Comments welcome.

INCOME DISTRIBUTION AND SOCIAL EXPENDITURES: A CROSSNATIONAL PERSPECTIVE*

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Abstract

We assemble data from several different sources to examine the cross-national effects of inequality and trust on social expenditures. We find that the inequality between the middle classes and the poor (as measured by the 50/10 percentile ratio) has a small, positive impact but inequality between the ends of the distribution and middle class (measured by the 90/50 percentile ratio) has a large and *negative* impact on social spending .Different measures of trust are shown to have a large and positive impact on spending , implying that more cohesive, trusting societies are more willing to share economic resources with others not so fortunate. Our results therefore suggest that as the "rich" become more distant from the middle and lower classes, they find it easier to opt out of public programs and to buy substitutes in the private market. This implies that over time rising inequality will erode support for social institutions and social support that provides insurance against income loss, upward mobility and equal opportunity

"America's high earners—the fortunate top fifth—thus feel increasingly justified in paying only what is necessary to insure that everyone in their community is sufficiently well educated and has access to the public services they need to succeed" –Reich (1991)

Economic inequality, either actual or perceived, plays an important role influencing the set of goods and services that are subsidized by the public sector. Public expenditures on defense, police and fire services, roads, foreign aid, or research and development may (or may not) have benefits for all citizens. However, aside from those directly employed in these activities, such expenditures do not directly affect the well-being of households. In this paper, we focus instead on public expenditures that provide income or goods and services directly to households. This implies that we are primarily concerned with public expenditure on the provision of "private goods," including cash and near–cash transfers, health care, and education.[1]

In this paper, we first document the trends in social spending as we have defined it and quickly review that existing literature that links social expenditures and inequality. We then construct and estimate a new model of the empirical relationship between inequality and social expenditures. Our main questions deal with the effects that inequality and trust have in the provision of public expenditures? We use trust as a proxy for citizen belief in altruism, help for those around them who are afflicted or in need—regardless their beliefs as to whether government *should* facilitate these altruistic desires. Our estimates imply that more trustful societies are associated with higher levels of public spending while measures of inequality, especially the ratio of the top market income to the middle market income are indicative of lower spending as we have defined it above.

[1] We concentrate on social expenditures in cash or near cash terms, e.g., food stamps, housing allowances, active labor market programs, for the nonelderly. We cannot include health care or education at this time because of lack of data on these areas of social spending for the nations and years which we are analyzing. Tax expenditures are not included nor are employer provided benefits; but refundable tax credits like the earned income tax credit are included. This definition of social expenditures is very consistent with the definitions of market and disposable income employed in the income inequality literature.

The analysis is designed as follows. First, we review and summarize the literature in the area that links social expenditures and inequality. Then, we present some summary data linking inequality and trust variables from the ISSP (International Social Survey Programme) data set. In Sections II and III, we present the data used in our empirical analysis followed by a review of our results. Finally, we bring the issues together in the conclusion of Section IV.

I. Social Spending, Inequality and the Literature on Public Redistributive Goods and Inequality

We briefly review the growing literature on redistribution by governments and inequality. Before we discuss this literature however, we examine the trends in social spending and the measures of inequality used to explain its relationship to economic inequality. In so doing, we offer some clues as to the way in which we review the literature and why we model the relationship between the two as we do in the next section of the paper.

Patterns of Social Spending

Redistributive social expenditures vary greatly across nations. In the developed countries, total social expenditures as a percent of GDP (in 1998) ranged from 15% in the U.S. to 26% in the U.K. to over 30% in Sweden (OECD 2002a).[2] The available evidence (Smeeding 2002b) indicates that social expenditures as a fraction of total government spending in OECD nations range from 0.67 in Australia to 0.90 in Denmark and Sweden. That is, 67 to 90 percent of all

[2] The variation in nonelderly total social expenditures is even more pronounced. There, the Northern European (Belgium, Denmark, Netherlands) and Scandinavian (Finland, Norway, Sweden) countries spend markedly more (as a percentage of GDP) on social expenditures than do the Anglo (Australia, Canada, UK, US) countries (OECD 2003).

government spending is made up of redistributive cash or in-kind benefits.[3] Thus, the topic of social expenditure is about most of what governments actually do.

We begin by tracing the trend in non-elderly cash and near cash (food, housing) benefits for OECD countries back over the past 20 years, using data from the OECD (2002a). We present these estimates in comparable format in Figure 1. Here 17 OECD nations—all of the major nations except for the Central and Eastern Europeans—have been grouped into 7 clusters: Scandinavia (Finland, Norway, Sweden); Northern Europe (Belgium, Denmark, Netherlands); Central and Southern Europe (Austria, France Germany, Italy, Luxembourg, Spain); Anglo Saxony (Australia, United Kingdom and Canada); the United States and Mexico.[4]

The Scandinavian and Northern Europeans follow similar patterns—high levels of spending showing responsiveness to the recession of the early 1990s in Sweden and Finland, and a tapering after these events. The Central and Southern Europeans and the Anglo-Saxon nations show remarkably similar spending patterns, again raising in the early 1990s but overall at a level distinctly below that the other two groups. The United States is significantly below all these others and, by the late 1990s is spending at a level closer, in terms of a fraction of GDP per capita, to Mexico than to the other richer OECD nations.

These figures illustrate the wide differences that one can find for both levels and trends in social spending, using figures that abstract from financing of health care, education and retirement for the elderly. They also correspond very closely to the measures of money and near-

[3] We estimate this ratio by adding OECD Social Expenditures and OECD Final Government Outlays and dividing this total into OECD Social Expenditures. For more on this method, see Smeeding (2002b) and OECD (2002a). Both we and the OECD do not include tax expenditures as public benefits in these calculations.

[4] No comparable time series exists that includes both health care and education spending.

money income inequality used in the analytic literature in this area, including that presented below.

Inequality

In analyzing the impact of "inequality" on social expenditures, one must confront the crucial issue of how inequality is measured. Since the work of Atkinson (1970), it has been recognized that inequality rankings often differ, depending on which summary measure of inequality is used. Atkinson emphasized that the choice of a summary measure of inequality contains an implicit judgment as to which differences in which part of the distribution of income are more important. Some measures of inequality (like the Atkinson index) weight more heavily differences between the incomes of the most deprived and the "mainstream" of society. Whether these differences matter most[5] ,or whether it is the difference between the middle class and the affluent (captured better by the coefficient of variation) which matters more depends largely on which question one is asking. For example, the gap between the very affluent and the middle class is an important variable in models of voting behavior but inequality at the lower end of the distribution is more emphasized in the literature on poverty and social outcomes.

Because we believe that inequality at the top affects social spending differently than does income inequality at the bottom of the distribution, our work makes use of robust measures of each type of inequality, specifically the ratio of the top income groups to the middle income group (90^{th} percentile person divided by the median or 50^{th} percentile person) and the ratio of the middle group to the bottom group (50 the percentile person to the 10^{th} percentile person) We

[5] In the European literature, the current emphasis on "social exclusion" as a major social problem reflects both a concern with the multi-dimensionality of economic and social deprivation and an analysis that social outcomes are heavily influenced by the economic distance between the bottom and the middle parts of the distribution.

prefer these measures because they explicitly identify how differences in specific parts of the income distribution affect our variable of interest.. At the bottom of the distribution, the difference between the incomes of the median bottom quintile person (e.g. the10th percentile) and the middle income person (the median or 50th percentile) may be a statement of need for redistribution in the in the society and hence the larger this difference, the larger is the 'demand' for redistribution.

The arguments for the significance of the top versus middle income comparisons are different. Here we want to test the assertion that there may be a "tipping point" in overall national levels of inequality, (for example, at high levels of the 90/50 ratio), beyond which affluent citizens become less civically engaged and less likely to support public policies which benefit all of society. This might occur, for example, when a critical mass of high-income parents decides to pull their children out of the local public school system or when well paid employees decide that paying taxes for income security programs or social insurance are a waste of their money because it is easier to self-insure at lower cost. As a consequence, it is essential to know *which part* of the distribution of income is becoming more unequal.[6]

The Literature on Inequality and Spending

There are at least three main threads of economic research specifically relevant to the current analysis. The three strands of the economics literature which we review include the literature on social capital and inequality; the median voter models of inequality and social spending; and the literature on social spending and economic growth. And then there is additional institutional literature on politics and social spending in the political science

[6] In unpacking this issue, we also recognize the fact that social expenditures *do* influence the "real" level of inequality within and across societies. We discuss this endogeneity issue more completely below.

literature. We summarize our reading of the literature at the end of the section.

Social Capital and Inequality. The first grouping of literature in this area examines the relationship between specific measures of social capital and inequality (some good examples are: Putnam (2001), Costa and Kahn (CK) (2001), Knack and Keefer (KK) (1997), and Alesina and La Ferrara (AF) (1999, 2001)).[7] The intent of this literature is to capture national or jurisdictional (e.g., United States' states; Canadian provinces) tastes for redistributive and collective goods. These specific measures include such "taste parameters" as community heterogeneity and community participation (i.e., membership in social groups such as churches, sport clubs, etc.) and are used either as dependent (CK) or independent (CK, KK and AF) variables in the various empirical models. Alesina and La Ferrara (2001) extend these ideas by addressing perceptions of economic and social mobility as they affect peoples' taste for redistribution within the United States. They report: "people who believe that American society offers equal opportunities to all are more averse to redistribution in the face of increased mobility." Those that do not perceive there to be an equal chance or a great deal of mobility does not find social mobility as a good substitute for redistributive policies. Thus the political economy approach from the economists' point of view suggests that preferences for redistribution are tied to beliefs about equality of opportunity and social and economic mobility. However, one must emphasize that Alesina and La Ferrara are examining differences in attitudes within the United States, i.e., within a common context of understanding of the acceptable domains of inequality and a common perception of basic human rights. Such intra-country attitudinal differences may be a poor guide to international differences, as we argue (and estimate empirically) in this paper.

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[7] The World Bank also has useful annotated bibliographies on social capital and research on the connection between inequality and violence—see http://www.worldbank.org/poverty/inequal/abstracts/violence.htm and http://www.worldbank.org/poverty/scapital/index.htm

Closely associated to the social capital studies is the literature that relates various measures of trust to economic outcomes. Recent work by Slemrod (2002) and Slemrod and Katuscak (2002) use the same data used in this study to look at the impacts of trust on income. In the latter paper the authors show that "on average, a trusting attitude has a positive impact on income, while trustworthiness has a negative impact on income." Using the World Values Survey data on trust (see below for more on this data), Slemrod and Katuscak (2002) estimate an Ordinary Least Squares (OLS) model with controls for education, age, trust, and trustworthiness to support their conclusions. Other work in this area, including studies by Knack and Keefer (1997) and Zak and Knack (2001), make similar conclusions. Knack and Keefer (1997) find that trust exhibits a strong and positive relationship to growth while Zak and Knack (2001) introduce other influences on growth, including formal institutions, social distance, and discrimination. In the latter paper, a percentage point increase in trust is found to have slightly over a 1 percent effect on growth; our empirical results imply a slightly smaller effect of trust on social expenditures. We try to frame our empirical work with these papers in an effort to expand what we believe is an important yet relatively unexplored factor in both the economic growth and the inequality literature.

Median Voter Models. The second research thread tests the median voter hypothesis (and the closely related issue of social mobility) or other closely related hypotheses (i.e., social affinity hypothesis), relating it to inequality and its effects on growth or on social spending within and across countries. These papers (Milanovic (2000); Bassett, et al. (1999); Alesina and La Ferrara (2001); Kristov, et al. (1992)) are typically motivated by the relationships between measures of inequality (e.g., median income levels, share of the median income, or Gini coefficients) and growth, but they focus on the impact of inequality decision-making process of

the median voter. If one believes the median voter model, greater levels of inequality at the top of the distribution produce more redistribution because there is more for the poor and middle classes to gain from taxing the rich.

