A NON-MELTZER-RICHARD MODEL OF REDISTRIBUTION

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1. INTRODUCTION

The model in Meltzer and Richard (1981) has been the starting point for any political economy discussion of redistribution for the past twenty-five years, despite the empirical evidence for the model being ambiguous at best. Most direct tests of the Meltzer-Richard model are conducted at some level of aggregation, but the plausibility of the Meltzer-Richard model has indirectly been called into question by now well-established results in experimental economics where subjects often play strategies that do not maximize their expected payoff, evidence that is consistent with the literature from sociology and psychology on how individuals' beliefs about fairness and need affect their behavior.

This paper is part of a larger dissertation project that integrates insights from what might be called "political sociology" into the political economy literature on the welfare state. Although politically oriented sociologists have been at the forefront of this research, "political sociology" includes the work of nonsociologists, such as many psychologists, most economists that conduct experiments on fairness motivations, Amartya Sen and followers, political scientists outside the subfield of political economy, and now a few political economists proper.

So far, the overlap between political sociology and political economy has been rather limited. Alesina and Angeletos (2005) presents a model where individuals prefer that others "get what they deserve and deserve what they get" and shows that different tastes for this kind of fairness can result in multiple equilibria that can explain the differences between the European and American welfare states. Similarly, Benabou and Tirole (2006) incorporates "Belief in a Just World" theory and other insights from psychology into an otherwise prototypical political economy model. Piketty (1995) believes that the rich oppose redistribution not because they lose money but because the rich are more likely to believe that skill and effort are, and should be, rewarded.

Each of these papers, however, does not directly address a core proposition of political sociology that individuals, to different extents, care about equality of outcomes, particularly about outcomes for the needy. An offhand comment in Moene and Wallerstein (2002) represents a rare instance where need-sensitivity is acknowledged by in a comparative political economy model:

> Self-interested workers care about the benefits received by the unemployed because of the chance that they may be without employment sometime in the future. Of course, voters may care about those without earnings out of altruism as well as self-interest. In this case, the [discount] parameter ... might be interpreted as reflecting concern for the poor as well as concern for the future. The lower

is [the discount parameter], the greater the weight given to the welfare of those without earnings in

wage earners' choice of how to cast their ballots. (863)

Perhaps the observable implications of the model in Moene and Wallerstein (2002) are the same whether the discount parameter is interpreted as concern for the currently poor or concern for a future self who is probabilistically poor. But determining which interpretation is more correct seems to be a rather fundamental issue to be addressed for future research.

This paper demonstrates that the political economy and political sociology models can be combined to some extent, which is to say that voters' utility functions can depend both on "value orientations" and on self-interest. First I give a brief description of the political sociology approach to the welfare state, and then present some individual-level evidence that is inconsistent with the Meltzer-Richard model. In the fourth section, I sketch a formal model where voters have ideal functions with which they prefer income to be distributed — rather than ideal points in policy space — and their policy preferences can loosely be expressed through the parameters of their ideal income distribution functions. By using political economic aggregation mechanisms, it is possible, in principle, to derive aggregate-level predictions, although I think the models are best tested at the individual level. In the fifth section, I briefly summarize some evidence from a cross-country factor analysis model that does seem to support the core of the political sociology perspective.
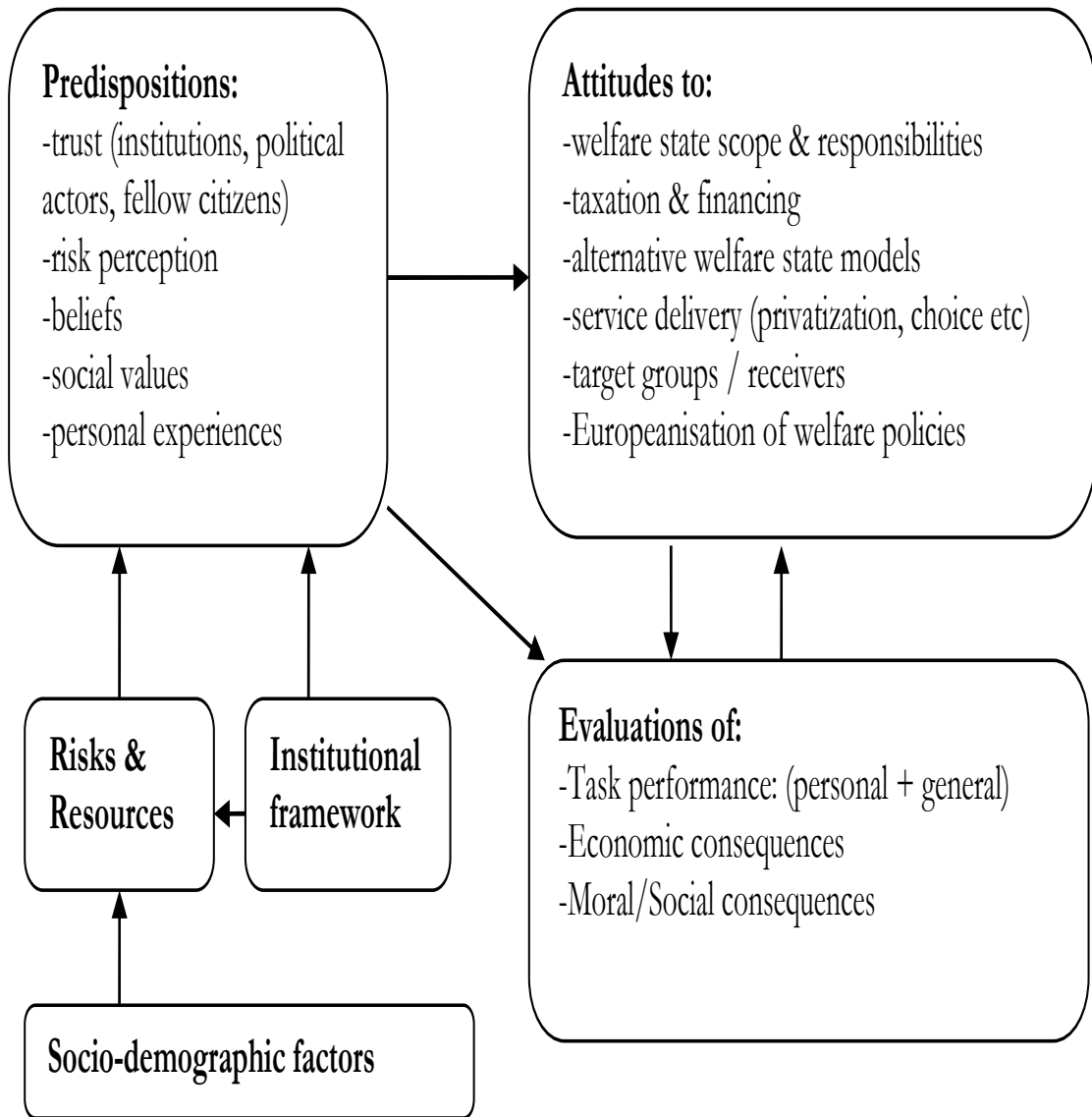
2. Political Sociology Approaches to the Welfare State

What are the differences between political economy and political sociology approaches to redistribution and related welfare state issues? In political economy, inequality is primarily seen as a byproduct of market forces. Although inequality can be affected by government policy, no agent has the goal of reducing inequality in a typical political economy model. Reductions in inequality result when individuals maximize their own utility through voting and a majority would benefit from some government redistribution. In political sociology, reducing inequality can be and typically is an objective of agents, or perhaps reducing poverty is the objective, which has some effect on inequality. Of course, political sociology contemplates additional goals of policy and other motivations of agents, but the fundamental difference between the political economy and political sociology literatures is whether agents make a value-judgment against inequality and / or poverty. This section provides a brief caricature of the political sociology approach.

