Legitimation of inequality and the role of educational systems: A joint mean & dispersion model

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Abstract

The research about the public opinion on economic inequalities focuses on the legitimation issue and the average score on redistribution opinions. However the factors that prevent the emergence of a widely held opinion on economic redistribution by causing deviations from the average evaluation of inequalities remain obscure. Thus we construct a joint-model of factors that shape the mean and dispersion of public opinion on economic inequalities. We find that the increase in the level of tracking of education system contributes to the dispersion of the public opinion on economic redistribution. This may affect the cohesion of contemporary societies adversely.

Introduction

Public opinion on economic inequality is of central sociological concern for two reasons. First, by examining opinions on issues like income redistribution, we get informed about the level of *social cohesion* in a society. If socio-structural positions, as for example identified by social class, strongly affect the extent to which people would desire income redistribution, it can be maintained that the cohesion at societal level is threatened. Clashes between social classes may then arise, and, irrespective of their revolutionary intensity, such clashes are harmful to the stability of societies. The current financial and economic crisis illustrates the rapidity with which public opinions on legitimate income differences can change, and how such changes may lead to lower levels of social cohesion among different social groups in society. Second, knowledge about public opinions on income redistribution informs us about the public *legitimation* of situations which are, at least in part, a consequence of politics. If public opinion on tolerable inequalities among populations differs strongly from the existing income distribution, it can be maintained that the political field is subject to a legitimation crisis (Alesina & Glaser 2007).

These two issues imply that the sociological question on public opinions about economic inequality is situated at the crossroads of two core research problems of sociology: the question of inequality instigated by Karl Marx ("Who gets what and why?") and the question of social cohesion first asked by Thomas Hobbes and later Emile Durkheim ("How is it possible that members of society live together peacefully?").

Empirical research has, however, not adopted models that adequately study the central concerns of the field. Existing research has thus far mainly looked at the *average score* on redistribution opinions. The central concern is then with inequalities among groups with regard to their opinions (References to be added here). As such averages can be related to existing income distributions, researchers have been mostly concerned with the legitimation issue, and less with social cohesion. Little attention has been devoted to the employment of a statistic that is ultimately concerned with social cohesion: the *dispersion* in opinions. This lack of attention is unfortunate, as a study of dispersions helps us to understand to what extent members of populations have a similar view regarding redistribution of incomes, which is clearly relevant for studying social cohesion. Interestingly, cross-national variations in average opinions are found to be different from variations in dispersions; members in conservative welfare states have a strong average preference for redistribution, while the dispersion within those countries is also high (Jaeger 2009).

In short, the emergence of a particular public opinion about income inequalities can be properly understood only if the factors that affect both the mean and the dispersion of

preferences are simultaneously examined. In this paper we do this with a data set that covers 17 countries. Our aims are twofold. First, we aim to contribute to the development of models to examine means and dispersions in outcomes simultaneously (Western & Bloome 2009; Jaeger 2009, Smyth et al 2001, Aitkin 1987). Second, our substantive aim is to examine cross-national variations in public opinions on economic redistribution, and focus on the impact of national educational institutions on means and dispersions in judgment on income inequalities. Our results demonstrate that strongly tracked educational systems increase the dispersions in opinions on redistribution, controlled for a variety of other (related) institutions and factors, such as social policy and factual inequality in the society. This gives us ground to believe that the higher levels of dispersions in conservative welfare states as demonstrated by Jaeger (2009) are in fact caused by the strongly tracked nature of many educational systems in conservative welfare states. On a wider scope, we may adhere to views expressed by T.H. Marshall (1950) and Esping-Andersen (1993) that institutions in conservative welfare states often result from paternalistic motivations, and that such institutions bring a threat to the social cohesion and legitimation of contemporary societies.

Theoretical Framework

Institutional effects on opinions about economic redistribution have since long been studied (Alves & Rossi 1978, Hermkens and Boerman 1989, Svallfors 1997, Funk 2000, Fong 2001, Linos & West 2003) . However, what has been ignored in the field is how educational institutions affect individual's opinions on inequality. Educational institutions are likely to be of importance, as personal values and opinions are established during the formative phase in life, and are very stable across the life course (Hyman & Wright 1979; Inglehart 1990; Pascarella & Terenzini 1991). We expect threefold impact of educational institutions on opinion on inequality: the direct implications of institutional characteristics, the influence resulting from the impact of education on income levels and the influence generated by the cultivation of civic virtues by education.

An institutional characteristic that is of particular importance, we expect, is the extent to which systems stratify students in separate schools early in the school career. In strongly tracked systems that are characterized by external differentiation between schools, students are selected in separate school buildings, or even separate organizations. Through this stratifying nature of educational systems, students in their formative phase are positioned in structural locations that are highly predictive of the future career and their eventual position in the social stratification. Students in the lower tracks are well aware of their enrolment in non-academic education, preparing for employment in the skilled working class rather than for tertiary education. Students in the academic track are aware of their relatively advantaged position, leading to university

qualifications and advantaged structural locations in the social order. So, precisely during adolescence, when it is known that values are formed, tracked systems separate students and place them in locations that are highly predictive of their future position. In less stratifying countries, by contrast, students are likely to be less well aware of their future chances in life. Recent comparative research has demonstrated that student expectations of future educational attainment are far more realistic in strongly tracked educational systems than in comprehensive systems (Buchmann & Park 2009).

It is plausible that such realistic predictions of final educational attainments have a direct bearing on the structural location that students will take in the labor market after finishing school. Thus, by being located in a vocational or academic school, students are socialized into particular career prospects and future class positions. Moreover, given the fact that track placement is strongly affected by social background, parents' social class effects further reinforce awareness of structural locations that will be taken in the future. Against this background we argue that the level of tracking (i.e. differentiation) of education system should have direct implications for individuals' opinion on economic redistributions. We expect this factor to be undermining the emergence of a common public opinion on economic redistribution. More technically, we expect the increasing tracking to expand the dispersion of public opinion and thereby preventing a large consensus to emerge.

Another important institutional feature of education systems is the vocational orientation. It is relevant for inequality as it affects the transition from school to work. In educational systems that are strongly vocationally oriented, such as Germany and the Netherlands, the transition from school to work runs more smoothly than in systems that are less vocationally oriented. This has been demonstrated at the individual level in terms of hazard rates of finding employment after leaving school, and at the aggregate level with regard to youth unemployment rates (Breen 2005; Müller & Gangl 2003; Shavit & Müller 1998). Moreover, as Brunello and Checchi (2007) showed, equality of educational opportunity is not negatively affected by a strong vocational orientation. These findings suggest that a vocational orientation has a strong 'inclusive' effect. Yet, other findings with regard to the wage returns to education indicate that vocationally oriented systems have larger educational returns, which has been explained by the more limited supply of tertiary degrees in those systems (Wolbers 2007).

