An Analytical Perspective on

Participatory Inequality and Income Inequality

A paper for the Russell Sage Foundation Project
on the "Social Dimensions of Inequality"

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January 28, 2003

Acknowledgements: My thanks to Iris Hui who performed invaluable research assistance. Michael Hout, Neil Fligstein, Sidney Verba, Kay Schlozman, and Gene Smolensky made helpful comments at a presentation of this paper.

Introduction

At least since the *sans culottes,* literally "those without pants," streamed through the streets of Paris in 1789 to overthrow the Ancien Regime, modern social theorists have been concerned with the relationship between income inequality and political participation. Connections between people's economic resources and their political activities surely date back to antiquity, but the appearance, in the late eighteenth century, of democratic nations with novel forms of mass participation and the onslaught, in the nineteenth century, of the industrial revolution with its starkly unequal social classes, led to new speculations about how income inequality produces political activity. De Tocqueville worried that democratic participation would allow the lower classes to use their political power to level society, erasing all differences (including income inequality) and creating uninspired homogeneity. Marx predicted capitalism's extreme income inequality would eventually generate working class consciousness that would lead to the revolution of the proletariat and communism. In both formulations, economic inequality would spawn political participation that would transform the society.

With the rapid rise in income inequality in the United States from 1979 to 1994, it is a good time to reevaluate this classic concern of social theorists. Modern social scientists have explored the relationship between income inequality and revolutionary activity across many countries (e.g., Hibbs, 1973; Gurr, 1970), and they have investigated the relationship between income and conventional activities such as voting, campaign work, and campaign contributions by individuals (Verba and Nie, 1972; Wolfinger and Rosenstone, 1980). Neither of these strains of research, however, adequately addresses the questions raised by the changes in the past thirty years in America. In a stable democratic society such as the United States, income inequality seems less likely to foster revolutionary activity than to erode the conventional activities of some groups and to stimulate the conventional activities of others, leading to changes in who gets what, when, and how. And the finding from cross-sectional surveys that political activity increases with higher income captures just part of the story. It says nothing about how over-time increases in income inequality affect political participation.

This paper offers an analytical perspective on income, income inequality, and participation, and it presents new empirical work that goes beyond existing research. The analytical perspective draws upon economics and political science to consider how income and income inequality might affect participation. The empirical research reveals the seemingly paradoxical result that from the 1970s through the 1990s, participatory inequality decreased for at least some forms of political participation as income inequality increased. The analytical perspective suggests various reasons why this might be so, and it provides avenues for future research. Although we append an extensive bibliography of articles that we have consulted, this paper does not provide an article-by-article review of this literature, partly because there are several other excellent literature reviews (Leighley, 1995; Schlozman, 2002; Verba, 2001; Freeman, 2002) but primarily because the greatest need is for an analytical perspective on this literature that considers the objectives of the Russell Sage Foundation's project on the "Social Dimensions of Inequality." Without such a perspective, the empirical findings are obtuse, recondite, and confusing.

Basic Concepts

Political Participation – Political activities are complex human performances (Brady, 1999, pages 768-770) which typically involve actions by ordinary citizens to influence politics. Every society has its own repertoire of allowable, marginal, and illegal acts. Although Europeans no longer engage in illuminations in which protestors light candles at night, they are far more likely to block traffic or occupy buildings than Americans who favor petitions, lawful demonstrations, and boycotts (see Brady, 1999). Europeans also turn out to vote at higher rates than Americans. In America, the standard repertoire includes giving money (e.g., campaign contributions), giving time (e.g., campaign work, protests, organizational memberships), giving a speech or organizing a meeting (e.g., campaign events, local boards), writing a letter (e.g., contacting governmental officials or the newspaper), and simply going to vote.

Table 1 (taken from Brady, 1999) presents a classification system for political activities. For those activities that are meant to influence politics directly, the major distinction is between electoral and non-electoral activities. Electoral activities include voting, campaign contributions or campaign work, and party membership which are organized and even scheduled by the electoral system. Non-electoral activities are organized outside the electoral system. Conventional non-electoral activities consist of contacting government officials, belonging to organizations, or working in the community. Unconventional, non-electoral activities range from legal methods such as petitioning and lawful demonstrations to occupying buildings, blocking traffic, destroying property, or even terrorism and assassination.

Because political activity is multifarious, there are good reasons to expect that the impact of any change in society, such as an increase in income inequality, on political participation will depend upon the political act. Voting, for example, costs relatively little (Aldrich, 1993) so that it seems likely that the impact of income changes on voting will be through routes other than increases or decreases in the relative cost of voting. Campaign contributions, however, cost money by definition, and it seems very likely that a change in income will directly affect the level of campaign contributions. One of the goals of this paper is to suggest that there are different ways that income inequality might affect different forms of participation.