One political sociology perspective, that of Stefan Svallfors, is given in figure 1.[1] The main point is that, in Svallfors' view, "predispositions" such as social values affect attitudes toward the welfare state. Self-interest in the policies of the welfare state is not explicitly part of the model, although "self-interest" could easily be thought of as

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[1] Buy Stefan's forthcoming books: `http://www.amazon.com/Moral-Economy-Class-Comparative-Perspective/dp/0804752850/ref=sr_1_3/103-4159697-3956647?ie=UTF8&s=books&qid=1178223830&sr=1-3` and `http://www.amazon.com/Political-Sociology-Welfare-State-Institutions/dp/0804754357/ref=sr_1_2/103-4159697-3956647?ie=UTF8&s=books&qid=1178223830&sr=1-2`.

FIGURE 1. Svallfors' Perspective

Predispositions:
-trust (institutions, political actors, fellow citizens)
-risk perception
-beliefs
-social values
-personal experiences

Attitudes to:
-welfare state scope & responsibilities
-taxation & financing
-alternative welfare state models
-service delivery (privatization, choice etc)
-target groups / receivers
-Europeanisation of welfare policies

Risks & Resources

Institutional framework

Evaluations of:
-Task performance: (personal + general)
-Economic consequences
-Moral/Social consequences

Socio-demographic factors

a predisposition. Political scientists might want to add some additional considerations to figure 1 in order to explain welfare policy outcomes (or even the political institutions themselves), but the essential point is that figure 1 does not hinge on an individual's tradeoff between labor and leisure, as in the Meltzer-Richard model and most political economy models.

Despite Hochschild (1981) and Meltzer and Richard (1981) being published at virtually the same time, it was not until this year that any journal accepted a critical review of the political sociology and political economy literatures on redistribution. Lübker (2007) notes that

Both the new growth literature and the sociological literature lead us to believe that the extent of inequality influences the demand for redistribution. What the two bodies of literature differ on is how they conceptualize this link. The literature inspired by Meltzer and Richard (1981) assumes a direct link and makes predictions that can easily be translated into a testable hypothesis . . . : That the level of actual inequality is positively associated with the demand for redistribution.

From the perspective of political sociology, this may or may not be true. To be sure, most political sociologists would accept that there is a causal link between the two variables. For example, one could argue that at higher levels of inequality, people (both poor and rich) will see a greater need for redistribution. But what is then crucial is that inequality is seen as a problem in need of remedy, and the evaluation of inequality as unfair or morally bad is by no means only driven by the level of actual inequality. As Amartya Sen has argued, people's judgements about actual income distribution are a function of (i) their ideas about what is morally right and just, and (ii) the reality they compare these norms to (Sen, 2000 p. 60). If one accepts that value judgements on income differences are a step logically prior to the call on governments to redistribute income, one needs to allow for the influence of values and cultural norms . . .

Rather than denying that inequality influences the demand for redistribution, the political sociology approach therefore conceptualizes the link in a different way: As mediated, i.e. that actual inequality matters only insofar as it — in conjunction with value orientations — influences the evaluation of inequality, which will in turn influence the demand for redistribution. What might seem like splitting hairs at first has, however, consequences for the predictions theory allows us to make: It is conceivable that countries with low inequality happen to subscribe to egalitarian views (and thus evaluate even low levels of inequality negatively) and those with high inequality to individualistic principles (which would make them more tolerant of high levels of inequality). As a result, the demand for redistribution might no longer correlate with actual inequality at the bivariate level. The finding of a bivariate non-correlation would thus be reconcilable with the idea of a mediated relationship between inequality and the demand for redistribution. Contrary to this, the rational choice argument does not allow for an interaction with social justice principles. (123–4)

Considering the degree to which these two large literatures disagree on a fundamental question — whether inequality is seen by voters as a "problem in need of a remedy" — one would think that this contentious issue would be a hotbed of empirical testing. It isn't, but Lübker (2007) finds some evidence in survey data that supports the sociological perspective while not really disproving the political economy approach.

Once one entertains the premise that agents see inequality as a "problem in need of a remedy", the next logical question is what are the "social justice principles" that determine whether an individual sees inequality this way? The most common typology is summarized in Scott et al. (2001), where individuals evaluate what ought to be in any given situation by reconciling four potentially conflicting principles of distributive justice: equality, efficiency, merit, and need.

Efficiency can be given a conventional economic interpretation of maximizing total surplus. In the traditional economic view, efficiency tends to be maximized when merit is rewarded, but from the perspective of the distributive justice literature, it is possible for a result to be efficient for a group (or a society) as a whole but have an imperfect correlation between merit and reward at the individual level.

Equality is also straightforward, whether interpreted as equality of outcomes or less often, as equality of opportunity. Sensitivity to need is often conceptualized somewhat pejoratively as "altruism" in economics but is explicitly "altruism toward the needy" in the distributive justice view. Thus, an individual that is more oriented toward efficiency and rewarding merit is less likely to see inequality as a problem, while someone is is more egalitarian and sensitive to need is more likely to see inequality and poverty as problems in need of remedies.

One reason why many economists are somewhat skeptical of "altruism" as a motivation of individual behavior is because it is more difficult to model formally and test. One of the purposes of this paper is to show how such considerations can be incorporated into utility functions in a semi-tractable fashion. However, empirical evidence for this distributive justice schema is evident in survey data and experiments on college students. For example, Scott et al. (2001) asks subjects to rate nine hypothetical societies on a 0 to 10 scale where the following characteristics of the societies are experimentally manipulated: the ratio of the top and bottom income quintiles (equality), mean income (efficiency), the percentage of income explained by effort and ability (merit), and the poverty line (need). Scott et al. (2001) finds that the desirability of a society is sensitive to all four of these manipulations. Thus, although taxation and redistribution are not explicitly manipulated in these experiments, both pertain to all four of these distributive justice principles, so it is plausible to believe that people evaluate the welfare state accordingly.

However, it is difficult to capture the more than a bare-bones notion of "government" in an experiment. Thus, it is also possible that individuals also have beliefs about whether government (or which level of government) is the appropriate agent for bringing about change, as noted in Osberg and Smeeding (2006). For example, some people may be sensitive to need but believe that private charities, rather than the welfare state, should be primarily responsible for helping the needy. Or maybe some people believe that the welfare state should be responsible for alleviating need but believe that their current government is corrupt or otherwise ineffective at doing so. Thus, when considering distributive justice over explicitly political questions, it may be well to consider support for government activism as a fifth principle.