It is also clear that education is of crucial importance in income distribution given the fact that it is one of the most important factors that determine income levels across different political economies (Meyer 1977, Hall & Soskice 2001). However, it is not equally clear the extent to which the education determines the attitude of individuals' towards income distribution, their normative judgments. On the one hand one may argue that as the level of education increases

(primary, secondary, tertiary degrees) the income, too, increases. By drawing on this simple relationship one may claim that as individuals' income increases as a result of their educational attainment they may be inclined to evaluate the existing income distribution more positively. This may contribute to the emergence of a common public opinion which is favorable towards the status-quo in income distribution. However, here it would be the income generated by the education rather than the content of the education that would mainly form the attitude towards economic redistribution. On the other hand, one may argue that educational attainment, besides providing better income, may also cultivate some civic virtues which may be conductive to social coherence (Van de Werfhorst 2007). Thus it may be the content-based impact of education rather than its income-based effect which may be shaping the public opinion on economic redistribution. We argue that either of these possible influences would have impact on the 'average' opinion on income distribution.

However, in order to clarify the exact influence of education and its institutional features on the opinions about the income inequalities, one should also take into account some other potentially influential factors.

One may, for example, argue that actual inequality in a society may shape the extent which the existing income distribution as it is perceived by individuals is tolerable. The simple logic here is that the actual inequality in a society as the objective state of affairs may have an influence on the individual judgments based subjective perceptions: to be unaware of and indifferent towards the inequalities might be less likely when these inequalities are very sharp. It is possible to expect that in those societies where there is substantial inequality the existing income distribution (which is one of the primary reasons that generate and/or sustain the inequality) would be negatively evaluated. Perhaps this negative evaluation would be made (by different social) groups due to different reasons: the wealthy may be concerned of high inequality because of possible future threat that might be posed by social unrest on the property but the poor may be critical about the inequality because of the immediate hardships. On the other hand, if the actual inequality in a society is not very high then the income distribution might be much less of a concern for people due to the lack of both of these reasons.

This observation about the possible differences in the reasoning of the wealthy and the poor points out that the evaluation of existing income inequalities may also be shaped by the position of individuals on the income distribution besides the inequality that they may observe outside their individual circumstances. From a pure rational choice perspective one may expect those individuals who have relatively low income to evaluate the existing income distribution negatively while those with relatively high income to do the opposite. Thus, the impact of the

income on the evaluation of the income inequalities may qualitatively change in accordance with its relative magnitude on the income distribution.

Obviously, societies do not remain idle in the presence of inequalities (either of temporary or permanent nature) and respond in some way in order to alleviate the adverse consequences. Everywhere there is a form of social policy that in some specific way addresses the inequalities. Given that, these policies in general aim at reducing (or at least preventing the worst instances of) the inequalities, they may have a positive impact on the way in which the existing income distribution is evaluated. For, thanks to these policies even the poorest individuals may have a favorable opinion about the society in which they live if they consider themselves sheltered from the adversity. Similarly, one may also argue that, due to this inclusive effect, social policies may enhance the cohesion in the society leading more consensus; that is reducing the dispersion in the way in which the inequalities are evaluated. However, despite these simple deductions, it is prudent to note that social policies differ temporally within and spatially across societies generating endless variations that may only be crudely represented by typologies. Esping-Andersen's typology in its extended form (that is including the Mediterranean type, besides liberal, social democratic and conservative welfare states) may still be considered to be the most prominent attempt of creating some kind of classification (references should be added) . However, as one looks beyond Western Europe and North America so as to include some other countries such as ex-communist states in Europe or democratizing countries in Latin America into the analysis, Esping-Andersen's typology in its most extended form becomes less useful (as we demonstrate in this paper : see footnote 5). Obviously, social expenditure as the share of GDP may also to some degree reflect (though without much qualitative content) the way in which a society responds to the inequalities. However, regardless of how it is operationalized, the fact remains that the social policy should be included as one of the factors that has a potential to shape the way in which the existing income distribution is evaluated, affecting both the mean and dispersion of the evaluation.

Against this background, our aim is to capture the impact of education systems on public opinion regarding the economic redistribution. We envisage three different impacts: first, education may, due to its institutional characteristics, especially the level of tracking (i.e. differentiation) in the system but also due to its degree of occupational orientation, affect the dispersion of public opinion on economic redistribution. Second, education may affect individuals' opinion on economic redistribution because of its impact on the income levels. Finally, education system may have an influence on the public opinion due to its content-based effect. In this paper we investigate these three possible impacts of education by constructing a joint mean & dispersion model but as we do this we will also clarify the impact of income, actual inequality and social policies. For, as mentioned above, in order to account for the dynamics of

public opinion on fairness of income distribution one should simultaneously model the factors that motivate people to agree about a particular judgment and those variables which causes the deviations from this very judgment. From a statistical perspective this would entail to develop a model which would evaluate the mean and dispersion of the dependent variable in relation to each other.

(Additional references required)

Analytical Framework

Osberg and Smeeding (2006), based on a set of questions in the ISSP survey created a measurement for individual sense of fairness of the perceived income distribution (see also Jasso 1999 for a similar approach). In the ISSP survey a set of ten professions are listed and respondents asked to mention their view on the actual and ideal wage for each given profession.[1] In other words, respondents are asked about their perception of "what is" for ten different professions' income and then requested to replace this with "what ought to be". Osberg and Smeeding, by using these answers, proposed to establish the following equation in order to quantify individuals' sense of overall fairness of the perceived income distribution:

$$Y^{ought} = \beta_0 + \beta_1 Y^{is}$$

The crucial element here is the slope coefficient β_1 which summarizes respondents' sense of fairness in income distribution. Obviously, $\beta_1 = 1$ means that according to the respondent every single profession is paid what it deserves, that is, 'what is' equals to 'what ought to be', thus existing inequality in income distribution is fair.

