverage, there is much less scope for gains at the bottom of the income distribution from the imposition of the GMI-level basic income. In France and Italy, “countries where the benefits that a BI would replace are largely based on social insurance”, household losses among social security recipients would be more prevalent. However, there is also a great deal of scope to afford basic income through the conversion of generous payments.

In summary, the existing literature yields a number of important insights into the question of how basic income’s feasibility varies across countries. Empirical findings are broadly suggestive of a generalised trade-off between fiscal and distributional criteria that underpin a ‘demand-capacity paradox’, but the idea is not addressed explicitly. In particular, the attributes driving this result at the country level – in

⁹ Theirs is in relation to the existing social security system, under the restriction that tax rates cannot be adjusted upwards (instead the basic income payment is levelled downwards). Ours is in relation to the national poverty line, and we model tax rises required to render scenarios budget neutral.

terms of welfare policies and outcome – are not systematically explored. A more comprehensive and systematic comparison is the contribution of the present study.

3. Research design and method

The EUROMOD microsimulation program

This analysis employs EUROMOD, an EU-wide tax/benefit microsimulation model (Sutherland and Figari, 2013). Like all tax/benefit microsimulation programmes, EUROMOD combines two sources of information: representative household-level financial surveys; and policy rules, detailing individuals' and households' tax liabilities, and the public transfers to which they are entitled, based on their personal and financial characteristics.

The model can simulate hypothetical tax/benefit policy changes, the outcomes of which are then compared to a 'base' (pre-reform) system. The outcomes of microsimulation include aggregate fiscal effects – e.g. the additional costs of introducing a given benefit, or the change in tax rates required to render the introduction of a given benefit 'fiscally neutral' – as well as distributional effects – identifying 'winners' and 'losers' across different income and demographic groups. The incorporation of representative survey data enables an accurate picture of overall impacts on the income distribution at the national level, and sampling weights can be incorporated into the analysis to adjust for the under- and over-representation of particular demographics.

The household survey data incorporated into EUROMOD's analysis are provided by the Family Resources Survey (FRS) for the UK, and European Union Statistics on Income and Living Conditions (EU-SILC) survey for all other EU countries. Data are from the 2015 version of the EU-SILC survey, except for Germany for which data are for 2014. FRS data are from the 2014/15 version of the survey. These data are 'uprated' for 2017 policy systems (that is, policies are up-to-date with national reforms up to 2017, and financial survey data are adjusted for inflation).

EUROMOD policy systems are designed to capture, as much as possible, the complexities of each constituent country's tax/benefit system, while retaining a harmonised structure to facilitate comparison across systems. Specifically, policies are classified according to a harmonised naming and acronym scheme, based on characteristics such as their target demographic and modes of access. Financial data are also aggregated according to a harmonised system of 'income lists', so that for each country, EUROMOD produces comparable data on gross (original) income, different categories of benefit, different types of direct taxation, and disposable income. Regarding standardised income lists of benefits, EUROMOD distinguishes (among others) means-tested benefits, non-means-tested benefits, and pensions.

EUROMOD simulates benefit entitlements and tax liabilities based on individual and household characteristics recorded in the surveys described above – for example, age, income, employment status, disability, and the presence of dependent children. In some cases, the survey does not record the data required to determine entitlement to certain benefits – for example, accrued social insurance contributions. In most cases, where benefits are not simulated their distributional effects are inferred directly from the microdata. Less commonly, tax and benefit policies are excluded from the model's scope if they are neither included in the microdata nor simulated by EUROMOD. The level of accuracy of the model thus varies across countries, depending upon data availability.

Comparative strategy

This working paper compares five basic income 'modes of implementation' across 28 EU member states: to do this requires modelling 140 reforms in total, in addition to 28 'base' systems with which the effects of reform are to be compared. This requires an automated process for duplicating analysis across multiple countries, and thus the use of EUROMOD's advanced 'add-on' function.

An additional complexity is that the models compared here are 'revenue neutral' in that they are accompanied by tax increases approximately equivalent to the basic income's net cost¹⁰. This requires iterative 'loops' to be incorporated into the aforementioned add-ons.

¹⁰ This is the cost after spending reductions arising from the elimination / adjustment of benefits, but before tax changes that generate offsetting revenue.

We compare basic income's fiscal and distributional effects by mode of implementation and by country. For each country / mode of implementation combination, we determine a host of fiscal and distributional indicators, as follows:

Fiscal indicators

- Benefit spending (in absolute terms and as proportions of original market income and base benefit spending, and as percentage change from the base) disaggregated into means-tested benefits, non-means-tested benefits, and pensions.
- Net cost of basic income payments (in absolute terms and as proportions of original market income and base benefit spending)
- Flat tax on disposable income – excluding the basic income itself – required to maintain approximate revenue neutrality (see below for operationalisation).

Distributional indicators

- Poverty (percentage of population, percentage change from base, and percentage point change from base)
- Inequality (Gini coefficient, and percentage change from base)
- Proportions of households experiencing losses and gains (of various magnitudes) compared to the base scenario, reported by income quintile, and household type¹¹.

Modelling basic income

Introducing a basic income policy into a country's welfare system in EUROMOD is relatively straightforward: we must simply specify an eligibility rule (stating that each individual is entitled to the basic income payment, perhaps with some differentiation on the basis of age) and the payment calculation. In order to capture the fiscal and household distributional effects of the policy, we then need to include the policy in the relevant income lists (i.e. 'non-means-tested benefits', which is a component of 'total benefits and pensions', itself a component of 'disposable income').

Specification of alternative 'modes of implementation'

As noted above, the modes of implementation we model in this paper are as follows:

- BI1. No adjustment to any benefits.
- BI2. Adjustment of means-tested benefits; retention of other benefits and pensions intact.
- BI3. Adjustment of all benefits and pensions.
- BI4. Elimination of means-tested benefits; adjustment of other benefits and pensions.
- BI5. Elimination of all benefits and pensions.

We maintain a conceptual distinction between means-tested benefits on the one hand and non-means-tested benefits and pensions on the other because the latter are more likely to be contributory and have a consumption-smoothing function via an earnings-related component. In contrast, means-tested benefits are more likely to perform the 'Robin Hood' function of social assistance. It makes sense to distinguish modes of implementation in which these types of benefits are treated differently. EUROMOD does not distinguish contributory benefits with a separate income list. However, users could generate such income lists themselves – in order to simulate the elimination of non-contributory benefits and the retention of benefits to which individuals have accrued entitlement – in future research.

¹¹ Households are divided into: single working age adult households with no children; single working age parent households with children; working age couple households with no children; working age couple households with children; single pensioner households; pensioner couple households (at least one pensioner); and other multi-adult households. We also report indicators for households with at least one dependent child and households with at least one pensioner.

Payment levels and entitlement conditions

In order to ensure a uniform (and thus broadly comparable) policy across diverse countries, we set payment levels to be determined in relation to common national indices rather than a common, EU-wide index.

EU poverty lines are defined in the context of *national* median income (below 60% of the latter). ‘The poor’ are those whose resources fall short of widespread living standards in the countries in which they live. Given that this measure – and the accompanying idea of poverty as a relational phenomenon within countries – is so ubiquitous, we adopt this definition here and therefore prefer to set basic income payment levels in relation to national poverty lines. However, we note important debates around the definition of poverty “in relation to the median income of the Union as a whole” (Berthoud, 2012: 1). It would be interesting to model an EU-wide basic income in future work, as discussed in Vandenbroucke (2017), Van Parijs (2017) and Standing (2017), and assess it in relation to a common EU-wide poverty threshold¹².

Poverty lines are ‘equivalised’ to account for household size¹³, but basic income is by definition an individualised payment which cannot be conditional on living or partnering arrangements. Because of basic income’s considerable gross cost – especially when paid at rates at or close to relative poverty lines – we set the basic income payment level in relation to the national poverty line for a couple (1 + 0.5 using the OECD equivalence scale). Payments for adults are therefore set at half this rate for a couple (i.e. 75% of the poverty line for a single adult).

Payments for dependent children are set at 30% of the poverty line for a single person living alone, again inspired by the OECD equivalence scale. We use a common definition of dependent child as anyone under the age of 18, rather than national definitions coded into EUROMOD household composition parameters, which would render the results less comparable, to the extent that national rules and definitions diverge widely.

Modelling compensating adjustments and eliminations of existing benefits

Our first mode of implementation (BI1) is straightforward, involving no adjustments to existing benefits. This simply required generating a basic income policy with two eligibility conditions as per the figure below, specifying that the resulting output (‘bbi_s’) be added to the ‘non-means-tested benefits’ and ‘disposable income’ income lists. The eligibility conditions are simply that if age is less than 18, the individual receives 30% of the national poverty line; if age is greater than or equal to 18, the individual received 75% of the national poverty line. National poverty lines are calculated based on EUROMOD data, and input into each country system manually as ‘constants’. The basic income payment is aggregated at the household level rather than paid individually, as adjustments to benefits and tax required to ensure revenue neutrality (described below) relate to the household level. This decision does not affect our analysis of distributional effects (which is based on equivalised data).

Complexities arise when we have to make corresponding adjustments to existing benefits and tax rates. The ways in which basic income could interact with the existing welfare systems are practically infinite. Our aim has been to devise a small number of schemes – sufficiently small to permit operationalisation across the full range of European countries for which data are available. These schemes need to be parsimonious in the sense that they can be operationalised in like fashion across the diverse welfare

¹² In fact, proposals for EU-wide schemes frequently still include national variation in payment levels but with some redistribution from rich to poor members in the funding mechanism.

¹³ Equivalisation adjusts net income for household size and composition, in order to better assess material living standards in terms of the level of consumption of goods and services permitted by a given income. The (modified) OECD equivalisation scale takes a single adult without children as the reference point, assigned a value of 1. Additional adults are assigned 0.5, and children (under the age of 14) 0.3. The scale implies that that, in order to maintain the same standard of living within the household, an individual adult living alone requires 67% of the income required by a couple; each additional adult or child over 14 years of age requires 33% of the amount required by the couple; and children under the age of 14 require 20% of the income required by the couple.

states, and relatively straightforwardly, in EUROMOD¹⁴. In this regard, ‘add-ons’ essentially allow the researcher to automate the process of replicating a given policy system for multiple countries. This has been indispensable for the present project, since manually replicating five alternative implementation modes across 28 countries would be prohibitive in terms of time. In practical terms, there is a trade-off between achieving a high level of ‘realism’ and analysing a large number of cases – which is only feasible for highly stylised and simplified scenarios. The loss of realism – for want of a more appropriate word – comes from our need to simplify the process of identifying, switching off and adjusting different types of benefit payment so that these changes can be operationalised using the add-on function. However, the use of add-ons does impose some minor limitations to the analysis, as we discuss below.

As previously mentioned, it is possible to think about two main ways to adjust the benefit system in order to constrain the additional net costs associated with basic income: by adjusting their payment levels downwards to take into account the basic income transfer, and by eliminating them entirely.

Adjustment of benefits

There are several ways to operationalise compensating adjustments to welfare payments in the EUROMOD programme. Means-tested benefits have ‘adjustment’ rules in-built; they are designed to take into account income from other sources in various (and complex) ways. For individual country simulations, it would be straightforward to specify that basic income payments are incorporated into the relevant means tests (as in, e.g., Reed and Lansley, 2016; Torry, 2017; Martinelli, 2019). This would require identifying the benefits requiring adjustment, and then incorporating the new basic income into their means tests rules individually. In the case of non-means-tested benefits, it would require creating a new function entirely within each specific benefit. The advantage of this approach would be that we could see the ‘mechanics’ of how the basic income would affect expenditure on other individual benefits at a high degree of disaggregation, since each benefit would be reported in its adjusted form.

Unfortunately, it would be onerous to replicate this approach over a large number of disparate countries. My approach is to create a separate function to calculate the appropriate adjustment – in this case, the value of the relevant benefit list up to the maximum value of the basic income itself – and subtract this from the relevant benefit income lists.

For BI2, therefore, we generated a function to calculate a ‘means-tested benefit reduction’ (‘bbirdmt_s’) output, which was then subtracted from the ‘means-tested benefit’ income list. The figure was simply the amount of means-tested benefits in payment at the household level, up to a maximum value of the amount of basic income paid at the household level. For BI3, we generated two additional functions corresponding to reductions in non-means-tested benefits, excluding the basic income, and pensions (‘bbirdnm_s’ and ‘pbird_s’, respectively). When adjustment applies to more than one benefit list, the calculation proceeds in a stepwise fashion until the adjustment reaches the maximum level of the basic income payment: means-tested benefits are reduced first, followed by non-means-tested benefits, and then pensions. This means that bbirdnm_s is a maximum of the basic income payment remaining after bbirdmt_s has been subtracted from it, and pbird_s is a maximum of the basic income payment remaining after bbirdmt_s and bbirdnm_s have been subtracted from it.

Elimination of benefits

In the case of elimination, it would be easy to use add-ons to remove specific harmonised lists (e.g. means-tested benefits) from the ‘disposable income’ list calculation. However, doing so would not does not switch off the benefits that are the components of the harmonised income lists; they can still interact with the wider system of tax and benefit policies; by design, EUROMOD income lists are meant for defining relevant income concepts and not to control which policy instruments are simulated. So for example, they could be still be taken into consideration in the calculation of a household’s tax liability – thus reducing their disposable income – while not actually appearing as a benefit in the same disposable income list. This strategy could lead to households not only to lose income compared to the

¹⁴ This is similar to Immervoll and Browne’s (2017: 3) analysis of a BI scheme that they designed to be “parsimonious in its specification, in the sense that the specifics of the reform scenarios are in large part derived endogenously from parameters of the existing benefit systems”.

base scenario but even to experience *negative disposable incomes*, despite the compensatory effect of the basic income. This could drive surprising increases in poverty, especially in systems that feature generous earnings-linked pensions, and would generate such unrealistically undesirable distributional effects that using add-ons in this way would become a hindrance to understanding basic income's likely effects. The shortcoming is less pertinent for the models in which we only *adjust* benefits downwards, rather than eliminate them; essentially, these models imply that if tax were due on the benefits that the basic income (partially) replaces, then the same tax would be due on the basic income itself. The key point is that the adjustment cannot exceed the basic income payment. This is not true of the models that feature full elimination of benefits – in these, the amount the household loses in withdrawn benefits can massively exceed the amount of basic income they receive.

Thus, the relevant benefits need to be 'switched off' or set to zero individually, so that tax liabilities are not generated on non-existent income. However, because policy systems are not entirely consistent across countries – an individual policy may or may not appear in a given country, and similar policies may appear under different names, despite attempts by the EUROMOD team at harmonising policy-naming conventions – we cannot automate the process using the add-on function¹⁵. Instead, the way that we model benefit eliminations is to identify and manually switch off and/or set to zero specific policies within each country system¹⁶.

For BI4, means-tested benefits were switched off in this way, and non-means-tested benefits and pensions were adjusted in stepwise fashion as described above. For BI5, all benefits and pensions were simply switched off.

There will be some inconsistency between the models, in that the 'adjustment' models (BI2 and BI3) will retain the previous situation in terms of tax liabilities, whereas the 'elimination' models (BI4 and BI5) will more accurately reflect the desired tax profile. However, this limitation is likely to be relatively insignificant, since the discrepancies will be small in relation to the magnitude of the policy changes we are simulating here, and since we are interested in broad theorisation rather than evaluation of concrete policy proposals, in which accuracy is paramount.

Modelling a revenue neutral basic income tax (RNBIT)

Usually, microsimulation models that aim to attain revenue neutrality adjust the existing system iteratively – for example increasing tax rates or reducing personal allowance thresholds but leaving the broader structure of tax bands intact – until increased tax revenue approximately equals net spending of the welfare reform. Tweaking thresholds and rates across specific tax bands is inappropriate for the present analysis for two reasons: it would be overly onerous in terms of time resources, requiring amendments to tax policies specific to each country; and it would be difficult to compare the resulting tax changes in terms of magnitude across countries.

In this paper, we model a revenue neutral tax change that *is* comparable across countries: a flat tax on all household disposable income, prior to the payment of the basic income, but following the adjustment

¹⁵ It has been pointed out by a reviewer following the completion of this research that one possibility for doing this would be to use standard benefit income lists and the function ILVarOp to set their components to zero.

¹⁶ We identified the relevant benefits by examining the components of each income list. My approach was simply to go through the policy spine for each country, switching the relevant benefits to 'off'. However, in some cases (Austria, Croatia, Greece, Ireland, the Netherlands, Slovakia, and Spain) switching off the relevant benefit policies led to errors that prevented the simulations from running correctly, due to interdependencies between said policies and other ('live') policies (for example income tax policies or other benefits). It should be noted that this is not a limitation of EUROMOD *per se* but a deliberate design feature intended to prevent developers and users overlooking interdependencies between various policies. In any case, in such cases, the relevant policies were left switched 'on'. In addition, not all benefits necessarily appear in the policy spine; some policy calculations are not simulated in EUROMOD, but instead are based on the micro data or are excluded entirely (see EUROMOD country reports for full details). For these reasons, at the start and end of the policy spine, we set to zero each of the relevant benefits identified by examining the income list components for means-tested benefits, non-means-tested benefits, and pensions. The policy systems and add-ons are available on request from the corresponding author.

or elimination of other welfare benefits. We add this tax – the ‘revenue neutral basic income tax’ (RNBIT) to each country’s policy system as part of the add-on. All other existing taxes are retained in full; in this way, country specificity with respect to tax system is irrelevant, since the RNBIT has the same structure for all; the applicable tax rate can be simply compared across implementation modes and across countries.