An important remaining question is how do individuals obtain these values that (will) go into their utility functions? Frieden (1999) recommends that preferences / values must either be assumed, be induced from data (although not from data on outcomes of strategic games), or be deduced from more primitive assumptions. It is straightforward to induce that Frieden (1999) has a preference for the latter, of which the Meltzer-Richard model is a classic example, albeit one that is inconsistent with the data. From the political sociology perspective, socio-demographic characteristics and what is often referred to as "context" explain variation in values. To give another example from political sociology, Brooks and Manza (2007) contains a chapter entitled "Where Do Welfare State Preferences Come From?" and — in stark contrast to the answers suggested by the political economy literature — the authors

> identify three main sources of social influence over mass policy attitudes: (1) interests individuals have by virtue of social-structural locations; (2) participation in discursive communities that are characteristic of such major institutions as churches and schools; and (3) long-term patterns involving the influence of welfare state-making itself, where these operate through collective memory processes. The tendency of the distribution and effects of these three types of social factors to change slowly over time frequently confers on mass opinion a degree of stability in the aggregate. The divergence between a model of individuals as continually updating their preferences and one of acting on socially embedded identities has implications for understanding patterns of change over time in welfare state attitudes. (page 5 in draft chapter 5)

Although Brooks and Manza (2007) support these assertions with some empirical evidence, my guess is that most political economists would remain unconvinced in the absence of more specific data.

A lesser, but still important difference between the political economy and political sociology literatures, is that the latter worries less about how preferences are aggregated. Thus, while the political economy literature could be improved by expanding voters' utility functions to take advantage of the insights of political sociology, the political sociology literature could be improved by expanding the scope of the model to take advantage of the insights of political economy on strategic behavior of voters and parties. The main goal of the dissertation is to estimate the multivariate distribution of preferences in many countries from survey data, which will make it possible to test theories about whether welfare state outcomes are related to the distribution of preferences and test theories about how individual preferences are related to observable characteristics of the respondents.

3. The Meltzer-Richard Model vs. the Data

There is no need to rederive the Meltzer-Richard model because it so well-known in the political economy literature, although it is largely unknown or ignored in the political sociology literature. Nor is there space to review all the empirical tests of the Meltzer-Richard model, except to say that that the empirical literature is inconclusive and that

virtually all tests of the Meltzer-Richard model are conducted at some level of aggregation. A more direct test is to ascertain whether the main individual-level prediction in Meltzer and Richard (1981) holds, from which the aggregate predictions are derived. This section presents new evidence that is contrary to the individual-level prediction of the Meltzer-Richard model that preferences over the tax rate(s) are ordered by individuals' income.

Meltzer and Richard (1981) famously concludes the results of its derivation with

> Roberts (1977) showed that if the ordering of individual incomes is independent of the choice of [redistribution policy], individual choice of the tax rate is inversely ordered by income. This implies with universal suffrage the voter with median income is decisive, and the higher one's income, the lower the preferred tax rate. By making the additional assumption that consumption is a normal good, we have shown that incomes are ordered by productivity, ... [and] ... we can order the choice of tax rate by the productivity of the decisive voter. The higher an individual's productivity, the lower is his preferred tax rate. (921)

In the Meltzer-Richard model, productivity is exogenous and income is endogenous, but income is a monotonic function of productivity among those who work. Thus, to claim that preferences over the tax rate are ordered by productivity is also to claim that preferences are ordered by income, at least among those who work. Thus, an observable implication of the Meltzer-Richard model is whether voters' preferred tax rates are generally decreasing in income, and if this prediction does not hold, then the aggregate implications do not follow.

The necessary data to answer this question have been available for almost a decade from the widely used ISSP Role of Government III module, but there is no evidence in Google to suggest that anyone has used these particular data for any purpose.[2] Respondents in seven countries (Australia, New Zealand, Italy, Spain, Hungary, Czech Republic, and Poland) were asked:

> How much tax per year, if any, (do) you think someone who earns [X] should pay? We mean all taxes that are deducted from a person's wages, such as (wage deductions) and (personal income tax). (Please write in amount or tick box if 'none' or don't know)

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[2]International Social Survey Program (ISSP), 1999-10-07, "International Social Survey Program: Role of Government III, 1996", hdl:1902.2/02808 http://id.thedata.org/hdl%3A1902.2%2F02808 Inter-university Consortium for Political and Social Research [distributor(DDI)]

Country	Value of X in 1995ish local currency units
Australia	25,000
New Zealand	20,000
Italy	26,500
Spain	1,500,000
Hungary	20,000
Czech Republic	60,000
Poland	10,000

As the above table shows, the value of X was made explicit (albeit specified differently in each country) and was intended to loosely represent the "average annual wage of a full-time unskilled worker". Respondents were allowed to write (virtually) any number for the tax they believe such a person should pay. Thus, for each respondent, it is straightforward to calculate an ideal average tax rate (ATR) by dividing the response by the specified base (X). Respondents were then asked to write how much someone who earns 2X, 4X, and 8X should be taxed, making it possible to calculate a total of four ideal ATRs for each respondent — one on the working (X), middle (2X), rich (4X), and super rich (8X) classes — and verify whether the ideal ATRs are decreasing in respondent income.

In figure 2, where the ideal ATRs are plotted against family income in Australia, there is *no* bivariate relationship, and a virtually identical plot can be constructed for New Zealand (not shown). Thus, contrary to the Meltzer-Richard model, the median income earner in Australia (normalized to 100) does not provide a unique (or even tightly bounded) prediction for the Australian ATR for the working, middle, rich, or super rich classes.

The *colors* of the points in figure 2 correspond to the answer the respondent gave to the following question

> First for those with [high, middle, low] incomes, are taxes [in Australia] ... much too high [black], too high [red], about right [green], too low [dark blue], much too low [light blue] [with yellow for non-response]

For the purposes of figure 2, the answer to the question about current taxes on "high" income earners corresponds both to the panel for the rich and for the super rich, while the questions about taxes on "middle" and "low" income earners correspond to the middle class (2X) and working class (X) respectively.

Thus, the colors of the points in the bottom half of figure 1 support the conventional wisdom that the low and middle income earners tend to believe that *existing* taxes against the rich are too low. However, the essential point of figure 2 is that it is a fallacy to believe the Meltzer-Richard proposition that there is a negative relationship between *ideal* tax rates and income. We do not yet know how to reconcile this conflicting information, but it is possible that the poor underestimate existing taxes on the rich, that the top tax rates are out of sync with public opinion, or that the poor do