Our work is a departure from the median voter hypothesis since we believe political influence differs within the population. As we noted previously, more affluent individuals may become less civically engaged at some "tipping point." The same individuals may be better able to further their own interests (which may or may not benefit those at the other end of the distribution) through political contributions, greater political knowledge, higher probability of voting, or greater access to elected officials. So while money may not "buy" votes, money may buy access hence tying voting to lobbying (see Ansolabehere et al. (2003)). In fact, in a recent study by Bartels (2003), constituents at the 75th percentile of the income distribution are shown to have almost *three times* as much influence on U.S. senators' voting patterns than those at the 25th percentile. McCarty et al. (2003), also using the U.S., show that political partisanship increased substantially over the last half of the twentieth century and in addition has become more stratified by income. Comparing partisanship and income over the period, the authors speculate that "richer voters represented by both parties are…less likely to favor redistribution and social insurance than were the counterparts of these voters a half-century earlier." Of course, political institutions differ by nation and political system but we believe that for most developed countries, especially the nations in our analysis, this basic framework makes conceptual sense.[8]

Milanovic (2000) is one recent paper that uses the Luxembourg Income Study (LIS) data

[8] The study by Mulligan et al. (2002) is cross-national in nature and investigates the empirical connection between Social Security programs and democracies. Although they show that Social Security programs vary by demographic and economic factors, democracies and nondemocracies are surprisingly similar in their provision of Social Security benefits.

set that we also use here to analyze 79 country observations (waves 1 through 4).[9] Using fixed effects, Milanovic regresses three measures of inequality (either the Gini coefficient for factor incomes, or the share of total factor income received by the bottom half (bottom quintile) of the population ranked by factor (market) income and the proportion of the population over 65 years old), on the extent of redistribution.[10] The paper does not, however, present any data on median voters or their incomes compared to the average incomes in society. It is not generally true that the outcomes of the median voter are measured at all by these different indices of inequality,[11] so there is only a very loose link between the model of voting behavior and the inequality measures they seek to motivate. Furthermore, the largest effects of greater inequality resulting in greater social spending by governments in Milanovic's work seem to come from social retirement expenditures.

Societies with broad and deep social retirement programs, such as Scandinavia and Northern Europe, tend to have lesser amounts of private pension income or savings because of the high benefits from government and therefore have higher pre-benefit inequality (Smeeding and Williamson (2001)). In other countries however, the tax exemption of registered private pension plan contributions means that the public sector contributes significantly—through tax expenditures—to the relative size of the private pension sector. However, we do not capture this past role of the public sector when we examine current pension receipts. Hence, in the area of old

[9] Milanovic's paper outlines one economic theory of social expenditures and inequality as follows. "When individuals are ordered according to their factor (or market) incomes, the median voter (the individual with the median level of income) will be, in more unequal societies, relatively poorer. His or her income will be lower in relation to mean income. If net transfers (government cash transfers minus direct taxes) are progressive, the more unequal is income distribution, the more the median voter has to gain through joint of taxes and transfers, and the more likely he or she is to vote for higher taxes and transfers. Based on the median-voter as decisive, more unequal societies will therefore choose greater redistribution."

[10] Milanovic defines the dependent variable as "how the share of (i) the bottom half of (ii) the bottom quintile (ranked by factor income) increases when we move from factor to disposable income."

[11] The median voter will be, for example, completely unaffected by changes in the share of income received by the bottom quintile.

age security, the true size of the public sector role may be more imperfectly measured by current expenditures than is the case for other types of social expenditures. As well, the aggregate value of pensions paid, relative to pension contributions received (for both the public and private sectors), necessarily depends crucially on the age structure of the population. There are therefore strong arguments for controlling these estimates for the size of the elderly population amongst other factors; or for restricting our analyses to the nonelderly populations. We address these concerns further in the latter sections of our analysis.

A second recent paper by Kristov et al. (1992) uses a political economy approach to examine a "pressure group" model of spending.[12] The "pressure group" model, in this paper, categorizes people into different nine different "politically active"—"subsidized status" cells. Each category includes three camps; *actively in favor*, *inactive*, or *actively against*, for the first; and *to be subsidized*, *neither taxed nor subsidized*, or *to be taxed*, for the second. Clearly, this type of categorization and the qualitative examination that follows directly relates to the current project. They note,

> Growth might be a negative influence on commitment to social transfers for a reason linked to the social-affinity hypothesis: the greater the recent rate of growth the stronger the perception of upward mobility, reducing sympathy with those presently poor.

Readers will note that this formulation conflates societal and individual income growth. In general, the year to year change in any person's real income will be the sum of the change in average real incomes, their annual expected change in relative incomes due to greater age/experience and the year to year stochastic variability in income flows. As already noted, the relationship between growth in average income and redistribution has often been put in terms of

[12] A paper closely related in terms of methodology is Plotnick (1986) who constructs a similar model by individual sates of the U.S. using AFDC data.

social spending being a normal good—hence higher rates of growth of average income should lead to *higher* rates of public spending. However, one must also be aware of the assumption that changes in average incomes measure typical individual experiences of income change. It is quite possible for individuals to experience a faster rate of change in their personal incomes over their lifetimes, even as aggregate growth slows, if the age/earnings profile becomes sufficiently steep.

Econometrically, the authors test the social affinity theory by regressing a series of covariates that attempt to explain patterns in their dependent variable; social transfers as a share of GDP. They find that the larger is the gap between the rich and the middle (the 90/50 ratio), the *greater* is the redistribution that takes place, but the greater the gap between the bottom and the middle, the *less* the redistribution, presumably because of pressure politics (these are exactly the opposite signs to those we hypothesize). The authors argue that willingness to engage in political activity and resulting redistribution depend on poverty (the clear net gainers from redistribution), social affinity, the growth rate of aggregate income, and income asymmetry (income inequality). Their paper focuses only on the period 1961-1980, when there was both growing equality and growing real incomes in most of the countries examined.[13] They find that the closer are the poor to the middle class (or the higher is the mobility between middle and lower incomes), the higher is the willingness to redistribute. In later periods, e.g., 1980-2000, when not all incomes have grown to the same extent and where rising, not falling economic inequality has been the norm in some countries, and where overall rates of wage and income growth have been much less in most nations, the same results may not hold (Osberg (2002); Smeeding and Rainwater (2002)). While the paper does not seem to support our hypothesis, we applaud it for separating the effects of rich

[13] Note that during much of this period the study of economic inequality was said to be "as exciting as watching paint dry" due to the relative constancy of aggregate measures, such as the Gini index of money income inequality. In international data it is the 1975 to 1995 period, particularly in the United Kingdom and United States, that has seen much larger changes in inequality.

and poor on outcomes and for not just focusing on one simple summary measure of inequality.

A third and more recent paper by Mahler (2002) fits into this literature and measures the impact of globalization and domestic political factors on income distribution. Not only does he use the standard measures of income, he constructs a measure of the difference between pre- and post-tax-and-transfer income. This "fiscal redistribution" variable is sensitive to his linear model but continues to perform well. Overall the author finds "only scattered evidence of relationships between integration into the global economy and internal income inequality." Strong and positive relationships are exhibited however, between domestic political variables and egalitarian distribution of income. Hence in a global world, individual national tastes for redistribution appear to remain important determinants of the level and pattern of social spending.

The remaining recent literature on social spending and inequality, such as papers by Moene and Wallerstein (MW) (2001, 2002) and by like minded political scientists and sociologists of an empirical bent, such as Kenworthy and Pontusson (2002), Bradley, et al. (2001) have several common features. They all purport to test the "median voter" model, e.g., differences being expressed as the difference between the mean and median incomes or voters, but they then use earnings inequality for all earners (not voters alone and not amongst households) to express this difference. Voting turnout is then used as a measure of intensity of preferences and institutions are represented by right or left government parties.[14]

One new and appealing feature in this literature is the Moene and Wallerstein (2002) paper, which argues that investigations of the determination of social expenditures and its relationship to inequality should be carried out on a disaggregated basis. That is, there is no a priori reason why national levels of welfare spending, unemployment insurance, health care, pensions, and education should all have the same determinants. Indeed social insurance, targeted

[14] We in turn experiment with these political variables in our empirical work (see Section III).

social assistance, and universal benefits (like child allowances) may reflect different tastes, values, and mechanisms for redistribution—and different conceptualizations of the acceptable domains of inequality and redistribution. This thinking is consistent with the different tastes for cash versus goods and services which we have already identified and leads to a belief that one should model demand for social goods on a policy by policy basis. However, we also feel that one may also go too far down this path, ignoring the built-in relationships between different programs that are a part of each nation's social history and institutions. In net, however, some disaggregation is to be preferred. In fact, MW find that higher levels of inequality in pre-tax earnings are associated with lower levels of spending for policies that insure against income loss for working persons. And while they find different determinants for different types of social spending, they find no category of social spending that is positively related to income inequality. This is in radical departure from the older literature mentioned above but the results are similar to our empirical work found below.

Inequality and Growth. The final strand of the literature deals with issues of inequality and growth, particularly as they are both affected by redistributive public spending. The growth and inequality literature in general is a huge area of inquiry,[15] akin to the growth and savings literature popularized by Romer and Mankiw. Here we are much more specific in our interests. The effects of health and education benefits on growth, as well as public cash benefit provision are particularly relevant for our purposes. This literature includes the papers by Perotti (1992, 1996), Bassett, et al. (1999), Persson and Tabellini (1994), Alesina and Rodrik (1994), Osberg (1995), and Benabou (1996, 2000), regarding inequality and redistribution and their interactions with economic growth.

[15] For a useful summary and guide to the literature see: http://www.worldbank.org/poverty/inequal/econ/index.htm.

This area has been the subject of recent surveys and includes work by Arjona, Ladaique and Pearson, (ARS) (2001) and Scarth (2000). Although the high level of inequality and low level of redistribution in the United States is an important counter-example, ARS find support for the hypothesis that higher levels of pre-government ("market") income inequality leads to *greater* levels of redistribution. In turn they suggest that the form of additional redistribution also matters and that policies that reduce market income inequality directly, by raising the market incomes of the poor, may be good for growth. The example they give is greater education for the poor, which produces lower market income inequality. They admit that other interpretations are also relevant, e.g., that more redistribution causes lower market incomes (due to poverty traps and lower labor supply) and that in turn these phenomena may reduce economic growth. They conclude that they cannot say which interpretation best fits the data.

Historically, the relationship between growth and redistribution was often put in terms that social spending is liable to be a normal good, hence higher rates of economic growth lead to higher rates of spending on public goods. The inequality/growth hypothesis of the 1990s however, reverses the assumed sequence of causation, suggesting that lower levels of inequality tend to *cause* higher rates of economic growth.[16] The inherent trade-off between growth and inequality introduces a social welfare dilemma for governments and policy makers. On the one hand, greater economic growth may generate rising incomes and overall social productivity but some individuals will not benefit from this growth and fall behind. On the other hand, addressing inequality (perhaps by providing a generous safety net) in lieu of economic growth may reduce

[16] Since some transfer payments may be counter cyclical and expand as the economy contracts, it is essential to abstract from cyclical influences and measure growth over fairly long periods. In addition, one must beware of cyclical influences on measures such as health care, or education, expenditure as a percentage of GDP. Although these sorts of programs may have outlays that are driven almost entirely by longer term trends, their ratio to GDP will fluctuate from year to year as the denominator (GDP) varies cyclically—a phenomenon which the health economics literature calls "denominator bias."

labor market incentives and have detrimental effects on long-run growth and prosperity. Clearly, whether inequality hurts or helps growth initially, growth changes the capacity to make public transfers subsequently; hence, we need to account for the simultaneity of the relationship between social expenditures, growth and the actual amounts of these benefits.

Institutional Political Economy Literature In the political science field, the new literature on cross-national "social policy preferences" is typified by the work of Iversen and Soskice (2001, 2002), Hall and Soskice (2001), and Iversen (1999). The approach, while akin to the earlier "worlds of welfare capitalism" work of Esping-Andersen (1990), is also somewhat different. This literature offers a much more institutionally driven and sophisticated argument about national preferences for redistribution. The argument is that coordinated nations—those with a high degree of cooperation between business, industry and labor—invest in human capital in different ways than do nations that are of the liberal market economies, where competition replaces consensus seeking. Skill training is more specific (e.g., vocational training), job tenure is longer and job changing is less in these coordinated economies than it is in societies with more general training (e.g., college educated). In these latter types of economies, market competition rewards high skills with high "winner take all" wages and low skills are punished with low wages. They term this latter group, the risk-taking "liberal economies."