In order to operationalise this tax, we need to distinguish household disposable income at different points in the operation of the loop. Disposable income at stage one (DI1) is the aggregate (weighted) disposable income prior to any adjustments. In order to obtain DI1, we run each country in the absence of any hypothetical reform, and store the result as a ‘constant’, to which subsequent models can refer. Disposable income at stage two (DI2) is the ‘tax base’ – prior to the payment of the basic income, but following the adjustment or elimination of other welfare benefits. The tax rate determined by the loop equals the total revenue of the tax expressed as a percentage of DI2. Disposable income at stage three (DI3) includes the basic income payments; it is this figure from which the RNBIT must be subtracted in order to achieve equivalence with DI1. Finally, disposable income at stage four (DI4) is the final weighted aggregate, subsequent to the basic income payment, adjustment or elimination of other benefits as applicable, and the imposition of the RNBIT. The different stages of the modelling calculations are illustrated in a stylised manner for three implementation modes, in Table 1 below.

Table 1: Stylised illustration of stages of revenue neutral basic income tax calculation

	No compensating adjustment or elimination of benefits	Some compensating adjustment or elimination of benefits	Complete elimination of pre-existing benefits
Original (earned) aggregate income	10	10	10
Original benefits	2	2	2
Original tax	2	2	2
DI1 (original aggregate disposable income)	10	10	10
Basic income	2	2	2
Compensating benefit reduction	0	1	2
Net basic income	2	1	0
DI2 (RNBIT base, post compensating benefit reduction)	10	9	8
DI3 (pre RNBIT, post BI aggregate disposable income)	12	11	10
RNBIT	2	1	0
RNBIT rate (= RNBIT / DI2)	0.2	0.11	0
DI4 (post RNBIT, post BI aggregate disposable income)	10	10	10

In order to estimate the tax rate required to achieve revenue neutrality, we specify an iterative loop so that total (weighted) aggregate disposable income is approximately (to within a margin of $\pm 1\%$) equivalent before and after the implementation of the basic income. The loop specifies that the tax rate is adjusted until it reduces DI3 to approximately equal DI1. In other words, the amount of the revenue neutral basic income tax must roughly equal the net cost of the basic income payment (its gross cost minus any compensating adjustments in benefits) before the loop is closed and the final rates (and aggregate disposable income levels) are recorded.

Note of the comparability of different modes of implementation resulting from differential treatment of taxable benefits

A complication arises when benefits that are withdrawn to reduce the net cost of the basic income payment are *taxable*. This is because taxable benefits that are adjusted or withdrawn do not reduce disposable income by the same amount as the benefit reduction; households will face a lower tax burden as well, increasing their disposable income by a proportion of the value of the lost benefit. Thus, withdrawal of taxable benefits will reduce the net cost of the basic income scheme, but by less than the value of the withdrawn benefits. Thus, *ceteris paribus*, when benefits are taxable at a relatively high rate, their withdrawal results in a basic income scheme with a greater net cost compared to one involving withdrawal of equivalent levels of benefits taxed at lower rates.

As a result of this complication, comparing modes of implementation is problematic. For the modes in which some or all benefits are *adjusted* via the benefit reduction method described above (BI2, BI3, and BI4), tax liabilities are not reduced in response to the amended benefit receipts. For the modes in which some or all benefits are *eliminated* via the method described above (BI4 and BI5), tax liabilities are reduced. When a benefit is eliminated, reduced tax liability applies to all expenditure on that benefit – not just the ‘additional’ proportion of the benefit that had not been subject to adjustment.

Thus, very considerable drops in benefit expenditure between modes BI3-5 may actually affect the net cost, and thus the RNBIT rate, less than expected. While compensatory benefit reductions are increasing in magnitude, the fact that these benefits are being ‘switched off’ (all means-tested benefits in BI4 and all benefits and pensions in BI5) instead of adjusted implies that household’s tax liabilities also fall as

their incomes fall. This increases the gap between DI1 (original disposable income) and DI3 that needs to be made up through the imposition of a tax – the net cost, which is the numerator in the calculation of the tax rate. It also increases DI2, the denominator, but by a smaller proportion, provided the RNBIT base exceeds the basic income’s net cost. (This would only *not* be the case if the gross BI cost exceeds aggregate disposable income.)

It is possible that although reducing benefit expenditure – and thus reducing the net cost of the basic income by proportionally more than the base of the tax designed to pay for it – would unambiguously reduce the RNBIT rate, models BI4 and BI5 might see increased RNBIT rates compared to BI3 (and BI5 compared to BI4) because the former models eliminate benefits that were previously only adjusted. For example, BI5 could see a drop in non-means tested benefit and pensions spending compared to BI4, but the reduction in tax liabilities on non-means tested benefit and pensions is relatively large, since the adjustment to non-means tested benefit and pensions payments modelled in BI4 did not reduce households’ tax liabilities. It is plausible that reduced tax liabilities (which apply to the difference between the base scenario and BI5) that might exceed the effect of the reduced benefit expenditure (which only applies to the change between BI4 and BI5). This is the case, in fact, for Ireland and the Netherlands, while Denmark only sees a fall of 0.1% in its RNBIT, despite a reduction in benefit expenditure of 28% of base expenditure).

Operationalising welfare state classifications

Welfare regimes

Despite well-documented limitations, and ongoing processes of reform that potentially erode the consistency of the typology, Esping-Andersen’s original welfare regime classification remains a useful point of departure for exploring welfare state diversity. In the following analysis, we supplement the original country classifications with two additional groups – Eastern and Southern¹⁷.

Although there is clearly a good deal of variety within welfare regimes – especially for the ‘new’ *ad hoc* Eastern regime, which is particularly large and diverse – examination of some core welfare state characteristics suggests that there is merit in distinguishing these groups (see Table 2, below).

Non-coverage and earnings-relatedness

For the purposes of our analysis, we are particularly interested in how effectively existing welfare expenditure is targeted towards poverty alleviation, because this is expected to affect the nature of the resultant trade-offs between fiscal and distributional objectives.

For our indicator of non-coverage of welfare provisions, we use EC (2016: Table 17) data, based on EU-SILC, which reports the proportion of households not covered by income support measures (social assistance and insurance, excluding family and child benefits). We generate an additional binary indicator by dividing our sample of countries into two equal groups based on this measure. (We also tried dividing the sample into two groups above and below the mean; this made very little difference to the groups).

For our indicator of ‘earnings relatedness’, we use OECD data (OECDStat, 2018) on replacement rates in unemployment. Of course, the choice regarding which specific indicators to choose to represent the earnings relatedness of the welfare system as a whole is to some extent arbitrary, since replacement rates will vary across different benefits and in line with individual circumstances – for example, depending on family composition, prior earnings levels, contributions history, and duration of unemployment. We operationalise our indicator as the difference between the replacement rate for high earners (150% of median income) in the initial period of unemployment, and that for median earners in long-term unemployment¹⁸. This indicates the extent to which unemployment benefits exemplify an

¹⁷ The classifications are as follows: Conservative: Austria, Belgium, Germany, France, Luxembourg, and the Netherlands; Eastern: Bulgaria, Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Poland, Romania, Slovenia, and Slovakia; Liberal: Ireland and the UK; Social democratic: Denmark, Finland, and Sweden; and Southern: Cyprus, Greece, Spain, Italy, Malta, and Portugal.

¹⁸ For both categories, indicators are for married single earner households with two children.

insurance function – related to previous earnings and time-bound – as opposed to social assistance. Again, we generate an additional binary indicator by dividing our sample of countries into two equal groups based on this measure.

These indicators are reported by country and welfare regime in Table 2.

Table 2: Welfare state characteristics, by country and welfare regime type

Welfare regime	Country	Poverty rate	Gini coefficient	Unemployment rate	Social spending as proportion of original market income	SI contributions as % of total revenue	Non-coverage of the poor	UB replacement rate (initial period, single person, 100% average wage)	Earnings-relatedness of UB replacement rates
Conservative	AT	13.2	0.250	5.5	42.0	63.1	18	55.0	-23.0
	BE	11.1	0.223	7.1	38.6	58.7	7	65.9	-3.1
	DE	15.4	0.279	3.8	33.1	61.2	16	58.9	6.7
	FR	12.4	0.275	9.4	39.3	70	12	67.8	12.1
	LU	10.3	0.241	5.6	42.9	52.3	8	85.6	7.4
	NL	11.3	0.254	4.9	22.2	65.4	11	75.2	-11.5
	Mean	12.3	0.254	6.1	36.4	61.8	12	68.1	-1.9
Eastern	BG	23.1	0.359	6.2	27.9	69.2	49	76.5	48.7
	CZ	9.8	0.247	2.9	30.1	76.8	34	71.6	-11.0
	EE	21.4	0.330	5.8	26.1	66.7	30	53.6	4.8
	HR	20.0	0.301	11.1	32.4	83.2	37	69.0	3.3
	HU	18.8	0.291	4.2	37.9	70	20	44.9	17.9
	LT	21.9	0.371	7.1	25.3	71.5	21	54.8	7.8
	LV	22.8	0.350	8.7	24.4	63	39	84.4	25.3
	PL	14.3	0.285	4.9	38.9	61.8	25	51.6	-32.4
	RO	24.1	0.365	4.9	45.5	57.2	44	32.5	14.5
	SI	14.3	0.248	6.6	36.0	70.9	9	66.7	-13.2
	SK	11.7	0.218	8.1	30.7	78.6	10	65.0	17.1
	Mean	18.4	0.306	6.4	32.3	69.9	29	61.0	7.5
Liberal	IE	14.8	0.296	6.7	28.2	39.1	15	48.9	-27.8
	UK	15.8	0.315	4.4	21.7	44.3	14	37.1	-36.4
	Mean	15.3	0.305	5.6	24.9	41.7	15	43.0	-32.1
Social democratic	DK	10.7	0.253	5.7	30.1	4.5	6	62.1	-18.3
	FI	10.4	0.234	8.6	41.9	51.6	2	65.4	-15.5
	SE	14.7	0.238	6.7	35.3	53.6	7	41.6	-25.5
	Mean	11.9	0.242	7.0	35.8	36.5	5	56.4	-19.8
Southern	CY	15.0	0.321	11.1	38.9	55.7	31	-	-
	EL	18.7	0.318	21.5	50.6	61.1	59	28.4	22.2
	ES	22.0	0.339	17.2	38.8	64.2	24	55.7	16.8
	IT	18.0	0.307	11.2	46.3	55.2	51	65.6	60.4
	MT	15.6	0.281	4.6	24.3	50.2	13	39.7	-19.4
	PT	19.2	0.337	9.0	43.0	60.9	25	75.0	28.1
	Mean	18.1	0.317	12.4	40.3	57.9	34	52.9	21.6

Source: Author's calculations using EUROMOD with Eurostat (2018) and DWP (2016) data, except non-coverage (EC, 2016) and replacement rate data (OECDStat, 2018).

4. Findings

Comparing fiscal and distributional effects of alternative modes of implementation

Simple country averages of the main fiscal and distributional effects of each alternative mode of implementation are shown in Table 3. Turning first to BI1 – for which net cost is equal to gross cost as there are no corresponding benefit adjustments – this mode of implementation represents an average increase in benefit spending of around 161% compared to existing levels of expenditure, or 54% of aggregate original income. An average flat tax of around 51% of households ‘interim’ disposable income would need to be levied to render such a policy revenue neutral. Unsurprisingly, this mode of implementation would have dramatic effects on relative poverty and inequality rates, and would be highly redistributive. Almost all households in the lowest income quintile, and 88% in the second, would gain by at least 10% of their previous income. The proportion of households among the bottom three quintiles losing at least 10% of previous income would be fairly negligible. In contrast, 89% of those in the top quintile, and 18% in quintile 4, would lose at least 10% of previous income.

BI2 claws back some of the gross fiscal cost by adjusting means-tested benefits downwards, and on average around 98% of such benefits are withdrawn in this way. However, this only makes the scheme marginally more affordable: this mode of implementation still represents an increase of an average of 151% of base benefit spending, or 50% of aggregate original income. The RNBIT would represent around 49% of intermediate disposable income. On average, the distributional effects are very progressive; an average reduction in relative poverty of 71% and a fall in the Gini coefficient of around 43% would arise. Again, the bottom three income quintiles would see increases in their average equivalised disposable incomes, with the majority gaining significantly, while the top two quintiles lose out – with large losses concentrated in quintile 5.

BI3 changes the trade-offs considerably, by adjusting downwards not just means-tested benefits but non means-tested benefits and pensions too. In this way, non means-tested benefit expenditure falls by an average of 90%, and pension spending by an average of around 64%. In this way, around 45% of the total gross cost of the basic income is recouped through reductions in benefit spending. This renders the mode of implementation much more fiscally feasible – the net cost falling to 91% of baseline benefit spending and 30% of aggregate original income. However, distributional effects are less favourable: poverty and inequality rates only fall by around a quarter of their previous values, and the proportions of households in the lower three quintiles experiencing large income losses becomes non-negligible (with around 3, 15 and 24 percent of quintiles 1, 2 and 3 respectively losing at least 10% of previous income). For quintile four, the average change in equivalised disposable income is negligible, and around the same proportion win as lose. Around half of the top income quintile lose by at least 10% of previous income, with negligible numbers of winners.

BI4 shows very similar effects as for BI3 – unsurprisingly given the difference between the two modes of implementation¹⁹ – with slightly more favourable fiscal effects and slightly less favourable distributional effects. Total benefit spending falls by an average of 2% compared to BI3. However, the proportions of those in quintiles 1 and 2 losing at least 10% of baseline income also increases by several percent. It appears that given the small fiscal gain, the distributional consequences for the lower income render BI4 inferior compared to BI3.

Finally, we turn to BI5. For this mode of implementation, the remaining 27% of benefit spending is eliminated. The net cost falls further to an average of around 70% of existing benefit spending and just

¹⁹ In BI4 means-tested benefits are eliminated prior to the other benefits being adjusted, whereas BI3 the adjustment occurs through all benefit groups in stepwise fashion. Therefore, there is a difference to the extent that means-tested benefits plus non means-tested benefits and / or pensions are in payment for a given household, such that total payments still exceed the BI payment after the adjustment of benefits in stepwise fashion. In this case, BI4 would represent an additional adjustment (of up to the value of the means-tested payments) compared to BI3. It is possible with BI4, unlike with BI3, for households to lose more in forgone benefit payments than they gain in terms of their basic income payment.

22% of aggregate original income²⁰. The flipside is that the distributional consequences of BI5 are very much less favourable. We see an average increase in poverty rates, of around a third in proportional terms or 4 percentage points in absolute terms. Large numbers of households can lose large amounts of income through the wholesale elimination of (earnings-linked) benefits and pensions that are significantly more generous than the basic income payment that ‘replaces’ them. While the majority of quintiles 1, 2 and 3 still gain significantly, there are also large numbers of significantly losers – with 13%, 26%, and 21% of each quintile respectively losing over 10% of their previous income.

Turning to Table 4, it is clear that pensioners are particularly adversely affected by our basic income schemes compared to working age households with children and single parent households. This is especially true for BI3, BI4 and BI5, which are progressively unfavourable for pensioners, with average losses of 11%, 11.5% and 22% of previous incomes respectively among all pensioner households. Single pensioner households fare more badly still, with 69%, 73% and 87% of households losing over 10% of their previous income in BI3, BI4 and BI5 respectively.

Working age households with children generally experience average increases in income across all modes of implementation, with single parent families experiencing larger gains. The majority of these household types gain significantly, but there are still large numbers of losers. The more nuanced pattern relates to the interplay between changes in benefit entitlements and changes to tax liabilities, which have diverse effects on households depending upon their relative reliance on benefits and wages in household income.

²⁰ The average fiscal saving is not as pronounced as may be expected from the additional reductions in benefit expenditure, because BI5 (and BI4 too, to a much lesser extent) also involves adjustment to tax liabilities. In particular, taxes previously incurred on taxable benefits and (especially) pensions are no longer collected for this mode of implementation. As discussed above, this point (which arises from methodological limitations) renders the comparisons between modes of implementation imperfect. For some countries, BI5 even carries a *higher* net cost compared to BI4 – understandable given the operationalisation of each mode of implementation as described above.