FIGURE 2. Ideal average tax rates in **Australia** as a function of family income (baseline = 25,000 local currency units annually)
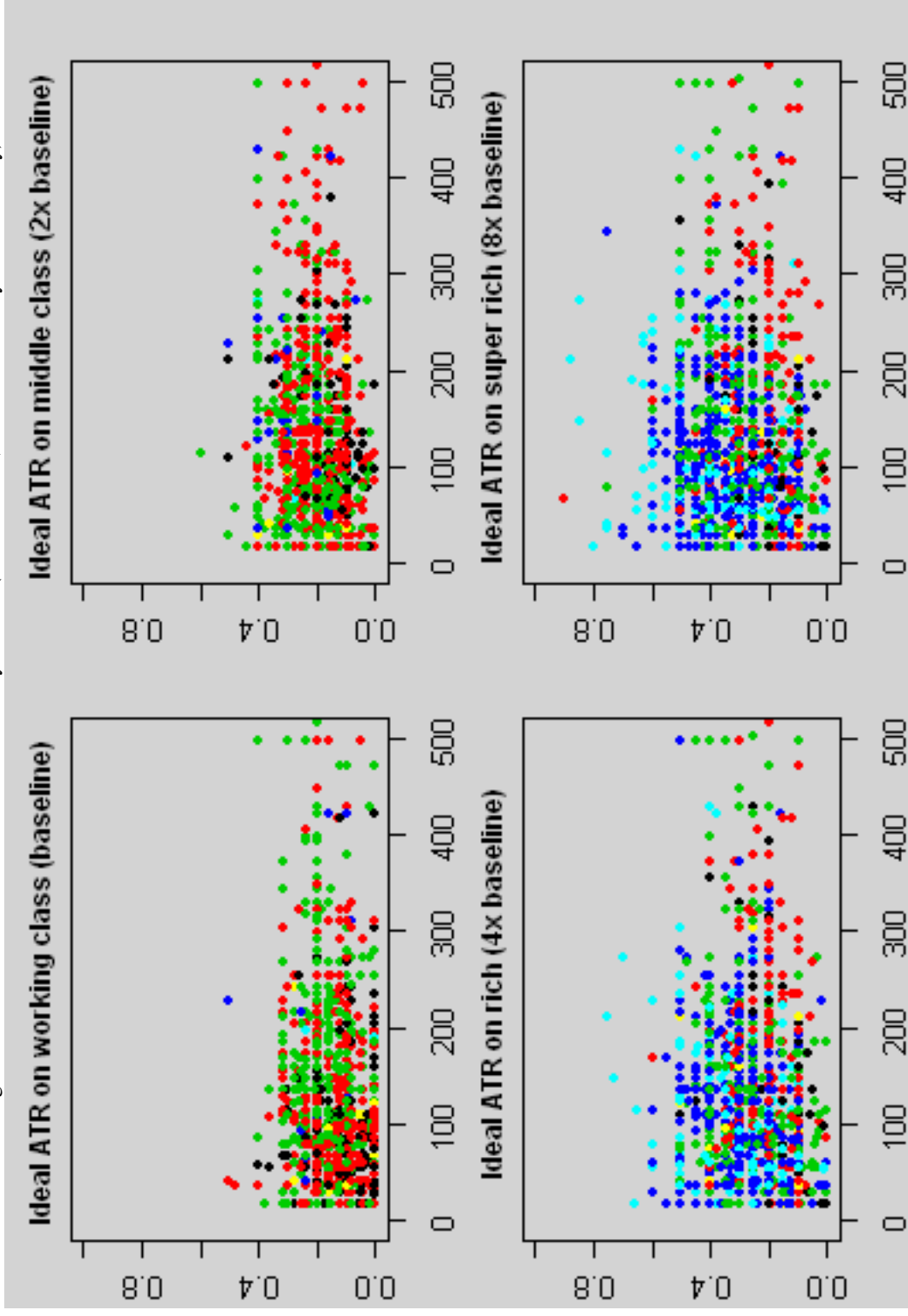
The *y*-axis is always the respondent's ideal average tax rate on a person earning the specified wage. The *x*-axis is always the family income of the respondent, normalized so that the sample median is 100. The colors indicate (black = "Much too high", red = "Too high", green = "About right", dark blue = "Too low", light blue = "Much too low", yellow = "Don't know") what the respondent thinks of the current tax rate that is applied to each class. Data taken from the 1996 ISSP.

not consider people with 4X or 8X income to be "rich". Perhaps the tendency of the low and middle income earners to say that the rich are undertaxed is more a statement of ideology than a the result of a careful consideration of what the appropriate tax rates should be, but if that is the thought process in most voters' minds, then one could question whether the rational choice approach to the political economy of redistribution is appropriate.

The Meltzer-Richard prediction that ideal ATRs are decreasing in income remains applicable to countries with proportional representation, although the decisive voter is not necessarily the median voter. I do not show the corresponding plots here because they are virtually identical to figure 2: ideal ATRs are not decreasing in family income in Italy, Spain, Hungary, the Czech Republic, and Poland for any of the four classes. Thus, the ISSP data exhibit no relationship between ideal ATRs and family income of respondents in any country for any class.

The main weakness of the survey question on ideal ATRs is that it does not specify how the revenue will be spent, or even that it will be used for redistribution. Also, it is true that in survey questions that specifically ask about support for redistribution, the respondent's income consistently has a relatively strong negative coefficient in a regression, at least when controlling for a number of other factors. However, if attitudes toward redistribution were driven by self-interest and the way in which taxation distorts the labor-leisure tradeoff, as supposed by the Meltzer-Richard model and many other political economy models, then we would expect to see evidence for it in the ideal ATR data. Thus, it is more probable that the correlation between income and attitude toward redistribution is driven by something besides the deadweight losss of taxation and self-interest.

So what could account for this failure of political economy models? The Meltzer-Richard model does rely on the assumption that consumption is a normal good, but this assumption is uncontroversial. Also, the the Meltzer-Richard model relies on the result in Roberts (1977) that redistribution does not change the ordering of incomes, and the fiscal scheme in the Meltzer-Richard model conforms to this assumption by specifying a proportional tax and lump-sum benefit transfer with a balanced budget. In practice, taxes are at least somewhat progressive overall, transfers are never strictly lump-sum, and balanced budgets the exception rather than the rule; thus fiscal policy induces some reordering of incomes in every country. But one does not get the impression that these three abstractions from reality are sufficiently severe to account for the complete absence of a relationship between ideal ATRs and respondent income across four different income classes, seven different countries, and three different post-war political trajectories.

A final possibility is simply to say that voters' utility functions do not depend solely on consumption and leisure. Doing so would represent a major departure from the bulk of the political economy research in the past twenty-five years, but could be a major step *toward* the bulk of the political sociology in the past twenty-five years that has found, for example, that individuals have tastes for fairness and need alleviation.

For advanced and transitional democracies respectively, figures 3 and 4 plot the data on ideal ATRs in a different way. The kernel density of ideal ATRs is plotted for each class and country and contrasted with vertical lines that

