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DO PREFERENCES IN EU MEMBER-STATES SUPPORT FISCAL FEDERALISM?

by

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Do Preferences in EU Member-States Support Fiscal Federalism?

Abstract

The aim of this paper is to assess preferences with respect to fiscal federalism in EU member-states. In particular, we address the question of whether each EU country would - if the decision were taken by "majority voting" - or should – if the decision were taken by a social planner – favour centralisation or decentralisation of mutual risk insurance. Our analysis implicitly assumes that each EU median voter or each EU social planner takes the composition of the fiscal federation as given, leaving aside the issue of how many and which countries take part in the optimal EU fiscal federation. With majority voting, the median voter "individual" and the median voter "region" in each EU country are decisive. In this situation, the national (federal) government level for redistribution is preferred if the national ratio between median income and mean income is lower (higher) than the EU ratio. In contrast, were the decision taken by the social planner, the choice in favour of centralisation (decentralisation) would be derived from the maximisation of a social welfare function. In terms of European regions, the index of "jurisdictional distance" indicates that social welfare is maximised by (de)centralised redistribution whenever intra-national income dispersion is greater (smaller) than inter-national income dispersion. The results show that, for the large majority of EU member-states, when one of the two decision-makers prefers centralisation (decentralisation), the other has the opposite preference; moreover, the chosen government level is in most cases the same for interpersonal redistribution and inter-jurisdictional redistribution: what is good for the individual is also good for the nation.

Keywords: Income Distribution, Public Choice, Fiscal Federalism, European Economics.
JEL Classifications: D31, D7, H7.

1. Introduction

EU countries are presently designing constitutional guidelines for a future EU federation. The question we address in this paper is whether the EU member-states (henceforth, EUMS) of this federation would be willing to support a move from the present national systems of interpersonal and inter-jurisdictional risk insurance to "fiscal federalism", that is a fully centralised regime of mutual risk insurance, with a common tax rate, and all revenues of the central budget funding it.

The analytical scheme behind this paper is at the crossroad of two strands of literature: the public finance approach to redistribution as a public good (Hochman and Rodgers, 1969) and the public choice approach to the optimal government level for public goods when preferences are heterogeneous (Oates, 1972, Alesina and Spolaore, 1997). In the empirical part, on the basis of different measures of income distribution, the preferences in favour of decentralisation or centralisation for the EUMS are assessed by ranking income distributions.

The reason why social protection generally leads to redistribution across individuals, and inter-regional risk-sharing leads to redistribution across jurisdictions of a political entity (i.e. the regions of a country, or the nations of a federation) is the existence of differences in the probabilities of incurring an adverse event.[2] Under the hypothesis that mutual risk insurance has to be imposed by political command since it implies *ex post* redistribution,[3] the reasoning proceeds as follows. Let a EUMS express preferences about the level of government (either the country, or the European federation) entitled to organise mutual risk insurance. Assume two different possible decision-making mechanisms: "majority voting" (e.g. a referendum held in each EUMS), and the "social planner" of each EUMS. As regard to the first, in each country, the constituency is composed of the individuals and of the "regions",[4] respectively. Hence, the median income individual and the median income region of each member-state are decisive within each country. With regard to the second, national social planners express preferences for decentralisation or centralisation of interpersonal and inter-jurisdictional risk-sharing.

Whether EU countries would - if the decision were taken by the median voter - or should – if the decision were taken by the social planner – prefer centralisation or decentralisation of mutual risk insurance will be evaluated on the basis of two assumptions. First, since the median voter has a lower income than the average (the interpersonal income distribution is typically right-skewed), his objective is to select the government level at which redistribution is maximised. Second, the social planner's interest is to preserve social stability by preventing distributive conflicts due to high income disparities in the society. In other

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[2] The political institutions where the redistributive consequences of mutual risk insurance take place could be a country or a federation. In the first case, redistribution occurs across the country's regions, and in the second across the federation's nations. Therefore, in this paper the term jurisdiction denotes the lower level of government, whether a region or a nation.

[3] We deal with the redistributive consequences of the EU member-states' fiscal systems affecting the individuals (taxes and social expenditures) and regions (inter-jurisdictional transfers).

[4] By the general term "region" we refer to the different administrative units representing the sub-national level of government in EU countries.

words, the social planner will choose the government level at which the need for redistribution is minimised owing to a relatively lower income inequality.

On the basis of these two assumptions we evaluate the preferences in the case of majority voting and that of the social planner. Under majority voting, redistribution is preferred at national (federal) government level if the national median to mean income ratio is lower (higher) than the corresponding European ratio. In each EU country, the median voter is the individual, or the region, with median income. With the social planner, the choice between decentralisation or centralisation is made by looking at an indicator of the degree of inequality in income distribution across individuals and another referring to the regions of each EUMS, and comparing the respective national and European figures. With respect to the former, we rank the choices according to the Generalised Lorenz ordering. In particular, centralisation is preferred whenever the EU Generalized Lorenz Curve (henceforth GLC) dominates the national GLC. In the second case, the index of "jurisdictional distance" (henceforth *JD*) indicates that social welfare is maximised by centralised redistribution whenever income at the intra-national level is more dispersed than at the inter-national level.

The assessment of each country's preferences in favour or against fiscal federation excludes consideration of the outcome of the "participation game". How many and which countries would actually take part in a future EU fiscal federation is not a question addressed in this paper.[5]

Results show that for the majority of the EUMS, when centralisation (decentralisation) is preferred by one of the two decision-making mechanisms, the other has the opposite preference; furthermore, in most cases the same government level is chosen for interpersonal and inter-jurisdictional risk-sharing: what is good for the individual is, generally, also good for the nation.