In the liberal economies, the costs of social protection are perceived to outweigh the benefits, and thus we find less employment protection and less wage protection. However, in the coordinated economies, one finds strong employment protection and wage protection from within and outside companies, coupled with high unemployment benefits, adequate and early take-up social retirement, and various other trappings of the European welfare state. This also suggests that, as market based earnings inequalities grow, more redistribution will take place

because of the built-in stabilizers in western coordinated economies (see also Kenworthy and Pontusson (2002)).

It turns out that the most market-oriented societies are in fact those with the least equality, while the coordinated nations have the least degree of inequality. These findings fit our original hypotheses but seem to be independent of income inequality as a driving force. Rather it is argued that lessened inequality and greater social spending are the joint product of the broader systems of social and economic cooperation that they find in these societies (which they call "business social capital"). This hypothesis is difficult to examine conclusively since clearly there must be some set of processes to generate any particular pattern of inequality but a number of different processes might generate the same level of inequality.

Summary

In this summary of the literature, we have been careful to select only articles that seem relevant to our particular interests and hypotheses. We have not delved at all into the literature on education and health spending and inequality, leaving these for the time being to other projects (e.g., see Mullahy, Robert and Wolfe (2002), and Berkman, et al. (2002) on health spending).

We conclude that the older literature in this area has primarily focused on the United States (see Kristov, et al. 1992) and includes several different models, all of which attempt to predict which characteristics will lead to higher social spending. They suggest that higher inequality leads to more social spending. The newer political science literature follows many of the same threads we have followed here but without differentiating between the effects of the top and bottom of the distribution. They also do not clearly understand the ways in which preferences for a fair society are translated into actual programs and policies via social and

political institutions. The literature also tends to ignore how lobbying in highly unequal societies may prevent these polices from being formulated and passed, and while we have not yet captured this variable explicitly in our analyses, the new literature does seem to suggest that higher inequality now leads to lower social spending.

General Conclusions

More specifically, the review that we have carried out so far leads us to the following conclusions:

1. Inequality and poverty are different, and a single summary measure of inequality—e.g., the Gini, or the 90/10 ratio—will not allow us to differentiate amongst explanations which hinge on forces which differentially come from different parts of the income distribution.

2. The relationship between economic inequality and social spending is one of mutual interdependency—in which it is crucial to distinguish specific types of social spending, which are affected by different aspects of inequality.

3. Most models are of a reduced form nature with little attention paid to desired levels of redistribution (or national differences in the taste for redistribution) in combination with the institutions and voting mechanisms (parties, lobbies, etc.) legitimizing these tastes.

4. Leaps of analytic belief are often made in the current literature (such as the assumption that political preferences can be measured on a left/right domestic spectrum that is comparable internationally) which are crucial to the models developed, but which seem to us to be questionable in a cross-national context.

II. Theories, Models, and Data

All the nations that we have been examining are "democracies" yet their governments play different roles in the level and type of social expenditures. If we are to model the interaction of inequality of income and public expenditures, it seems important to us to understand more clearly why the citizens of different countries may make different demands of their political systems. This first leads to a discussion of a theory of

how differing attitudes toward inequality (or tastes and values for redistribution) may affect public policy, using ISSP preference data. We then present our reduced-form model and follow that with a detailed description of the data we use in our empirical work.

Modeling Inequality and the Perception and Provision of Public Expenditure

International differences in how inequality is perceived can be expected to affect the link between public expenditures and inequality. The standard "political economy" model of the median voter skips a number of crucial steps. In a standard "median voter" model, there is nothing very complicated about the line of connection between relative income and voting behavior: votes are assumed to be directly transformed into policy outcomes. Individuals are presumed to directly perceive their self interest and to get results when the median voter opts for a specific policy.

However, we do not think this is how the world works. We believe it is more realistic to recognize that citizens do not necessarily get what the majority wants. Political systems differ considerably—for example, in the constraints they place on campaign financing or in the ease with which new parties that represent a particular point of view can be formed. Greater inequality does increase the number of relatively poor but it also gives some citizens the incentive *and the resources* to lobby and make donations to the candidates who will protect and augment their wealth. These citizens may also hold considerable influence on policy makers through greater access and connections, associations with interest groups and greater coordination between lobbyists, individuals and political action groups (see Ansolabehere et al. (2003) and Bartels (2003)).

While less affluent citizens may want to make demands of the political system, whether

or not they vote likely depends on their sense of individual political efficacy. In some jurisdictions it will be individually rational (given that each person can observe the impact of campaign donations on the process) for the less affluent to conclude that the effort of voting is pointless (and it is observable that voter turnout has declined precipitously in many affluent nations). Discontent with the available political options can only be expressed by voting for new entrants, if party entry is feasible. However, if entry is not feasible the absence of a party to represent a point of view (e.g., the absence of a Labor party or a Socialist party) is likely to produce abstention by its potential voters. The bottom line is that political and social institutions, such as collective bargaining arrangements and unionization, are likely to play an intervening role in determining the relationship between inequality and public spending.

Although statistical data can reveal whether, in an objective sense, income inequality is increasing, the political attitudes and behavior of individuals actually depend on the *subjective awareness* which individuals have of income inequality, and on the *subjective evaluation* of this perceived degree of inequality relative to an individual's own norms of "fair" income differentials. A fascinating series of questions in the ISSP of 1987, 1997, and 1999 asked respondents a series of questions regarding their perceptions and beliefs of inequality (see our unpublished paper for a more thorough exploration of this data (Osberg, Smeeding, Schwabish (2003)).

For purposes here, we focus on the questions the ISSP asks about attitudes to redistribution. The reader should be careful to note that international differences in responses seem to be quite sensitive to how exactly the role and responsibility of government is framed. Two nearly identical items were asked at different points in the questionnaire: (1) "On the whole do you think it should be or should not be the government's responsibility to reduce income

differences between the rich and the poor. Possible responses coded from 1 (Definitely should be) to 4 (Definitely should not be).” And, (2) “What is your opinion of the following statement: It is the responsibility of the government to reduce the differences in income between people with high incomes and those with low incomes. Possible responses coded from 1 (Strongly agree) to 5 (Strongly disagree).”

These items have slightly different coding but the results are quite consistent—on average United States respondents are least likely to agree that it is the responsibility of government to reduce income differences. The degree to which Americans hold this belief is by an especially impressive margin given that respondents in the United States are starting from a considerably higher base rate of inequality in income (see Table 1). Asking whether it is the “responsibility of government” to reduce income differences mingles the twin issues of whether income differences should be reduced and how it should be done. As already noted, the United States and other countries have quite similar attitudes to the fact of income inequality, so Table 1 can be interpreted largely as indicating a disinclination by Americans to assign to government the “responsibility” for reducing inequality.

Furthermore, although one might logically expect attitudes to redistribution by government to be similar to those in favor of progressive taxation, the attitudes evoked by wording about the “responsibility of government” may differ from those probed in the item:

> Some people think those with high incomes should pay a larger proportion of their income in taxes than those who earn low incomes. Other people think that those with high incomes and those with low incomes should pay the same proportion of their earnings in taxes. Do you think those with high incomes should: 1 (Pay much larger amount) to 5 (Pay much smaller amount).

Although the average United States respondent is still clearly less likely than the average respondent elsewhere to be in favor of progressive taxation, the differences with other nations

are not nearly as pronounced as in the other items in Table 1.

In the neighboring columns of Table 1, each of the ISSP variables is scaled to the unit interval so that it can be compared to the WVS data, which appears in the final column. The WVS trust variable—which we use in our regression framework (see below)—is a broader measure of trust and asks respondents whether most people can be trusted (=1) or if people "can't be too careful" (=0). This is a broader measure of trust and has different effects on the rankings of the countries in the table. For example, with the ISSP data, the United States consistently ranks at the bottom of the distribution. With the WVS data however, the United States is closer to the middle of the pack, ranking ninth. Norway ranks somewhere in the middle in the first three columns but is the second least trusting country in the table under the WVS header. Thus, because trust from the WVS is measuring something much broader than the ISSP variables, countries look much different in their relationship to one another. This difference will have important consequences for our empirical work, which we discuss in the following sections.

In short, there is strong evidence for international differences in attitudes to the role government might play in reducing inequality[17] but much less strong evidence for systematic differences in attitudes to income inequality in itself. This raises the issue of how attitudes to government are formed and what influence the evolution of inequality may have on those attitudes.

To make one final note before detailing our empirical work, we acknowledge several conceptual problems with the trust data. A particular problem with the WVS trust data that we use in our regression framework is that the binary measure is an ordinal measure and does not differentiate between those who "really" trust and those who "somewhat" trust. In addition,

[17] There is some evidence that Americans and Europeans may have different attitudes to the responsiveness of government.

persons in different countries may have different concepts of what is and what is not trustworthy. For example, what people in Sweden consider trustworthy may be distinctly different than in the United States. We also recognize that this trust measure mixes issues of general trust, altruism and egalitarianism. Nevertheless, we use the trust measure since it at least provides a baseline measure of these concepts.

Model and Data

Thus far, we have focused on previous work in the area of inequality and social expenditures as well as the levels and trends of trust across the world. We begin the final sections of the paper by specifying a reduced form equation to explore the relationship between inequality and social expenditures:

Social Expenditures = f {Inequality, Values, Growth, Institutions, Immigrants}.

We are most interested on the effects that **Inequality and Values** (as measured by trust) have on Social Expenditures; the remaining covariates are included as controls for various social, economic, and political institutions.

Our estimation strategy is rather straightforward and we use a simple Ordinary Least Squares (OLS) approach. To test the significance of the estimated coefficients, we estimate the standard errors via two methods. In the first, we only correct for heteroskedasticity by using a Huber-White "sandwich" robust estimator. In the second, we not only correct for heteroskedasticity but also cluster the observations by country. Since our data are pooled in unevenly spaced year observations, this clustering technique may be preferred to the simple robust standard errors (see Mahler (2002))—we report both sets of standard errors in the tables that follow. In some cases, the clustered standard errors are larger than in the robust case and

some are smaller. The latter case can occur when the intra-cluster correlations are negative, that is, some variation in the variable is being cancelled out in the clustering technique (see Stata (2002)). Statistical significance tests however, are generally consistent between the two approaches.

Before detailing the data used in the empirical model, there is one particular issue in the recent literature on inequality and redistribution that demands our attention. As we have seen, our assertion that inequality affects social expenditures through the level and distribution of publicly provided goods is not unique. Recently, Kenworthy and Pontusson (2002) have argued the opposite case, that household earnings inequality can be determined by employment controls and measures of household income combinations and those changes in redistribution are a function of *changes* in employment, unionization, GDP, trade, and other political controls. Alvarez (2002) and Bradley, et al. (2001) also argue that reductions in inequality can be at least partially determined by measures of social expenditures (overall social expenditures in the former and taxes and transfers in the latter). This is not a surprising view; the goal of social expenditures and public goods is, at least in some part, to redistribute wealth and reduce inequality.

These conflicting theories force us to consider the endogeneity of inequality in regression models. The key then, is to find a variable that determines inequality but is exogenous to the social expenditure decision—and such instruments are hard to come by. Instruments proposed by Alvarez (2002) include government ideology (such as right and left-leaning government legislative/executive bodies) and the ratio of the minimum wage to the average wage. Moene and Wallerstein (2002) use wage-setting institutions and political variables as instruments for inequality (their inequality measure is the logarithm of the 90/10 wage ratio). The exogeneity of

these factors to social expenditures however, can be difficult to argue convincingly, for instance if institutions directly affect wage levels (e.g., minimum wages) and employment and training policies.

Thus, while our framework addresses the effects of inequality on government spending, the reverse causality begs our attention. In short, we believe that our focus on pre-tax and transfer income, or market income, removes most, if not all, of the endogeneity of the inequality measures. Such income is measured before taxes and transfers are accounted for and thus have yet to reflect the degree to which taxes and transfers serve to redistribute income. However, it is well established that taxes and transfers affect behavior (specifically in terms of labor market behavior), which in turn affects our inequality measure and the subsequent social expenditure decision. Thus, the reverse causality does not work directly through our measures of inequality but indirectly through (labor market) responses to such policies. Consequently, as tax rates or transfer payment generosity changes, citizens revise their labor market responses, which ultimately changes inequality as the market adjusts. We note that instrumental variable attempts were unsuccessful and we briefly explore our efforts in Section III.