FIGURE 3. Ideal and "Actual" Average Tax Rates in Advanced Democracies
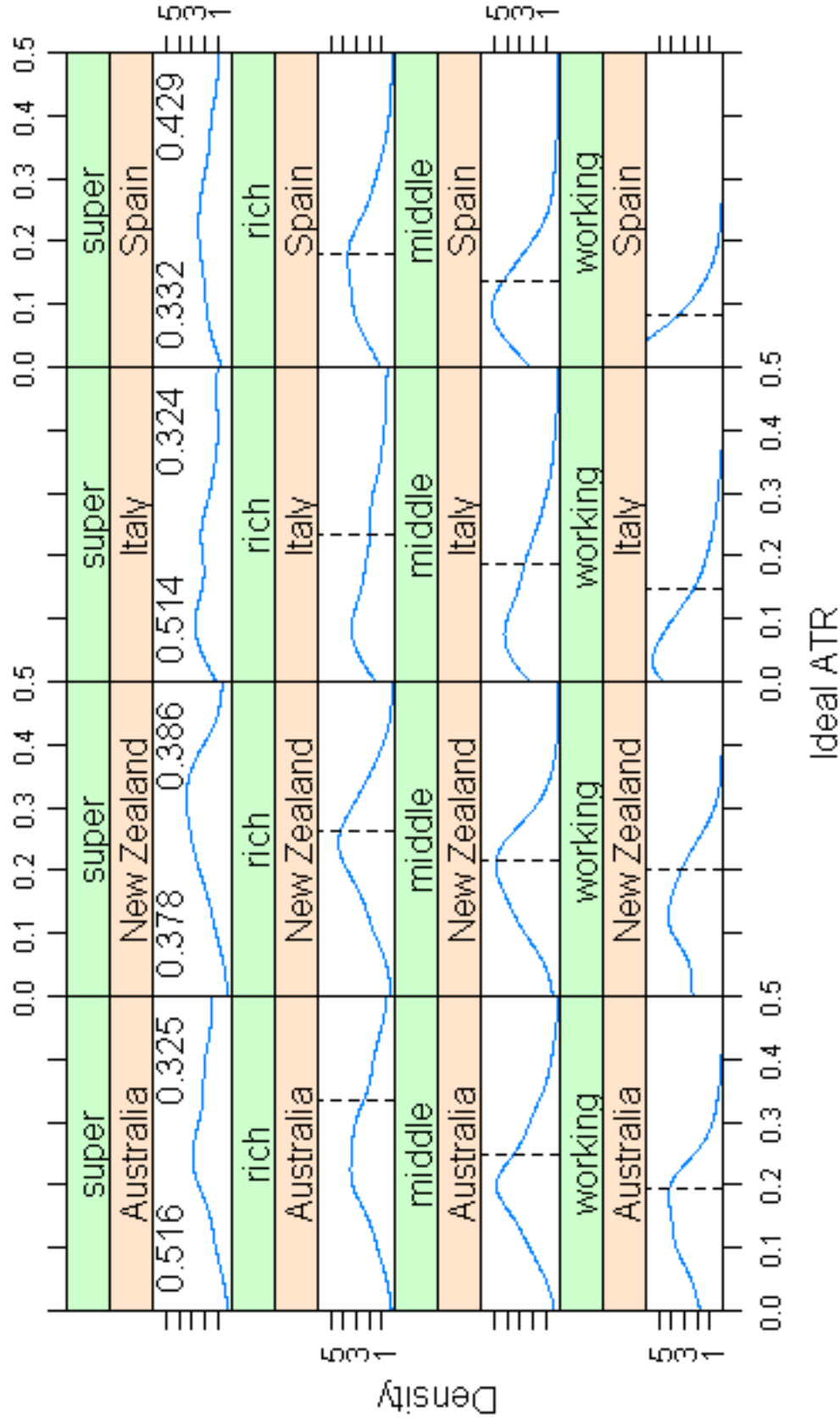
Solid lines are kernel densities of ideal tax rates on the specified class. Vertical dashed lines are average income tax rates on a single individual with no children in each income class and are calculated from the 1997 OECD Taxing Wages database. Numbers in the top left and top right corners for each country respectively indicate the proportion favoring "reduce taxes" and "more social services" given a choice between the two (ISSP item v56); other respondents did not state a preference.

FIGURE 4. Ideal and "Actual" Average Tax Rates in Transition Countries
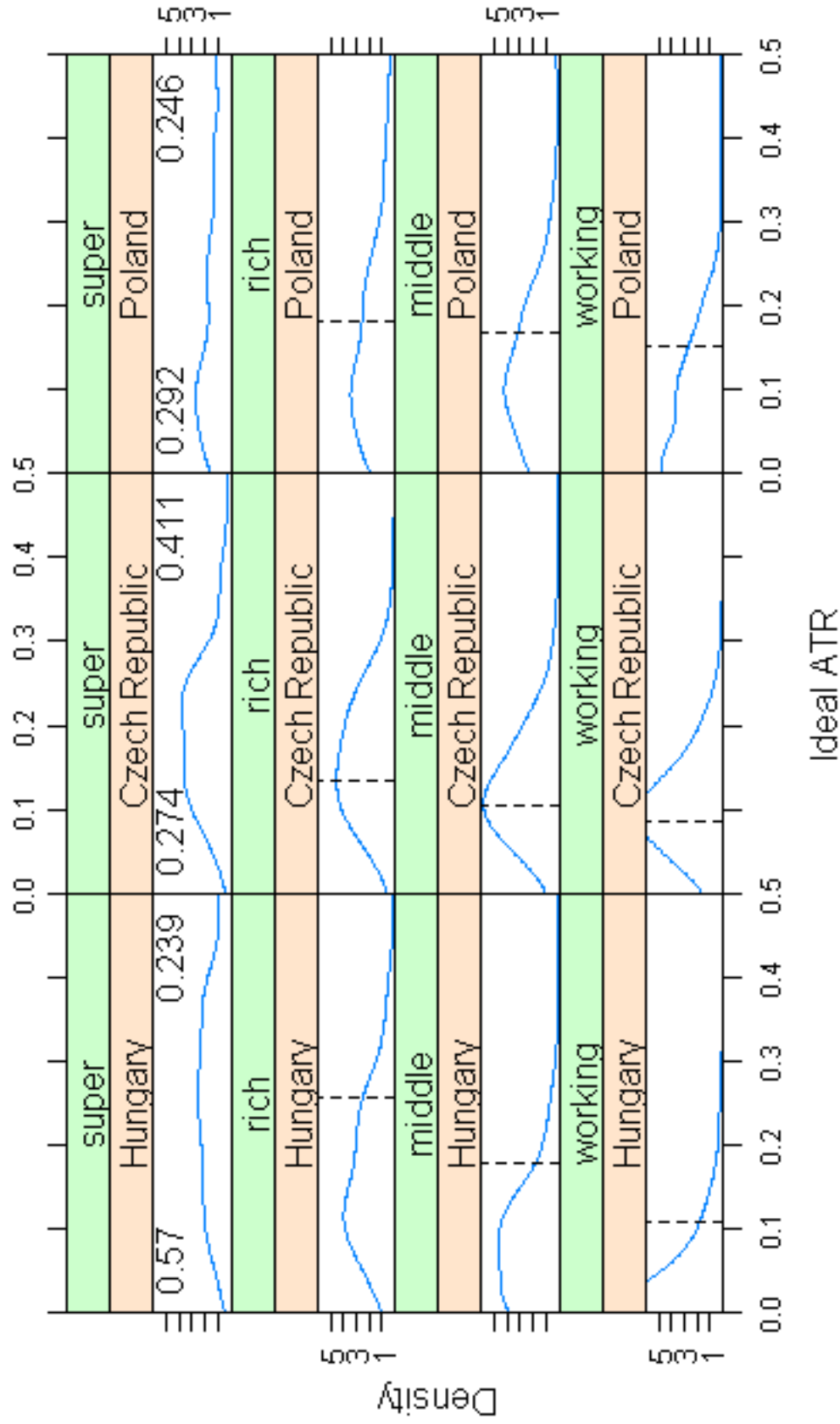
Solid lines are kernel densities of ideal tax rates on the specified class. Vertical dashed lines are average income tax rates on a single individual with no children in each income class and are calculated from the 1997 OECD Taxing Wages database. Numbers in the top left and top right corners for each country indicate the proportion favoring "reduce taxes" and "more social services" respectively given a choice between the two (ISSP item v56); other respondents did not state a preference.

are intended to loosely represent the *actual* ATRs on the working, middle, and rich classes in each country. These "actual" ATRs are really the average income tax rates on a single, childless workers earning 67%, 100%, and 167% of the average wage taken from an OECD database.[3] These "actual" ATRs understate true tax burdens because they do not take into account taxes on capital or the employee-incidence of taxes levied on employers, but also overstate true tax burdens because many couples benefit from tax deductions, credits, or other preferential treatment due to marriage and / or children. Also, "actual" ATR data were unavailable for the super rich but the ATR on single childless workers earning 167% of the average wage is probably a good lower bound.