The paper is organised as follows. In the next section we attribute redistribution to the presence of both individual and macroeconomic risks. In sections 3 and 4, we present the indices that will be applied to evaluate preferences. We argue that the efficiency-enhancing and the efficiency-decreasing features of *ex post* redistribution stemming from mutual risk insurance influence respectively the preferences of the median voter and those of the social planner. In section 5, the results obtained for the two decision-making mechanisms are presented. Section 6 outlines the conclusions.

2. Risk insurance and redistribution among individuals and jurisdictions

Economic uncertainty gives rise to both individual and macroeconomic risks. Individual risk deals with the contingencies influencing personal well-being (e.g. a high probability of poor health, poor employment opportunities, poverty, and so on). Since it is impossible to know precisely the chances of a loss and to rank individuals along a continuous scale of increasing risk, private provision of insurance suffers from adverse selection. "Actuarially fair" contracts are tailored to low risk individuals by private insurance companies,

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[5] In the subsequent participation game, each country's choice whether or not to join (and attempting to oppose other countries' applications, not only with respect to the actual EU member-states, but also to the twelve applicant countries) will be based on the solution to the "free-riding" problem of preference revelation and on expectations of the other countries' strategies and beliefs. This, in turn, will be influenced by the extent to which federal income distribution and median voter's income would vary, depending on which countries are expected to eventually participate.

while contracts offered to high risk individuals are burdened by very high "premia".[6] Therefore discrimination against high risk individuals arises, either because they cannot afford the contract or because they are offered no contract at all. This is the well-known "cream skimming" effect, i.e. the selection of low risk individuals only.[7] Another source of discrimination is caused by capital market imperfections. For instance, when the start-up of enterprises is hampered by the lack of credit facilities for liquidity-constrained young people or by credit rationing hitting low-income individuals with no collateral, the formation of human capital is hampered and the propensity towards risk and investment is negatively affected.[8]

Macroeconomic risk concerns jurisdictions and consists of the possibility that a community belonging to a larger political entity (i.e. a region of a country, or a nation of a federation) suffers from poor environment and resources, so that its growth opportunities are undermined. Indeed, a high probability of incurring asymmetric shocks negatively affects long-term macroeconomic performance. The lasting absence of positive externalities in backward jurisdictions causes "path dependency", which may augment the divergence of growth rates within a nation.[9] With respect to individual risk insurance, when heterogeneous jurisdictions with higher-than-average probability of recession are bound together in a common political entity, too high a premium may be required for participation. [10]

The insurance of both individual and macroeconomic risk face a trade-off between the principle according to which a contract must be actuarially fair (i.e. the probability of claiming a loss equals the price for a unit of cover) and the principle of horizontal equity (i.e. equal treatment for equals). The problem is that the latter principle demands co-existence inside a mutual risk insurance of *all* individuals and *all* jurisdictions. This may result in the provision of insurance that is actuarially unfair, since those who on average contribute the most end up benefiting the least.[11] In other words, heterogeneity in the exposure to risk of different individuals and jurisdictions translates *ex ante* risk insurance into *ex post* redistribution. When the cost of insurance for high risk individuals and high risk jurisdictions is burdened with high premia,

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[6] "Private redistribution contracts have to 'wait' until a person has reached the legal state of adulthood, but the most of the veil of ignorance have been lifted. When both the insurer and the insuree have the same knowledge about the inequalities then existing they will not be able to find a mutually agreeable redistribution contract. And when the insuree has superior knowledge, there will be the typical adverse selection problem, analysed so frequently in the literature" (Sinn, 1996, p.263).

[7] With regard to unemployment, it has been observed that "with private information, competitively determined arrangements will fall short of complete pooling, (so that) this class of models also raises the issue of social insurance: pooling arrangements that are not actuarially sound, and hence require support from compulsory taxation" (Lucas, 1987, p.62).

[8] A Pareto-improvement would follow were the credit system to support educational training of young people without collateral and reduce uncertainty undermining the capacity of low income individuals to take risks in the market (by public guarantees in project financing, etc.). See Aghion (1998), Aghion et al. (1999), Atkinson (1996, 1999a,1999b), Sinn (1995, 1996 and 1997).

[9] The problem of market failures determining high inequality and slow growth was formalised by Bénabou (2000).

[10] "Each country should hold a fraction of the pooled risks equal to its share of expected aggregate income, and a (positive or negative) safe asset (indexed bond) amounting to its specific risk premium (the difference between the risk premium corresponding to its share of the pool and the risk premium defined by the covariance of its own national income with the aggregate)". (See Dréze, 2000, p.342).

[11] One analytical difficulty with Welfare institutions is the variety of monetary and non-monetary benefits. However, if we think of services of social protection and of in-kind benefits as a sort of "internalisation " of monetary losses, that is as. insurance pay-outs that are saved by the insuree, both monetary and non monetary welfare provisions can be considered vehicles of redistribution.

bargaining on risk-sharing may get stuck. The absence of "insurance for all" can be detrimental in terms of dynamic efficiency.