Table 3: Comparison of the average fiscal and distributional effects of alternative implementation modes

	BI1	BI2	BI3	BI4	BI5
Fiscal effects					
% change in means-tested benefit expenditure	0	-98.2	-98.2	-100.0	-100.0
% change in non-means-tested benefit expenditure	0	0.0	-90.6	-92.8	-100.0
% change in pension expenditure	0	0.0	-64.0	-66.3	-100.0
% change total benefit expenditure	0	-10.4	-70.7	-72.7	-100.0
Net BI cost as % of base benefit expenditure	161.4	151.0	90.8	89.0	70.2
Net BI cost as % of original market income	53.8	50.4	30.1	29.5	22.4
Net cost as % of gross cost		93.6	55.8	54.8	41.9
Flat tax on 'intermediate' disposable income commensurate with revenue neutrality	51.1	49.3	36.4	35.9	29.5
Distributional effects					
Percentage of population living in poverty (post reform poverty line)	1.9	4.4	11.3	12.4	20.2
Change in poverty rate (% change from base)	-88.8	-71.1	-26.3	-18.5	34.5
Change in poverty rate (percentage points)	-14.2	-11.7	-4.8	-3.7	4.1
Gini coefficient	0.154	0.167	0.216	0.220	0.249
Change in Gini coefficient (% change from base)	-47.0	-42.3	-25.0	-23.6	-13.2
% change in average EDI, bottom income quintile	70.4	62.1	48.2	47.4	49.1
% of households in bottom income quintile experiencing large losses ($\geq 10\%$) in EDI	0.0	0.7	2.9	7.2	12.5
% of households in bottom income quintile experiencing large gains ($\geq 10\%$) in EDI	99.8	94.6	74.5	74.6	75.8
% change in average EDI, quintile 2	26.4	24.8	16.4	15.8	15.9
% of households in quintile 2 experiencing large losses ($\geq 10\%$) in EDI	0.0	1.2	14.8	18.1	26.4
% of households in quintile 2 experiencing large gains ($\geq 10\%$) in EDI	88.1	84.5	59.4	59.7	62.9
% change in average EDI, quintile 3	9.0	9.3	7.6	7.7	8.2
% of households in quintile 3 experiencing large losses ($\geq 10\%$) in EDI	1.7	2.3	24.0	24.1	21.5
% of households in quintile 3 experiencing large gains ($\geq 10\%$) in EDI	47.8	49.8	52.3	53.3	62.1
% change in average EDI, quintile 4	-4.2	-3.1	-0.3	0.1	1.7
% of households in quintile 4 experiencing large losses ($\geq 10\%$) in EDI	18.3	15.2	25.4	24.9	20.0
% of households in quintile 4 experiencing large gains ($\geq 10\%$) in EDI	2.0	2.9	23.2	25.3	45.3
% change in average EDI, top income quintile	-22.1	-20.6	-13.4	-12.9	-11.9
% of households in top income quintile experiencing large losses ($\geq 10\%$) in EDI	89.0	83.5	51.1	49.5	35.1
% of households in top income quintile experiencing large gains ($\geq 10\%$) in EDI	0.0	0.0	0.6	0.8	9.7

Table 4: Distributional effects - by selected household type

	B11	B12	B13	B14	B15
% change in average EDI, households with children	3.8	3.1	8.3	8.6	14.1
% of households in households with children experiencing large losses ($\geq 10\%$) in EDI	18.8	18.1	11.0	11.4	7.2
% of households in households with children experiencing large gains ($\geq 10\%$) in EDI	50.2	48.2	55.3	56.3	66.9
% change in average EDI, single parent households	13.7	8.8	10.7	10.1	14.6
% of households in single parent households experiencing large losses ($\geq 10\%$) in EDI	11.8	15.1	12.7	15.6	11.7
% of households in single parent households experiencing large gains ($\geq 10\%$) in EDI	62.3	52.5	53.9	54.6	62.5
% change in average EDI, all pensioner households	4.7	5.1	-10.9	-11.5	-22.2
% of households in all pensioner households experiencing large losses ($\geq 10\%$) in EDI	16.4	15.5	52.0	55.6	61.2
% of households in all pensioner households experiencing large gains ($\geq 10\%$) in EDI	53.1	53.2	14.5	14.6	17.3
% change in average EDI, single pensioner households	2.4	2.5	-16.3	-18.0	-39.5
% of households in single pensioner households experiencing large losses ($\geq 10\%$) in EDI	18.6	19.0	69.0	73.4	87.2
% of households in single pensioner households experiencing large gains ($\geq 10\%$) in EDI	48.3	46.7	3.6	3.6	3.7

Trade-offs across alternative modes of implementation

The country-average data indicate a clear trade-off between the fiscal and distributional feasibility of the various schemes. As figures 1, 2 and 3 show, as we move from B11 to B15, the average fiscal cost of the schemes falls as we reduce expenditure on existing welfare. However, as expected, distributional effects become less desirable as the schemes become more fiscally feasible.

Figure 1: Average net cost as % of base benefit expenditure and average % change in poverty rates, alternative modes of implementation

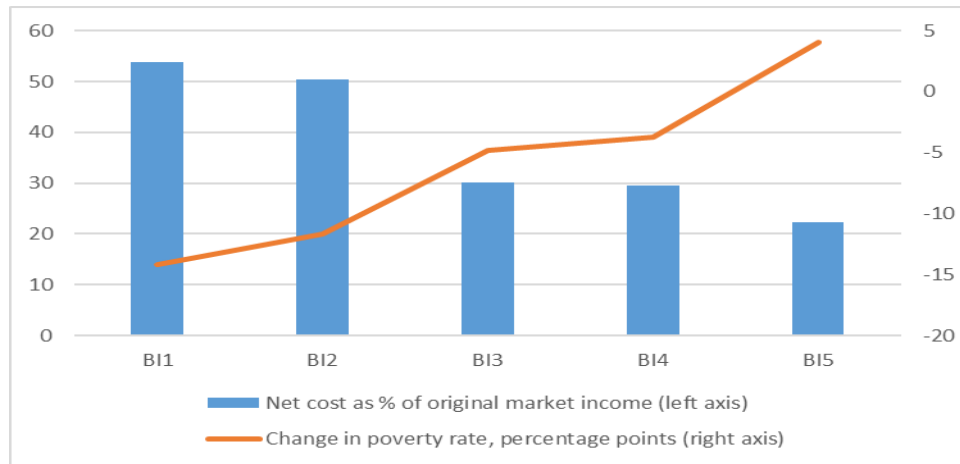


Figure 2: Average net cost as % of original market income and average % change in Gini coefficient, alternative modes of implementation

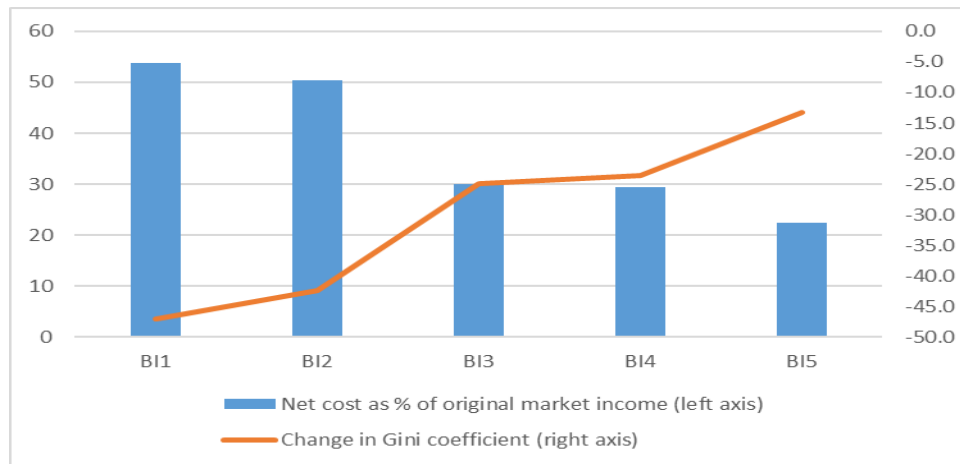
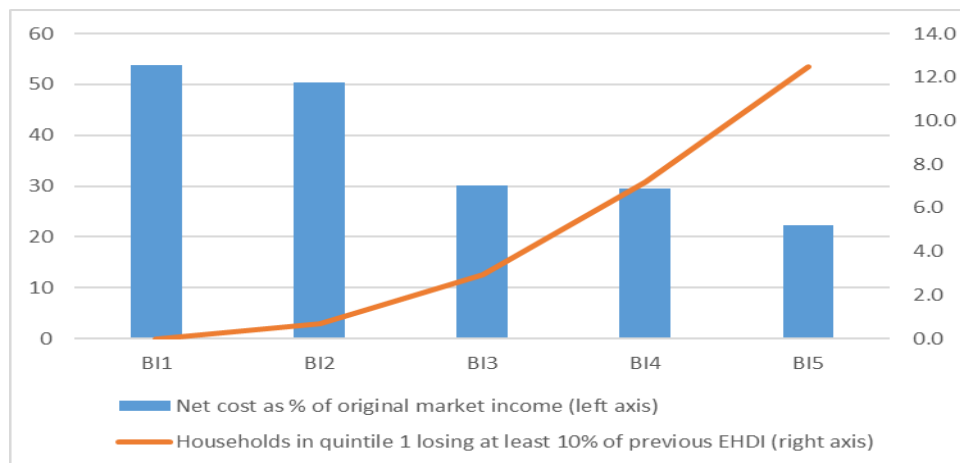


Figure 3: Average net cost as % of original market income and average % of quintile 1 losing at least 10% EHDl, alternative modes of implementation



Comparing fiscal effects by mode of implementation and country

Gross costs

Clearly, even before we take into consideration the different ways of ‘clawing back’ some of the total gross cost of the basic income payment, affordability – as indicated by magnitude of fiscal costs in relation to aggregate original income, shown in figure 4 – varies rather significantly across countries. Gross fiscal cost as a percentage of original market income ranges from around 60% in the cases of Slovakia, Greece and Spain to just over 40% in the case of Denmark. The simple average across the sample is 53.8%.

What factors explain the gross cost of the BI payment as a proportion of aggregate original income? The numerator of this measure of fiscal cost is aggregate basic income payments, and the denominator is aggregate market income. Recall that the basic income schemes in this study were specified in relation to each country’s relative poverty line (60% of net equivalised median household income in the base scenario), with payments for children set at just under half the rate paid to adults. This means that affordability (by this measure) depends partly on the relationship between equivalised median household income and non-equivalised mean household income that underlie the aggregate figures, and partly on the demographic composition (in terms of the ratio of children to adults) of the population.

The top left panel of figure 5 confirms a strong, positive correlation between the ratio of median equivalised household income to mean per capita income, and the gross fiscal cost of the basic income. The bottom two panels show some likely determinants of the variation in this ratio, in terms of prevailing typical household compositions. If households tend to be relatively large, then for a given mean per capita income, average equivalised income would be relatively high. By means of illustration, compare a population of single occupancy households and a population of dual occupancy households, each with the same per capita income (say, £1000 per month). Average equivalised income for the single occupants would be £1000 whereas for the population of dual occupancy households it would be £1333. Thus, we would expect countries with larger and fewer single occupant households would tend to have a higher equivalised median income in relation to per capita income compared with countries with smaller and more single occupant households. Again, these intuitive expectations are supported by figure 5. There is a strong negative correlation between the proportion of the population living alone and gross fiscal cost (bottom left panel); and a strong positive correlation between average household size and gross fiscal cost (bottom right panel).

As mentioned, dependent children receive less than half the amount that adults do, so it will cost comparatively less to pay for this form of basic income in countries with high proportions of children in the population. A negative correlation between the proportion of children and gross fiscal cost is shown in the top right panel of figure 5.

Figure 4: Gross cost as % of original market income, by country

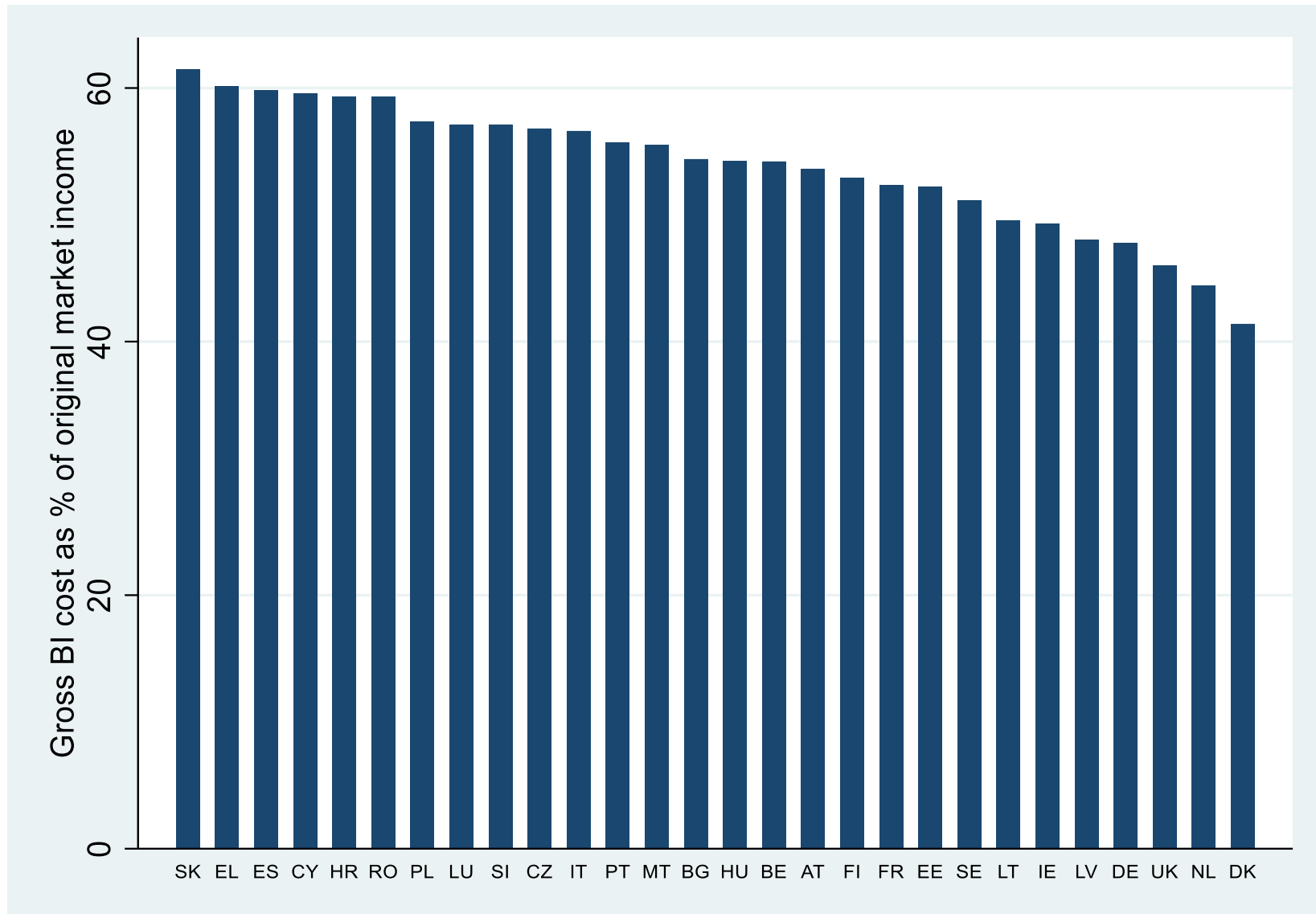
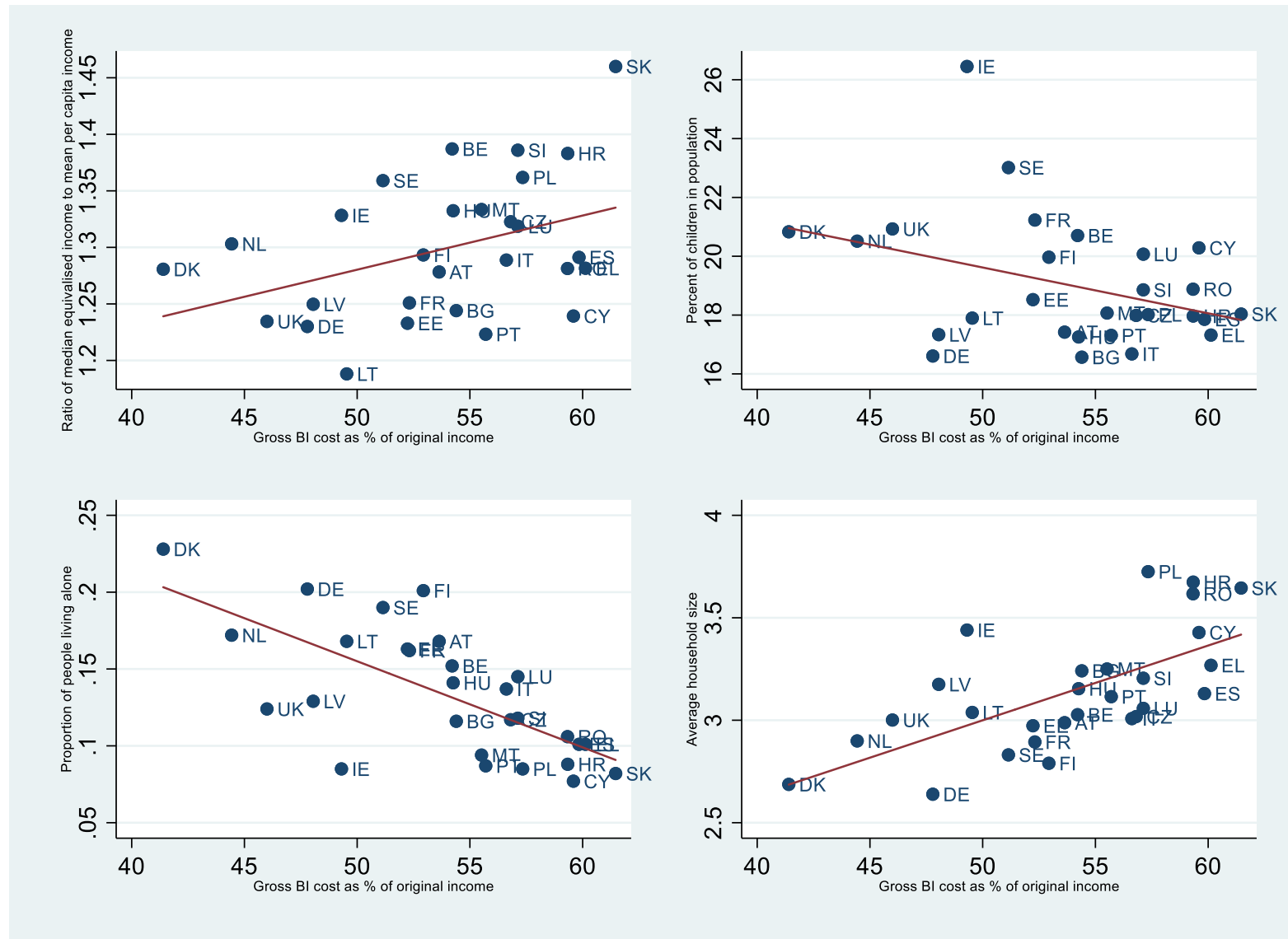


Figure 5: Correlates of gross BI costs



Net cost and benefit ‘claw back’

We now turn to the modes of implementation that involve some adjustment of existing benefits. Intuitively, it seems likely that the prospects of ‘clawing back’ some of the gross fiscal cost of a substantial basic income will depend upon the prevailing structure of benefits, which in turn varies across different types of welfare state.