On the other hand, $\beta_1 > 1$ hints that according to the respondent some professions (which are already in the relatively high-paid part of the distribution) are paid less than they deserve thus there should be increase in the higher end of the income distribution while the others (which are already in the relatively low-paid part of the distribution) should receive even less[2] . In other words, the existing inequality in the income distribution is not sufficiently unequal to be fair thus more inequality is required.

[1] a skilled worker in a factory , a doctor in general practice, chairman of a large corporation, a lawyer, a shop assistant, the owner-manager of a large factory, a judge in the highest court, an unskilled worker in a factory, a cabinet minister in the national government, someone in respondents' own occupation .

[2] Those professions whose perceived actual income is lower than

Finally $\beta_1 < 1$ indicates that the respondent is of the opinion that those professions which are currently paid relatively high wages should receive less and the others which receive relatively low wages should be paid more. This means that existing inequality in the income distribution is unfair and more equality is required to reach fairness.

We propose to use the distance between "what is equals to what ought to be" , that is, $\beta^* = 1$ and the actual evaluation of perceived income distribution by respondents, that is, β_1 as a measure of the "attitude" towards inequality in income distribution: $\pi = 1 - \beta_1$

It is clear that when

$\pi > 0$

Respondent is of the opinion that more equality is required in order to ensure the fairness of the income distribution, on the other hand when

$\pi < 0$

Respondent is in favor of more inequality as a means for generating a fair income distribution. And finally,

$\pi = 0$

Implies that respondent is entirely content with the perceived income distribution. The advantage of this new measure (compared to just using the slope coefficient) is that it allows us to locate each individual's normative judgment quantitatively but in relation with a qualitative judgment captured by

$\pi = 0$

which indicates the income distribution as it is perceived is considered just. Only in this way one can make substantive interpretation of the multivariate models in terms of the extent to which a particular factor causes individuals to evaluate the existing income distribution positively or negatively.

Thus, our interest is in the magnitude of π. Our aim is to establish the factors which determine the mean value of π and the dispersion of π about this mean.

$x = \frac{\beta_0}{1 - \beta_1}$ are relatively low-paid and those professions whose perceived actual income is higher than this value are relatively high paid professions. This cut-off point is obtained by evaluating the value of x at the intersection between "what is" equals to "what ought to be" line , that is, $Y^{ought} = Y^{is}$, and the line created by the respondents' answers , that is, $Y^{ought} = \beta_0 + \beta_1 Y^{is}$.

As to the mean: those variables which have a negative impact on mean magnitude may be considered to motivate people to evaluate the perceived distribution more positively while those variables with positive impact on mean magnitude increasing individual's desire to demand more equality in income distribution.

As to the dispersion about the mean: those variables which have a negative influence on dispersion may be considered to have a positive impact on emergence of common opinions about fairness while those which have positive impact on dispersion may be considered to have negative impact on emergence of common opinions.

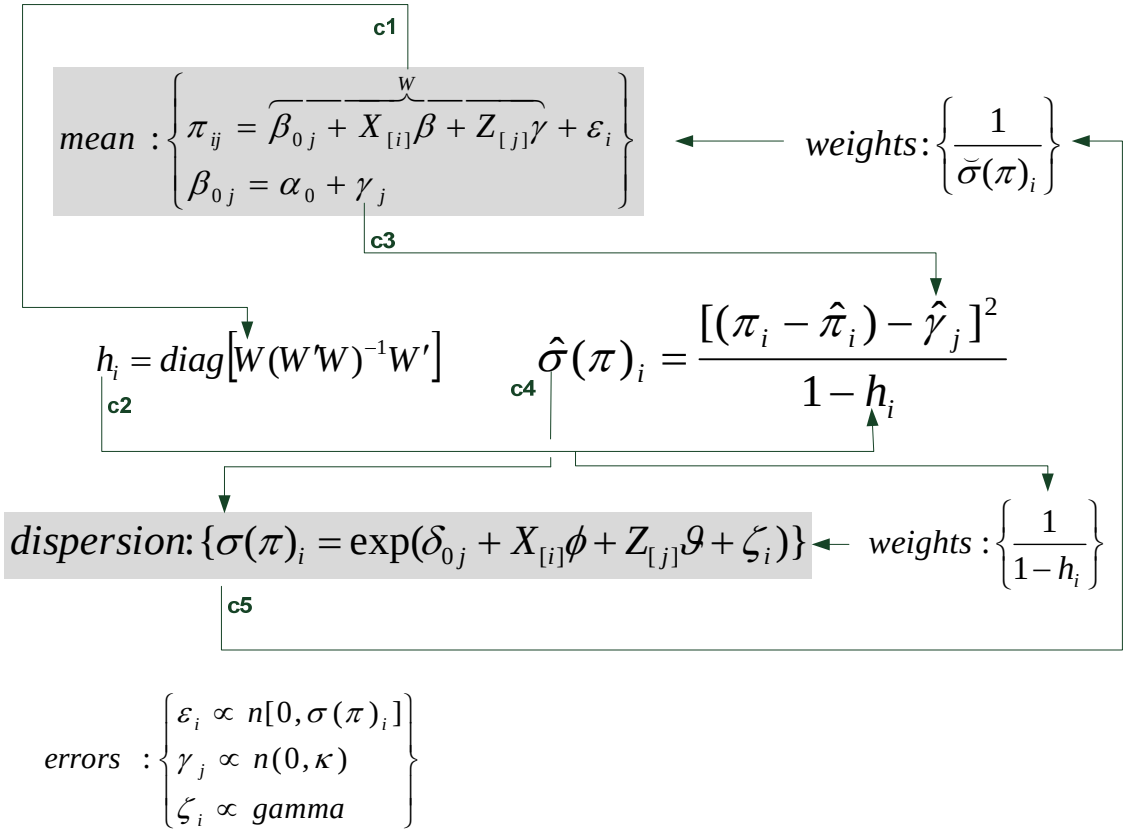
In order to account for the dynamics of individuals' judgment on fairness of income distribution one should simultaneously model the factors that motivate people to agree about a particular judgment and those variables which causes the deviations from this very judgment. From a statistical perspective this would entail to develop a model which would evaluate the mean and dispersion of the dependent variable in relation to each other. Namely while a mean model would account for the variables that shape the average magnitude of π, the dispersion model would explain the factors that influence the variance of π, that is, those factors that increase or decrease the distance between (conditional) mean of π and individual values. In order to ensure the connectivity between mean and dispersion one should construct an inter-linked system of equations.