The objective of risk-sharing is to offset cyclical fluctuations of individual income around the trend and those of jurisdictional income around the average federal income (only temporary rather than permanent shocks are dealt with). Historical evidence demonstrates that a "pooling equilibrium" is possible. Discrimination against high risk individuals and jurisdictions, which occurs whenever risk-sharing is made conditional on the payment of a premium, is avoided by political command. In many advanced countries the political process has created, across individuals who are heterogeneous in terms of income levels, a system of social protection that covers the risks of all the individuals in the national community. Welfare institutions impose a common standard in the protection against individual risks by providing universal access to public subsidies and services funded by proportional (or, sometimes, progressive) taxation and possible flat contributions to services and benefits in-kind. Pair-wise, jurisdictions heterogeneous in terms of GDP variations, but linked by strong cultural ties, have often agreed on a system of mutual risk insurance aimed at fostering correlation across business cycles and promoting convergence in growth rates. Nation-wide (or federal) public agencies may operate a system of inter-jurisdictional contributions and transfers, by taxing the jurisdictions where the GDP percentage increase is above the average, and then redistributing to the jurisdictions where this indicator is below the average.[12] Therefore, redistribution can be beneficial to individual well-being and jurisdictional dynamic efficiency. From the perspective of mutual risk insurance imposed by political command, ex post redistribution appears as a special kind of "public good".[13]

However, low risk individuals and jurisdictions may be willing to exploit the "exit" option and quit, respectively, a public system of social protection and federal inter-jurisdictional risk-sharing. If contracts respecting horizontal equity are too costly to them, low risk individuals advocate "freedom of choice", that is opting out the public system and purchasing contracts offered by private insurance companies at actuarially fair conditions. Alternatively, when labour is mobile, the Tiebout model (Tiebout, 1956) suggests that individuals may move across boundaries, that is "vote by their feet". Similarly, if the imbalance between contributions and transfers across jurisdictions too large, a group of regions experiencing a low frequency of

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[12] Two situations of dynamic inefficiency should be counteracted by funding reform policies. First, negative externalities hampering growth in jurisdictions that suffer from marginalisation due to backwardness. Second, the unbalanced integration process which tends to stem from specialisation and agglomeration factors leading to the concentration of investments in advanced sectors in those jurisdictions having higher proportions of human and social capital. In fact, this was the policy implemented by the European Union by supporting the development process of backward areas with structural funds. However, this strategy may not be sufficient to foster convergence across EUMS. As recently argued, "(t)here could be long-run polarisation of Europe into advanced regions with high incomes and low unemployment, and depressed regions with low incomes and high unemployment" (Braunerhjelm et al., 2000, p15).

[13] Risk-sharing can be seen as a special case of interdependence among utility functions, the hypothesis being that a portion of utility functions is upward-sloping, such that individual A's utility level varies directly with individual B's income. "Given interdependence among individual utility functions, it is possible that some redistribution will make everyone better off. Efficiency criteria can be applied , therefore, to redistribution of income through the fiscal process. If, for example, the utility of individuals with higher incomes depends upon and is positively related to the incomes of persons lower in the distributive scale, tax-transfer schemes which raise the disposable incomes of those in the poorer group may improve everyone's utility level (…) Redistribution through the fiscal process is just as necessary for the attainment of Pareto optimality (…), as the collective provision of conventional public goods" (Hochman and Rodgers, 1969, pp.542-3). According to this view, redistribution appears as a "public good", and the distinction between the allocative and the redistributive functions of the State withers.

negative asymmetric shocks may regard their income-related preferences as being "far" from the central government's uniform provision of public goods and struggle for secession.[14] Thus, the possible outcome is a "separating equilibrium", in which "clubs" of rich individuals and rich jurisdictions are formed.[15]

The search for a "separating equilibrium" is also motivated by efficiency considerations. The redistributive consequences of mutual risk insurance may damage the incentive system of a country, thus conflicting with efficiency. For individuals, too high taxation may diminish the propensity to invest. Due to moral hazard, public subsides may negatively affect labour productivity by reducing concern for health protection, labour effort and upgrading human capital. For jurisdictions, interregional transfers to counteract a short-term slump may easily become permanent, so that moral hazard reduces concern for promoting productivity growth and undertaking reforms to cope with asymmetric shocks with respect to average federal income. Centralisation permits the internalisation of spill-over effects, but is often considered welfare-decreasing with respect to fiscal competition among separate jurisdictional risk insurance systems: the latter may stimulate countries to introduce efficiency-enhancing reforms[16], while the former tends to reduce efficiency by granting excessive transfers to high risk individuals and backward jurisdictions[17].

In the next two sections, we argue that the efficiency-enhancing and efficiency-decreasing features of *ex post* redistribution stemming from mutual risk insurance influence, respectively, the preferences of the median voter and those of the social planner.

3. The median voter's preference about the government level

The median voter model (Hotelling, 1929, Downs, 1957) is employed as a decision-making mechanism for predicting the preferences of the EUMS regarding whether social protection and inter-regional risk-sharing should be centralised at the federal level or remain a national responsibility. A direct voting procedure is

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[14] Oates' Decentralisation Model (See Oates, 1972) criticises central public goods provision just on this grounds. It is worth noting, however, that a powerful simplification is adopted by Oates: the "correspondence principle". This principle imposes the condition that all participants in a political entity (individuals or local communities) share the same preferences. It is a very demanding condition which amounts to assuming that between the political jurisdiction and the economic jurisdiction – the area on which a public good spreads its effects - there is a complete matching. In other words, it is assumed that there are no spill over effect – whether in the form of public goods having externalities for other jurisdictions or of mobility across jurisdictions as a consequence of distortions provoked in individual utility functions.