Data: Sources and Details

We have constructed a dataset with 57 different sets of observations for 17 countries, using data from LIS (on various measures of inequality), the Organization on Economic Cooperation and Development (OECD) on growth and social expenditures (SocEx), and the World Value Survey (WVS) data sets on values, as expressed by trust for others. Most countries enter with multiple observations, though five is the maximum number of observations we have

for any one nation.[18] For readers who are particularly interested, the main variables of concern (trust, p9050 (MI), p5010 (MI), and Gini (MI)) are graphed along with Social Expenditures in Appendix Figures A1 through A4. What is particularly interesting in these figures is how the Nordic countries (Belgium, Denmark, Finland, Sweden and Switzerland) tend to lie above the regression lines while the Anglo countries (Australia, Canada, UK and US) tend to lie below the regression lines.

For the empirical model the OECD **Social Expenditure**, Education at a Glance, and Health Expenditure databases (OECD 2002a, 2002b, and 2002c) offers us few practical options for dependent variables:

a. Total social expenditures (elderly and nonelderly; cash only),

b. Nonelderly spending (total, cash and noncash, categorical).

These data sets are fairly comprehensive, both in terms of number of countries and years covered but are lacking in a number of dimensions. Here we concentrate on non elderly social spending for reasons given above. Once this decision is made, there is no straightforward way to split health care expenditures between the elderly and nonelderly and to include the role of employer benefits in the USA. In addition, there exists no consistent education series that covers most or all of the years for which we have the other variables of interest. Hence, we concentrate our analysis on models using nonelderly cash and near cash social expenditures (excluding education and health care expenses—see fn. 1) since these are less sensitive to public retirement funding and more sensitive to a nation's age structure. To avoid some of the problems associated with

[18] The country-years used in the analysis include, Australia (AUS) (1981, 1985, 1989, 1994); Austria (AUT) (1987, 1995); Belgium (BEL) (1985, 1988, 1992, 1997); Canada (CAN) (1981, 1987, 1991, 1994, 1997); Denmark (DK) (1987, 1992, 1995, 1997); Finland (FIN) (1987, 1991, 1995); France (FR) (1984, 1989, 1994); Germany (GER) (1983, 1984, 1989, 1994); Italy (IT) (1986, 1991, 1995); Luxembourg (LUX) (1985, 1991, 1994); Netherlands (NL) (1983, 1987, 1991, 1994); Norway (NOR) (1986, 1991, 1995); Spain (SP) (1980, 1990); Sweden (SW) (1981, 1987, 1992, 1995); Switzerland (CH) (1982, 1992); UK (1986, 1991, 1995); and US (1986, 1991, 1994, 1997). We also use Mexico (1994, 1996, 1998) in later illustrative regressions.

purchasing parity and inflation variation, we measure our dependent variable as a percentage of GDP.

A wide variety of comparable measures of inequality can be directly generated from the LIS database, including,

a. Both market income and disposable income inequality,

b. Pre- or post-tax and transfer poverty rates.

The measures of **inequality** include the 90/50; 50/10; 90/10 ratios, and many single parameter measures of inequality (Gini, Theil, Atkinson). These are easily estimated from the LIS data set and are comparable to previously published numbers and publicly available series available directly from LIS. The 90/50 and 50/10 ratios or poverty rates are less sensitive to changes in the top or the bottom of the distribution than are the single parameter estimates (see Atkinson, Smeeding and Rainwater (1995)). These measures also separate two effects: the effect of the economic distance of the rich from the middle class (90/50 ratio), and the effects of poverty or relative low income (50/10 ratio) on support for income transfers. We present results using both "market income" defined as pre-government tax and transfer income and largely consisting of pre-tax market earnings for households plus property income; and "disposable income" defined as post-tax and transfer income which includes the effects of direct taxes and cash social redistribution on market incomes.[19] Our empirical work then, uses market income-based measures of inequality, as well as distinct measures of inequality (Gini ratios *and* percentile ratios), something which other studies do not generally use.

Our data on **values** come from the World Value Survey (WVS) results from the 1981-1984, 1990-1993 and 1995-1997 surveys. The WVS question that is universally asked is about trusting others—very few nations also ask about trusting government. In addition, variables that

[19] We relegate the results with disposable income to Appendix tables.

measure trust in government may primarily reflect attitudes to the government of the day, rather than to the institution of government, and current political popularity fluctuates for many reasons unrelated to the issues of this paper. In some cases, the surveys are limited to some nations-periods, but not others (e.g., Gallup, ISSP, Euro barometer). Due to the small number of surveys performed with respect to our data set, we were forced to impute some (less than 15 percent) WVS trust figures to other years for the same country. The absence of these variables in the research summarized in Section I (with the exception of the papers by researchers such as Slemrod, Keefer, Knack, and Zak) leave something to be desired in the literature. Such trust variables are critical for determining the "tastes" for redistribution, and are especially powerful when combined with political and institutional variables that measure the forces which move governments to act via redistributive measures.

We therefore employ a set of variables that can express the efficacy with which preferences are transmitted and enacted. One variable measures the way that labor market **institutions** affect inequality via their effect on the stability of market incomes and in political circles. These are typified by union representatives or by the fraction of centrally bargained wages. Iversen (1998) has developed a consistent centrally bargaining series for a number of countries between 1973 and 1993 but we are then left with only 31 observations. Since variation over time, for the same country, is relatively small, we increase the degrees of freedom in the regressions with the centralization measure, by filling in the missing observations by using own-country averages—the coefficient on the centralization measure was virtually unchanged by this procedure.[20]

[20] Index of centralization from Iversen (1998): "The operational definition of centralization—C—is the sum of $(w_j * p^2_{ij}) * (1/2)$, where w_j is the weight accorded to each bargaining level j (sum of $w_j=1$), and p_{ij} is the share of workers covered by the union (or federation) i at level j."

Another approach is to use **political or voting variables**, such as voter turnout. Voter turnout is a rough indicator of the extent to which a nation's citizenry is involved in its political process. The political science literature has done much with voter turnout but we are unconvinced the measures used in the literature are accurately measured and so we do not include them here. Following the literature, we have experimented with measures of governance, such as left governing party seats as a percent of all legislative seats and left party legislative seats as a percent of all legislative seats (both from Marshall and Jaggers (2000)). Neither variable entered the regressions statistically significantly however, and had little to no effect on the other covariates. Hence, specifications with these variables are not included in the tables below.

There may be an income elasticity of demand for public social spending, especially health care and education, and several authors cited above have found that economic **growth** leads to greater generosity for redistributive spending more generally. We test for this by using the average growth rate over the five years prior to the year of observation (see OECD (2002d)).[21]

Some additional **demographic** differences, from LIS, are reasonable proxies for factors that would almost automatically produce demand for social goods, both cash and in-kind. However, we believe demographic variables—such as the percent of single parent families and the percent elderly—contaminate other covariates and are thus not included in the empirical specifications below. Specifically, because single parent families often receive a significant

[21] The per capita GDP growth rate reported here is the growth rate of per capita GDP at current prices and current PPPs (United States dollars) over the five years preceding the year of observation. Three other measures of per capita GDP were also included in the specification with minor differences in the results. Since this growth measure is the average annual growth rate over the five years prior to the year of observation, we believe this is sufficient to be considered exogenous to the *current* social expenditure decision by a nation.

amount of social transfers and generally find themselves at the bottom end of the income distribution, we infer that this variable contaminates the p5010 ratio. Also, since the elderly receive a disproportionate share of the largest social expenditure categories—social retirement and health care—we believe there are spillover effects to the other covariates and to cash spending on the nonelderly as well. Thus, we do not include these variables in the regressions that follow.

The percent of foreign born, or the number of **immigrants** in a society, is a different kind of demographic variable, one which may positively affect the demand for social services and expenditures[22] but may also directly and negatively affect voters taste for redistribution, depending on attitudes towards minorities and on program eligibility rules. Using data from OECD (2000), LIS and the U.S. Census Bureau, we enter this variable in our model as an additional control of demand for services.

III. Empirical Results

This paper has presented a review of the literature and our heuristic model of how preferences toward equality affect redistributive spending via voting, lobbying and related institutions. In this final section, we present the single equation approaches to modeling inequality and public social spending.

Following the single equation format outlined in the previous section, we regress total cash and near cash social expenditures on the nonelderly as a percentage of GDP on a set of demographic, political, and macroeconomic covariates (see previous section and table notes for

[22] We would like to thank David Richardson for suggesting the use of ethnic fractionalization measures as a proxy for immigration *and* centralization. However, ethnic fractionalization measures are not available for multiple years. We did impute ethnic fractionalization data from Alesina et al. (2002) for each country and while it did enter the model statistically significantly, we do not report the results with the variable below.

sources and definitions of covariates). We choose to use expenditures on the nonelderly since we know that social expenditures on the elderly are heavily driven by the population's age structure and are relatively poorly modeled by direct state expenditures (which do not include tax expenditure incentives for private pensions). The covariates include trust, inequality measures (Gini coefficient and p9050-p5010 percentile ratios), macroeconomic controls (percent foreign born and an index of centralization of union wage bargaining) and per capita GDP growth rate. Summary statistics, sources and details for the variables are found in Table 2.

We focus on Tables 3 and 4, which contain the results using market-income based measures of inequality.[23] The GDP growth rate variable is negative and significant in the two tables, confirming our prior expectations. Converting the point estimates to elasticities implies that a one percent increase in previous GDP growth decreases nonelderly social expenditures by slightly over 0.2 percent. Recall that in these tables, trust is measured as the percentage of survey respondents who agree with the statement that they believe that people can generally be trusted. The interpretation is that a positive coefficient would indicate that more cohesive, more trusting societies are more willing to share economic resources through the state. One can note that in Table 3, trust is strongly significant (and the inequality measure is not) if the Gini index is used as our measure of inequality. When one uses measures of social distance at the bottom (the 50/10 ratio) and at the top (the 90/50 ratio) in Table 4, the measures are significant (with opposite signs) and the trust variable maintains both its significance and magnitude. The elasticity estimates are about the same as those found in Zak and Knack (2001)—a one percent increase in

[23] The analogous regressions using the disposable personal income definition are repeated in Appendix Tables A1 and A2. The results are sensitive to the new inequality variable measures. In Appendix Table A1, the coefficient on trust is still positive and significant, though of slightly smaller magnitude. Estimates on other covariates also differ somewhat from their MI counterparts. The estimate on the percent foreign born variable maintains its sign, magnitude and significance. The coefficient on Iversen's Centralization variable is again positive and of smaller magnitude but is no longer significant. The reader is left to further investigate the differences on her own.

trust increases social expenditures by approximately between 0.40 and 0.90 percent.[24]

The other two structural controls—percent foreign born and the centralization index—are both typically statistically significant and consistent in magnitude in both Tables 3 and 4. The foreign born variable is consistently negative (between -0.15 and -0.20), indicating that more open (less homogeneous) societies are less willing to spend on social goods. The centralization index is positive and large in magnitude, suggesting that centralized wage bargaining does help transfer social policy preferences into programs and policies which support greater spending.[25]

Comparing the results in Tables 3 and 4 demonstrates the importance of using different inequality measures. When a single summary statistic of inequality (the Gini) is used and income inequality is measured before taxes or transfers, it is statistically insignificant. However, Table 4 indicates that the inequality in market income between the middle classes and the poor (as indicated by the 50/10 ratio) has a statistically significant and *positive* impact on social spending. Inequality in market income between the middle class and the affluent (as captured by the 90/50 ratio) has a statistically significant and *negative* (and larger) impact. Hence, the aggregate

[24] It might also be interesting to examine the determinants of our trust measure. While the WVS provides micro-level survey data, not all demographic or income variables are available for all country-years. However, we are able to estimate trust as a function of demographics (ratio of elders to total population, ratio of children to total population, and percent of households that are single parent families), economics (unemployment rate and per capita GDP), and government activity (voter turnout) from our main data set. We estimate several different linear (OLS) specifications and, for the most part, the equations fit poorly (R^2 under 0.05) although the unemployment rate (and % single parent family) enter negatively (positively) and statistically significantly. Overall, we expect trust to depend on the economic and demographic characteristics of a nation and feel that continued research in this area could prove worthwhile.