Despite these limitations, figures 3 and 4 can be used to assess the relationship between the distribution of ideal ATRs and the ATRs imposed in democratic countries. Of course, the data cannot indicate whether opinion "causes" policy or whether opinion coalesces around policy, but most would predict that there should be an alignment between the two in democratic countries. It also helps to consider the proportion of respondents who favored "reduce taxes" and "more social services" when asked

> If the government had a choice between reducing taxes or spending more on (social services), which
>
> do you think it should do? (We mean all taxes together, including wage deductions, income tax, tax
>
> on goods and services and all the rest).

In New Zealand, Spain, and the Czech Republic, actual ATRs seem to be near the modes of ideal ATRs, especially for taxes on the working class and the rich. Also, in these three counties, a plurality opposed reducing taxes, as shown by the proportions who favored tax reductions and increased social spending in the top corners. In Australia, actual ATRs seem to be aligned with the modes of ideal ATRs on the working and middle classes, but a majority favors reduced taxes, perhaps due to perceived overtaxation of the rich.

However, in the remaining cases, actual ATRs fall in the right tail of the distribution of ideal ATRs and at least a plurality favors reducing taxes over increased spending on social services. Neither the political economy literature or the political sociology literature offers a compelling reason for divergence between tax rates and opinion about tax rates. There are some institutions-based explanations, but no one goes so far as to say that, in equilibrium, a *majority* could favor reduced taxes, as is the case in Italy and Hungary.

It is encouraging that aside from the somewhat odd case of Poland where barely half the respondents even had an opinion on the tax vs. spending question, there are no mutually exclusive tendencies in figures 3 and 4. In several democracies, tax rates seem "about right" given opinion and perception. In other countries, tax rates seem too high given opinion, but citizens "rightly" prefer for taxes to come down. These two figures suggest that the individual data on ideal ATRs are meaningful and not just noise. However, there are competing explanations as to what drives preferences over ideal ATRs, and it remains to be investigated how the current levels of taxation are even sustainable

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[3]OECD, "Taxing Wages Statistics: Comparative tax rates and benefits (old definition) Vol 2006 release 01", Paris.

in the face of opinion in Italy and Hungary or why the working class is even taxed at all in Spain given that a *majority* favors no income tax on the working class. These are the questions that I hope to be able to answer eventually.

4. FORMAL MODEL OF INDIVIDUAL PREFERENCES

How can we integrate political sociology and political economy theories? A considerable first step would be to expand voters' utility functions so that they include variables suggested by both camps. This section suggests one way of doing so. The core idea is that one can metaphorically posit that individuals have an ideal post-fisc income distribution that factors into their utility function. Few people actually think in terms of distributions of anything, but positing that individuals have an ideal post-fisc income distribution is a convenient device for establishing a more concrete operationalization of otherwise fuzzy concepts.

Although it is impossible to specify an exact relationship, the extent to which an individual cares about equality, efficiency, merit, and need ought to be reflected in the characteristics of his or her ideal income distribution function. For example, a taste for equality of outcomes would correspond to an income distribution with low variance, while a taste for equality of opportunity would correspond to a fairly symmetric income distribution. Sensitivity to need implies that an individual's ideal income distribution would have a short left tail, etc.

However, there are "traditional" economic reasons why an individual might care about the shape of an income distribution. For example, the Possibility Of Upward Mobility (BO 1996?) hypothesis states that voters anticipate their future income based on their human capital and prefer a tax rate accordingly. Of course, it is not reasonable to say that people anticipate the future without uncertainty. Thus, the upwardly mobile should prefer an income distribution with a long right tail. Similarly, the political economy literature on skill specificity and insurance can easily be incorporated into this framework. For example, high skilled workers may generally prefer that the income distribution has a long right tail. But if their skills are specific and subject to being made obsolete by changes in the economy, then such workers may also prefer a post-fisc income distribution with low variance, particularly if they are averse to the risk of being laid off.

Thus, the ideal income distribution of workers with specific skills would face conflicting pressures. But distributive justice theorists would contend that *everyone's* ideal income distribution faces conflicting pressures because the four (or five) distributive justice principles always come into conflict. Individual judgments in the domain of fiscal policy would thus depend on the extent to which equality / need / insurance motivations prevail over efficiency / merit motivations.

It is possible to derive simpler or more complex models, but the one presented in this section is best for conveying the intuition of this approach. Let a continuum of voters be indexed by $p \in (0, 1)$. One can also think of person p as the individual such that the proportion of the population that is poorer than him or her is p. I make use of quantile

functions for income; a quantile function is the inverse of a CDF and thus is a function of p that maps into income. Let the pre-fisc income distribution given by nature be $Q_0(p;\lambda_0)$, which indicates how much money nature gives to person p from a quantile function with nature's parameter vector λ_0. The variance, tail thickness, etc. of an income distribution are determined by the distribution's functional form and parameters. Thus, the pre-fisc distribution of income depends on λ_0 as well as the unspecified functional form of $Q_0(p;\lambda_0)$. In principle, $Q_0(p;\lambda_0)$ is fairly observable or can be approximated with wage data or pre-fisc income data from the LIS.

Let $Q_p(p;\lambda_p)$ be p's ideal post-fisc income distribution with p's preferred parameter vector λ_p. Thus, p can express a relatively wide array of preferences with a relatively small number of parameters that are collected into the vector λ_p. For example, if $Q_p(p;\lambda_p)$ were the quantile function for p's favorite lognormal income distribution, then λ_p would be a vector of length two that contains the location and scale parameter of a lognormal distribution. However, there is no need to restrict our attention to two-parameter distributions like the lognormal, so I leave the functional form of $Q_p(p;\lambda_p)$ unspecified here.

An interesting property of quantile functions is that the expectation and variance can be defined from them: $\mathbb{E}[Y] = \int_0^1 Q(p;\lambda)\,dp = \int_{-\infty}^\infty yf(y)\,dy$ and $Var[Y] = \int_0^1 [Q(p;\lambda)]^2\,dp - \mathbb{E}[Y]^2 = \int_{-\infty}^\infty f(y)(y-\mathbb{E}[Y])^2\,dy$. Thus, for nature's income distribution, $\int_0^1 Q_0(p;\lambda_0)\,dp = \bar{y}$ and $Var[Y_0] = \int_0^1 [Q_0(p;\lambda_0)]^2\,dp + \bar{y}^2$. I assume that the expectation of $Q_p(p;\lambda_p)$ is also $\bar{y}$, which is to say that voters recognize that redistribution is zero-sum, conditional on the total amount of income given by nature.