Turning first to BI2, the height of the blue bar (representing the net cost of BI2 as a percentage of total gross cost) in figure 6 indicates the extent to which fiscal resources can be clawed back from the withdrawal of means-tested benefits, and thus the extent to which the welfare state relies on the latter. It is perhaps surprising that the fiscal resources freed up in this way are such a small proportion of total gross cost. Adjusting means-tested benefit downwards (as described above) claws back a maximum of around 18% of total gross cost (in the case of Ireland). Other welfare systems that rely relatively heavily on means testing are Cyprus, Denmark, Finland, the Netherlands and the UK. On the other hand, Estonia, Hungary and Latvia have barely any means-tested benefits with which to reduce the net cost of BI2. The correlation between this percentage and the proportion of means-tested non-pension benefit in total social spending is shown in the top left panel of figure 7.

Turning next to BI3, the drop in net cost for BI3 compared to BI2 is quite large across all countries, but quite variable. *Additional* savings will partly depend on the adjustments made in BI2; countries with significant adjustments of means-tested benefit are among those with smaller additional adjustments in BI3 (e.g. the UK saves an additional 25% of total gross costs compared to BI2, Cyprus saves around 28%, and Malta around 29%). These countries also end up clawing back the smallest proportions of gross cost; BI3 only permits them to offset around 40% of total gross cost, compared to around 50% for Finland and Ireland. Hungary and Estonia, countries with negligible adjustments for BI2, claw back the largest additional proportion of gross costs, with nearly 45% of gross costs offset in this way. Intuitively, we expect the total proportion of gross costs to be clawed back in this mode of implementation to be determined by the generosity and coverage of the benefits being adjusted. The top right panel of figure 7 shows a significant positive correlation between the proportion of gross cost offset in BI3, and total social spending as a percentage of income (serving here as a proxy for benefit generosity and coverage).

For BI4, the proportion of gross costs clawed back is very similar to BI3. Only a few countries exhibit significant additional savings, and as expected, this seems to be related to the reliance on means-tested in the welfare system. The bottom left panel of figure 7 shows the correlation between additional offsetting of gross costs in BI4 compared to BI3, and the prevalence of means-tested benefits in total social spending.

Finally, turning to BI5, both additional savings and the total proportions of gross cost offset by benefit adjustments are highly variable. Intuitively, countries with very generous (earnings related) benefits compared to the BI payment, will be able to claw back a large proportion of the BI’s gross cost. Given that the basic income payment is large in any case, this is likely to be the case where entitlements are dualistic, with privileged access to generous benefits and (especially) pensions for labour market insiders and large numbers of outsiders with relatively meagre provisions. Indeed, a glance at figure 8 confirms that the countries clawing back the highest proportions of gross costs, and with the largest additional claw back compared to other modes of implementation, are those characterised by corporatism and dualisation of entitlement (including those in Southern and Eastern Europe): for example, Portugal, Romania, Greece, Hungary, Italy, and Austria. The bottom right hand panel of figure 7 shows a positive correlation between an indicator of ‘earnings-relatedness’ of unemployment benefits, and the additional percentage of gross costs offset by benefit adjustment in BI5.

Figure 6: Net cost as a proportion of gross costs, by mode of implementation and country

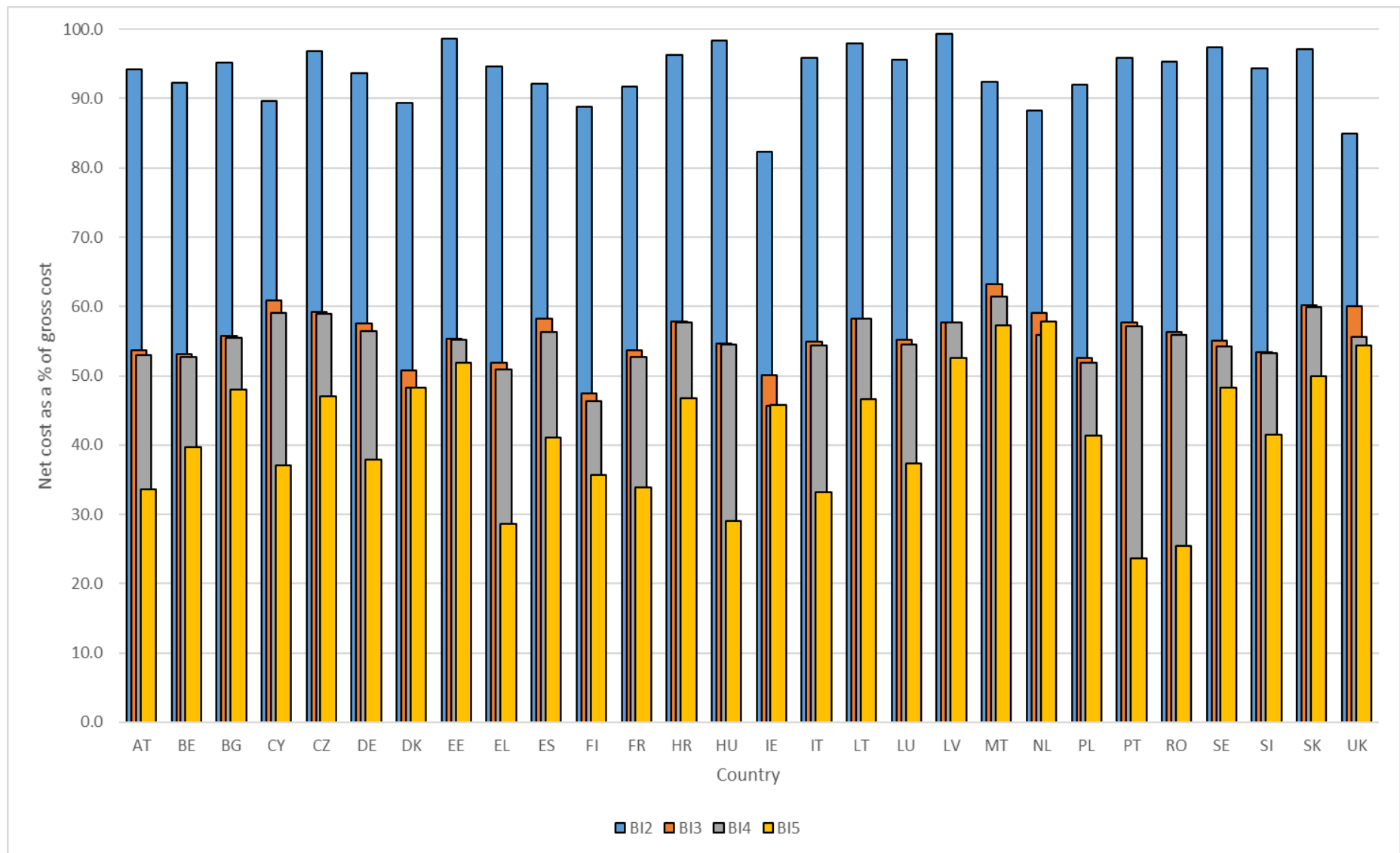
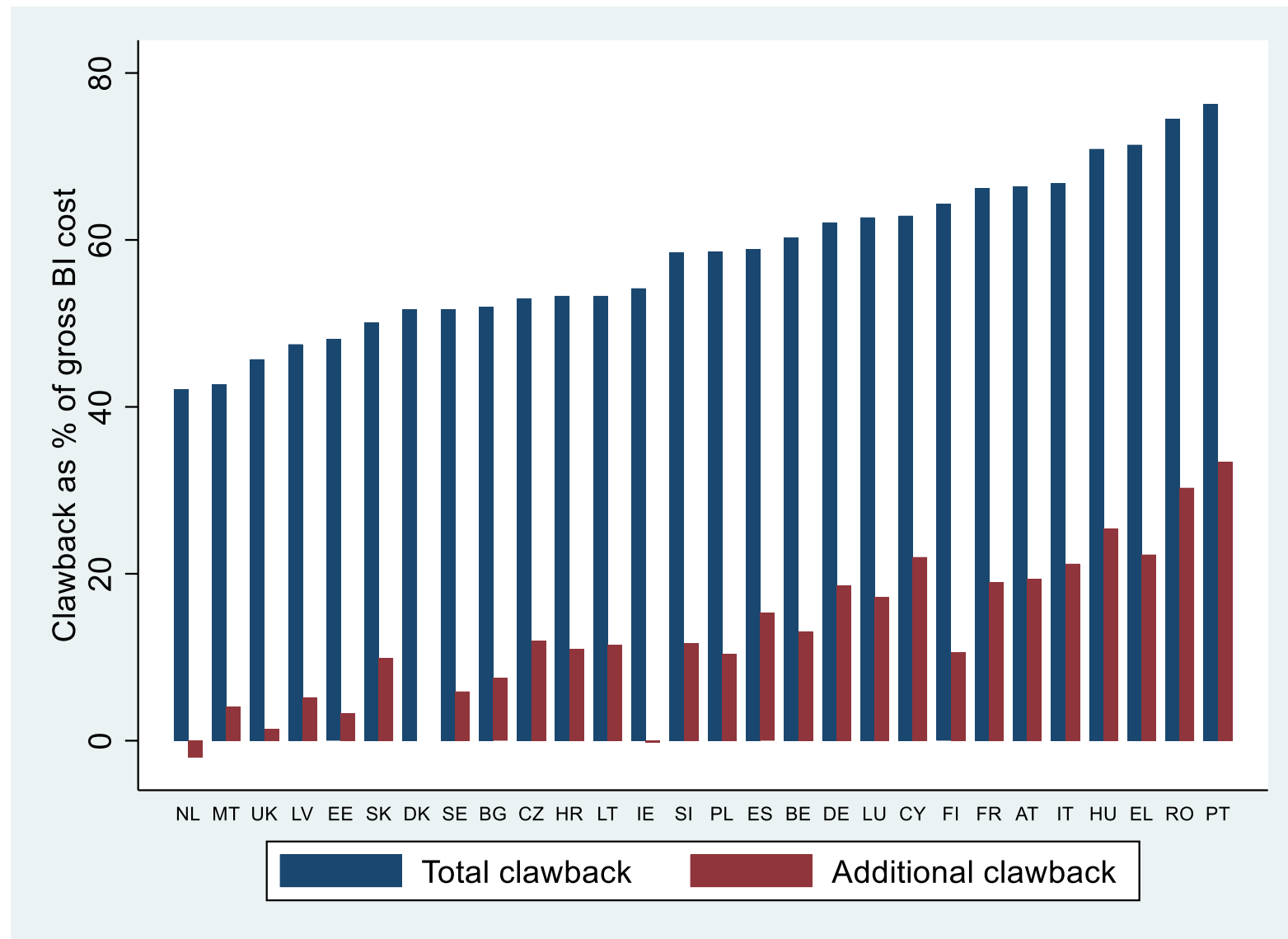


Figure 7: Correlates of percentage of gross cost offset by benefit adjustments, BI2-BI5



Figure 8: Total and additional 'clawback' of gross costs – BI5



Fiscal effects by welfare regime

The scope for offsetting a basic income's gross cost relates to the structure of a country's welfare system; using the classification discussed above, the relative congruence of different modes of implementation – in terms of fiscal cost – with different welfare regime types is evident (Table 5).

The Liberal regime type – comprising of the UK and Ireland – is relatively suited to BI2, due to the preponderance of means-tested benefits. Likewise, additional cost savings are generated moving from BI3 to BI4 for these countries. However, even eliminating all benefits in BI5 only claws back an average of 50% of gross costs, due to the relatively low level of spending. The Conservative and Social democratic countries also offset a significant amount of the BI's gross cost through reduction in spending on means-tested benefits.

The Social Democratic countries claw back the largest proportion of gross costs through BI3 – almost 50% on average – reflecting their generous, comprehensive benefit structures. Moving from BI3 to BI5 does not generate a great deal in the way of additional offsetting reductions in benefit expenditure, perhaps reflecting that welfare entitlements are generally flat-rate and well-targeted at the poor, rather than strongly earnings-related.

In contrast, the Conservative, Eastern and Southern welfare states generate significant additional savings moving from adjustment (BI3/4) to elimination (BI5) of benefits. The Southern countries in particular offset an additional 20% of the basic income's gross cost in this way; this group claws back the highest average proportion of gross costs overall, with 63%.

Table 5: % of gross cost and additional % of gross cost offset through benefit reductions: BI2 - BI5, by welfare regime type

		Conservative	Eastern	Liberal	Social democratic	Southern
% of gross cost offset through benefit withdrawal	BI2	7.4	3.6	16.4	8.0	6.6
	BI3	44.8	43.5	45.1	49.1	42.3
	BI4	45.9	43.9	49.7	50.3	43.5
	BI5	60.5	56.5	50.1	56.3	63.2
Additional % of gross cost offset through benefit withdrawal	BI3	37.4	39.9	28.7	41.0	35.8
	BI4	1.2	0.4	4.6	1.2	1.2
	BI5	14.5	12.6	0.4	6.0	19.7

Comparing distributional effects by mode of implementation and country

Changes in poverty rates

As shown in Figure 9, across the board, BI1 has massive effects on poverty rates, reducing poverty rates by between 75% and 99% of the base level. However, BI2, in which means-tested benefits are adjusted, has smaller poverty alleviating effects, and for some countries that rely heavily on means-testing – especially Finland, Ireland, the Netherlands, and the UK – the difference is very large.

For many countries, the difference between BI2 and BI3 in terms of poverty effects is very large, while for others it is more marginal. In Belgium, the Czech Republic, Denmark, Finland, Ireland, and the Netherlands, the effects go from substantial reductions in poverty rates in BI2 to negligible falls or even increases in poverty under BI3. In other countries, such as Greece, Hungary and Italy, there is little difference between BI2 and BI3. This divergence reflects differences in how non-means tested benefits and pensions are structured under existing systems, and thus how much of a difference replacing them makes to overall poverty rates. In the first set of countries, coverage is more comprehensive and payment rates are set in relation to poverty lines, whereas in the latter, coverage rates are likely to be low, but recipients may receive more generous, earnings-linked payments (and thus not fall into poverty even when these are adjusted downwards to account for the basic income payment).

In general BI4 closely follows the dynamics of BI3. In contrast, 23 of the EU28 exhibit increased poverty rates under BI5. In nine countries – Austria, Belgium, Czech Republic, Germany, Denmark, Finland, France, Ireland, and Luxembourg – increases exceed 50% of the base rate. Only in Bulgaria, Spain, Estonia, Hungary, and Latvia are poverty rates lower than the base scenario, for this mode of implementation.

The changes in Gini coefficient, shown in Figure 10, follow a similar cross-national pattern, although increases in inequality are far rarer. Only in Belgium and Finland, in mode of implementation BI5, does the Gini coefficient actually increase.

Figure 11 shows the proportions of the lowest income quintile that lose out from each mode of implementation, by country. These findings reflect the same dynamics as described above in relation to changes in poverty rates. In countries with strong, redistributive welfare states, which tend to be situated towards the right of the graph, the probability that low-income households will lose out significantly from the conversion of existing benefits into a basic income (plus additional tax liabilities) is much higher. Losses are most prevalent in BI5, but quite significant proportions of low-income households lose under BI3 and BI4 as well.

Correlates of distributional effects

What explains these diverse distributional effects? Following the literature reviewed above, we expect several factors to emerge. Initial poverty and inequality rates, shown in figures 12 and 13, are clearly correlated to distributional effects, as expected; countries with prevalent gaps in social security, and high levels of poverty and inequality, have more to gain. Likewise unemployment – itself strong correlated with poverty – is significant, as shown in figure 14.

Turning to figure 15, intuitively, we can identify two factors to be driving spending on social transfers – the level and structure of transfers, and the broader macroeconomic situation. It seems that spending is *not* a good proxy for the redistributive functions of the welfare state, since if it were, we would expect the opposite relationship between social spending and the change in the poverty rate from the one we observe. It seems that spending levels are highest among countries with pervasive poverty rates, with residual, highly targeted welfare states having less to gain. The relationship breaks down for BI5, because here the offsetting losses to poor households from the removal of generous insurance-based benefits reduce the large improvements in poverty levels as we move towards high levels of social spending.

Non-coverage of income support measures and earnings-relatedness of unemployment benefits are also strongly correlated with poverty reduction, as shown in figures 16 and 17. This is unsurprising, given that countries with poor coverage and strongly ‘dualistic’ welfare systems tend to function relatively poorly at alleviating poverty, implying basic income’s effects would be more favourable.