The idea is that an appropriate function of residuals generated by the mean model would be used as the response variable for the dispersion model as a proxy for the variance about the conditional mean of π at each multi-dimensional intersection generated by independent variables. Then this proxy measure for variance would be used as a dependent variable in the dispersion model and the generated estimates would be inserted as weights back into the mean model so as to reduce heteroskedasticity. Ideally this circular relationship would be repeated until both models converge. Once convergence is attained it would be clear that what is captured by the dispersion model is what prevents the mean model from accounting for the entire variation. More specifically, mean model would reveal the way in which included independent variables contribute to the emergence of a conditional π value, that is, an opinion about the existing income distribution, and dispersion model would indicate to what extent included independent variables increase the variance about this π value and prevent the emergence of a single opinion.

There are several methods and algorithms in order to construct such a system for the mean and dispersion (Smyth *et al* (2001, Nelder et al, 1998, Faraway 2006). In these algorithms usually the mean component is a simple linear model and the dispersion component is

a gamma regression (GLM with log link function). However, given the fact that we deal with a cross country data set we prefer to establish a multi-level linear model for the mean component with random intercepts. This requires rethinking the measure that would be generated by this component to be used in the dispersion part as a response variable. Thus we constructed the system depicted in figure 1 which is highly interconnected.

Figure 1: Joint Mean-Dispersion Model



It is worthwhile to elaborate on these interconnections:

In this joint system, the mean component is a linear model that consists of individual and country levels. There are random intercepts that change across countries. The dependent variable is π. Individual level errors (ε_i) are normally distributed with zero mean but changing variances ($\sigma(\pi)_i$) that are gradually stabilized through the weighs ($\frac{1}{\hat{\sigma}(\pi)_i}$) produced by the dispersion model (see c5). Country level errors (γ_i) are normally distributed with a constant variance κ. The estimated values of these errors ($\hat{\gamma}_i$) are crucial in generation of the proxy measure ($\hat{\sigma}(\pi)_i$)

that enters the dispersion model as dependent variable (see c3 and c4). In the construction of this proxy measure of the variance of π, the residuals ($\pi_i - \hat{\pi}_i$) are corrected by subtracting the estimates of country level errors ($\hat{\gamma}_i$) before being squared to ensure positivity. The idea is that; we would like to exclude that part of the variance that is accounted for by the difference between countries before we insert it into the dispersion model. It is of importance to mention that without this correction we were unable to attain convergence in the entire system.

It should be noted that the errors in the dispersion component are gamma distributed and the dispersion model in its entirety is a GLM with a log-link but for the sake of clarity depicted in the figure as its appears prior to the application of the link function. Moreover in figure 1 the fixed-effect independent variables are depicted as two separate matrices (X and Z) in order to emphasize the existence of individual and country level factors but the overall matrix of independent variables is conceived as W. The hat matrix generated by W is utilized to obtain the leverage values (h_i, see c1 in figure 1) that are, in turn, instrumentalized so as to generate a robust response variable and weights ($\frac{1}{1-h_i}$) for the dispersion model (see c2 and c4 in figure 1). It is clear from figure 1 that we use the same independent variables both for the mean and dispersion components (note that X and Z are in the dispersion component too). The aim is to observe the extent to which the same variables behave differently as they explain mean and variance[3].

Independent variables

Into this system we enter individual (contained in X see figure 1) and country level (contained in Z see figure 1) explanatory variables. On individual level we have gender dummy, years of education and income as our independent variables in both components of the system.

Here two points should be clarified:

[3] it is of importance to mention that when restricted maximum likelihood method is applied for the mean model the standard errors of the corresponding dispersion model are underestimated. This leads lower probability values for the coefficients of the dispersion model (Faraway 2006:147). We have calculated our models by taking this underestimation into consideration and in no model specification we faced a situation where this underestimation affects the significance structure. This is mainly due to the large sample size.

Firstly, as an indicator of respondents' level of education we use years of education rather than the highest educational degree they attained because the ISSP survey is considered to be not accurate in the way it codes these degrees. There have been inconsistencies between ISSP and some other surveys on this issue (reference). Thus we decided to avoid any bias that may be generated by using relatively unreliable parts of the survey. In this sense the years of education is straight forward indicator of level of education and much less likely to generate any bias.
Secondly, we argue that (as mentioned above) the way in which the income influences the opinion does not remain the same across the income distribution. We expect low income levels to have a different influence than the high income levels. Moreover we also believe that the relative magnitude of income rather than its absolute magnitude to be crucial in the generation of individuals' judgment on inequalities. In order to operationalize these two arguments we developed the following variables:

Income.low : income variable for those respondents whose income is under the median income. In each country it is zero for higher-than-median group and when it is not zero it equals to the proportion of respondents' income to the median of the lower-than-median group.

Income.high : income variable for those respondents whose income above the median income. In each country it is zero for lower-than-median group and when it is not zero it equals to the proportion of the income to the median of the higher-than-median group.

These two variables enable us to capture the impact of income in a sensitive way by allowing the impact to change across the income distribution as its relative magnitude changes.

On country level we have institutional characteristics of education system, social policy and actual inequality as our variables.

For capturing the institutional features of education systems we constructed two indices : the level of tracking (i.e. differentiation) and the degree of occupational orientation of education systems[4].The *differentiation* variable is created by a factor analysis using information on three variables, ranked to a proportional score before the factor analysis was carried out: the age of first selection (reverse coded), the number of tracks available to a typical fourteen-year-old

[4] A common problem in comparative research of individual and country-level data is that countries are ranked based on their more or less 'coincidental' appearance in the microlevel (survey) dataset. We avoid this problem by first gathering information on a maximum number of countries relying on OECD statistics. See www.oecd.org

student, and the length of the tracked curriculum as a proportion of total length of secondary education. The resulting scale accounted for 82 % of the variance in the dataset with N=34 countries, with an Eigenvalue of 2.45. The scale was z-standardized again for the 34 countries. *Vocational orientation* variable is based on a single indicator: the percentage of students within upper secondary education enrolled in a vocational track. Upper secondary vocational enrollment is a common indicator of the vocational orientation of a country, and is available for a large number of countries (e.g.Shavit & Müller 1998). This variable was also z-standardized for 40 countries of the extended country-level dataset.