[25] It is also important to note that we included a control for total union membership (from Visser (1996) contained in Huber, et al. (1997)) but the estimated coefficient was approximately zero, statistically insignificant in all runs, and took overall precision out of the model. A third set of regressions were estimated using just the p9050 as the inequality control (not reported) with results similar to those found in the tables. As noted above, two political variables were also included in the specification but both proved to be statistically insignificant and close to zero. An alternative trust measure was used from the ISSP data set (various years) but due to the small number of observations, the model fit too poorly to report any results. Finally, we note that our GDP measure confounds issues of level and growth. Hence, we included current levels of per capita GDP but noted the probable endogeneity of this measure. We then included lagged values ((t-1) and (t-2)) of per capita GDP (separately) but all were statistically insignificant and virtually equal to zero.

insignificance of aggregate inequality in market income is arguably due to the *offsetting* influences of inequality at the top and at the bottom of the distribution of income before taxes and transfers. It, therefore, may well be that inequality at the top of the income distribution may reach a particular "tipping" level, beyond which support for public expenditures that benefit all of society is lost.

The results in Table 4 indicate that a widening of income gaps between the poorest 10 percent and median incomes has a small positive impact on expenditures, while the impact of widening differentials between the top end and the middle class is far larger in magnitude and strongly negative. This finding seems to counter much of the other literature, which finds the reverse sign (e.g., see Milanovic (2000) and Kristov, et al. (1992)) and may reflect the changing times of the post-1980's where inequality continues to grow and incomes are growing more slowly. These measures of inequality reflect differences in the impact of inequality at the top and bottom of the distribution are thus preferable to single parameter estimates which cannot differentiate between these effects. In fact, different exogenous and endogenous forces are driving changes in the 90/50 as opposed to the 10/50 in most rich nations (Smeeding (2002)). The F-test statistics, found in the last row of Table 4, test the joint hypothesis that both the p9050 and p5010 measures equal zero. The F-test statistics unanimously and overwhelmingly reject the hypothesis that *both* the p9050 and p5010 variables equal zero.[26] Overall, the model fits well with R-squared around 0.60 but is obviously sensitive to the covariates used.[27]

[26] The F-test statistics presented in Table 4 and Appendix Tables A2 and A4 are based on the robust standard error calculations. Using the robust, clustered standard errors for the F-test made no difference on the results. We chose to present the F-test statistics from the robust standard errors because the degrees of freedom can be made out more easily from the tables.

[27] In Appendix Tables 3 and 4, we estimate the same regressions for the sample without countries that spend more than 15% of their GDP on social expenditures. Eliminating these countries (Finland (1995), Netherlands (1983) and Sweden (1992)) has significant effects on the coefficients. For the regressions with the market income p9050 and p5010 measures (Appendix Table 3), trust is no longer statistically significant in a majority of regressions although

Clearly, in a single equation cross-sectional model, establishing causation is problematic. We would argue that causation plausibly runs from the right hand side and thus a larger income gap between the median and the poorest may well produce greater needs for social expenditures.[28] However, a widening income gap at the top end may plausibly be reflected in an increased influence in the political process of those with a preference for lower taxes (see Section II). Although one can argue that wider income gaps in market income imply a greater "need" for social spending the same differentials also increase the resources available to those who oppose higher social spending.

One might question if the results that we capture are merely reflections of the United States alone or of other nations as well. In order to test this hypothesis, we included observations for Mexico, for which we have both OECD measures of social spending and LIS measures of income inequality, identical to those found for the other nations.[29]. In appendix figure A2B, we illustrate the way that Mexico continues the patter of inequality compared to social spending that we find in the other rich OECD nations. Were we able to easily add to this continuum with other similar nations, we would do so; but we believe that Mexico helps make our point. Table 5 includes a series of regressions akin to Table 4 both with and without the U.S. and Mexico

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it maintains its sign and magnitude. The signs on the inequality measures maintain their sign and are statistically significant in every column.

[28] We tried several separate experiments to deal with the endogeneity issue. First, we used the other covariates in the basic model as instruments for the inequality variable. However, because of the small number of observations and subsequent lack of adequate variation in the sample, we were unable to deal with the collinearity of the predicted variable of interest. In a second approach, we used inflation as an instrument for inequality since inflation has been shown to positively affect inequality (see Albanesi (2001)) but, as expected, the instrument was weak. Third, we reduced the model in Tables 3 and 4 to the basic demographic, trust, and growth variables. Then, using combinations of the remaining covariates as instruments, we predicted the appropriate measure of inequality. Finally, we used several state variables as possible instruments, none of which generated significant results. Such instruments included trade and financial openness, measures of imports and exports (see Mahler (2002)) and lags in the dependent variable. Again, the fit was poor and the resulting estimates statistically insignificant.

[29] Due to other data constraints however, we were forced to impute the average values of trust, centralization, and the percent foreign born for the three Mexico observations (1994, 1996, 1998).

observations. It is clear that adding Mexico to the sample has little impact on the overall conceptual story; the p9050 coefficients are somewhat smaller but coefficients on both the p5010 and trust variables are stable and statistically significant. Our hypothesis continues to hold in the last three columns where both the U.S. and Mexico are eliminated from the sample, and although the coefficient on the p9050 ratio is statistically insignificant, both sign, magnitude and significance is maintained on the remaining covariates. Thus, from this exercise, we conclude that the U.S. is not an outlier but among the richest nations, rather it is at one end of the continuum of all OECD and other middle income nations. Were we to add more nations with greater inequality, the same patterns would hold.

The results in these tables provide evidence for two stylized facts. First, variable inclusion/exclusion and especially variable measure may have a profound effect on the outcome of the model. The changes we see are expected a priori given our understanding of the differences between disposable and market incomes. Second, trust and distributional measures of inequality (especially the p5010 and p9050 variables) play large and significant roles on social spending. In the future, more sophisticated estimation techniques with better, more consistent international data will enable researchers to pin down these causal effects more precisely.

IV. Conclusion

The hypothesis we have presented in this paper is that high levels of income inequality reduce public support for redistributive social spending. Were we able to also include consistent measures of publicly provided goods (such as health care and education) which especially benefit poor and rich alike, we believe our results would be even stronger. Indeed this is our next priority areas for additional research. Our empirical work strongly suggests that inequality and

trust have important impacts on public spending but it also suggests that future work can better tackle endogeneity and the measurement issues discussed above.

Our results are consistent with the hypothesis that higher levels of market income inequality (or market income poverty, or low income) means higher outlays for these goods but that higher levels of market driven pre-government inequality lead to lower levels of nonelderly social spending once we control for economic conditions, trust and social institutions (unions, wage setting behavior).

The results suggest that as the "rich" become more distant from the middle and lower classes, they find it easier to opt out of public programs and to either self insure or to buy substitutes in the private market. The conclusion is that higher economic inequality produces lower levels of those publicly shared goods which foster greater equality of opportunity, income insurance and greater upward mobility.

The results also suggest that the median voter model is simplistic in its ignorance of the maldistribution of political influence. Having greater numbers of rich in a nation does not lead to additional redistribution because the lower and middle classes do h not have the political power, voice and access to legitimize these claims.

We believe the analysis has important policy implications. Our comparison of attitudes to inequality in the United States and other countries has emphasized the essential similarities between countries in attitudes toward income inequality itself, but the dissimilarities in the institutions that represent social and economic rights in the political arena which determines redistributive government spending. Our discussion suggests that ideology and efficacy may both matter. Ideology—in the sense of national understanding of the meaning of "fairness," altruism and basic human rights—may play a crucial independent role in defining the acceptable domains

of inequality. But efficacy in the ways in which social institutions and political parties can influence government, is likely to be crucial in understanding whether demands are made of the political system to reach these objectives.

The many factors that effect public social expenditures are complex and intertwined. Certainly, social values and institutions in the United States differ from those found in other nations, and our belief in the market system is much more central and critical to social outcomes than in other advanced nations. Yet even within these beliefs, it seems clear that we do not possess the social institutions or political movements which might bring about greater levels of redistribution, even for those who are more clearly deserving because of their work effort or other factors. And it is clear that the high level of market driven economic inequality which we tolerate is in large part a determinant of the social policy outcomes which we observe.

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Table 1. Inequality and The Role of Government

	A1		A2		A3		A4
	Is it the responsibility of government to reduce income differences?		It is the responsibility of government to reduce income differences?		Those with high incomes should pay: 1 (much more) to 5 (much less) tax than those with low incomes		Would you say people can be trusted or you can't be too careful?
	1 (definitely) to 4 (definitely not)		1 (strongly agree) to 5 (strongly disagree)				1 (most people can be trusted) to 0 (can't be too careful)
Data Set	**ISSP**		**ISSP**		**ISSP**		**WVS**
Country	**Average**	**Average/4**	**Average**	**Average/5**	**Average**	**Average/5**	**Average**
Australia[1]	2.54	0.63	1.82	0.36	2.15	0.43	0.48
Austria[2]	1.96	0.49	1.36	0.27	1.86	0.37	0.32
Canada[3]	2.47	0.62	1.84	0.37	2.14	0.43	0.51
Denmark[4]	2.64	0.66	----	----	----	----	0.57
France[5]	1.77	0.44	1.33	0.27	2.09	0.42	0.24
Germany[6]	2.08	0.52	1.51	0.30	1.80	0.36	0.34
Italy[7]	1.87	0.47	1.39	0.28	1.84	0.37	0.29
Netherlands[8]	2.15	0.54	1.68	0.34	----	----	0.51
Norway[9]	1.97	0.49	1.58	0.32	2.09	0.42	0.60
Spain[10]	1.62	0.41	1.32	0.26	1.92	0.38	0.35
Sweden[11]	2.19	0.55	1.50	0.30	2.09	0.42	0.62
Switzerland[12]	2.44	0.61	----	----	----	----	0.43
UK[13]	2.07	0.52	1.55	0.31	1.98	0.40	0.39
US[14]	2.80	0.70	1.98	0.40	2.21	0.44	0.48

Notes for Table 1:

[1]Years averaged for Australia: A1: 1998, 1996, 1992, 1991, 1990, 1987, 1985; A2: 1999, 1996, 1993, 1990, 1985; A3: 1999, 1990, 1985

[2]Years averaged for Austria: A1: 1998, 1992, 1991, 1987, 1985; A2: 1999, 1985; A3: 1999

[3]Years averaged for Canada: A1: 1998, 1996, 1992; A2: 1999, 1996, 1993; A3: 1999

[4]Years averaged for Denmark: A1: 1998

[5]Years averaged for France: A1: 1998, 1996; A2: 1999, 1996; A3: 1999

[6]Years averaged for Germany: A1: 1998, 1996, 1992, 1991, 1990, 1987, 1985; A2: 1999, 1996, 1993, 1990, 1985; A3: 1999,

[7]Years averaged for Italy: A1: 1998, 1996, 1992, 1991, 1990, 1987, 1985; A2: 1996, 1993, 1990, 1985; A3: 1990, 1985

[8]Years averaged for the Netherlands: A1: 1998, 1991, 1987; A2: 1993

[9]Years averaged for Norway: A1: 1998, 1996, 1992, 1991, 1990; A2: 1999, 1996, 1993, 1990; A3: 1999, 1990

[10]Years averaged for Spain: A1: 1998, 1996; A2: 1999, 1996, 1993; A3: 1999

[11]Years averaged for Sweden: A1: 1998, 1996, 1992; A2: 1999, 1996; A3: 1999

[12]Years averaged for Switzerland: A1: 1998, 1987

[13]Years averaged for the UK: A1: 1998, 1996, 1992, 1991, 1990, 1987, 1985; A2: 1999, 1996, 1993, 1990, 1985; A3: 1999, 1990, 1985

[14]Years averaged for the US: A1: 1998, 1996, 1992, 1991, 1990, 1987, 1985; A2: 1999, 1996, 1993, 1990, 1985;A3: 1999, 1990, 1985

Table 2. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Source
Total Social Expenditures, Nonelderly	55	8.44	3.78	2.85	15.82	SOC-X
Gini	55	0.38	0.05	0.27	0.46	LIS
Gini (dpi)	55	0.27	0.04	0.20	0.37	LIS
mip9050	55	2.06	0.18	1.71	2.49	LIS
mip5010	55	12.51	19.64	1.84	98.12	LIS
p9050 (dpi)	55	1.79	0.18	1.51	2.15	LIS
p5010 (dpi)	55	1.95	0.29	1.58	2.80	LIS
Trust	55	0.44	0.12	0.23	0.66	WVS
GDP	55	1.79	1.20	-1.84	5.65	OECD
% Foreign Born	49	8.20	8.52	0.05	26.49	OECD, LIS, U.S. Census
Centralization	50	0.28	0.15	0.07	0.58	Iversen

Sources and definitions:

Total Social Expenditures, Nonelderly: percentage of GDP from OECD (2002a).