Figure 9: Percentage change in poverty rate, by mode of implementation and country

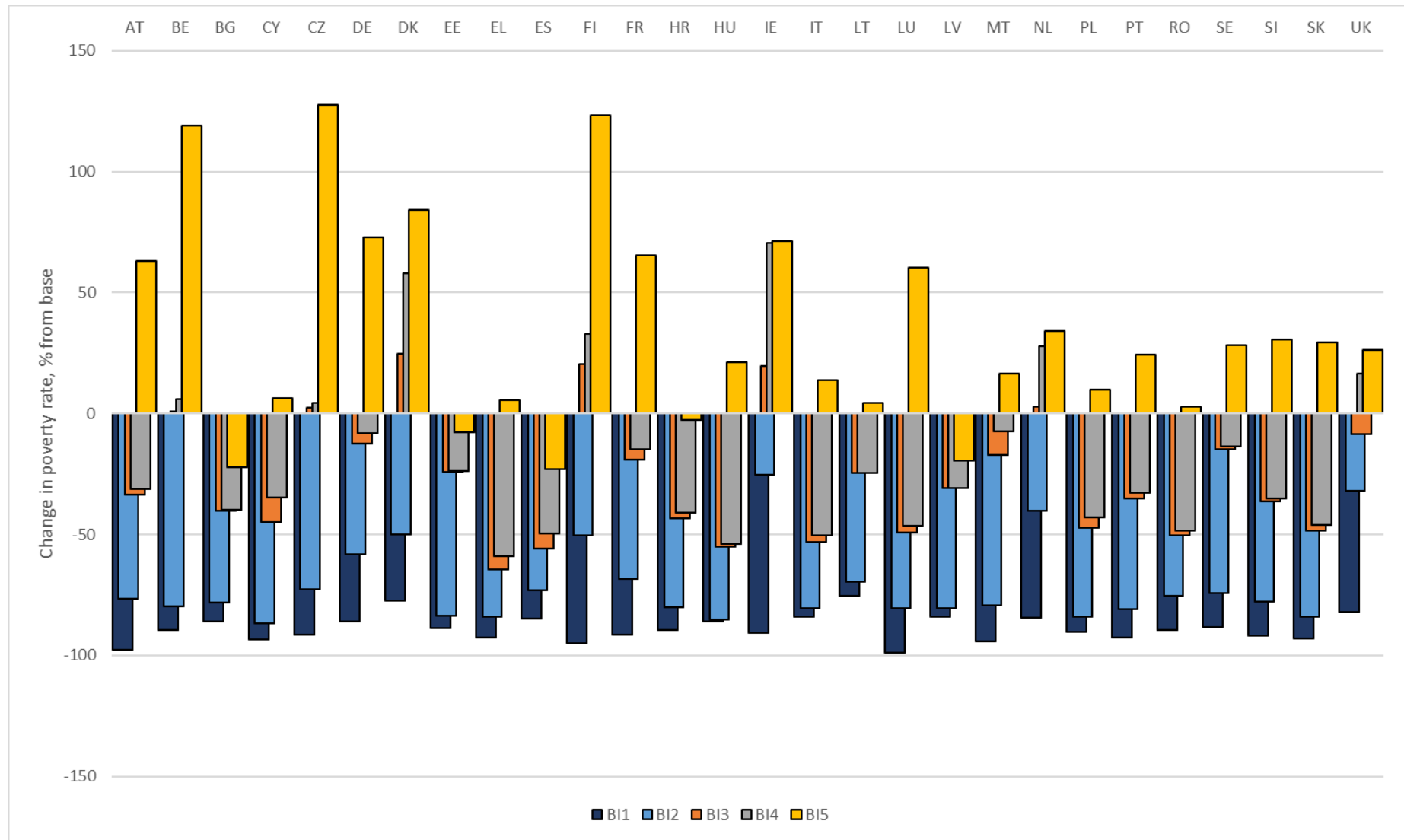


Figure 10: Percentage change in Gini coefficient, by mode of implementation and country

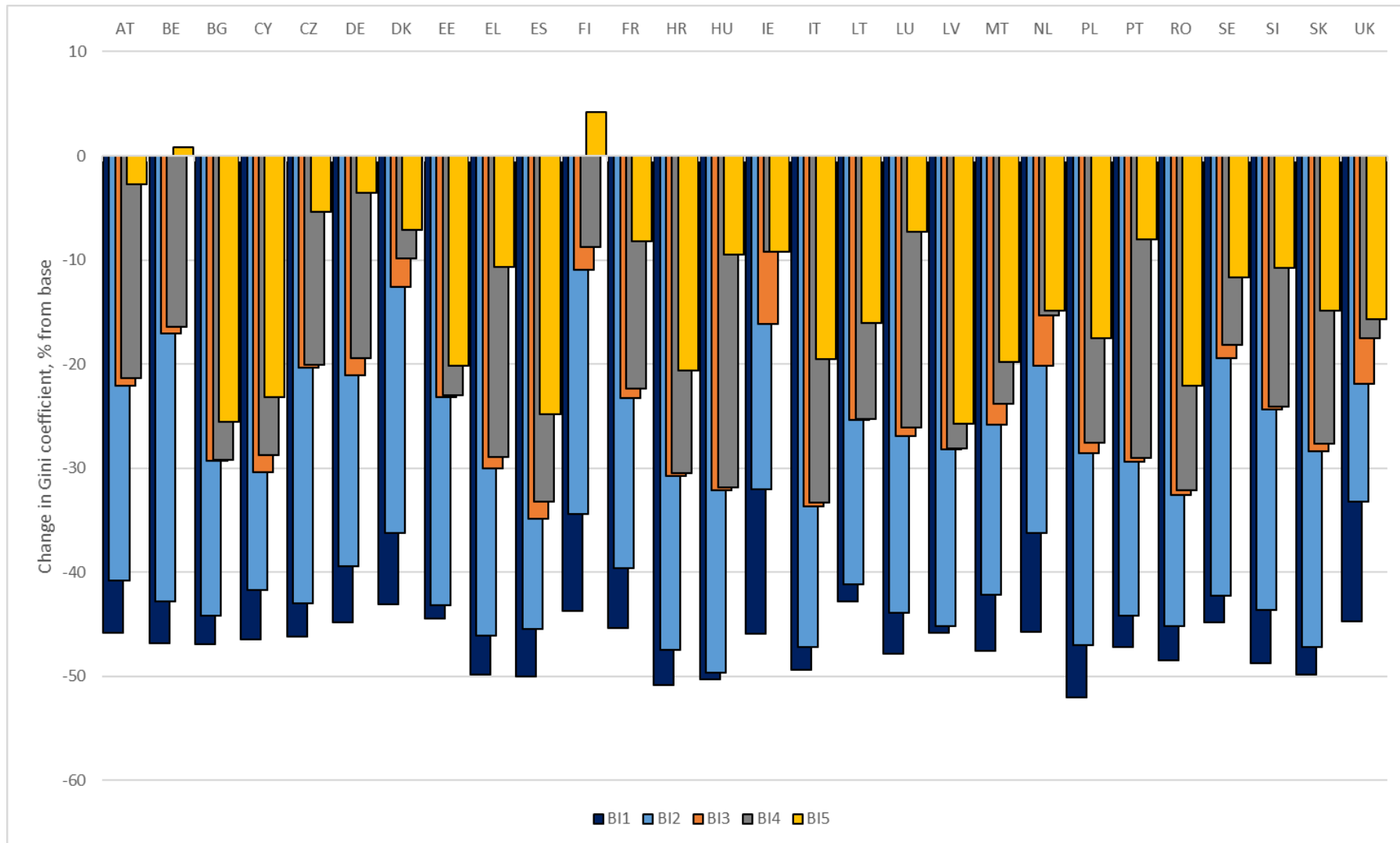


Figure 11: Proportion of poorest quintile losing out significantly, by country and mode of implementation

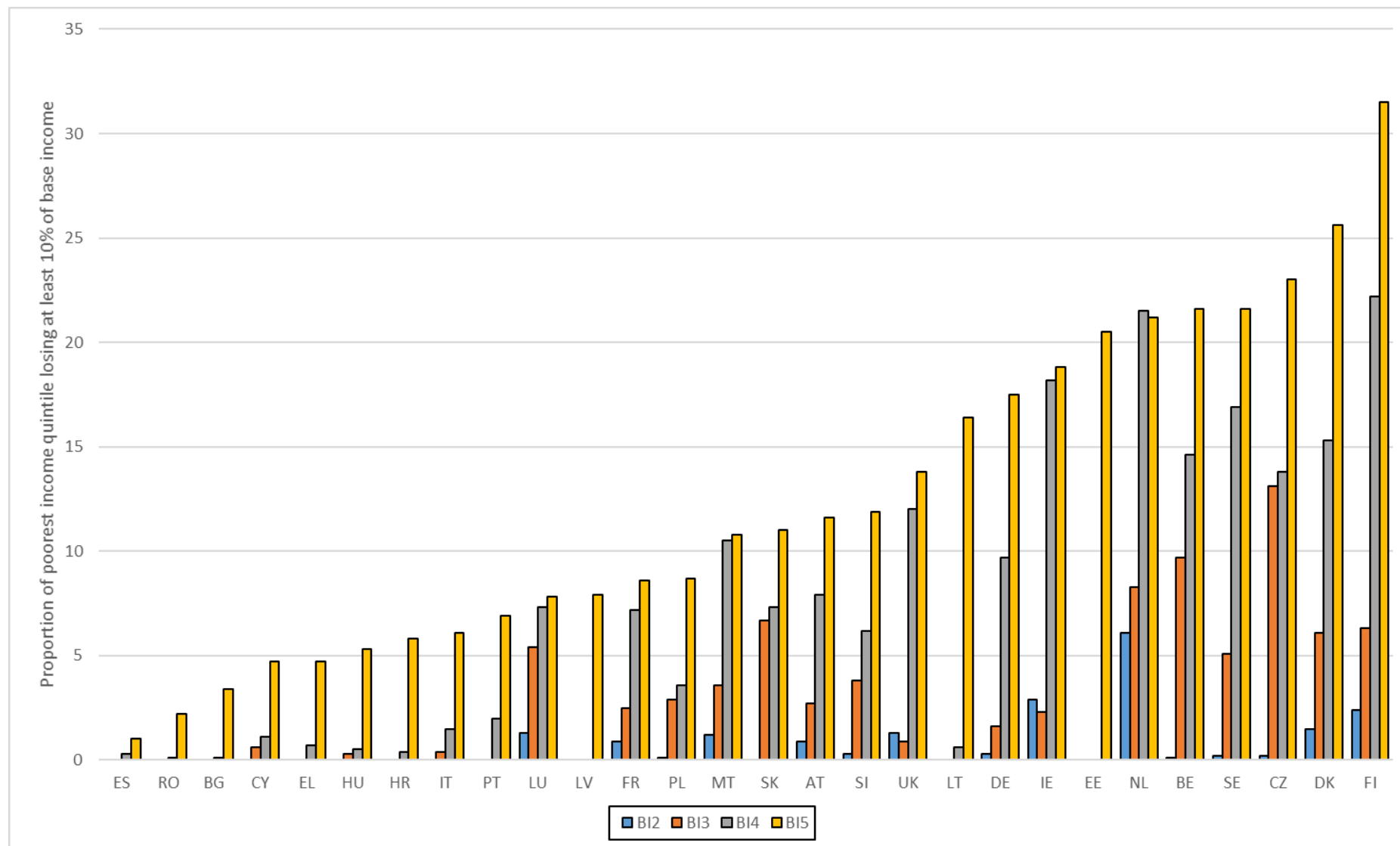


Figure 12: Percentage change in poverty rate and initial (baseline) poverty rate, BI2-BI5

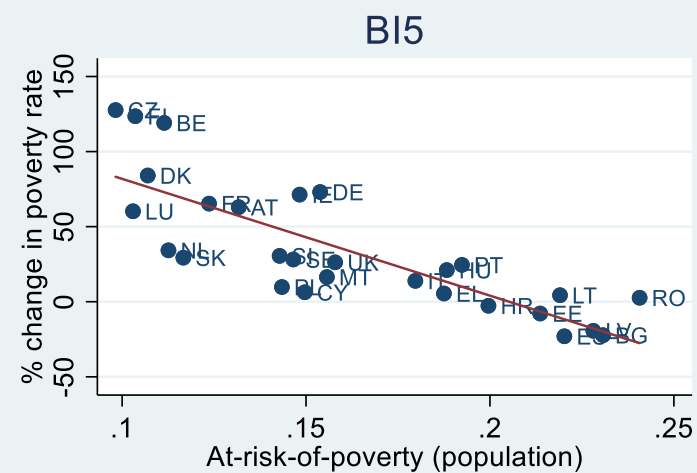
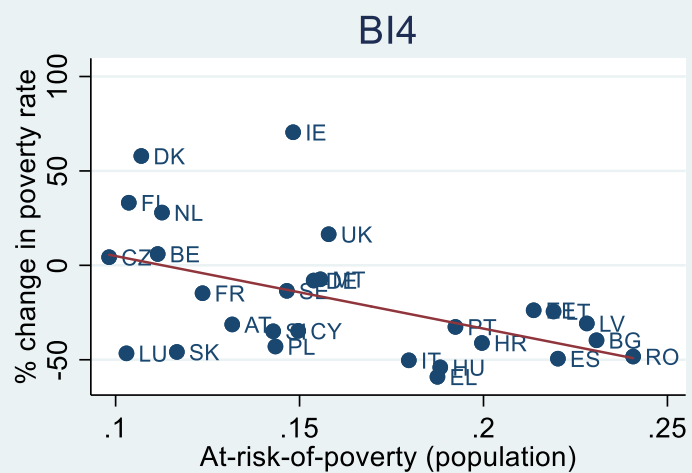
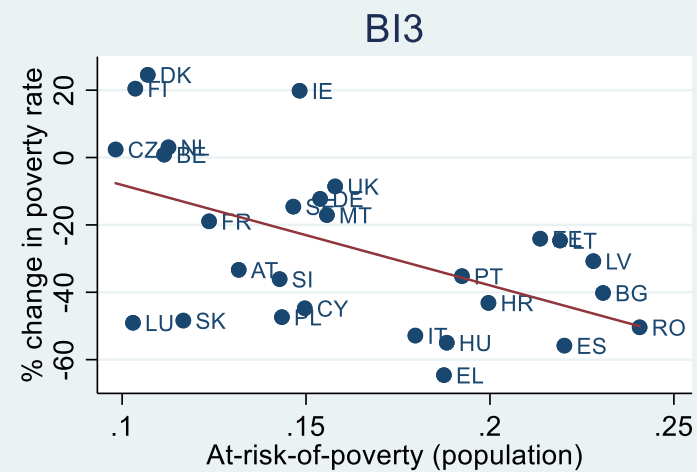
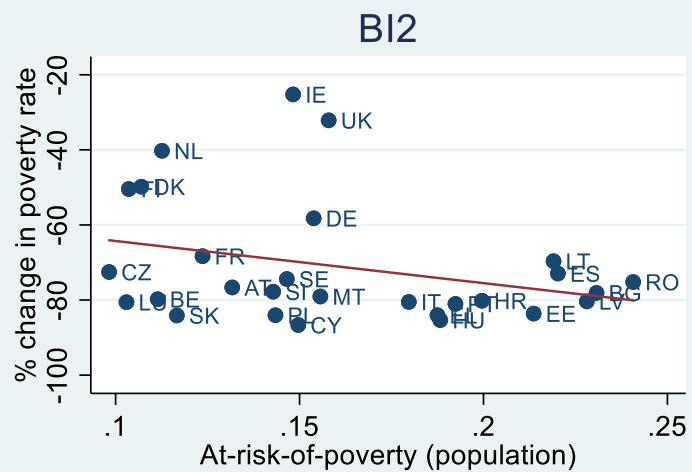


Figure 13: Percentage change in Gini coefficient and initial (baseline) Gini coefficient, BI2-BI5