As mentioned above although in all countries there is some kind of social policy that aims to address the inequalities, the content and conditionality of these policies differ both temporally and spatially. The prominent typology of Esping-Andersen (E-A) which facilitates construction of categorical social policy variables fails to account for the welfare systems beyond Western Europe and North America. Moreover, given that we have rather limited number of country level observations (17 in total) the use of dummy variables to capture four (or perhaps five) categories implied by E-A typology would be too costly in terms of degrees of freedom[5]. Therefore we decided to use two variables for capturing the social policy effects. First, we include the social expenditure (except the health system budget) as share of the GDP. Second, we construct a dichotomized variable which captures the difference between the social-democratic welfare systems (in E-A typology) and the others. This variable generates two dummies first one (social.democrat) equals to zero except for Scandinavian countries (Norway and Sweden), the other one (not.social.democrat) equals to one except for social democrat countries. We use social.democrat variable as our reference category in order to ensure that we have relatively homogenous group as the basis of comparison. We argue that this dichotomized categorical variable together with straight forward inclusion of the share of social expenditure in GDP allows us to capture the impact of social policies.

Finally, we use Gini coefficient as a concise measure of the factual inequality in a country.

[5] In fact just for the sake of clarification we also constructed a model with the following social policy categories as country level dummy variables : Social-Democrat, Conservative, Liberal, Rudimentary, Ex-Communist. We placed each single category into the position of reference to explore all possibilities. However, the joint-system did not converge in any way despite 8000 iterations. This, we believe, results from the fact that this detailed categorization does not capture the diversity of social policies beyond Western Europe and North America.

Data Set

Our data set[6] after eliminations of some entries due to GLM and multi-level diagnostics and imputations contains 10749 individuals from 17 countries. The list of countries is provided in the appendix.

(more details should be added)

Results

We constructed the joint-system depicted in figure 1 by using the independent variables and the data set mentioned above and obtained convergence after 700 to 1800 iterations (convergence is defined as constant outcomes up to 10^{-6} decimal points). However to be sure about the stability of the convergence we continued the process until 3000 to 8000 iterations. In the appendix we give visual representation of the behavior of estimates and their null probabilities during the iteration processes. We summarize our findings in Table 1 and Table 2. The first three columns in these tables depict the mean component of the joint-system of equations. Here those variables which have a negative impact are to be considered to motivate people to evaluate the perceived income distribution positively while those variables with positive impact should be interpreted as increasing individual's desire to demand more equality in income distribution. For negative impact implies that the independent variable causes the dependent variable in the mean component, that is, π , to approach the value zero which signifies the judgment that income distribution as it is perceived is just. On the other hand the last three columns in both tables show the dispersion component. In these columns those variables which have a negative influence on dispersion of π, that is, $\sigma(\pi)$, may be considered to have a positive impact on emergence of common opinions about fairness but those which have positive impact on dispersion may be considered to have negative impact on a common opinion, that is, preventing individuals to approach the mean magnitude of π conditioned by the circumstances. For positive impact implies that the independent variable causes the dependent variable in the dispersion component, that is, $\sigma(\pi)$, to get larger which implies that the consensus on a particular judgment is undermined as the variance about this value increases.

Having these interpretation guidelines in mind let's go through the results:

[6] which is generated from ISSP 1999, the last completed survey that contains around 32.000 subjects from 27 countries.

In table 1 the mean component suggests that the years of education has a negative impact on the mean magnitude of π: implying that those individuals with more education are inclined to think that the income distribution is fair as it is perceived. Of course it is more interesting to think of the education variable in combination with the income variables: one can see that income.low and income.high as two distinct variables that capture the impact of income have opposite signs which makes sense from a rational choice perspective we outlined above: income.low has a positive and income.high has a negative coefficient. This can be interpreted as follows: those individuals with an income lower than the median income in their country are inclined to evaluate the existing income distribution negatively, that is, desiring more equality to attain fairness in income distribution. On the other hand those individuals whose income is higher than the median in their country are content with the existing income distribution. Of course this interpretation is to be further elaborated by thinking in terms of the change in both variables and the point of shift from one to the other one. However, for our purposes what matters is that, thanks to the sensitive inclusion of the income into the equation, we may attribute the negative impact of education on π to the content of education rather than its effect on income. In table 1 one can also see that the gender variable too, that is being male, has a negative influence (compared to the reference category which is female). Finally the increase in age also indicates the same outcome, suggesting that, as individuals get older they tend to evaluate existing income distribution more positively. The very existence of income variables in the equation allows us to argue that the age and gender effects cannot be attributed to the fact that as people get older usually their income increases and men quite often earn more than women. Since we capture the effect of income explicitly, the effects of age and gender should be attributed to the intrinsic qualities of these variables rather than the indirect effect of income which operates through these variables. In the mean component of table 1 when we look at the country level education variables that capture the institutional features of education systems we see no significant effect. Thus we may conclude that only the individual level effect of education, that is years of education, has an impact on the way in which individuals evaluate the existing income distribution.

Now let's zoom into the dispersion component in table 1. Here, contrary to the mean component, we clearly see that the country level variables that capture the institutional features of education systems do have significant influence while none of the individual level variables having an effect which is statistically different from zero. The differentiation variable that reflects the level of tracking in an education system has a clearly positive significant effect but the occupational orientation variable appears to have the opposite sign. Our interpretation is that in a country as increase in differentiation undermines the consensus on the judgment about the fairness due to resulting increase in the variance of π. However, the increase in the occupational

orientation, due to its negative effect on the variance, appears to facilitate the emergence of consensuses on fairness.

However, these results should be subjected to a further inquiry: would they remain intact if the influence of social policy and actual inequality are included into the model? Table 2 summarizes an extended form of the model where both of these explanatory factors are included into the mean and dispersion components. At individual level, all the variables that appear significant in the smaller model remain intact and retain their signs (age, gender, income.low, income.high and education) but there is an influential country level variable: actual inequality that is captured by gini coefficient has a significant positive effect, implying that as the inequality increases in a country people tend to evaluate the existing income distribution negatively. This may make sense in several ways, but as we mention above, one of the simple interpretations is that increase in the actual inequality as an objective factor effects subjective judgments of individuals on the fairness of income distribution because as it is difficult to be indifferent towards the consequences of inequality. Though, the fact that various levels of income have different impact on judgment about inequality (as depicted in this extended model too) encourages us to think that the logic of being influenced by increasing inequality might differ across social groups. At the dispersion component in table 2 it is worthwhile noting that one of the individual level variables (gender; male dummy) has a positive significant effect on variance (compared to the reference category; female) which does not appear in table 1 in the smaller model. This suggests that new variables allow us to unfold more intriguing dynamics of the link between gender and consensus formation. However, for our purposes there are two important observations to be made about the dispersion model: Firstly, it confirms an intuitively expected point, namely, social policy is indeed an influential variable in the formation of opinions on income inequalities. Of two variables that are inserted into the model for capturing the effect of social policies, the dichotomic categorical variable (not.social.democrat) and the social expenditure, the former which signifies the difference between egalitarian social policies of Scandinavian countries and the remaining welfare systems appears to have a positive impact on the variance of π. This suggests that the Social democratic welfare systems are more conductive to the emergence of societal consensus than the other systems. Secondly, despite the inclusion of social policy effects into the equation the institutional effects of education systems remain intact: the differentiation still has a positive and occupational orientation a negative effect on the variance of π. This clearly points out the distinctive and unique influence of education systems on the formation of judgments about inequality that cannot be explained away by the usual suspect, namely, the welfare system.