Trust: "most people can be trusted (=1) or can't be too careful (=0)." *World Values Survey* (2002).

Gini, p5010, p9050: authors' calculations, Luxembourg Income Study.

GDP: Average annual percent growth over five years preceding year of observation. OECD (2002d).

% Foreign Born: OECD (2000b), various years; LIS, various years; U.S. Census.

Centralization: See text for definition. Iversen (1998). Country average used to impute for missing data. (Luxembourg and Spain omitted with zero observations).

Table 3
Measure of Inequality: Gini (MI)

	(1)	(2)	(3)
Gini (MI)[1]	-17.1093	-14.1942	-8.7048
robust, clustered standard error	(15.5484)	(16.0845)	(10.1857)
robust standard error	(9.9072)	(10.1484)	(7.6795)
Trust	15.9276	12.5671	5.4268
robust, clustered standard error	(4.4345)**	(4.2077)*	(3.7928)
robust standard error	(3.0146)**	(3.1323)**	(3.1945)
GDP	-0.9260	-1.0701	-0.9116
robust, clustered standard error	(0.3288)*	(0.2576)**	(0.1555)**
robust standard error	(0.3232)**	(0.3468)**	(0.2265)**
% Foreign Born		-0.1794	-0.2007
robust, clustered standard error		(0.0668)*	(0.0772)*
robust standard error		(0.0453)**	(0.0470)**
Centralization			10.2356
robust, clustered standard error			(3.8956)*
robust standard error			(2.8732)**
Constant	9.4924	11.7117	10.1038
robust, clustered standard error	(6.6316)	(6.4424)	(4.1991)*
robust standard error	(4.1606)*	(4.2201)**	(3.2473)**
Observations	55	49	47
R-squared	0.34	0.49	0.65

Notes:

Dependent variable: Total Social Expenditures, Nonelderly (as percentage of GDP). OECD (2002a).

[1]These variables are measured using market income.

*significant at 5%; **significant at 1%

Sources and definitions:

Trust: See Table 2 for definition. *World Values Survey* (2002).

GDP: Average annual percent growth over five years preceding year of observation. OECD (2002d).

% Foreign Born: OECD (2000b); LIS; U.S. Census, various years.

Centralization: See text for definition. Iversen (1998). Country average used to impute for misssing data. (Luxembourg and Spain omitted with zero observations).

Table 4
Measure of Inequality: p9050 and p5010 (MI)

	(1)	(2)	(3)
mip9050[1]	-8.9174	-8.3112	-5.5815
robust, clustered standard error	(2.5496)**	(2.7362)**	(2.3473)*
robust standard error	(1.7553)**	(1.8121)**	(1.8770)**
mip5010[1]	0.0412	0.0366	0.0309
robust, clustered standard error	(0.0181)*	(0.0149)*	(0.0124)*
robust standard error	(0.0135)**	(0.0109)**	(0.0094)**
Trust	10.4654	7.8307	4.1097
robust, clustered standard error	(4.2420)*	(3.7109)	(3.4494)
robust standard error	(3.0451)**	(3.0394)*	(3.1090)
GDP	-1.0370	-1.2370	-1.1163
robust, clustered standard error	(0.3138)**	(0.2335)**	(0.1558)**
robust standard error	(0.3194)**	(0.3193)**	(0.2302)**
% Foreign Born		-0.1577	-0.1817
robust, clustered standard error		(0.0481)**	(0.0617)*
robust standard error		(0.0400)**	(0.0417)**
Centralization			6.9764
robust, clustered standard error			(2.9334)*
robust standard error			(2.7934)*
Constant	23.4677	25.1993	19.5266
robust, clustered standard error	(6.1283)**	(6.2081)**	(5.4027)**
robust standard error	(4.1493)**	(4.2332)**	(4.3981)**
Observations	55	49	47
R-squared	0.51	0.64	0.71
F-statistic	23.30**	22.86**	11.20**

Notes:

Dependent variable: Total Social Expenditures, Nonelderly (as percentage of GDP). OECD (2002a).

[1]These variables are measured using market income.

*significant at 5%; **significant at 1%

Sources and definitions:

Trust: See Table 2 for definition. *World Values Survey* (2002).

GDP: Average annual percent growth over five years preceding year of observation. OECD (2002d).

% Foreign Born: OECD (2000b); LIS; U.S. Census, various years.

Centralization: See text for definition. Iversen (1998). Country average used to impute for misssing data. (Luxembourg and Spain omitted with zero observations).

Table 5. Country Effects: U.S. and Mexico

	Results from Table 4			U.S. and Mexico[+]			Without U.S. or Mexico		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
mip9050[1]	-8.9174	-8.3112	-5.5815	-5.1730	-4.9191	-4.3434	-6.1408	-4.5524	-2.3408
robust, clustered s.e.	(2.5496)**	(2.7362)**	(2.3473)*	(1.2789)**	(1.2306)**	(0.6459)**	(3.5782)	(2.9901)	(3.0277)
robust s.e.	(1.7553)**	(1.8121)**	(1.8770)**	(0.9008]**	(0.9501]**	(0.7590]**	[2.5192]*	[2.3592]	[2.5886]
mip5010[1]	0.0412	0.0366	0.0309	0.0424	0.0377	0.0309	0.0379	0.0323	0.0270
robust, clustered s.e.	(0.0181)*	(0.0149)*	(0.0124)*	(0.0185)*	(0.0148)*	(0.0121)*	(0.0189)	(0.0141)*	(0.0116)*
robust s.e.	(0.0135)**	(0.0109)**	(0.0094)**	(0.0130]**	(0.0102]**	(0.0091]**	[0.0131]**	[0.0098]**	[0.0085]**
newtrust	10.4654	7.8307	4.1097	11.8475	8.9312	4.0132	11.8376	9.3551	5.6433
robust, clustered s.e.	(4.2420)*	(3.7109)	(3.4494)	(4.1744)*	(3.8938)*	(3.6630)	(4.6534)*	(4.0116)*	(3.5954)
robust s.e.	(3.0451)**	(3.0394)*	(3.1090)	(2.8380]**	(2.8745]**	(3.0882]	[3.0697]**	[2.9664]**	[3.0714]
gdp2	-1.0370	-1.2370	-1.1163	-0.7336	-0.8852	-0.9266	-0.9243	-1.0433	-0.9252
robust, clustered s.e.	(0.3138)**	(0.2335)**	(0.1558)**	(0.2789)*	(0.2479)**	(0.1559)**	(0.3004)**	(0.1716)**	(0.1483)**
robust s.e.	(0.3194)**	(0.3193)**	(0.2302)**	(0.3027]*	(0.3230]**	(0.2259]**	[0.3209]**	[0.3166]**	[0.2415]**
% foreign born		-0.1577	-0.1817		-0.1700	-0.1867		-0.1720	-0.1981
robust, clustered s.e.		(0.0481)**	(0.0617)*		(0.0503)**	(0.0649)*		(0.0577)*	(0.0677)*
robust s.e.		(0.0400)**	(0.0417)**		(0.0389]**	(0.0420]**		[0.0422]**	[0.0438]**
Centralization			6.9764			7.8657			6.0313
robust, clustered s.e.			(2.9334)*			(3.3066)*			(2.9082)
robust s.e.			(2.7934)*			(2.5717]**			[2.7641]*
Constant	23.4677	25.1993	19.5266	14.6683	17.2612	16.5131	17.2003	16.8990	12.5726
robust, clustered s.e.	(6.1283)**	(6.2081)**	(5.4027)**	(3.6177)**	(3.5931)**	(2.6036)**	(8.6528)	(6.6674)*	(6.6928)
robust s.e.	(4.1493)**	(4.2332)**	(4.3981)**	(2.3567]**	(2.5429]**	(2.2784]**	[5.9211]**	[5.3258]**	[5.8351]*
Observations	55	49	47	58	52	50	51	45	43
R-squared	0.51	0.64	0.71	0.56	0.67	0.76	0.45	0.62	0.69
F-statistic	23.30**	22.86**	11.20**	12.81**	13.42**	46.25**	3.24	4.72*	3.07

Notes:

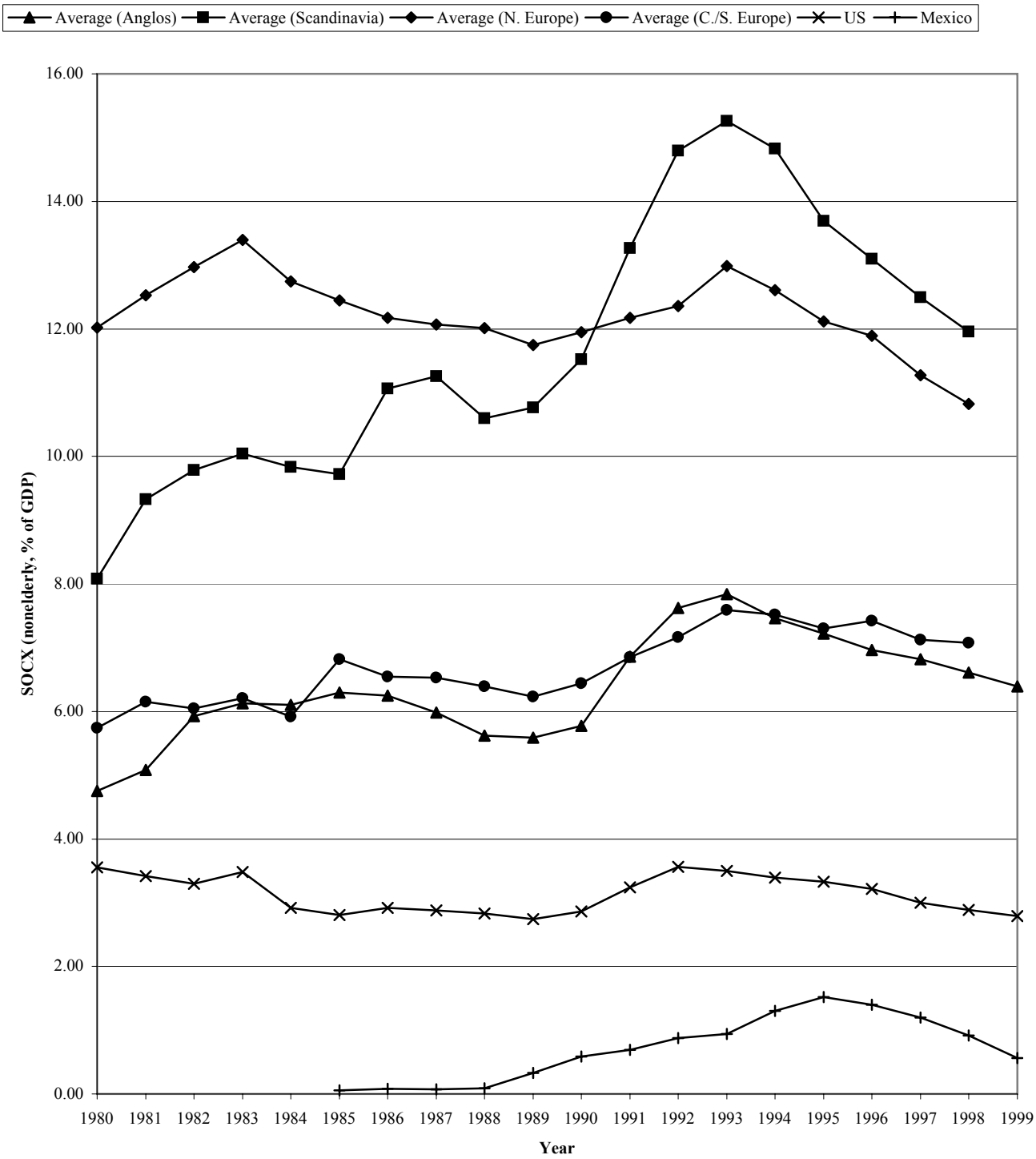
See Tables 2-4 for variable definitions and sources.