Suppose voters choose a proportional tax rate, τ, with a lump-sum benefit, as in the Meltzer-Richard model. I assume the absence of a labor supply effect here. Thus, the realized post-fisc income distribution is given by $Q(p;\lambda) = (1-\tau)Q_0(p;\lambda_0) + \tau\bar{y}$, and a voter's problem is

$$\arg\max_\tau \alpha_p Q(p;\lambda) - (1-\alpha_p)\int_0^1 [Q(p;\lambda) - Q_p(p;\lambda_p)]^2\,dp \quad =$$

$$\arg\max_\tau \alpha_p(1-\tau)Q_0(p;\lambda_0) + \tau\bar{y} - (1-\alpha_p)\int_0^1 [(1-\tau)Q_0(p;\lambda_0) + \tau\bar{y} - Q_p(p;\lambda_p)]^2\,dp,$$

subject to the constraint that $\int_0^1 Q_p(p;\lambda_p)\,dp = \bar{y}$ and where $\alpha_p \in [0,1]$ is the weight that p assigns to his or her own realization of post-fisc income, $Q(p;\lambda)$. The first-order condition is then

$$\frac{\partial}{\partial\tau}U_p \quad = \quad \alpha_p(\bar{y} - Q_0(p;\lambda_0)) - 2(1-\alpha_p)\int_0^1 [(1-\tau)Q_0(p;\lambda_0) + \tau\bar{y} - Q_p(p;\lambda_p)][\bar{y} - Q_0(p;\lambda_0)]\,dp = 0.$$

It follows that, at the optimum, the scalar, $\frac{\alpha_p(\bar{y}-Q_0(p;\lambda))}{2(1-\alpha_p)}$

$$= \int_0^1 \left[(1-\tau)\bar{y}Q_0(p;\lambda_0) + \tau\bar{y}^2 - \bar{y}Q_p(p;\lambda_p) - (1-\tau)[Q_0(p;\lambda_0)]^2 - \tau\bar{y}Q_0(p;\lambda_0) + Q_0(p;\lambda_0)Q_p(p;\lambda_p) \right] dp,$$

$$= (1-\tau)\bar{y}^2 + \tau\bar{y}^2 - \bar{y}^2 - (1-\tau)\int_0^1 [Q_0(p;\lambda_0)]^2 dp - \tau\bar{y}^2 + \int_0^1 Q_0(p;\lambda_0)Q_p(p;\lambda_p) dp,$$

$$= -(1-\tau)\left(Var[Y_0] + \bar{y}^2\right) - \tau\bar{y}^2 + \int_0^1 Q_0(p;\lambda_0)Q_p(p;\lambda_p) dp,$$

$$= -\left(Var[Y_0] + \bar{y}^2\right) + \tau Var[Y_0] + \int_0^1 Q_0(p;\lambda_0)Q_p(p;\lambda_p) dp,$$

and thus

$$\tilde{\tau}_p = \frac{\alpha_p(\bar{y}-Q_0(p;\lambda_0))}{2(1-\alpha_p)Var[Y_0]} + \frac{\bar{y}^2 - \int_0^1 Q_0(p;\lambda_0)Q_p(p;\lambda_p)dp}{Var[Y_0]} + 1,$$

where $\tilde{\tau}_p$ is p's optimal tax rate. In general, the sign of the first term in the expression for $\tilde{\tau}_p$ depends on the sign of $\bar{y} - Q_0(p;\lambda_0)$, which is to say whether p is richer or poorer than average, as in many political economy models with this fiscal policy scheme.

It is possible to discern two sensible special cases when $\alpha_p = 0$, which is to say that p cares only about the distribution of income and not about his or her own income. First, if $Q_p(p;\lambda_p) = Q_0(p;\lambda_0)$, then p does not want the distribution of income to change and should prefer a tax rate of zero. And $Q_p(p;\lambda_p) = Q_0(p;\lambda_0) \Rightarrow \bar{y}^2 - \int_0^1 Q_0(p;\lambda_0)Q_p(p;\lambda_p)dp = -Var[Y_0]$; thus $\tilde{\tau}_p = 0$. Second, if p is a radical egalitarian and wants everyone to have the same post-fisc income, then a tax rate of one is necessary to achieve this objective. And $Q_p(p;\lambda_p) = \bar{y} \Rightarrow \bar{y}^2 - \int_0^1 Q_0(p;\lambda_0)Q_p(p;\lambda_p)dp = 0$; thus, $\tilde{\tau}_p = 1$.

Regardless of α_p, another interesting special case occurs for the mean pre-fisc income earner, where $Q_0(p;\lambda_0) = \bar{y}$ and $\tilde{\tau}_p = \frac{\bar{y}^2 - \int_0^1 Q_0(p;\lambda_0)Q_p(p;\lambda_p)dp}{Var[Y_0]} + 1$. In other words, since the mean pre-fisc income earner receives a *net* transfer of zero regardless of τ, his or her preferences over the tax rate are driven solely by distributional considerations. Thus, the extent to which the mean pre-fisc income earner wants a tax rate less than unity depends on the extent to which $\int_0^1 Q_0(p;\lambda_0)Q_p(p;\lambda_p)dp$ exceeds $\bar{y}^2$. If one is willing to assume a functional form for the quantile distributions, then it is possible to calculate $\frac{\partial \tilde{\tau}_p}{\partial \lambda_0}$ and $\frac{\partial \tilde{\tau}_p}{\partial \lambda_p}$.

Essentially, this model posits a tradeoff between narrow self-interest and the desire for a particular post-fisc income distribution. We have some survey data on ideal ATRs. Thus, if we could hypothetically obtain data on $\int_0^1 Q_0(p;\lambda)Q_p(p;\lambda)dp$, then the above equation for optimal individual-level behavior could be translated into a testable regression model: $\tilde{\tau}_p = \beta_0 + \beta_1 Q_0(p;\lambda_0) + \beta_2 \int_0^1 Q_0(p;\lambda_0)Q_p(p;\lambda_p)dp + \varepsilon_p$. In practice, there will never be data on $\int_0^1 Q_0(p;\lambda_0)Q_p(p;\lambda_p)dp$, since this integral is something akin to the covariance between nature's income

distribution and the distribution of income favored by p. However, surveys often ask respondents to evaluate various aspects of a country's income distribution and the responses can serve as proxies for this integral.

Thus, it is possible to derive a reasonably simple model of individual preferences by assuming voters have a $Q_p(p; \lambda_p)$ and a wide variety of preferences can be expressed through λ_p. In contrast, it would be difficult to solve a model where there was a separate parameter for egalitarianism, a separate parameter for need sensitivity, etc. It is reasonably easy for formal modelers to think in terms of distributions. Thus, this framework can provide a framework for future theoretical developments that integrate political economy with political sociology.

5. FACTOR ANALYSIS

This section reports some results of a factor analysis model originally conducted for the 2006 APSA conference using the 1992 Social Inequality module of the ISSP.[4] My 2007 APSA paper will use some as-yet-unpublished factor analysis techniques that correct a number of problems with my preliminary analysis and include cover many more surveys (especially the Role of Government surveys).