[15] Jurisdictions subject to discrimination could make recourse to issuing bonds (with an annual dividend based on the nation's income) and portfolio optimisation by exchanging these bonds or by trading on the financial markets. However, recourse to the market is in turn in danger of facing another failure, due to the higher exposure of backward jurisdictions to capital market imperfections such as high volatility and credit rationing. With respect to the former, the bond issuing may be exposed to rapid changes in market prices with dangerous fluctuations in confidence in both the political and the economic processes, thus virtually excluding "high risk" jurisdictions obtaining macroeconomic insurance in the financial markets. With respect to the second, high risk jurisdictions may find difficult to self-insure when capital and credit markets are eager to reduce the degree of risk of their portfolio.

[16] "(N)ational and local authorities will provide better and more efficient infrastructures if that is important to attract firms and individuals; they have incentives for improvements in the tax system if factor owners can escape their share of burden by moving; and competing local authorities may be more innovative when it comes to constructive industrial policy than the Brussels burocracy." (Braunerhjelm et al., 2000, p.19).

[17] "(I)n a decentralised regime, all countries have to rely on their own resources to finance redistribution. This limits the resources available to subsidise unemployment" (…) "Regions with looser administrative standards can 'free-ride' on

assumed to take place within both electorates composed of two analytical entities - individuals and jurisdictions (e.g., the regions of the EUMS) – in order to decide the level of government in charge of mutual risk insurance. Under a rule of majority voting, the preference of the voter occupying the median position in the range of the single-peaked preferences on a single issue, is decisive in identifying the most preferred alternative. Voters compare the redistribution existing in their country with the one that would prevail in a federation of all EUMS. Since decisions on income distribution are based on willingness-to-pay, the median voter is defined as the individual possessing the median income.

It has been contended that the median voter theory is a reliable tool to appraise of how democratic societies decide on the amount of redistribution.[18] Therefore, this decision mechanism needs to be scrutinised to see whether passes the test of explanatory reliability. It is necessary to assess whether it is appropriate to assume that the preferences across individuals of each EUMS (concerning the level of government at which to organize mutual risk insurance) can be assessed on the basis of the median voter's preference. For this purpose, we have tested a regression model where the distance between mean and median income is taken to determine the extent of income redistribution.[19] In those countries where mean and median income are far apart – i.e. income is more unequally distributed - a relatively poor median voter would be more likely to vote in favour of more redistributive policies than in countries where income distribution is less unequal. Therefore, one would expect a negative relationship linking the dependent to the independent variable. In order to measure the amount of redistribution in a country, income is calculated using two different specifications: Factor Income (henceforth FI) including all pre-tax earned income (wages and salaries, self employment and cash from property) and Disposable Income (henceforth, DPI), obtained after allowing for taxes, social contributions and all public transfers. Using the LIS dataset covering EUMS,[20] a pooling OLS regression was run relating income redistribution to the ratio between median and average factor income, $\left(\dfrac{YmdFI}{YmeFI}\right)$, expressing how distant the median voter is from mean income. The dependent variable measures the reduction in inequality by the difference between Gini indices on factor income ($GiniFI$) and disposable income ($GiniDPI$).

(insert Figure 1)

The regression model was specified as follows:

(1)
$$GiniFI_i - GiniDPI_i = a + b\frac{YmdFI_i}{YmeFI_i} + d1_1 + d2_i + u_i$$

where $d1$ and $d2$ indicate dummies included to allow for structural differences in preferences of groups of similar countries, associated with different models of Welfare State[21]: the first ($d1$) represents the peculiarities of a more generous social-democrat model in Scandinavian countries (Denmark, Finland and Sweden) and is expected to have a positive sign, while the second ($d2$) covers those countries characterized by a narrower Welfare State and includes both catholic Mediterranean (France, Italy and Spain) and liberal Anglo-Saxon (Ireland and the UK) countries and is expected to have a negative sign. The remaining countries are characterized by middle performance and are taken as the reference countries. The latter belong to the so-called continental corporatist model (Belgium, Germany, Luxembourg and the Netherlands). The regression is meant to test the reliable of the postulated theoretical relationship concerning the extent to which the lower-than-mean income level of the decisive median voter reduces income inequality as measured by the difference between ex post and ex ante Gini coefficients.

Table 1. An empirical test of the median voter hypothesis

Variable	OLS estimate	s.e.	t-value	p-value
a	0.622478	0.14042	4.433	0.00001
b	-0.476471	0.15183	-3.138	0.00170
$d1$	0.047928	0.00982	4.882	0.00000
$d2$	-0.073678	0.01838	-4.008	0.00006
$F_{3,35} = 14.5$	R² adj. = 0.52	JB/SK= .97	BP = 4.20	Corr.xy=0.22

The results in Table 1 show that the median voter hypothesis is consistent with the empirical evidence. In the regression, all the parameters have the expected sign and are highly significant. Income redistribution in EUMS during the last twenty years is explained by the ratio between the median and the average factor income. The independent variable is able to explain over 50% of the variability of the phenomenon. The relevant Chi-square critical values state that for both tests - the Jarque-Bera/Salmon-Kiefer test for errors being normally distributed and the Breusch-Pagan test for homoskedasticity – the null hypotheses can be accepted at a very satisfactory significance level.