[1]These variables are measured using market income.

*significant at 5% level; **significant at 1% level

'[+]Sample includes three observations for Mexico (1994, 1996, 1998).

Figure 1. Nonelderly Social Expenditures in 6 sets of 17 Nations*



* Total Nonelderly Social Expenditures (as percentage of GDP), including all cash plus near cash spending (e.g., food stamps) and public housing but excluding health care and education spending. OECD (2002b). Anglos include Australia, UK, Canada; Scandinavia includes Finland, Norway, Sweden; Northern Europe includes Belgium, Denmark, Netherlands; Central/Sourthern Europe includes Austria, France, Germany, Italy, Luxembourg, Spain.

Appendix Table A1
Measure of Inequality: Gini (DPI)

	(1)	(2)	(3)
Gini (DPI)[1]	-56.2449	-51.3405	-42.1780
robust, clustered standard error	(9.1094)**	(9.4196)**	(10.0092)**
robust standard error	(6.7179)**	(7.0181)**	(8.6675)**
Trust	7.7198	5.7757	4.9356
robust, clustered standard error	(3.4471)*	(2.5547)*	(2.6354)
robust standard error	(2.3963)**	(2.0954)**	(2.2622)*
GDP	-0.8959	-0.8582	-0.8903
robust, clustered standard error	(0.1494)**	(0.1644)**	(0.1358)**
robust standard error	(0.2075)**	(0.2644)**	(0.2575)**
% Foreign Born		-0.1358	-0.1486
robust, clustered standard error		(0.0308)**	(0.0415)**
robust standard error		(0.0313)**	(0.0328)**
Centralization			3.1656
robust, clustered standard error			(2.6296)
robust standard error			(2.4982)
Constant	21.9413	22.6216	19.8306
robust, clustered standard error	(3.3768)**	(2.8538)**	(3.0671)**
robust standard error	(2.4643)**	(2.2214)**	(2.8150)**
Observations	57	51	49
R-squared	0.63	0.71	0.72

Notes:

Dependent variable: Total Social Expenditures, Nonelderly (as percentage of GDP). OECD (2002a).

[1]These variables are measured using disposable personal income.

*significant at 5%; **significant at 1%

Sources and definitions:

Trust: See Table 2 for definition. *World Values Survey* (2002).

GDP: Average annual percent growth over five years preceding year of observation. OECD (2002d).

% Foreign Born: OECD (2000b); LIS; U.S. Census, various years.

Centralization: See text for definition. Iversen (1998). Country average used to impute for misssing data. (Luxembourg and Spain omitted with zero observations).

Appendix Table A2
Measure of Inequality: p9050 and p5010 (DPI)

	(1)	(2)	(3)
p9050 (dpi)[1]	-4.5793	-0.8079	0.5340
robust, clustered standard error	(6.1279)	(4.5709)	(4.6887)
robust standard error	(3.7623)	(2.8987)	(2.9253)
p5010 (dpi)[1]	-6.0395	-7.4914	-7.5839
robust, clustered standard error	(3.4494)	(2.5798)*	(2.3676)**
robust standard error	(2.0781)**	(1.5755)**	(1.6225)**
Trust	10.7593	10.5055	10.1461
robust, clustered standard error	(4.7959)*	(3.4914)**	(3.3829)*
robust standard error	(3.0334)**	(2.4552)**	(2.5779)**
GDP	-0.8028	-0.7218	-0.7277
robust, clustered standard error	(0.1367)**	(0.1870)**	(0.2118)**
robust standard error	(0.1755)**	(0.2220)**	(0.2303)**
% Foreign Born		-0.1245	-0.1407
robust, clustered standard error		(0.0295)**	(0.0332)**
robust standard error		(0.0304)**	(0.0311)**
Centralization			0.9934
robust, clustered standard error			(1.7614)
robust standard error			(2.2906)
Constant	25.0971	22.4031	20.2942
robust, clustered standard error	(6.7873)**	(4.6207)**	(5.2046)**
robust standard error	(4.2451)**	(3.1863)**	(3.6478)**
Observations	57	51	49
R-squared	0.69	0.80	0.80
F-statistic	61.74**	76.69**	33.60**

Notes:

Dependent variable: Total Social Expenditures, Nonelderly (as percentage of GDP). OECD (2002a).

[1]These variables are measured using disposable personal income.

*significant at 5%; **significant at 1%

Sources and definitions:

Trust: See Table 2 for definition. *World Values Survey* (2002).

GDP: Average annual percent growth over five years preceding year of observation. OECD (2002d).

% Foreign Born: OECD (2000b); LIS; U.S. Census, various years.

Centralization: See text for definition. Iversen (1998). Country average used to impute for misssing data. (Luxembourg and Spain omitted with zero observations).

Appendix Table A3
Measure of Inequality: Gini (MI) -- SOCX<15%

	(1)	(2)	(3)
Gini (MI)[1]	-14.6013	-13.3357	-10.4997
robust, clustered standard error	(16.1810)	(16.8696)	(10.7704)
robust standard error	(10.1691)	(10.5474)	(7.4720)
Trust	14.3405	11.5249	4.3801
robust, clustered standard error	(4.6520)**	(4.2538)*	(3.8798)
robust standard error	(3.0615)**	(3.0597)**	(3.1170)
GDP	-0.5189	-0.7073	-0.7684
robust, clustered standard error	(0.3042)	(0.3045)*	(0.2380)**
robust standard error	(0.2989)	(0.4327)	(0.3131)*
% Foreign Born		-0.1638	-0.1916
robust, clustered standard error		(0.0677)*	(0.0793)*
robust standard error		(0.0460)**	(0.0480)**
Centralization			10.0658
robust, clustered standard error			(3.8692)*
robust standard error			(2.8966)**
Constant	8.2293	10.8863	10.8459
robust, clustered standard error	(7.1639)	(7.0461)	(4.5354)*
robust standard error	(4.3100)	(4.5345)*	(3.2255)**
Observations	52	46	44
R-squared	0.27	0.42	0.60

Notes:

Dependent variable: Total Social Expenditures, Nonelderly (as percentage of GDP). OECD (2002a).

[1]These variables are measured using market income.

*significant at 5%; **significant at 1%

Sources and definitions:

Trust: See Table 2 for definition. *World Values Survey* (2002).

GDP: Average annual percent growth over five years preceding year of observation. OECD (2002d).

% Foreign Born: OECD (2000b); LIS; U.S. Census, various years.

Centralization: See text for definition. Iversen (1998). Country average used to impute for misssing data. (Luxembourg and Spain omitted with zero observations).

Appendix Table A4
Measure of Inequality: p9050 and p5010 (MI) -- SOCX<15%

	(1)	(2)	(3)
mip9050[1]	-8.8580	-8.5093	-6.3098
robust, clustered standard error	(2.3389)**	(2.4306)**	(2.1479)*
robust standard error	(1.6460)**	(1.6472)**	(1.7860)**
mip5010[1]	0.0488	0.0420	0.0345
robust, clustered standard error	(0.0158)**	(0.0119)**	(0.0106)**
robust standard error	(0.0132)**	(0.0104)**	(0.0094)**
Trust	8.6546	6.4860	3.1774
robust, clustered standard error	(4.0823)	(3.5445)	(3.3029)
robust standard error	(3.0109)**	(2.8810)*	(2.9333)
GDP	-0.5809	-0.7934	-0.8432
robust, clustered standard error	(0.2376)*	(0.2633)**	(0.1922)**
robust standard error	(0.2527)*	(0.3607)*	(0.2907)**
% Foreign Born		-0.1365	-0.1647
robust, clustered standard error		(0.0458)*	(0.0592)*
robust standard error		(0.0397)**	(0.0415)**
Centralization			5.9224
robust, clustered standard error			(2.3267)*
robust standard error			(2.7076)*
Constant	22.9034	24.9442	20.8743
robust, clustered standard error	(5.6340)**	(5.5402)**	(5.0815)**
robust standard error	(3.7361)**	(3.7892)**	(4.0956)**
Observations	52	46	44
R-squared	0.52	0.64	0.70
F-statistic	26.97**	29.78**	14.16**

Notes:

Dependent variable: Total Social Expenditures, Nonelderly (as percentage of GDP). OECD (2002a).

[1]These variables are measured using market income.

*significant at 5%; **significant at 1%

Sources and definitions:

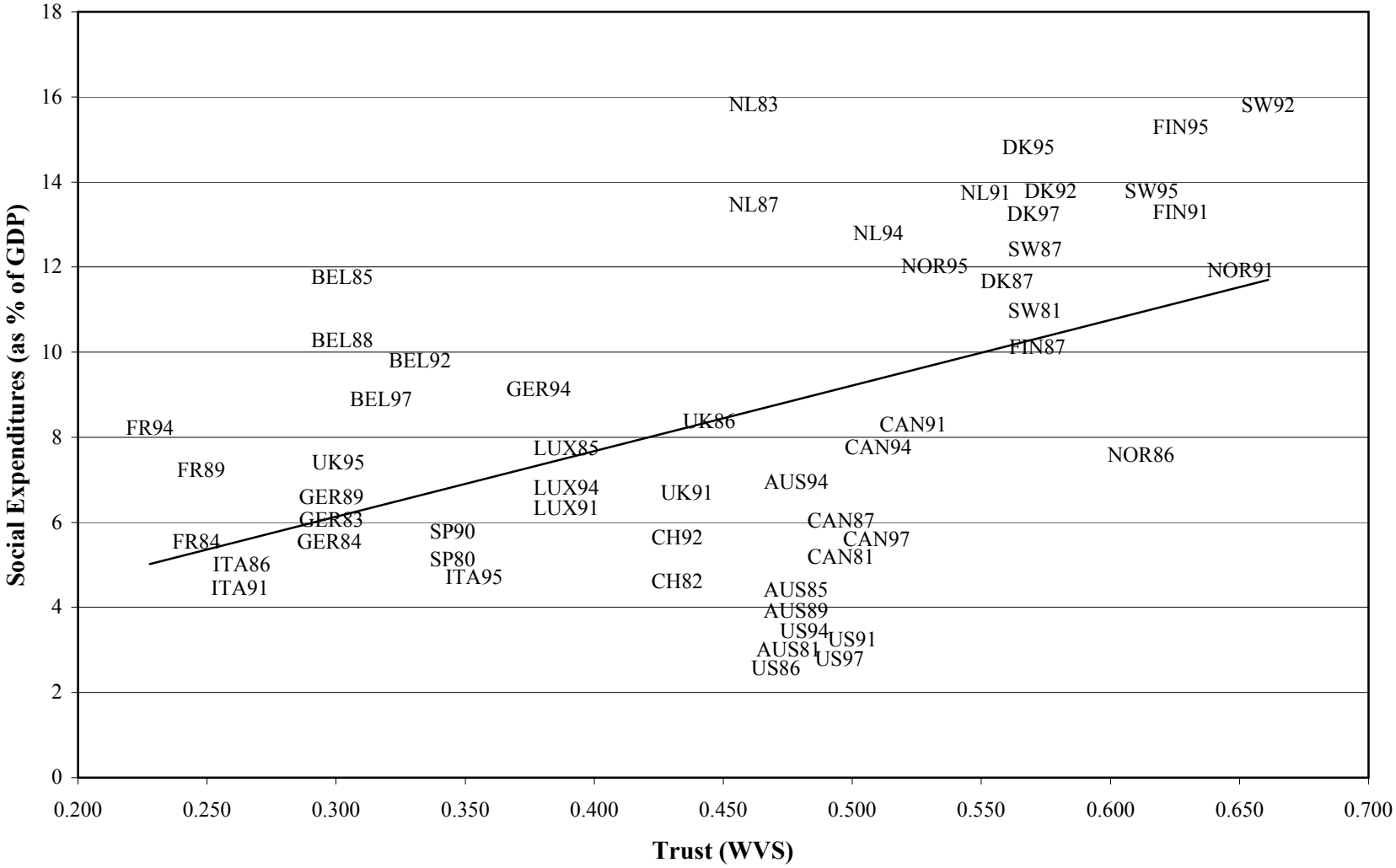
Trust: See Table 2 for definition. *World Values Survey* (2002).