Sociologists apply factor analysis to cross-country survey data all the time. However, two fairly basic problems have not yet been addressed in these analyses. The first is that the outcome variables are a mix of continuous-response and ordinal-response, and the traditional assumption that prediction errors are multivariate normal is unlikely to hold for ordinal responses. Second, nonresponse is quite common in surveys. Since the nonresponse is unlikely to be random, dropping respondents and / or questions due to missing data will introduce bias into the estimates.

Quinn (2004) presents a Bayesian factor analysis model that overcomes these two problems. Most of the full-conditional distributions are multivariate normal, so estimation via a Gibbs sampler is fairly straightforward. Gibbs sampling works essentially the same way for ordinal responses (with *standard* normal errors) as it does for continuous responses (with normal errors), which overcomes the first problem. Missing responses are simply imputed at each iteration of the Markov chain by drawing from the appropriate full-conditional distribution, which overcomes the second problem. There are a number of other challenges that apply to factor analysis generally and are not specifically addressed by Quinn's Bayesian factor analysis model. In particular, picking the number of factors and rotating the solution appropriately are never easy, but new algorithms for each will be forthcoming this summer.

Thus, the results in figure 5 are pre-preliminary and will soon be revised, but show the five-dimensional rotated loadings for about a dozen explicitly political questions in the 1992 ISSP Social Inequality survey. The first point is that political questions are not unifactorial; they usually load on two or sometimes three factors. Thus, the explicitly political questions are insufficient to interpret the dimensions.

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[4]International Social Survey Program (ISSP), 1996-06-10, "International Social Survey Program: Social Inequality, 1992", hdl:1902.2/06493 http://id.thedata.org/hdl%3A1902.2%2F06493 Inter-university Consortium for Political and Social Research [distributor(DDI)]

FIGURE 5. Rotated Loadings for Explicitly Political Questions

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However, there were about forty apolitical questions that were included in the model, but are not shown here because they are of less interest. A few of the apolitical questions load on only one factor each, and provide a basis for labeling the factors that corresponds closely to the distributive justice schema, with "equality" split into two separate factors: equality of outcomes and equality of opportunity. For example, the "need sensitivity" dimension is defined by a question that asks respondents "In deciding how much people ought to earn, how important should . . . [w]hat is needed to support a family be", which loads on only one dimension (green diamonds). The "efficiency" dimension is defined by a question about how much skilled factory workers should earn relative to unskilled factory workers, which loads on only one dimension (black circles). The "egalitarianism" dimension (pink downward pointing triangles) is not characterized by any single question, but is prominent (along with efficiency) in questions about the ideal distribution of wages and in the political questions in figure 5.

Thus, the two factors in figure 5 that appear most relevant to explicitly political questions are egalitarianism (of outcomes) and sensitivity to need.[5] A distant third is economic efficiency. In particular, when respondents are asked whether they agree with the statement "It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes," economic efficiency-orientation does nothing to explain the variance in responses, while egalitarianism and to a lesser extent, need sensitivity do. Efficiency is most relevant for the question of whether taxes on the rich are too high, but still not as important as egalitarianism. Need sensitivity is irrelevant to the question of whether taxes on the rich are too high. For the question about whether taxes on the poor are too high, need sensitivity and egalitarianism are about equally relevant, while efficiency-orientation is not. The other questions in figure 5 display a similar configuration of loadings.

The Meltzer-Richard model claims that the important factor that stops the below-median income earners from demanding a tax rate of one is the recognition that high tax rates result in deadweight loss through a negative labor supply effect. The fact that orientation toward economic efficiency does nothing to explain the variation in the responses to the question about income redistribution strongly suggests that the Meltzer-Richard logic is false. Instead, the bulk of the explanatory power for this question is driven by the need sensitivity and egalitarianism dimensions, in support of the political sociology approach.

In my APSA06 paper, I also regressed the factor scores from the factor analysis model on socio-demographic characteristics of the respondents. It is true that respondent income (more precisely the respondent's class) was negatively related to need sensitivity and egalitarianism, which would imply that the upper class is more likely to oppose redistribution than is the lower class. However, class is far from the only variable that explains variation in factor scores, so it would be a mistake to assume that the model could be "reduced" to a pure income / class explanation. The most interesting explanatory variable is perhaps religiosity, which is *positively* associated with need sensitivity and

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[5]The gray square and gray triangles in figure 5 pertain to equality of opportunity and merit dimensions, although the variables used to label these dimensions are not shown here. Neither of these two dimensions is particularly relevant for political questions.

negatively associated with egalitarianism, while most of the other variables have the same sign when the factor scores for need sensitivity and egalitarianism are regressed on them.

Thus, the factor analysis model seems to support the political sociology approach and specifically the principles specified by distributive justice theorists. There is very little (both here and in the original paper) that supports traditional political economy theories. However, all of these results are subject to major revision in the next few months.

6. CONCLUSION

This paper is perhaps not the most exciting of conference papers but illustrates a promising direction of research. There is a large literature on the political sociology of the welfare state that can be merged into political economy. Or perhaps it would be more correct to say that the political economy literature can be merged into political sociology because the political sociology approach appears to have a lot more going for it empirically. But some tools from political economy literature will undoubtedly be necessary to make predictions about aggregate outcomes from a micro model of individual behavior.

One of the main obstacles to this integration is operationalizing somewhat "fuzzy" concepts from political sociology, such as the distributive justice principles, in a formal political economy model. This paper has shown that is is possible to specify that utility depends on the discrepancy between an actual (or proposed) income distribution and an individual's ideal income distribution function. For example, "egalitarianism" can be operationalized more concretely as "low variance in the ideal income distribution". This theoretical framework is fairly flexible, and much more can be done in this vein.

In order to test any model that asserts individual behavior is a function of distributive justice principles, it will be necessary to estimate how much an individual "believes" in each principle. Exploratory factor analysis is the most obvious technique for doing so. A few methodological developments are needed to do a high-dimensionality factor analysis well with cross-country survey data, but sooner or later we will have nationally representative factor scores on multivariate distribution of ideology / preferences / principles for almost all developed countries at many points in time over the past twenty years. Then it will be possible to analyze the distribution of preferences across countries, to test whether aggregate outcomes are a function of the distribution mass preferences, and test whether individual preferences are related to specified socio-demographic characteristics.

It is even possible to include income on the right-hand side of a factor analysis model to see if income has a direct effect on survey responses, controlling for factor scores on the various distributive justice principles, as loosely implied by the formal model sketched in section four. I think the more likely way in which income affects responses to survey questions (and possibly political behavior) is *through* the principles that an individual uses to evaluate policies, and it would be possible to test this hypothesis as well.

Thus, I think that the evidence will validate the poltiical sociology approach, but this remains to be seen. The only "new" empirical results in this paper at least suggest that the Meltzer-Richard model should not be taken as a starting point. Voters' preferred ATRs are simply not ordered by income, so it is not a surprise that the empirical tests of the aggregate implications of the Meltzer-Richard model have been mixed, at best. The common finding at the individual level that income is negatively correlated with support for redistribution is an important correlation to explain, but there are competing explanations within political economy and within political sociology, and the existence of this correlation is insufficient to sustain the Meltzer-Richard model. Future research will result in sharper tests of the political sociology and poltical economy perspectus and hopefully will result in a more satisfactory synthesis.

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