As stated above, *ex ante* insurance entails *ex post* redistribution. Empirically, income distribution is skewed to the right. Hence, the median voter's income is lower than the average, implying that the median voter would benefit from redistribution (along with the majority which he determines). It is plausible to assume that in this situation he will express a preference for that government level - either national or federal – that is most likely to ensure the greatest redistribution. In each country, the median income individual would try to anticipate the decision taken by the European Federation's median voter. At the jurisdictional

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[21] Welfare State models incorporating different socio-economic characters were devised at the beginning of the nineties by Esping-Andersen. The general reference is Esping-Andersen (1999).

level, the median income region of each nation would try to anticipate the decision of the median voter region of the European Federation.

4. The social planner's preference for government level

Implementation of a federal budget would impinge on income distributions of EUMS, leading to a redistribution of resources across nations. After the passage to a common tax rate and common revenues, the higher is income heterogeneity across the nations of the federation, the greater will be both interpersonal and inter-jurisdictional redistribution, adding to that already taking place inside each country from rich to poor individuals and jurisdictions.[22] First, low risk individuals and jurisdictions may be afraid that a "high" tax rate will be chosen for running mutual risk insurance, while high risk individuals may expect that a "low" federation-wide tax rate is likely to bring about the shrinking of overall social protection and inter-jurisdictional transfers. [23] Second, common revenues are likely to entail expectations by the high risk individuals and jurisdictions – belonging to the countries of the federation with less-than-average (higher-than-average) income - of becoming net beneficiaries (contributors). Therefore, the existence of a stable equilibrium with a common tax rate requires that the countries participating in the federation have not too dissimilar income distributions and tax revenues, otherwise a sharp increase in redistribution could lead to distributional conflicts.[24]

The national social planner is led to believe that, the wider is income dispersion among countries, the more the formation of a federation may coincide with a worsening of distributive conflicts. In turn, the worsening of distributive conflicts could work as an incentive for jurisdictions – for instance, the "rich" regions of an EUMS - to secede from the federation. [25]

Thus, in expressing preferences concerning fiscal federalism, national social planners will take into account whether social instability would be magnified. Any social planner committed to national social welfare is principally concerned with preserving social stability from possible threats deriving from the unification of the risk-sharing systems. He would prefer the redistribution stemming from risk-sharing to take place at that level – the nation or the federation - at which redistributive conflicts connected with fiscal federalism are minimised.[26] Thus, the critical question for each social planner is whether national income is more or less dispersed than that within a potential European federation. The less the dispersion, the lower the

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[22] On this issue, see Persson and Tabellini (1996).

[23] With low labour mobility, the low risk individuals demand the right to set up their own private insurance, which constitute a substitute to "voting by their feet". This case is differentiated from secession by the low risks entailed as remaining residents of their country; they are subject to compulsory contribution to public social insurance and thus have to make extra -savings in order to pay for private insurance contracts.

[24] This is demonstrated by Bolton and Roland (1997), pp.1082-84.

[25] With secession, the dispersion of average income between regions is more important than income inequality within each region. The reason is that regions with different average incomes belonging to the same nation are likely to have diverging preferences concerning redistribution policies. The nation is then exposed to break up, due to attempts to secede by the rich regions (See Bolton and Roland, 1997).

[26] Furthermore, against credible threats of secession, enforceable constitutional obstacles should be devised in a federation, (such as pecuniary sanctions to be paid by the seceding jurisdictions, the reimbursement of a larger proportion of the national public debt than its population share, etc.).

amount of redistribution required, and the greater is social stability. In cases where intra-national conflicts - among individuals and jurisdictions, respectively – are severe, he might expect that national divisions could more easily be calmed down in the more variegated federation-wide socio-economic environment.[27] A higher (lower) dispersion in the intra-national income distribution, compared to the federal one, would then make the federal (the national) government the social welfare maximising organisational choice. The maximisation of social welfare in each country then coincides with the minimisation of redistribution. Social planners will be in favour of national risk-sharing or – alternately - fiscal federalism, depending on whether the country or the federation would have the smaller *dispersion* in interpersonal income distribution and the smaller *distance* among the income distributions of jurisdictions.

Two indicators were used, one for individuals and the other for jurisdictions. Let us start from income dispersion across individuals. In order to rank the interpersonal income distributions of the EUMS according to their degree of income inequality, we exploit the correspondence between the dominance among social welfare functions and among Generalised Lorenz Curves. In intuitive terms, the minimisation of redistribution requires the upper (lower) tier of government be in charge of redistribution when the intra-jurisdictional dispersion of preferences happens to be bigger (smaller) than the inter-jurisdictional dispersion of preferences. The social planner chooses decentralisation (centralisation) when the national mutual risk insurance faces a less (more) unequal interpersonal income distribution, than that of a European fiscal federation, as measured by the national and EU "generalised" Lorenz curves. The GLC are used in order to improve the ranking of income profiles. Being the GLC scaled up by the average income, this criterion allows consideration of higher incomes to be added to the preference for a more even income distribution, thereby combining efficiency and equity requirements.

In formal terms, the social planner ranks the welfare of different nations by judging income distributions on the basis of a social evaluation function, $W(Y)$, where $Y = (y_1, y_2, ..., y_N)$, that is non-decreasing S-concave.[28] Let's denote Ψ the class of non-decreasing S-concave functions. Shorrocks (1983) has shown that an unambiguous ranking for all $W(.) \in \Psi$ obtains if and only if the generalised Lorenz curves do not intersect.[29] By reducing the emergence of crossings among the Lorenz curves, the use of GLC enlarges the possibility of ranking income distributions. If the GLC cross only once, by the additional condition of the "principle of diminishing transfers",[30] it has been proved that the distribution with a lower mean can be recommended if its variance is sufficiently lower than that of the distribution with a higher

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[27] In many European countries, the commitments taken at the EU level, such as the need to abide by the EMS fixed exchange rates accord, or compliance with the "Maastricht criteria", have been used by national authorities in order to force social groups to stop bargaining on the division of resources. The seminal paper on the side-effects of European commitments inside the European countries, is Putnam (1988).