GDP: Average annual percent growth over five years preceding year of observation. OECD (2002d).

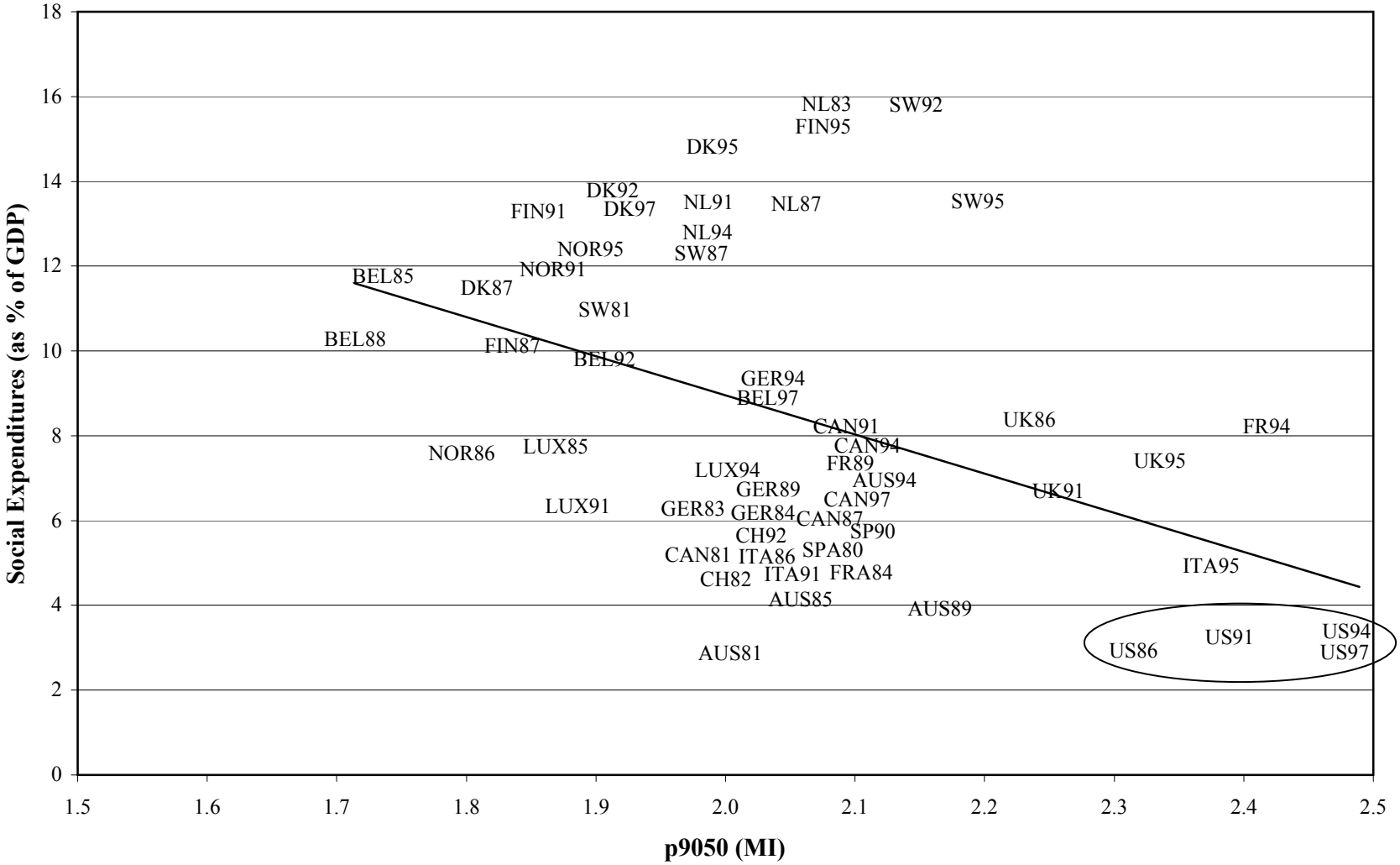
% Foreign Born: OECD (2000b); LIS; U.S. Census, various years.

Centralization: See text for definition. Iversen (1998). Country average used to impute for misssing data. (Luxembourg and Spain omitted with zero observations).

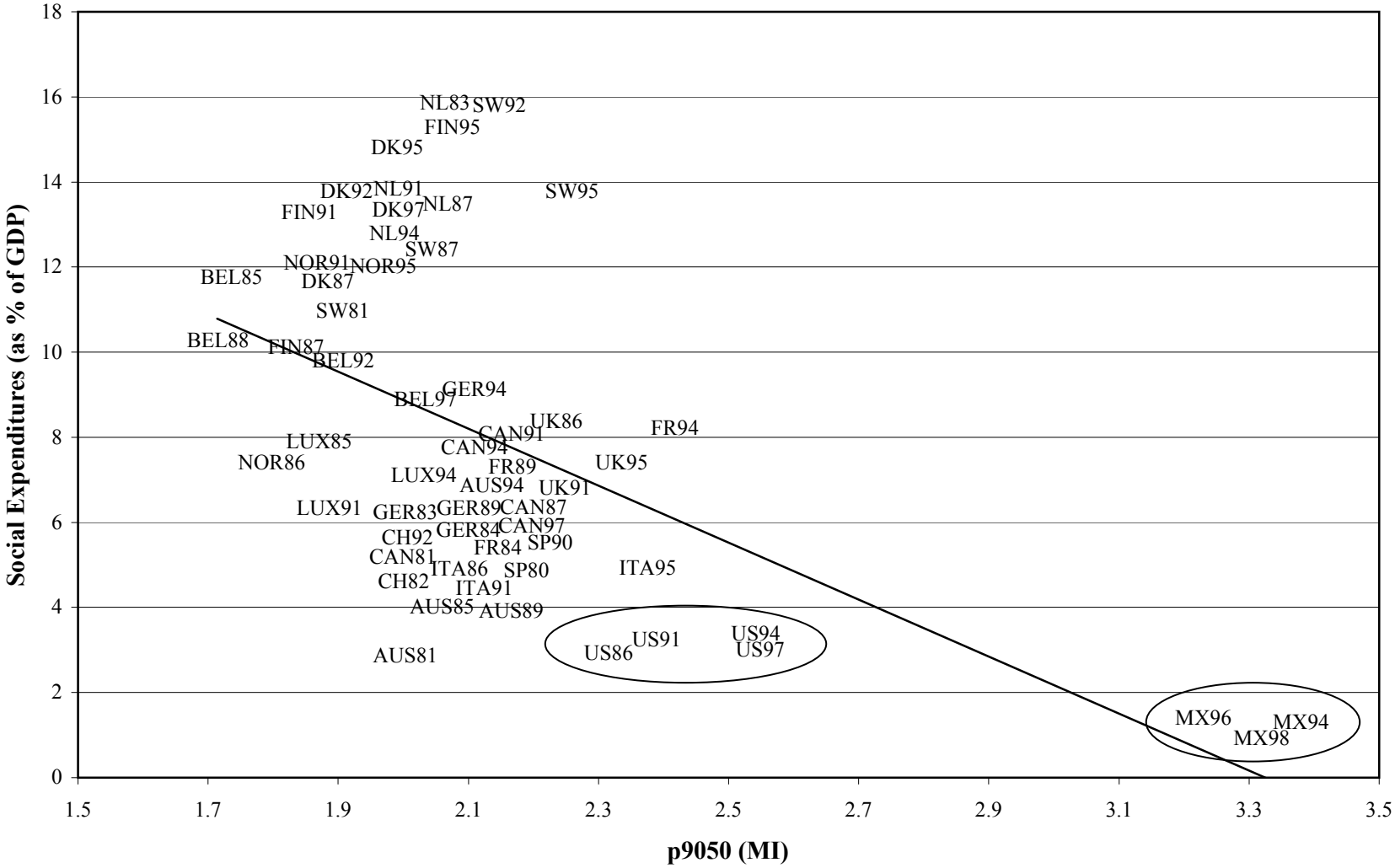
Appendix Figure A1
Social Expenditures - Trust



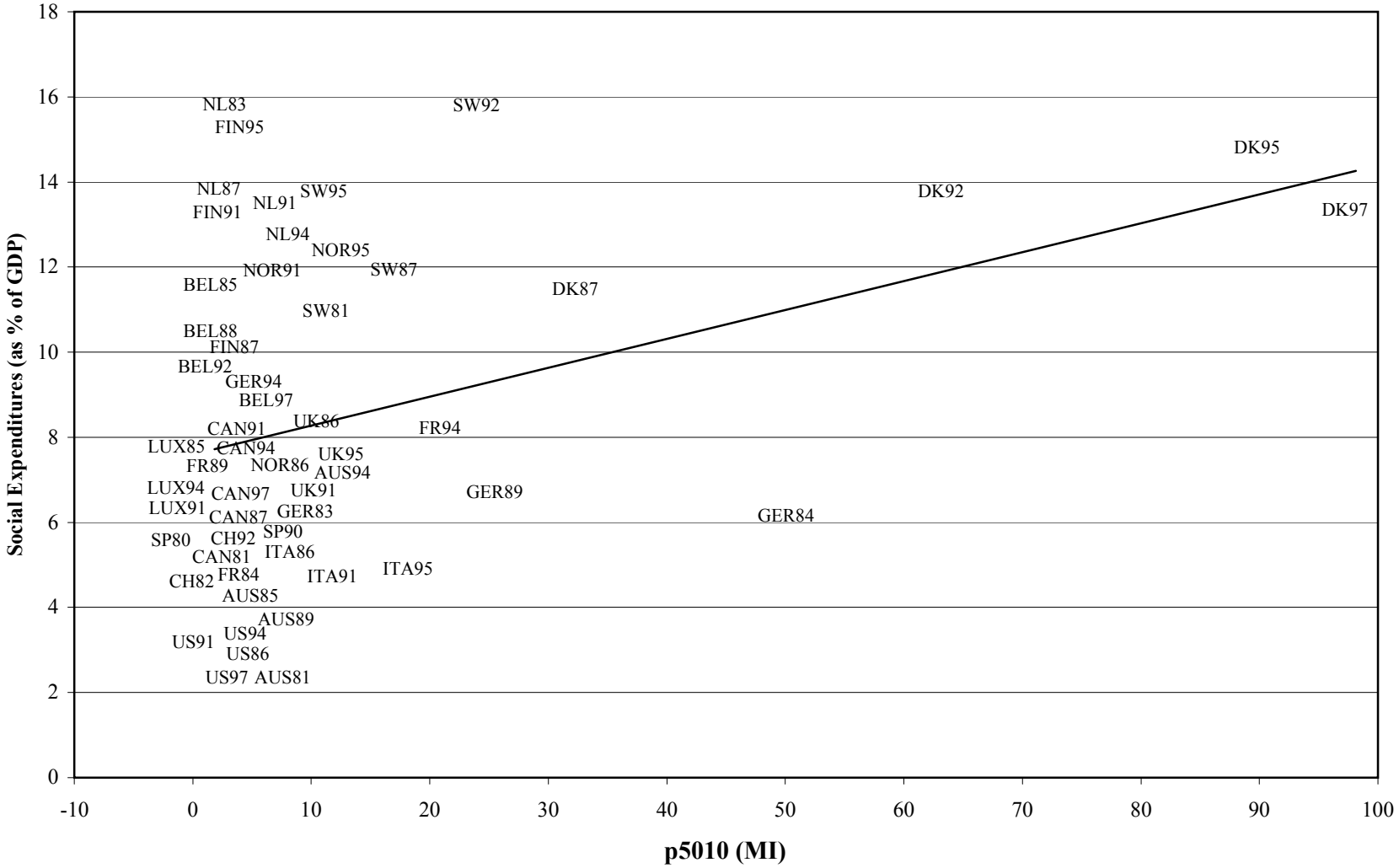
Appendix Figure A2a
Social Expenditures - p9050 (MI)



Appendix Figure A2b
Social Expenditures - p9050 (MI)



Appendix Figure A3
Social Expenditures - p5010 (MI)



Appendix Figure A4
Social Expenditures - Gini (MI)