Briefly, the results of our analysis allow us to conclude that education has a significant impact on the formation of judgments on economic inequalities. At individual level the effect is

on the mean π value that indicates the extent to which the existing income distribution is tolerable. The higher the education, it seems, the more acceptable the existing inequalities embedded in the income distribution. Our model that includes the income variable in an explicit and sensitive fashion enables us to claim that this education effect is different from the impact of income that might be generated by higher education. Thus the impact of education at individual level might be attributed to the content of education rather than its effect on income. At country level too, education seems to have significant effect on the judgment on inequalities. This is due to two institutional features: the differentiation that reveals the level of tracking in the education system, and vocational orientation. Both of these institutional features influence the dispersion of π value rather than its mean. Thus we can argue that institutional design of education systems have a significant influence on the consensus formation hence on the social coherence. Incidentally, it should be noted that in a conventional single equation model that focuses on average scores it would not be possible to capture these institutional effects of education systems as both of the country level variables remain insignificant in the mean component of our joint-system of equations.

(details / comments about the overall evaluation of the models should be added: models may be compared with each on the basis of their aggregate measures)

Conclusion

In this paper we argued that public opinion on economic inequality is of central sociological concern for it informs us about the level of cohesion in the society and the degree to which economic inequalities are legitimized by the society. We showed that the literature has been hitherto occupied with the legitimation issue and by the average score on redistribution opinions as the derivative of attitudes towards the existing income distribution. However this approach fails to pay sufficient attention to the factors that might lead to dispersion in public opinion as to the legitimation of inequalities. In fact it is crucial to be aware of the factors that prevent the emergence of a general public opinion on economic redistribution by causing individuals to deviate from the general evaluation of inequalities in the society. But these factors remain obscure. In order to fill this gap, we opted for a substantive & technical approach which, namely, joint modeling of factors that shape the mean and dispersion of public opinion on economic inequalities.

Our central argument is that the education system would have significant impact on the public opinion about economic inequalities and redistribution. We identified three possible mechanisms: first, institutional characteristics of the education system, mainly the level of tracking (i.e. differentiation) in the system but also its vocational orientation, may affect the

dispersion of public opinion on economic redistribution. Second, education system may affect individuals' opinion on economic redistribution because of its impact on the income levels. Finally, education system may have an influence on the public opinion due to its content-based effect.

After developing a new variable by using ISSP 1999 Social Inequality Survey which allows us to capture individuals' judgments regarding economic inequalities in relation to the existing perceived income distribution, we have established a joint mean & dispersion model. This joint equation approach allowed us to identify those factors which are conductive to and hindering the emergence of a common public opinion on the desired level of economic redistribution.

Our results suggests that of the three possible mechanisms through which the education might influence the public opinion on redistribution, the income-based and differentiation related impacts are statistically substantiated: we show that the education influences individuals' opinion on fairness of income distribution due to its content rather than its effect on income: as the years of education increase individuals are inclined to develop favorable opinion towards the existing income distribution.. This conclusion implies that the education has a distinctive impact on opinion which is independent from the advantages that it generates in the labor market.

However, according to our opinion, the most crucial finding is that the institutional features of the education systems too appear to be crucial in the emergence of public opinion: the level of tracking has a positive impact on the dispersion of the public opinion on economic inequalities, that is, as the level of tracking increases this prevents the emergence of public opinion that is shared by a large segments of the society. One may infer from this finding that higher levels of dispersions in conservative welfare states may actually be caused by the strongly tracked nature of many educational systems. This lends support to the idea that institutions in conservative welfare states often result from paternalistic motivations, and that such institutions bring a threat to the social cohesion and legitimation of contemporary societies (Marshall 1950 and Esping-Andersen 1993) .

(technical contribution may be emphasized more : the innovative dimension in using multi-level mean component in the joint system can be further elaborated; the remarkable length of convergence process may be commented upon;)

TABLE 1	MEAN COMPONENT			DISPERSION COMPONENT		
	estimate	probability	significance	estimate	probability	significance
intercept	0.5806	0.000	***	-1.2106	0.000	***
gender	-0.0211	0.000	***	0.0411	0.116	
age	-0.0013	0.000	***	0.0004	0.676	
education	-0.0028	0.000	***	-0.0036	0.209	
income.low	0.0097	0.009	***	-0.0017	0.956	
income.high	-0.0161	0.000	***	0.0043	0.841	
differentiation	0.0018	0.887		0.0304	0.069	**
occupational.orientation	-0.0073	0.561		-0.0447	0.008	**
LEVELS:	*Error Variance*					
country	0.0015230					
individual	0.0829709					
	Log-Likelihood	REML Deviance	AIC	Null deviance	Residual deviance	AIC
	-8597	17195	17215	24631	24610	-8098

TABLE 2

	MEAN COMPONENT			DISPERSION COMPONENT		
	estimate	probability	significance	estimate	probability	significance
intercept	0.3101	0.102		-1.6061	0.000	***
gender	-0.0208	0.000	***	0.0431	0.098	*
age	-0.0013	0.000	***	0.0008	0.357	
education	-0.0028	0.000	***	0.0017	0.605	
income.low	0.0105	0.005	***	0.0035	0.907	
income.high	-0.0157	0.000	***	0.0007	0.974	
differentiation	-0.0061	0.714		0.0676	0.004	***
occupational.orientation	0.0026	0.881		-0.0598	0.008	***
actual inequality	0.5884	0.006	***	0.2483	0.400	
not.social.democrat	-0.0181	0.690		0.1648	0.007	***
social expenditure	0.0041	0.415		0.0052	0.418	
LEVELS:	*Error Variance*					
country	0.0014549					
individual	0.0826456					
	Log-Likelihood	REML Deviance	AIC	Null deviance	Residual deviance	AIC
	-8603	17205	17231	24336	24295	-8024.1