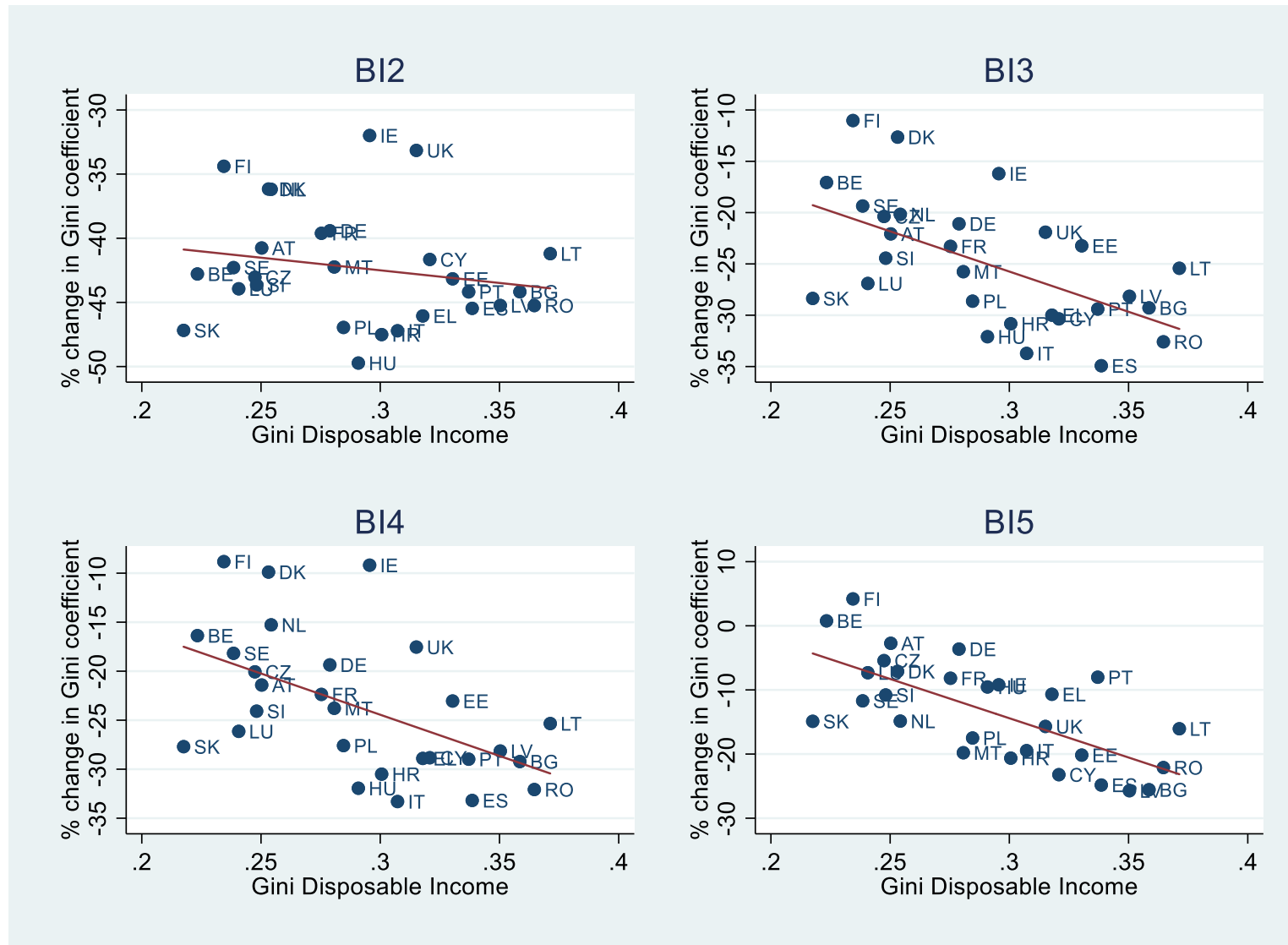


Figure 14: Percentage change in poverty rate and rate of unemployment, BI2-BI5

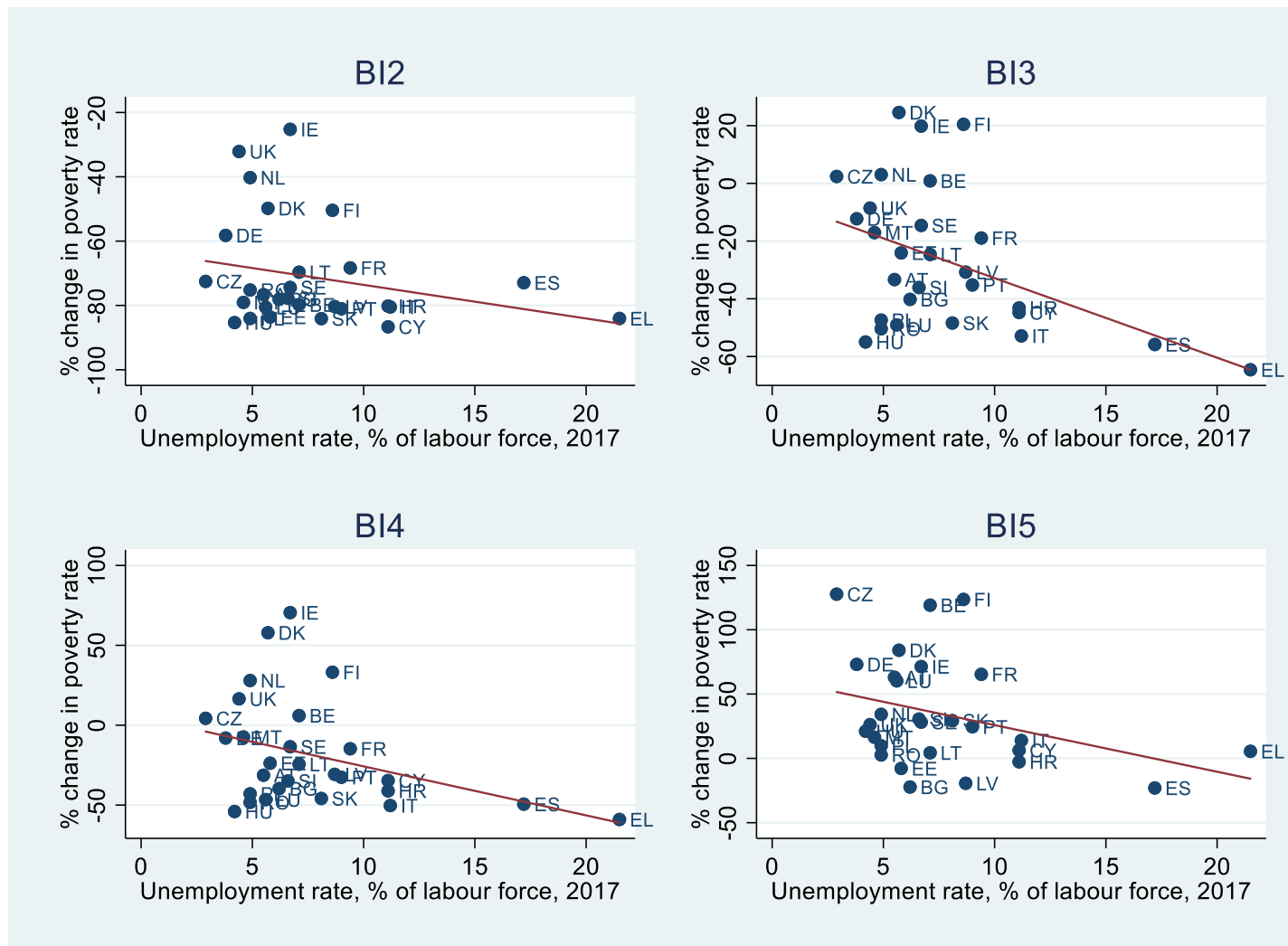


Figure 15: Percentage change in poverty rate and spending on social transfers, BI2-BI5

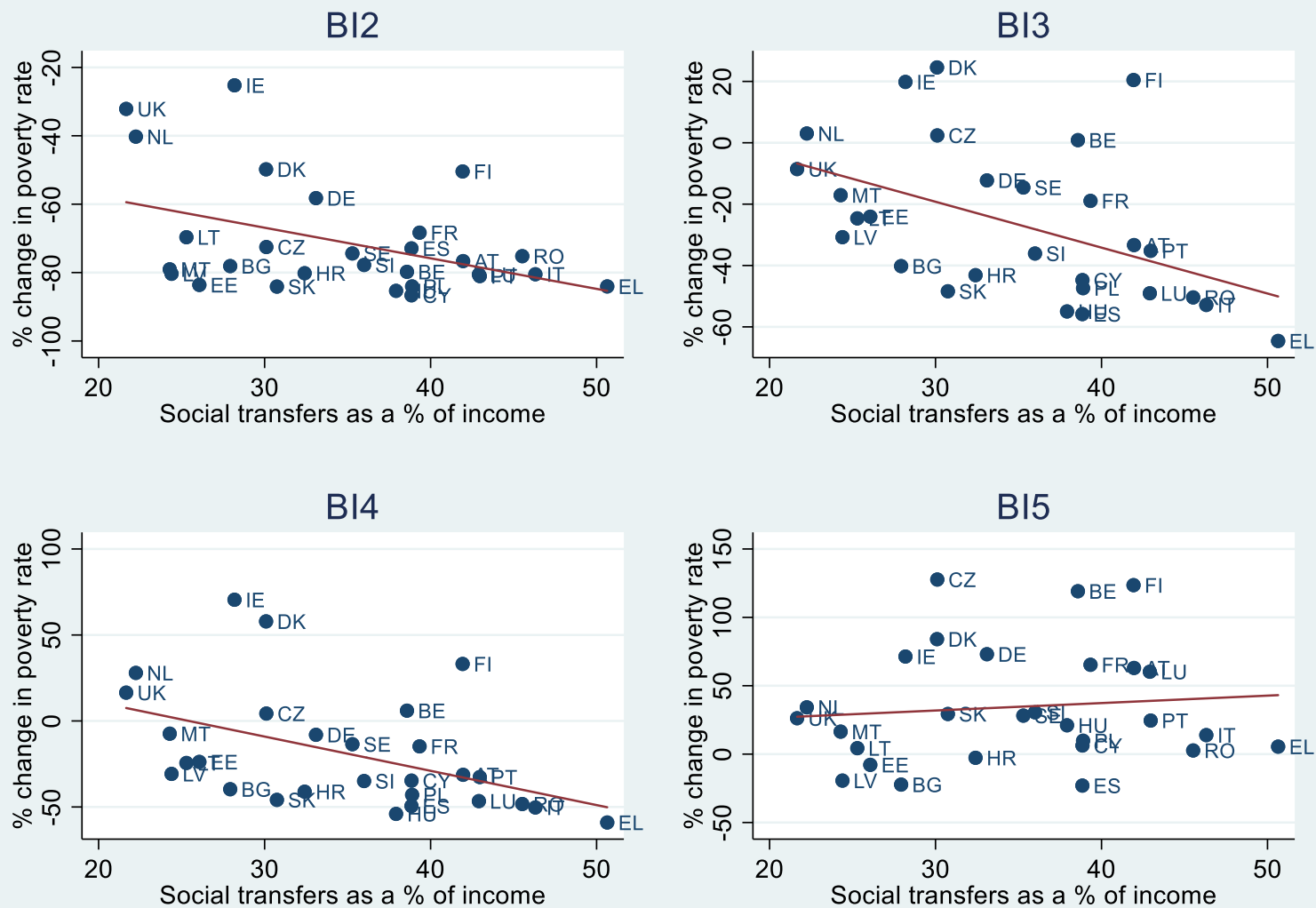


Figure 16: Percentage change in poverty rate and non-coverage of income support measures, BI2-BI5

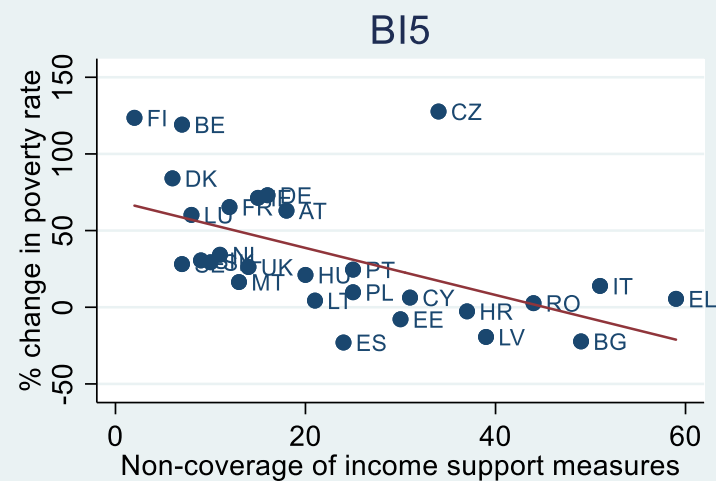
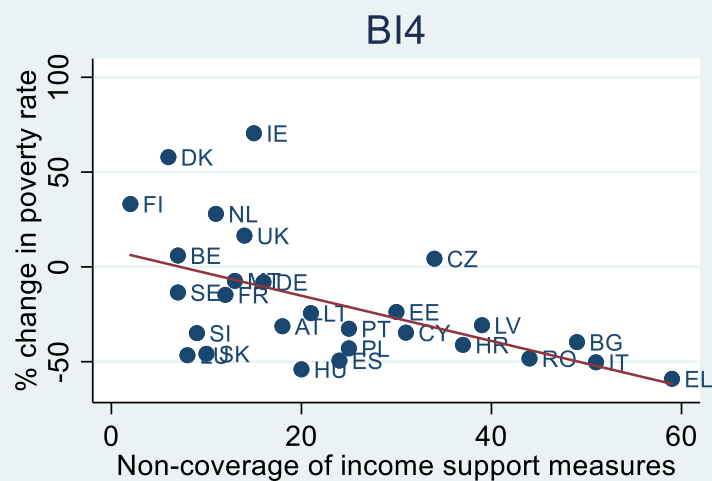
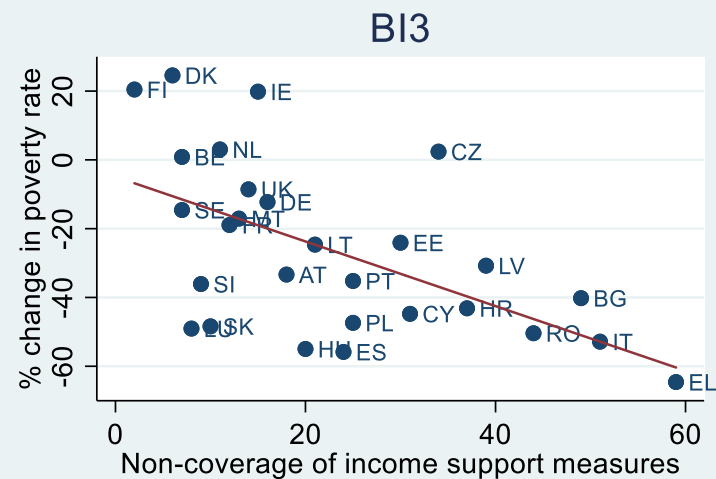
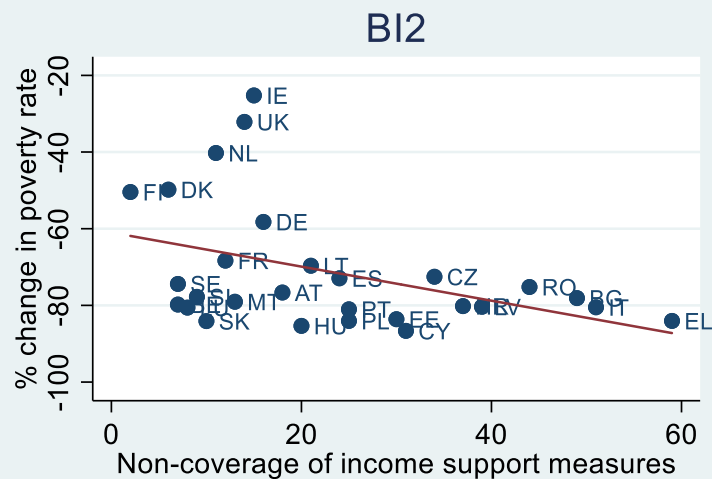
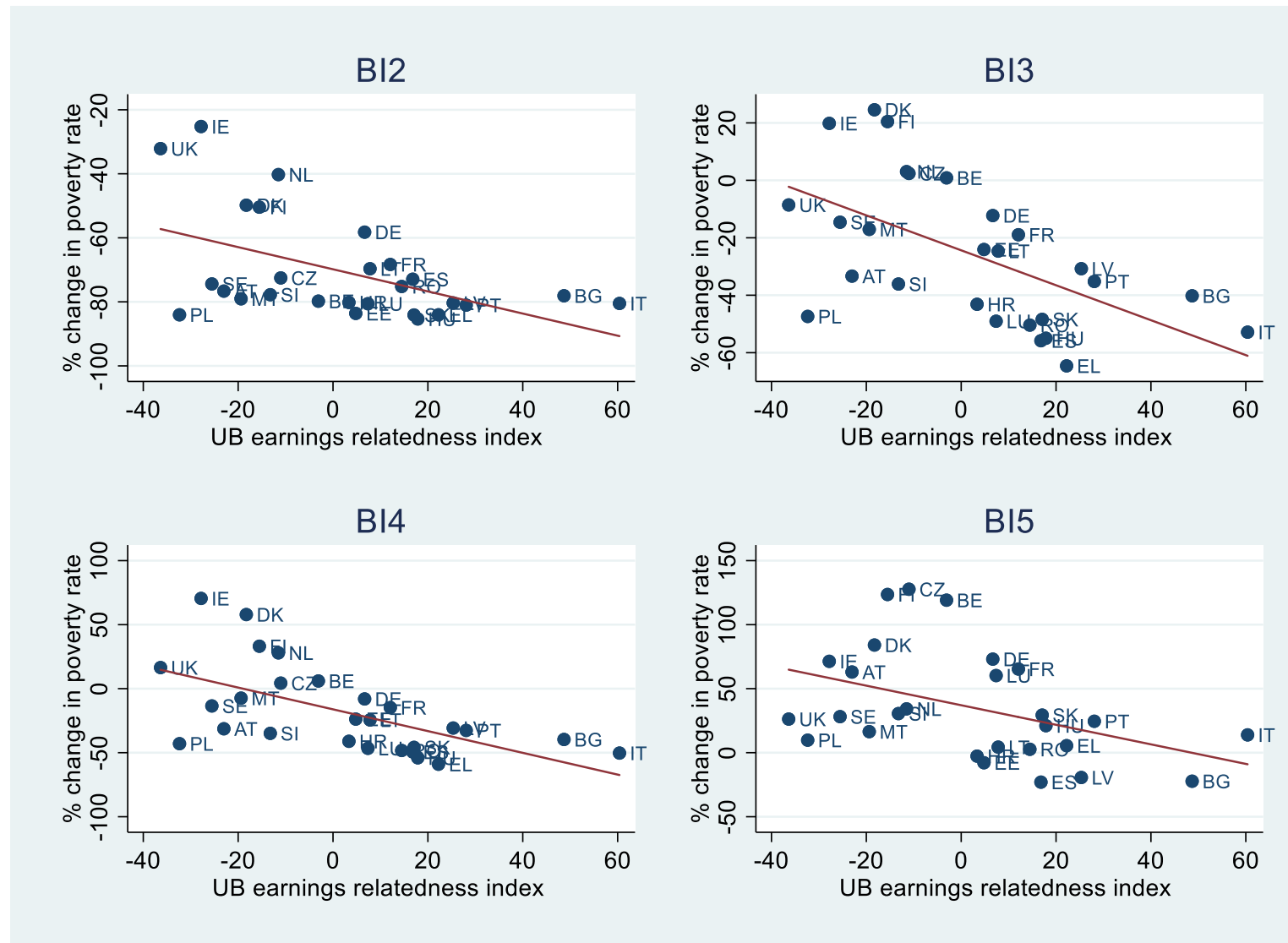


Figure 17: Percentage change in poverty rate and earnings relatedness of unemployment benefits, BI2-BI5



Fiscal and distributional trade-offs – a ‘demand-capacity paradox’?

It is clear that the choice of implementation mode involves a trade-off between fiscal and distributional feasibilities, but is it also the case that the latter vary cross-nationally within specific modes of implementation? The argument here is that countries with more comprehensive, generous and redistributive welfare states will find basic income relatively affordable – at least in those modes of implementation that claw back a proportion of the gross cost – compared to countries with residual and ungenerous coverage. However, basic income should give rise to highly favourable distributional consequences in these latter countries, since existing poverty and inequality levels are correspondingly high (and there are likely to be fewer losers arising from the elimination of generous benefits). Looking at the scatter plots of fiscal and distributional variables (figures 18 and 19) broadly confirms this intuition.