[28] The function $W(.)$ is said to be Schur-concave if $Y \in \Re^N$ implies that for all bistochastic matrices Q of order N, $W(QY) \geq W(Y)$, hence S-concavity means that the function assumes a greater value whenever a Pigou-Dalton transfer is made. Note that an S-concave function is necessarily symmetric.

[29] $W(Y) \geq W(Y')$ for all $W(.) \in \Psi$ iff $GL(Y, p) \geq GL(Y', p)$ for all $p \in [0,1]$, where $GL(.)$ indicates the generalized Lorenz curve constructed by scaling up the ordinary Lorenz curve by the mean of the distribution.

mean.[31] According to these criteria, in section 5 we will be able to rank all the countries *vis-à-vis* the European Union GLC.

Let us now deal with income dispersion across the jurisdictions, that is measured by an index we term "jurisdictional distance" (*JD*).[32] The intuition behind this index is the following. When the national social planner compares national and federal income distributions, the minimisation of redistributive conflicts corresponds to the lowest degree of dispersion of income levels across the individuals and the jurisdictions ("regions") of the country.

We may term the government level at which redistribution is minimised (nation or federation) the "optimal redistributive area". This definition is reminiscent of that of the "optimal currency area". This well-known theoretical concept is often used to determine the optimal size of the club of countries adopting a common currency. The condition for a group of countries to form an "optimal currency area" is to minimise the costs in terms of "real divergence". In fact, the impact on output and employment of a negative shock may be very different across jurisdictions and cause macroeconomic performances to diverge.[33] Similarly, the condition for an "optimal redistributive area" is to minimise the costs in terms of distributive conflicts. The government level that minimise redistributive conflicts is that showing the least heterogeneity in terms of distances among income distributions across jurisdictions. Hence, the national social planner prefers that mutual risk insurance is organised by the country or by the EU fiscal federation after having compared the "jurisdictional distances", i.e. the measures of diversity across the income distributions of its country's regions or across the income distributions of the member-states of the European federation.

The "jurisdictional distance" allows us to compare the homogeneity of jurisdictions belonging to a nation with the overall heterogeneity among the nations of a federation. If the distribution of a variable such as income is very compressed *within* a nation - but very diverse *between* the nations composing a possible federation - then we consider the federation "polarized". Polarization is fundamentally different from inequality and thus cannot be measured by any Lorenz consistent index[34].

Let's take individuals *i* and *j* that belong to different jurisdictions (regions or nations) of a government entity (nation or federation, respectively). *i* feels different from *j*, actually he is alienated from *j*, and from all the *j*'s that exist in the society: $S(i) = \sum_{j=1}^{N} Kov_{ij} \boldsymbol{p}_j$ represents the separation that *i* feels from *j*

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[30] The principle of diminishing transfers requires that a fixed-sized income transfer should have a greater effect on social welfare when it occurs at lower income levels. See Lambert (1989), p.74 .

[31] Dardanoni and Lambert (1988), in particular pp.10-11.

[32] Drawing on the index of polarization (Esteban and Ray, 1994), an index of social distance has been derived in D'Ambrosio (2001). The "jurisdictional distance" is an application of that index.

[33] A preference for a monetary union is associated with negligible losses in income and employment after a negative asymmetric shock (for instance, an upward shift in unit labour costs with imperfect labour market flexibility).

[34] Suppose, for example, that the distribution of household income within a country is uniform over income levels 0 to 1000. Now imagine a transformation that causes the income of all the households with income between 0 and 500 to converge to 250, and the income of all the households in the interval 500 and 1000 to converge to 750. Any Lorenz consistent inequality measure will register an unambiguous decline of inequality from this transformation. However, clustering has nevertheless increased. This society loses its middle class and polarizes to the two-point distribution at 250 and at 750.

where $Kov_{ij} = \frac{1}{2}\int\left|f_i(y) - f_j(y)\right|dy$ is the Kolmogorov measure of variation distance[35] between the distribution of income of the jurisdiction which i belongs to, $f_i(y)$, and the distribution of income which j belongs to, $f_j(y)$, and $\boldsymbol{p}_j$ is the relative frequency of group j. The effective separation, however, depends on how many individuals similar to i are in the society, since i identifies with individuals belonging to his jurisdiction and the more individuals, the greater the alienation felt. $E(i) = S(i)\boldsymbol{p}_i^a$ is the effective separation and α is the importance that we attribute to this phenomenon. Jurisdictional distance is the sum, over all the individuals, of the effective separation[36] that they are feeling:

$$JD(\boldsymbol{a}) = \sum_{i=1}^{N}\ \sum_{j=1}^{N}\boldsymbol{p}_i^{1+a}\boldsymbol{p}_j Kov_{ij}$$

$JD(\boldsymbol{a})$ ranges between 0 and $\left(\frac{1}{2}\right)^{1+a}$. The maximum is achieved with only two groups of the same size and no overlap. The index can be normalised to take values between $[0,1]$ by multiplying by 2^{1+a}.