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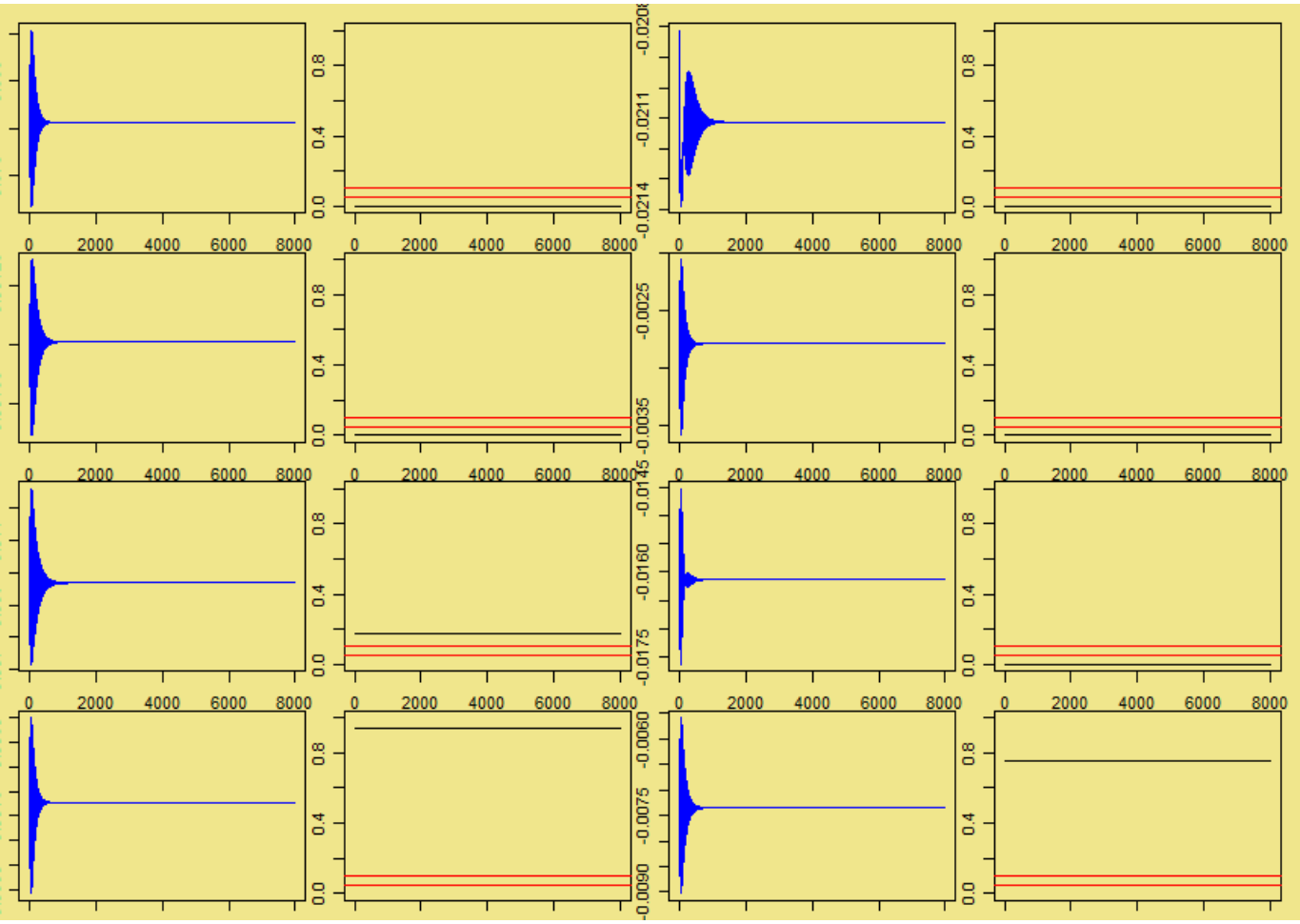
APPENDIX

Included Countries

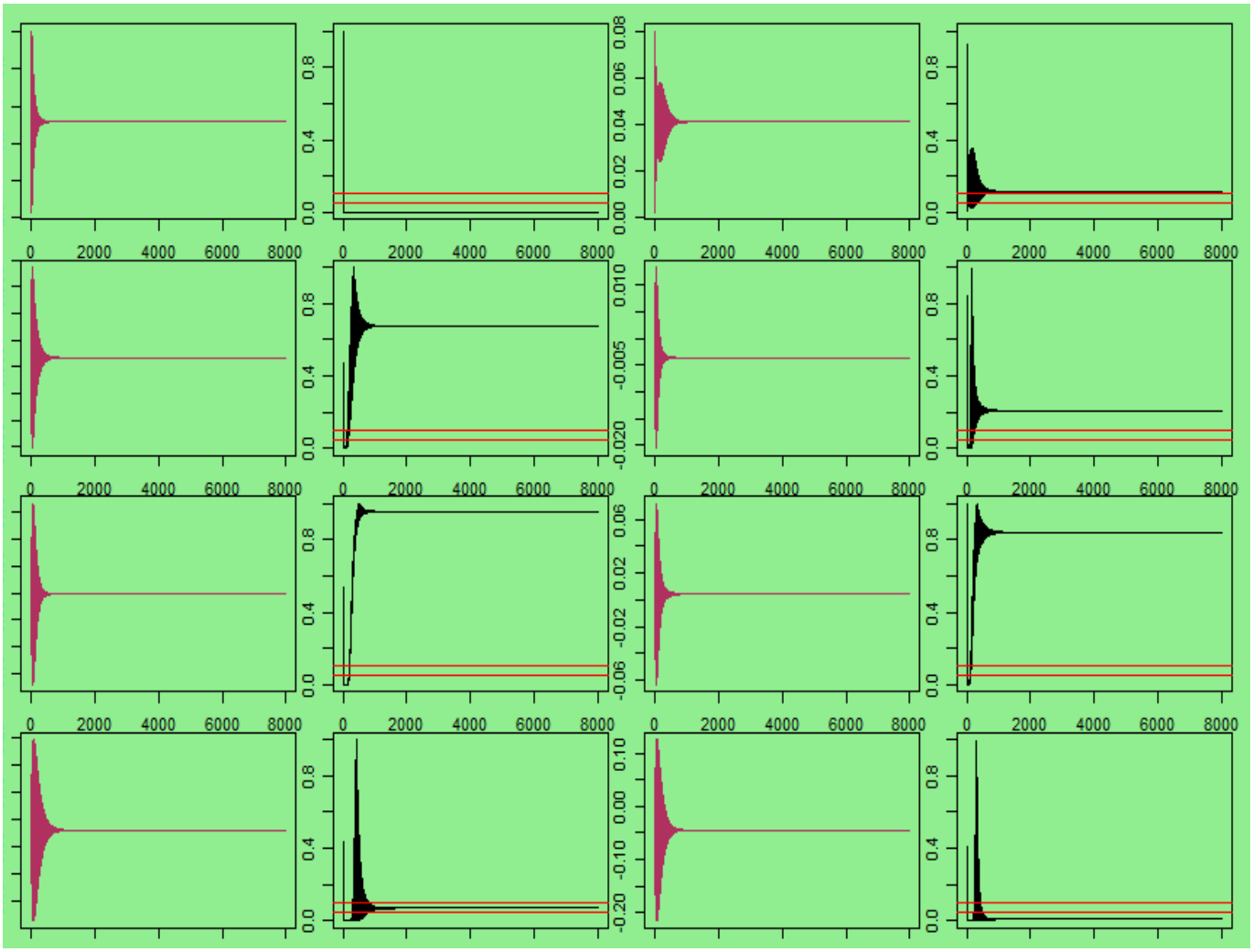
Country	Observations
australia	809
austria	570
britain	518
canada	659
chile	485
czech	1006
east.germany	271
france	1122
hungary	483
new.zealand	707
norway	232
portugal	757
russia	509
slovenia	664
spain	203
sweden	799
usa	564
west.germany	391
TOTAL	**17 Countries**[7] **10749 Observations**