However, the relationship is clearly not so straightforward, since there are large numbers of outliers, and linear fit line is much shallower for BI5 than for the other modes of implementation. This is unsurprising, since as we know, countries do not simply vary across a single dimension of welfare state ‘effort’ or size – and indeed the level of benefit spending does not uniquely determine the effectiveness of the welfare state in alleviating poverty and inequality. Indeed, it is well-known that welfare states vary in the extent to which cash benefits actually accrue to the poor; a significant proportion of spending accrues to the non-poor, and benefit spending can even be regressive (OECD, 2017; IMF, 2017).

We expect the additional dimensions of (non)coverage and earnings-relatedness to upset the straightforward relationship between fiscal and distributional feasibilities (and explain why the relationship shown for BI5 in figures 18 to 19 appears so weak). If welfare provision is generally comprehensive in coverage of the (poor) population, and payments are efficiently targeted towards the poor, then the fiscal / distributional trade-off should pertain – the differentiation is based on generosity of payments. On the other hand, if there are large gaps in coverage and / or payments are relatively generous for the non-poor (i.e. they are inefficiently targeted), the fiscal / distributional trade-off may break down. It is possible that if such countries have high spending but ineffective at alleviating poverty, then adjusting or eliminating benefits would offset a high proportion of the basic income’s gross cost *without* the distributional downside in terms of poor households losing out.

Indeed, such expectations are borne out in relation to figures 20 to 23. In each figure and for each mode of implementation, lines of linear fit are much shallower for the countries with poor coverage and with highly earnings-related payments. In contrast, strict trade-offs between fiscal and distributional feasibilities still pertain for countries with more comprehensive coverage and / or less ‘dualistic’ structures of welfare payments.

Figure 18: Net cost as % of original income and percentage change in poverty rate, BI2-BI5



Figure 19: Net cost as % of original income and percentage change in Gini coefficient, BI2-BI5

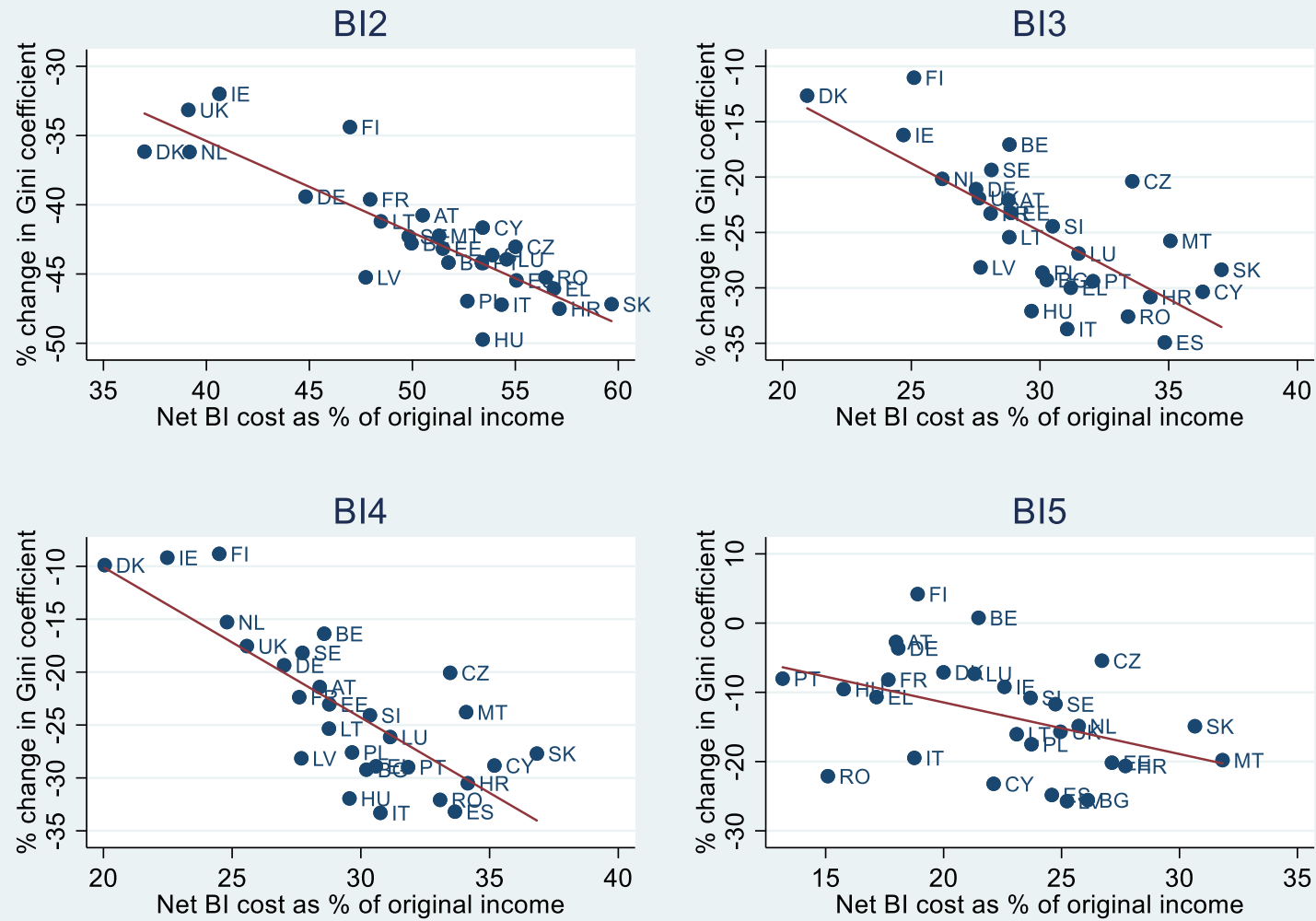


Figure 20: Net cost as % of original income and percentage change in poverty rate, BI2-BI5: low and high coverage welfare states

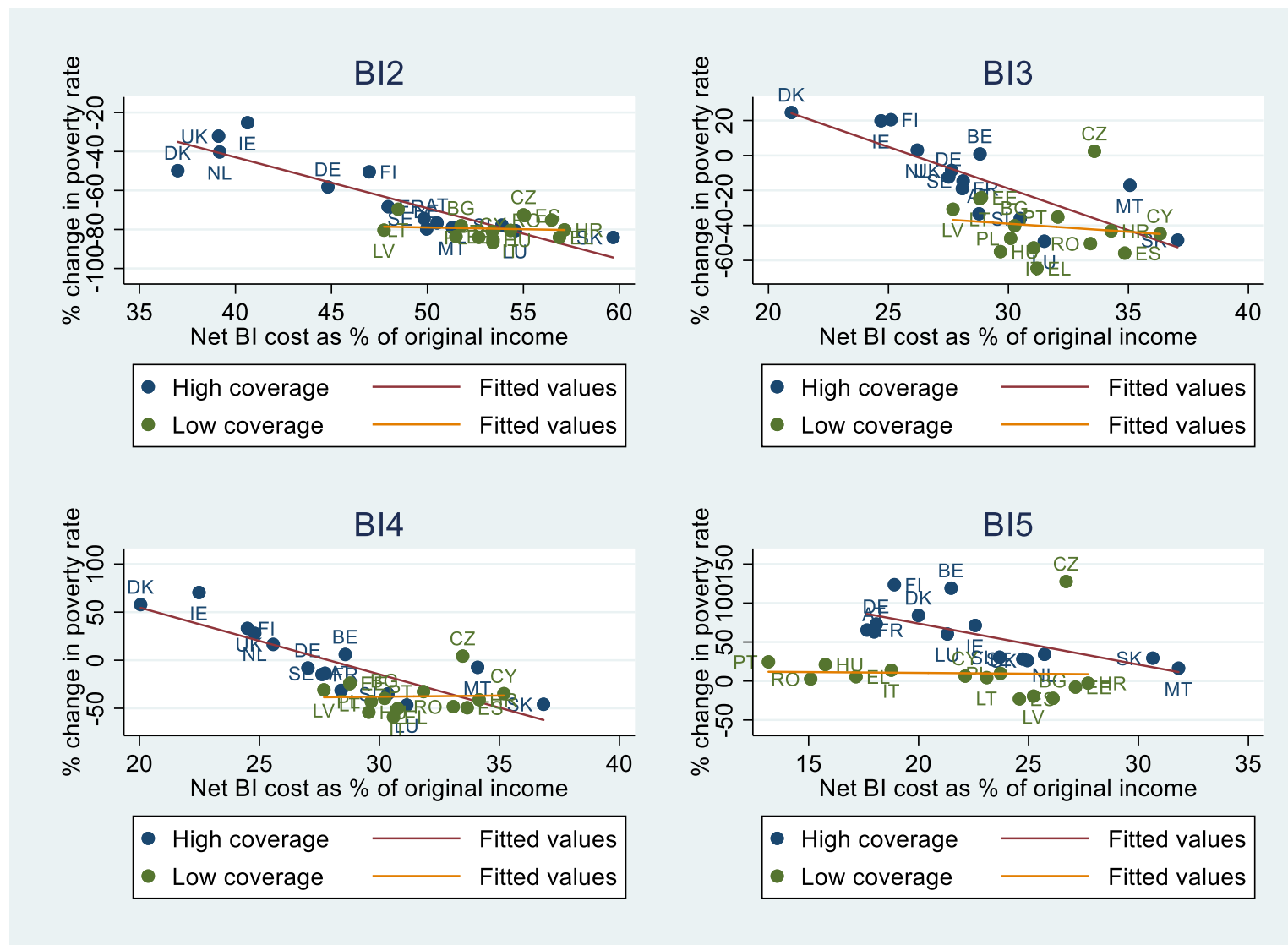


Figure 21: Net cost as % of original income and percentage change in Gini coefficient, BI2-BI5: low and high coverage welfare states

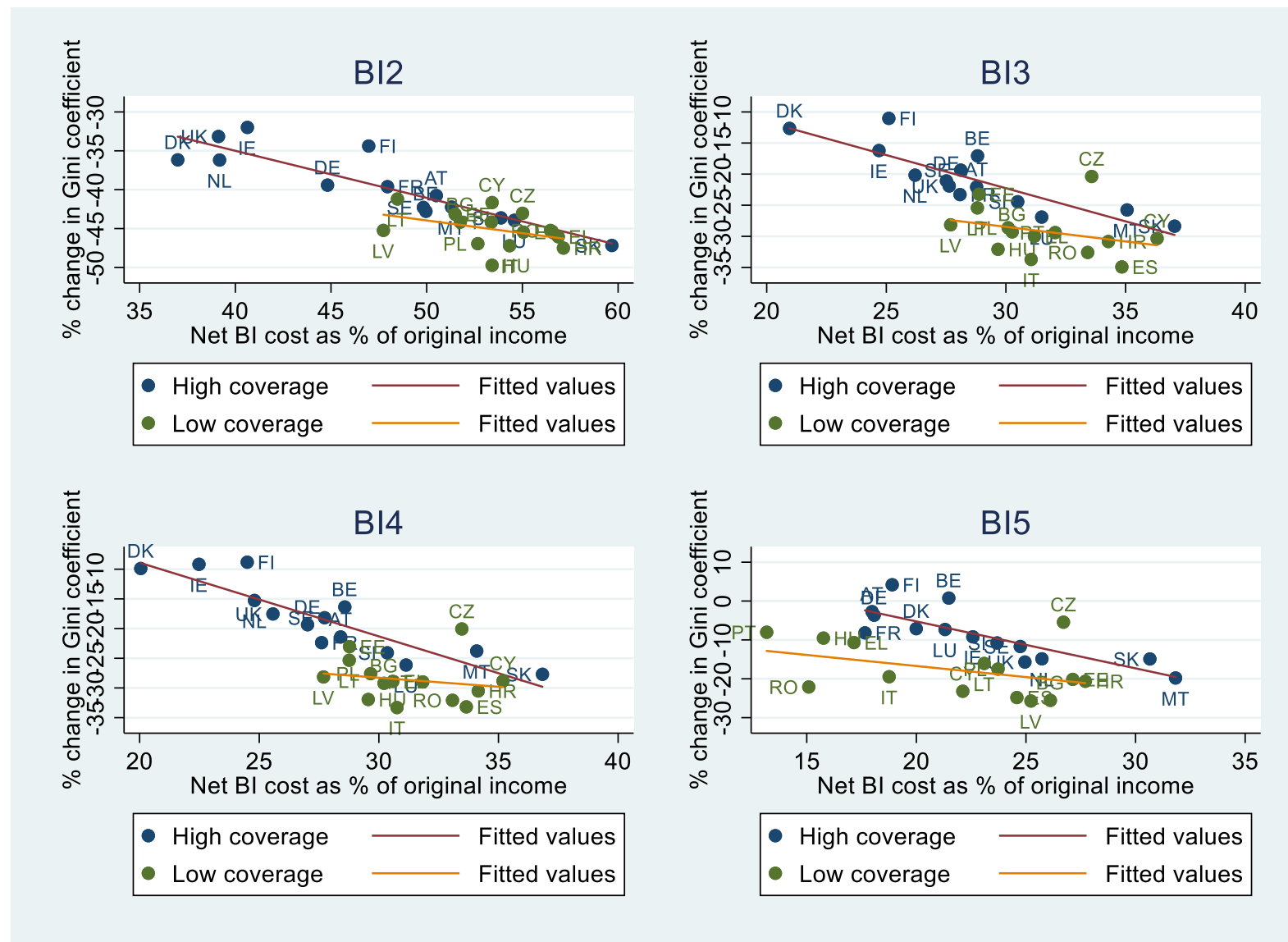


Figure 22: Net cost as % of original income and percentage change in poverty rate, BI2-BI5: welfare states with strong and weak earnings links

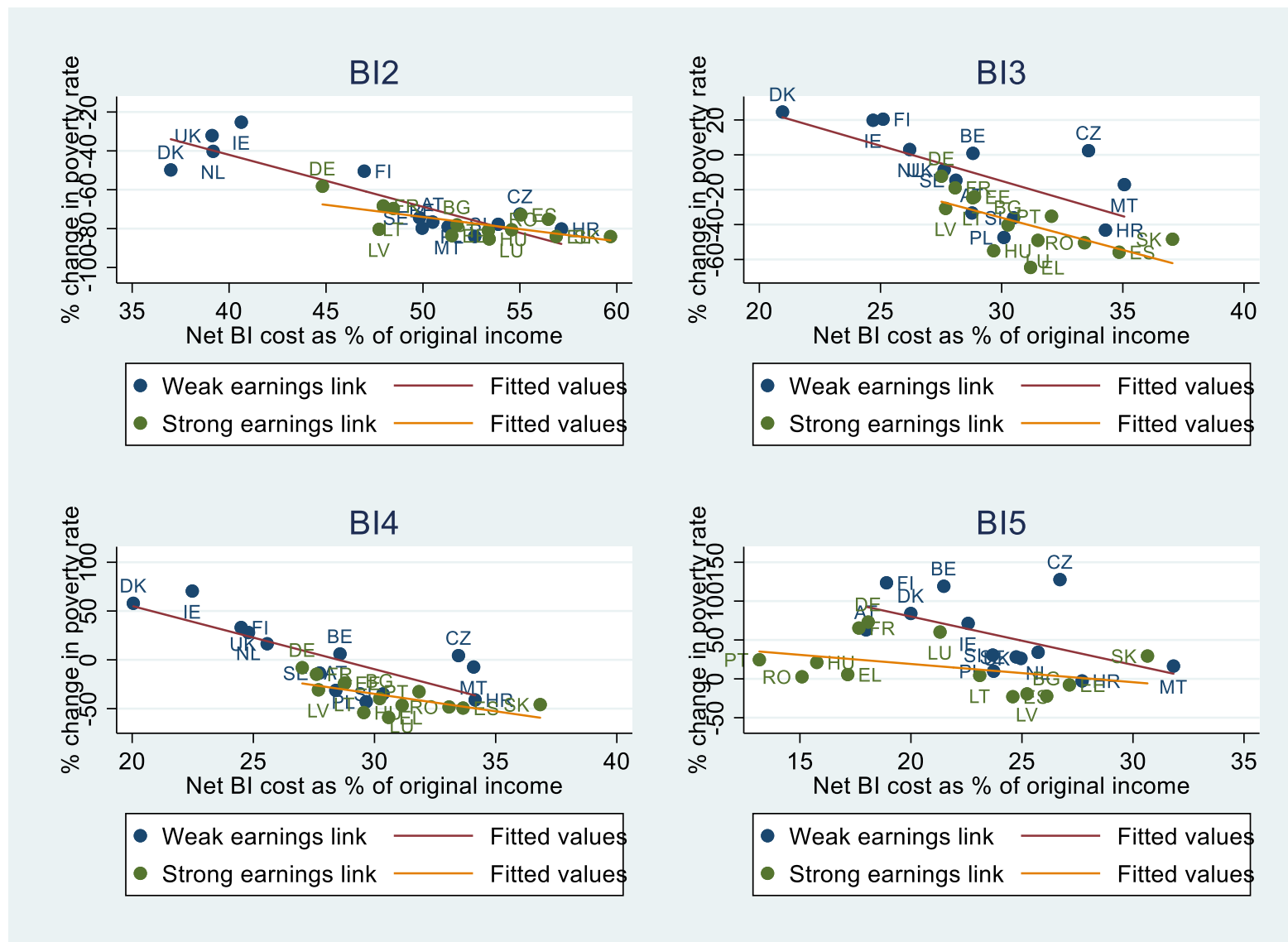
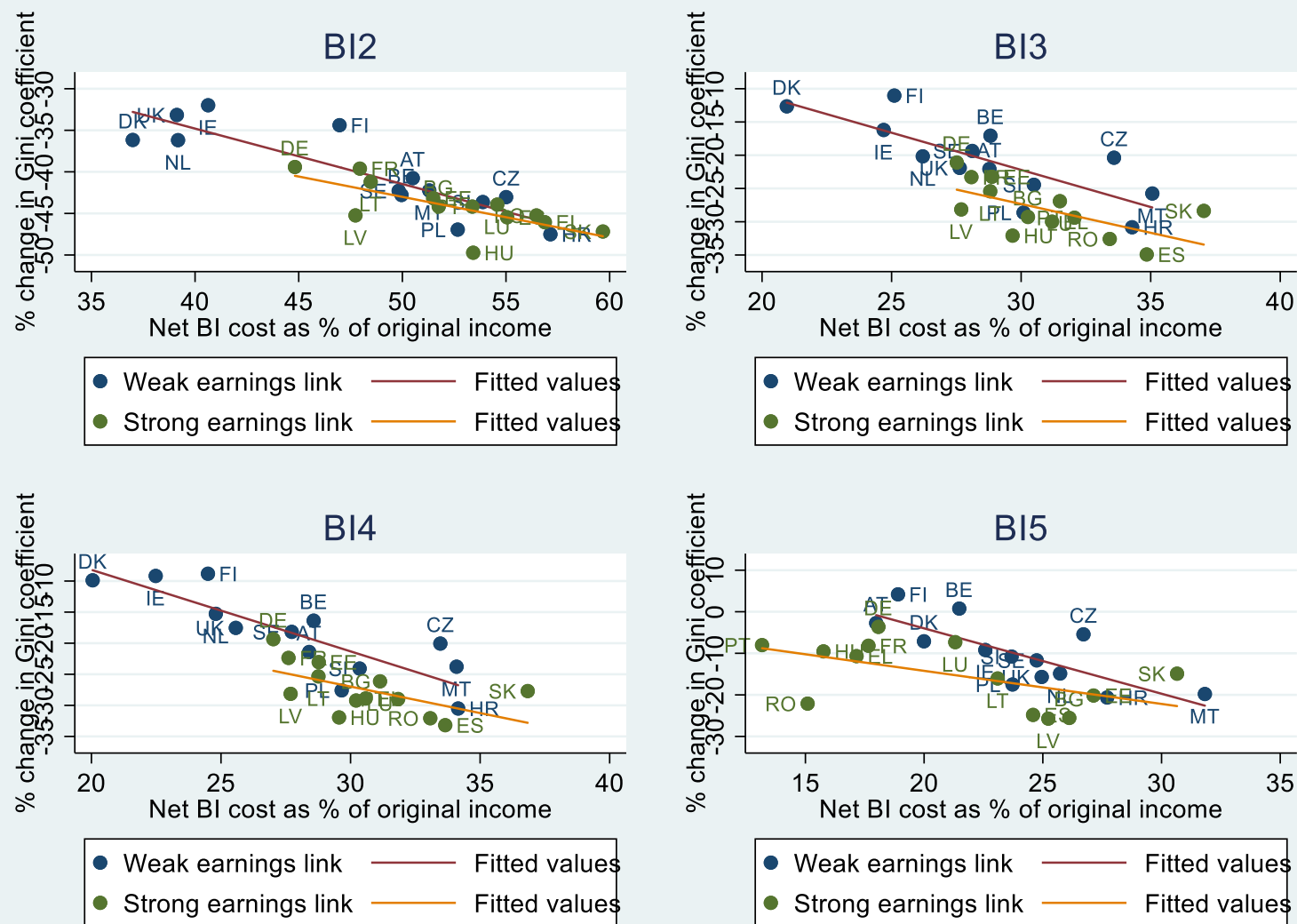