Therefore, the measure of jurisdictional distance captures the lack of overlap among income distributions of a nation's or a federation's different jurisdictions, and the consequences that these dissimilarities have for the behaviour and preferences of each individual. Depending on the shape of the income distribution, the more individuals in each jurisdiction have a different income level with respect individuals in all other jurisdictions, the higher the alienation felt in the jurisdiction. In order to assess whether, for each nation, social welfare is maximised by national or federal redistribution, we compare the jurisdictional distance across the jurisdictions of each EUMS with the same measure computed across EUMS (which are jurisdictions of a hypothetical Federal Europe). When the degree of dispersion of the densities of national jurisdictions is lower (higher) than the degree of dispersion across EUMS, the national social planner will prefer organising redistribution at the national (European) level of government. In other words, if the jurisdictional distance is lower among jurisdictions within a nation than among the EUMS, then it is socially preferable to maintain redistribution at the national level.[37]

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[35]The Kolmogorov measure of variation distance is a measure of the lack of overlap between groups i and j. $Kov_{ij} = 0$ if $f_i(y) = f_j(y)\ \forall y$, it reaches the maximum, $Kov_{ij} = 1$, if $f_i(y)$ and $f_j(y)$ do not overlap. The distance is sensitive to changes in the distributions only when both take positive values, being insensitive to changes whenever one of them is zero. It will not change if the distributions move apart, provided either that there is no overlap between them or that the overlapping part remains unchanged.

[36] A similar interpretation can be given to the Gini coefficient, except that with the Gini it does not matter how many agents are similar to the one under analysis; in other words, with the Gini coefficient the separation and the effective separation coincide. Hence, the proportionality between the *JD* and the Gini defined in logs when á = 0.

5. Results

The empirical evidence is based on the European Community Household Panel (ECHP). We focus on the year 1996, which was, at the time we start this project, the latest available wave for this dataset providing information on household incomes for 14 EUMS (all but Sweden). Income distributions were estimated for total household income from any source, expressed in Purchasing Power Standard (national currency divided by PPP) and corrected by sample weights and household size through an equivalence scale (square root of the household members). Indices for the median voter, as well as for the social planner, were derived from the income distributions at the three relevant aggregation levels (regional, national and EU).[38]

Table 2. The Median/Mean income ratio for individuals and regions in EUMS

Countries	Individuals	Regions
Austria (AT)	0.7800	0.7669
Portugal (PT)	0.8363	0.8127
Spain (ES)	0.8427	0.8448
United Kingdom (UK)	0.8430	0.8382
Ireland (IE)	0.8478	0.8374
Greece (GR)	0.8675	0.8494
Luxembourg (LU)	0.8759	-
Netherlands (NL)	0.8791	-
European Union (EU)	0.8811	0.8736
France (FR)	0.8835	0.8879
Italy (IT)	0.8989	0.8822
Germany (DE)	0.9157	0.9109
Belgium (BE)	0.9165	0.9161
Finland (FI)	0.9239	0.9183
Denmark (DK)	0.9408	**-**

Table 2 shows the results for the median voter individual and median voter region by comparing the national median to mean ratios with those calculated for the EU median voter individual and jurisdiction.

(Insert Table 3 and Figure 2 here)

Table 3 shows the preferences of the national and EU social planners, derived on the basis of the GLC and the *JD* indices for individuals and jurisdictions respectively. Figure 2 presents the GLC diagram. The only national GLC intersecting with the European Union GLC are those of Finland and Ireland. Since both these curves are located under the EU one along almost the whole line, one may think that they show more income

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[37] Esteban and Ray (1994) have introduced a model of individual attitudes in a society to formalise the intuitions reported above and use some axioms to narrow down the set of allowable measures.

[38] Since the ECHP database gives no regions for Denmark, Netherlands and Luxembourg, preferences stemming from evaluating the regional median voters and the *JD* cannot be computed. Therefore, these countries appear in parenthesis.

inequality than the EU curve. However, one of the advantages of GLC is that they measure not only the degree of inequality but also permit absolute income levels to be taken into account. As the intersection for Finland and Ireland occurs from above, the implication is that the poor are better off in these countries than in the EU on average. Therefore, one may conclude that the two social planners consider the system of national social protection preferable to the federal one from the viewpoint of social stability.

Figure 3. The results

<div align="center">Majority Voting</div>

INTERPERSONAL REDISTRIBUTION	INTER-JURISDICTIONAL REDISTRIBUTION		
		Centralised	Decentralised
	Centralized	IT, BE, FR, FI, DE, (DK)	
	Decentralized		ES, PT, GR, IE, AT, UK (L, NL)

<div align="center">Social planner</div>

INTERPERSONAL REDISTRIBUTION	INTER-JURISDICTIONAL REDISTRIBUTION		
		Centralised	Decentralised
	Centralized	ES, PT, GR	IT
	Decentralized	IE	DE, FR, FI, BE, AT, UK (DK, NL, L)

Figure 3 offers a synthesis of the preferences expressed by the median voters and the social planners: for simplicity, the government level in charge of mutual risk insurance at the individual and jurisdictional levels is labelled decentralised or centralised redistribution.

The first result is that in almost all cases the same preference (either centralisation or decentralisation) is indicated in the two dimensions of interpersonal and inter-jurisdictional redistribution for both decision-making mechanisms. In fact, the cells referring to the mix centralisation-decentralisation are always empty, but for Italy and Ireland in the second section of Figure 3. Therefore, what is good for the individual is also good for the nation.