[7] East and West Germany are combined during the analysis

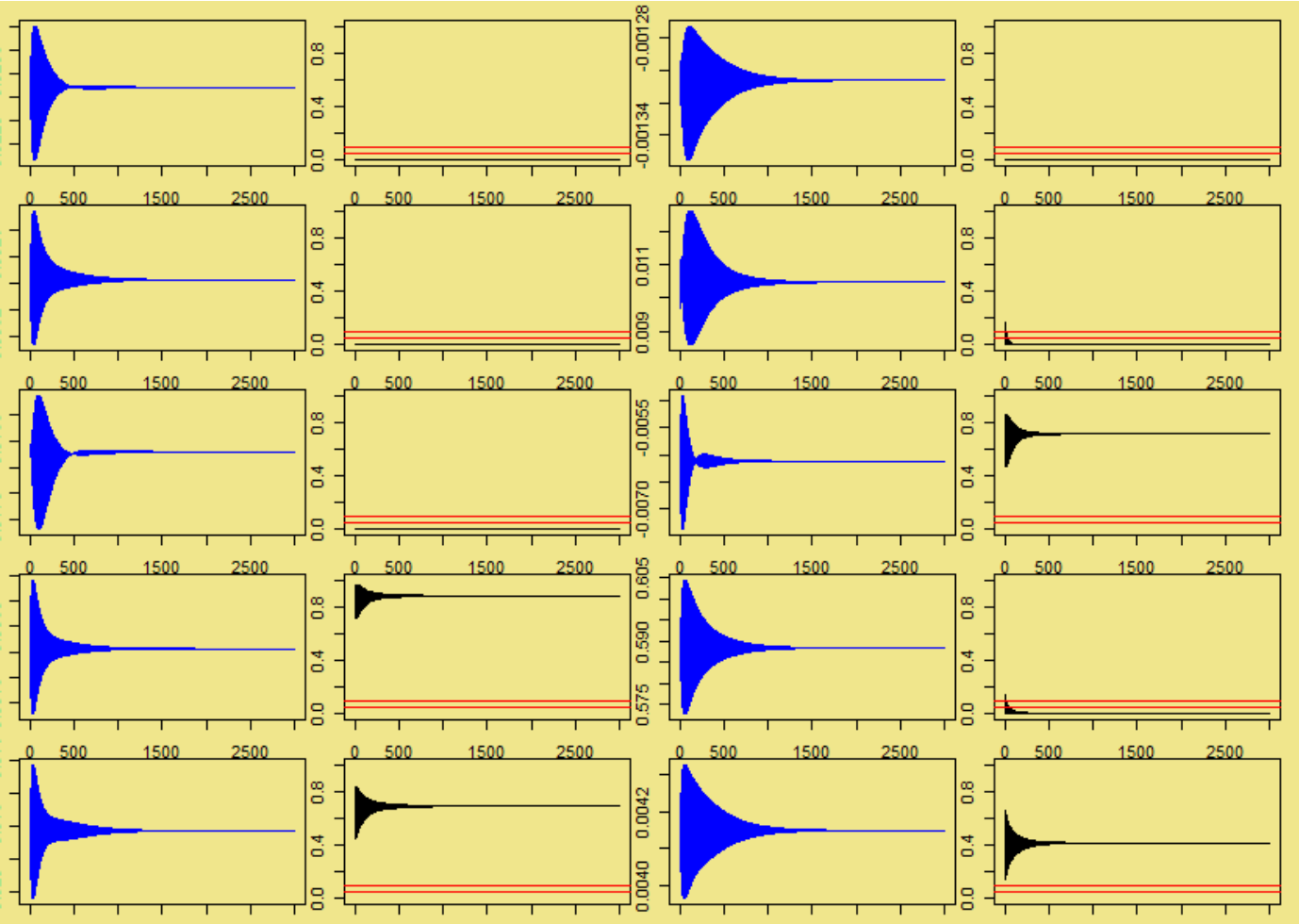
Mean Component Convergence Process for Table 1 (every pair of tables from left to write represent the behavior of variables and their null probabilities as they appear in Table 1)



Dispersion Component Convergence Process for Table 1 (every pair of tables from left to write represent the behavior of variables and their null probabilities as they appear in Table 1)



Mean Component Convergence Process for Table 2 (every pair of tables from left to write represent the behavior of variables and their null probabilities as they appear in Table 2 except intercept)



Dispersion Component Convergence Process for Table 2 (every pair of tables from left to write represent the behavior of variables and their null probabilities as they appear in Table 2 except intercept)