Figure 23: Net cost as % of original income and percentage change in Gini coefficient, BI2-BI5: welfares states with strong and weak earnings links



5. Summary and discussion of main findings

The insights generated have relevance beyond the question of basic income's feasibility *per se* and relate to a broader literature on the determinants and implications of welfare state diversity. Our findings have several key implications. There is a direct trade-off between alternative modes of implementation. Schemes in which benefits and pensions are not adjusted at all or in which only means-tested benefits are adjusted require much higher tax rises. But these types of scheme have relatively favourable effects in turns of alleviating poverty and reducing inequality. In countries in which means-tested benefits feature more heavily, offsetting fiscal savings are relatively large but schemes such as BI2 will be relatively ineffective at reducing poverty.

In contrast, schemes in which benefits and pensions are entirely eliminated (BI5) get much closer to fiscal feasibility, offsetting up to around 75% of the basic income's gross cost (in the cases of Portugal and Romania). But of course, these schemes have less favourable (indeed, highly unfavourable) distributional consequences. However, countries with patchy and highly dualistic benefit structures face more favourable trade-offs, since they could (in principle) offset a large proportion of net fiscal cost by repurposing generous benefits and pensions to a flat rate basic income, without the corresponding large increases in poverty that arise in other contexts. Given that even in these limited cases the trade-offs are hardly that favourable (i.e. large increases in expenditure coupled with modest increases in poverty), we conclude that in general, adjusting non-means-tested benefits and pension levels downwards, rather than eliminating them wholesale – as in BI3 and BI4 – is the most feasible strategy of the options explored here. Nevertheless, the insight remains that highly dualised systems might present the most favourable conditions for reforms towards basic income, considering fiscal and distributional effects in combination.

It is worth reiterating that the schemes modelled here are highly stylised, and we restrict insights to the *relative* strengths and weaknesses of different types of basic income in different country contexts. That is to say, findings regarding anticipated levels of poverty or requisite tax rises associated with specific schemes are not supposed to be applicable to basic income in general. The schemes were not designed with the goal of feasibility in mind, nor are they exhaustive of the myriad combinations of policy design features (in relation to payment levels, adjustments to other benefits, and tax changes) that might exhibit more favourable results. Advocates may justifiably respond that there are better ways to design basic income. To repeat, our goals here were parsimony (to enable operationalisation across a large number of implementation modes and countries) and comparability, rather than optimisation or realism.

To foreshadow such responses, there are several features of the approach which might attract criticism. The operationalisation of the revenue-neutral basic income tax *as a flat tax* is one. We also decided that the tax base would be composed of all 'intermediate' disposable incomes – i.e., we included benefit and pension income that had not been withdrawn after offsetting changes to the welfare system that accompanied the basic income. We decided on these feature for reasons of simplicity of implementation in EUROMOD, and ease of exposition of results. However, we acknowledge the consequence of these decisions has been that the schemes were less progressive than they might have been. This might be partly responsible for the disappointing poverty alleviation credentials of the schemes modelled herein.

Another feature which might be criticised is the level of the basic income, which might be seen as unrealistically high. This criticism is addressed in footnote 2. Nevertheless, we acknowledge that further research is required to investigate smaller partial basic incomes which have been shown to have more favourable fiscal / distributional trade-offs.

Another potential criticism which might be levelled at our approach is the coverage of pensioners, and thus, the inclusion of adjustment to / elimination of pensions, in our schemes. It might be argued that pensions follow a separate logic to working age welfare – being based much more explicitly on the accrual of contributions – such that the distributional issues associated with replacing pensions with a uniform basic income are particularly acute. Pensions also contribute disproportionately to welfare

expenditure, so differences in contributory pension systems – rather than in working age welfare systems – might largely drive the differences in effects between countries we observe for these schemes. This can be criticised on the grounds that no-one is really proposing the elimination of pensions based on the accrual of prior contributions that we model here. Of course, not all our models do that, but it is fair to emphasise that basic income advocates usually view the policy as a top up to non-contributory benefits, rather than as a replacement for pensions (Van Parijs and Vanderborght, 2017).

Connecting fiscal and distributional issues to political supply and demand

We have suggested that the above analysis is important for determining the feasibility of different forms of basic income and how this may vary cross-nationally. Implicitly, we have assumed that the distributional and fiscal trade-offs will at least *partly* determine political supply and demand. What is the basis for this assumption?

Regarding public attitudes towards basic income, as shown in figures 24 and 25, we observe clearly correlations between poverty reductions in poverty and inequality, and support for basic income. This is based on wave 8 of the European Social Survey (ESS, 2018), which covers 23 countries²¹ and around 44,000 respondents surveyed in the year 2016. Respondents were asked if they were ‘strongly in favour’, ‘in favour’, ‘against’ or ‘strongly against’ basic income. The data are the ‘net’ levels of support at the country level – i.e. strongly in favour and in favour minus against and strongly against – and are weighted using post-stratification weights.

Concrete expressions of support for basic income by major political parties have arguably been more prominent in high spending, comprehensive welfare states than in more residual (and dualistic) ones (Chrisp, 2019 forthcoming). Indeed, where basic income has been mooted in the latter (e.g. by the Five Star Movement in Italy), it has actually taken the form of a means-tested, conditional safety net; the term basic income has been (mis)used as a ‘signalling’ device to indicate the expansion of social assistance coverage. The same is true in Spain, where the populist Podemos have diluted their initial basic income proposal to a means-tested minimum income guarantee. In Eastern Europe, basic income ‘proper’ has barely been discussed at all. In contrast, there have been prominent expressions of support by major political parties in Finland, the UK, France, and the Netherlands – notwithstanding possible charges of ‘cheap support’ (De Wispelaere, 2016).

This is perhaps surprising given our finding that some residual, dualistic welfare states could offset very high proportions of a basic income’s gross cost, to the benefit of a majority, for modes of implementation in which existing benefits and pensions are eliminated. However, as mentioned previously, the fact that existing welfare systems could be reformed by eliminating generous and regressive earnings-related benefits and pensions does not mean that it would be politically expedient to do so. Clearly, labour market insiders and pensioners are a powerful electoral force. Normative and cultural factors that preclude the erosion of the reciprocity principle may also be especially pervasive in countries in which basic income appears to be a good fit, based solely on abstract considerations of fiscal and distributional effects.

²¹ 18 of which are in the EU: these are Austria, Belgium, the Czech Republic, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, Lithuania, the Netherlands, Poland, Portugal, Slovenia, Spain, Sweden, and the UK.

Figure 24: Percentage pt. change in poverty rate and net BI support (support minus opposition) (weighted ESS data), BI2-BI5.

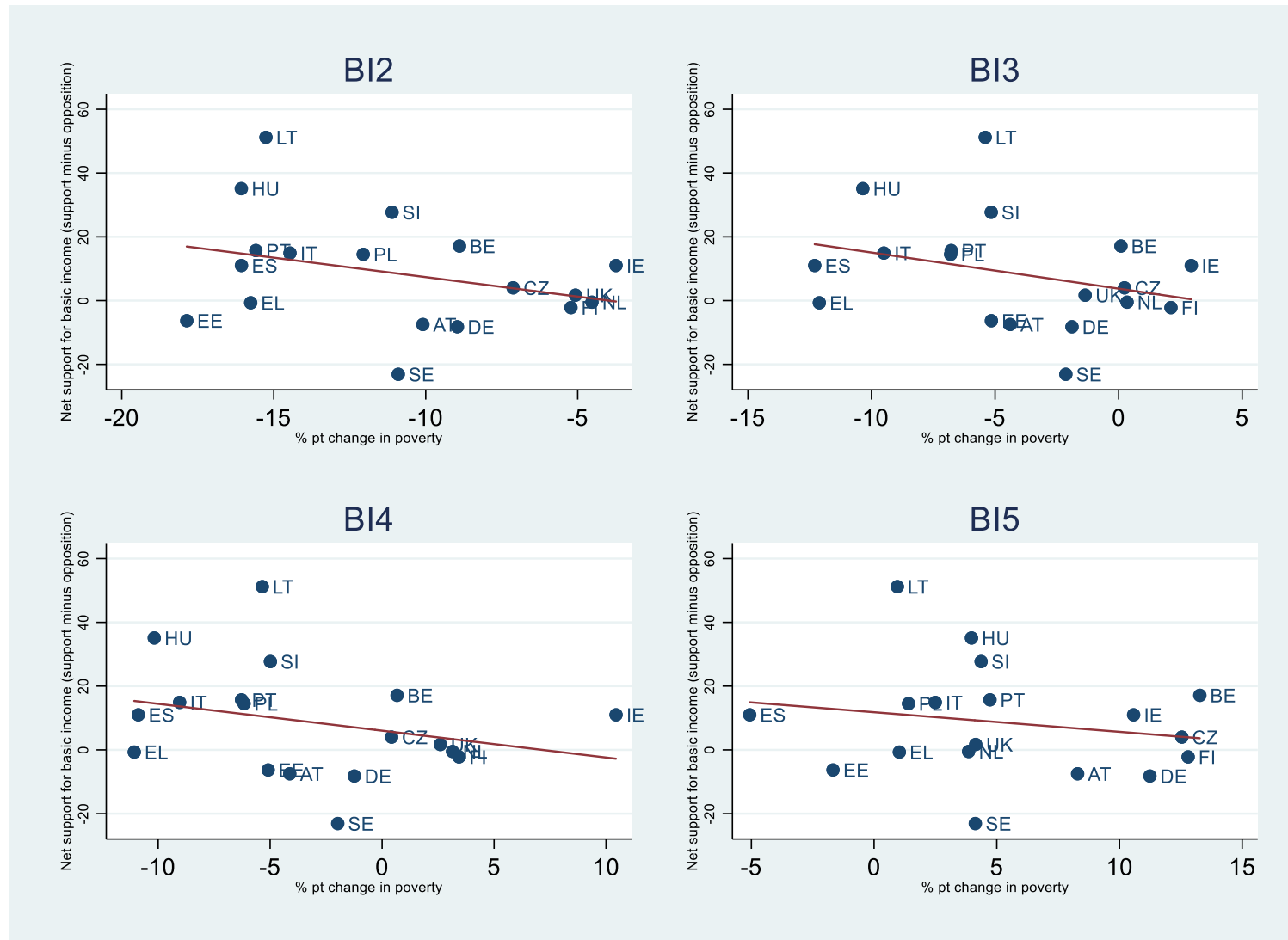
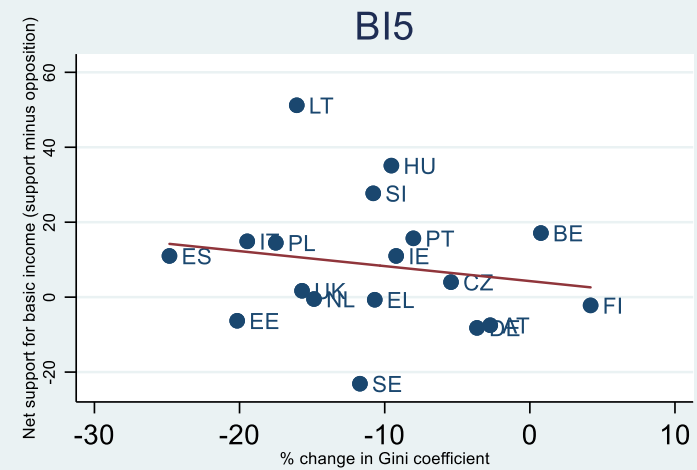
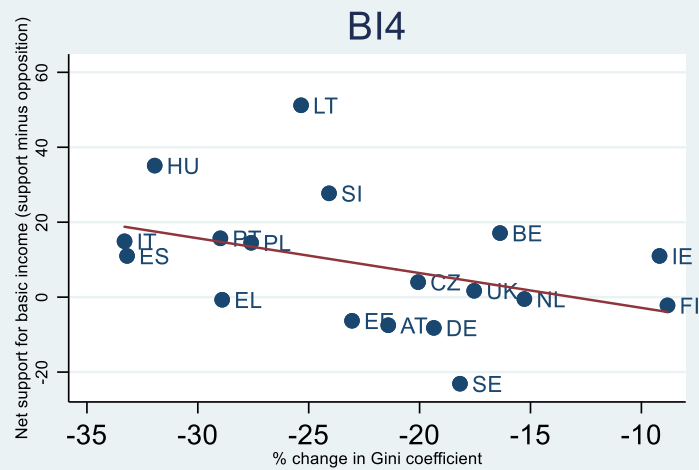
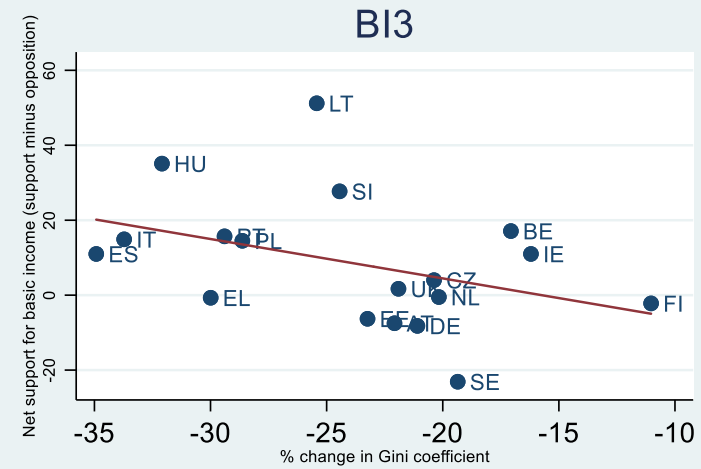
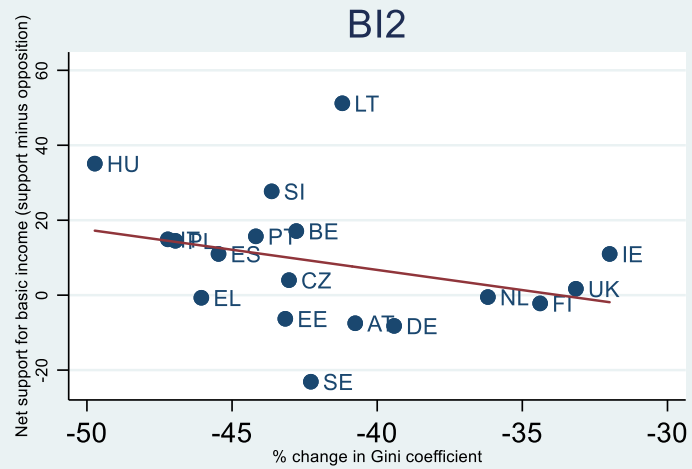


Figure 25: Percentage change in Gini coefficient and net BI support (support minus opposition) (weighted ESS data), BI2-BI5.



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