The second result is that in most cases the member-states that occupy a position in the first section of Figure 3, where the median voter results are summarised, are located in the opposite position in the second section of the same figure, where the results of the social planner's choice are reported. Indeed, the two decision-makers, by pursuing opposite objectives, end up favouring opposite choices. On the one hand, the median voter, whose income is always below the mean, prefers that government level at which redistribution is highest; on the other hand, the social planner, oriented towards smoothing distributive conflicts, prefers the government level with the least income dispersion. For most of the countries for which the social planner

prefers decentralised redistribution, centralised redistribution is preferred by the median voter, and vice-versa.

An important aspect of the disagreement between the median voter and the social planner shows up in opposite preferences being expressed in the rich and poor EUMS. Our empirical findings are that in rich countries like Germany, France and Finland the median voter and the social planner are divided. The social planner's choice is in favour of decentralisation, implying that individuals and regions are assumed, respectively, less unequal and less divided internally than at the EU level. On the contrary, in voting for centralisation (both at the individual and the regional levels) the individual and regional median voters seem to be "richer" internally than at the EU level. In short, in these countries, a social planner oriented towards the minimisation of distributive conflicts thinks that a national Welfare State is a better choice; while the median voter thinks that redistribution is maximised in a Federal Europe. Just the opposite happens with the "Cohesion countries". Our empirical findings show that in these most backward countries of Europe - namely Spain, Portugal, Greece and Ireland, for which the European Commission has set up the financial support of structural funds - the opposite choices are selected. The national social planners' preferences are in complete accord with the preference for centralised redistribution implicit in this special institutional arrangement negotiated by national authorities with the EU Commission. In fact, EU centralised redistribution is the social planner's preference only in the "Cohesion countries" (Ireland is a partial exception since at the interpersonal level decentralisation is preferred). However, by looking at the other decision mechanism, decentralisation (a national Welfare system and national inter-jurisdictional transfers) is chosen by the median voters. Again, our explanation for these opposite preferences is that governments prefer minimise distributive conflicts and move redistribution to a federal level, but individuals (the median voter) and local communities (the regional median voter) are afraid that a wealthier-than-them EU median voter will vote for a lower rate of redistribution.

Some remarks regarding single countries are also worth emphasising. In Italy, strong support for a Federal Europe is traced to the well-known characteristics of being a very unequal and very divided country. Consistent with this interpretation, Italy has the majority voting for centralisation when the decision is taken both by the individual and the regional median voter. However, the national social planner prefers decentralisation for inter-jurisdictional redistribution and centralisation for interpersonal redistribution. This suggests that at the intra-national level income inequality is larger, and per capita income "regional" disparity smaller, than at EU level. This is just the opposite of Ireland. Pair-wise, the United Kingdom, allegedly the least pro-European country, appears - in both the individual and jurisdictional dimensions and for both decision-making mechanisms - in the "decentralisation" cell. Not surprisingly, Austria, a country with a large portion of the electorate strongly opposing to an European Federation, is the only other country with the same results.
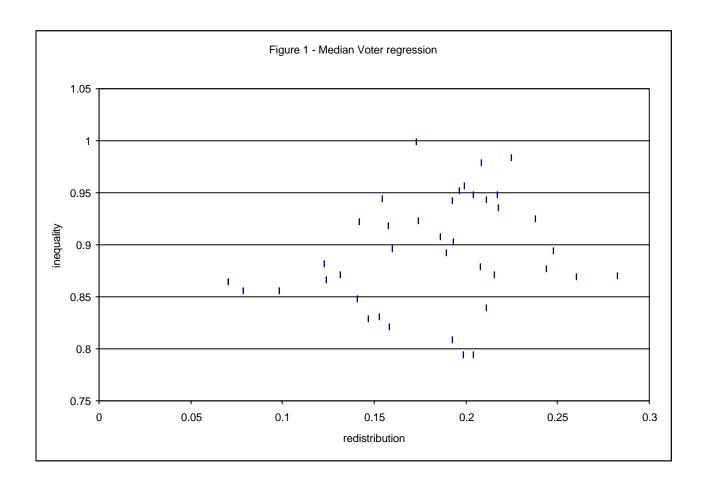
6. Conclusions

The aim of this paper was to assess what are the preferences in the EUMS regarding "fiscal federalism". The general finding of our investigation is that a reason can be found for the so-called "negative integration" that the EUMS are presently experiencing. The absence of active policies to foster harmonisation among fiscal systems, not to say of the project of Fiscal Union, can be explained by two intersecting sharp divides: in some member-states (the "Cohesion countries") where citizens and regions seem willing to keep their national institutions for interpersonal and inter-jurisdictional risk insurance, the social planner instead thinks that social welfare could be better pursued by EU centralisation; in member-states where citizens and regions seem to be willing to transfer risk insurance to a Federal Europe (Germany, Belgium, France, Finland, and Italy, the latter except that for interpersonal redistribution), the social planner supports the national system both at the inter-jurisdictional and interpersonal levels.

An insight from these results is that the objective of majority of citizens and jurisdictions of the EUMS – voting for the government level which maximises redistribution – is bound to conflict with the objective of social planners - that is to smooth social and territorial divisions, thus implicitly searching for less redistribution. Another possible remark is that the decisive jurisdictions voting in favour of EU centralisation may express opposition to their "central" government. This is more likely in the case of divided countries such as Italy, Belgium, and, from different viewpoints, also Germany and France.

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Figure 1 - Median Voter regression

Table 3. Generalized Lorenz Curves (a: Vemilies and b: Var

Figure 3 - Generalized Lorenz Curves