Income Inequality—The basic explanatory variable in this paper is income inequality. One of the easiest ways to measure income inequality is to split the population into income percentiles, such as deciles, and to take the difference between the average income of the top decile and the average income of the bottom decile. If incomes are fairly equal then this difference will be close to zero; otherwise it will be some positive number. Economists often take the natural logarithms of these average incomes before taking their difference which amounts to taking the logarithm of the ratio of the averages.[1] Figure 1 from Katz and Autor (1999) reports changes in the 90% - 10% log weekly wage differential over time. Note that the value of this quantity for men and women was between about 1.1 and 1.2 (indicating a ratio in average wages of the

[1] That is, they take ln(Average Income of Top Decile) – ln(Average of Bottom Decile) = ln(Average Income of Top Decile/Average Income of Bottom Decile). A ratio of average incomes of 2.78 to 1 produces a logged value of one; a ratio of 3 to 1 produces a value of 1.1; a ratio of 3.5 to 1 produces a value of 1.25; a ratio of 4 to 1 produces a value of about 1.4; and a ratio of 5 to 1 produces a value of 1.6.

highest to the lowest decile of about 3 to 3.3) from 1963 until around 1980 when it began to rise until 1994 when it was between 1.4 and 1.6 (indicating a ratio in average wages between 4 to 5.)

Figure 2 reports percentage changes in the Gini coefficient, another measure of inequality, for families from 1947 to 1998. In this figure, the percent change remained between plus and minus 5% for over thirty years – with increases approximately canceled out by decreases – until the early 1980's when the percent change in income inequality began a steady rise beyond 5% a year to 10% and even perhaps 20% year (although a change in the mode of data collection makes it hard to compare the figures for 1993 onwards with the earlier figures.) Our goal in this paper is to understand how these changes in income inequality during the 1980s and the 1990s affected participatory inequality.

Explanatory Models of Participation

The Basic Problem – Social theorists have made large claims about how economic inequality might lead to political participation, but they have seldom described the specific mechanisms linking economics and politics. Income inequality in a capitalist system is largely the result of individuals exercising their preferences through exchanges in markets which are often shaped by government action. Political participation involves people expressing their preferences to government through political activities fabricated from time, money, skills, and other inputs. Exercising preferences in markets and expressing (or forming) them in politics are clearly two different things, and it is not clear how they might be linked, although the role of government seems important. One possible linkage is that economic inequality affects the *resources*, especially income, available to people for participation so that richer people have more resources and poorer people have fewer. Another possible connection is that income inequality *motivates* participation so that poor people are more motivated than rich people to agitate in favor of redistributive policies. The first mechanism relies upon income as a personal capacity which supports the ability to participate, while the second involves economic inequality as a social fact, a characteristic of the society as a whole, that animates reactions from those whose interests are at stake. Both mechanisms involve trying to influence government action.

In the following sections, we try to characterize in detail the mechanisms that might link income, economic inequality, and political participation. Rather than simply proposing one mechanism, we investigate a number of different prototype mechanisms and their applicability to the problem at hand. The net result is a rich set of tools for thinking about inequality and participation.

Economic Models of Participation – Income and income inequality result from participation in the labor force and in the marketplace. In their models of labor force and marketplace participation, economists have worked out in great detail the relationship between income and economic participation. Because political activity is also a form of participation, it seems sensible to suppose that models of economic participation might provide some insights into the relationships among income, income inequality, and political participation.

For both labor force and marketplace participation, there are good reasons to believe that a change in income will affect the amount of participation. Common-sense suggests that people will work more as their income increases, but the story is more complicated than that, suggesting

that the relationship between income and political participation might be quite complicated as well.

In the standard labor force participation model (Blundell & Macurdy, 1999), for example, the hours H of labor force participation are chosen by maximizing the utility $U(X,L)$ of consumption X and leisure L subject to a budget constraint that purchases, defined as the price of one unit of consumption p times the amount of consumption X, must equal total income Y: $pX = wH + V = Y$, where total income is composed of non-labor income V and of wage income wH defined as wages w times the number of hours worked H. The hours worked H plus the amount of leisure L must sum to the total number of hours T that are available ($T=H+L$). With some assumptions about the functional form of the utility function, we can write a simple hours-of-work equation, essentially a participation equation, as:

$$(1) \qquad H = H(w,p,V,Q,\alpha,\varepsilon) = \alpha_0 + \alpha_1 w/p + \alpha_2 V/p + \alpha_3 Q + \varepsilon,$$

where α_0, α_1, α_2, and α_3 are parameters, ε is an error term representing unobserved heterogeneity, and Q is a vector of observable qualities such as age, sex, or education often called "taste shifters" although they may represent "capabilities" or "opportunities" as well.[2]

Economic theory only provides an ambiguous prediction about the impact of an increase in wages because of "income" and "substitution" effects which can work against one another,[3] but at least in the short-run, α_1 will be positive, indicating that an increase in wages will lead to an increase in hours worked. If, as seems very likely, leisure is a normal good (so that more of it is wanted as income increases), then an increase in non-labor income will *decrease* hours worked (α_2 will be negative) as people use their extra income to buy some leisure. Consequently, even if α_1 is positive, increases in income are not necessarily positively related to hours of work, and the consequences of an increase in income depends upon its source.

Furthermore, equation (1) refers to changes in a particular labor market; it does not refer to the relationship between hours of work and wages across a set of different labor markets. It is possible, for example, that increases in wages would lead to more hours worked for individuals in a number of different markets, say those for day laborers, aircraft mechanics, accountants, and doctors, but the correlation between the average wages in these occupations and the average hours worked could still be negative with those making more working less because the factors determining hours-worked might be different for each occupation. Income, in this case, could be a proxy for the factors that determine work hours in each occupation. The vector of

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[2] Killingworth and Heckman (1986, 140), for example, discuss the problem of interpretation when job characteristics are added to a supply equation, but the addition of education or the number of dependents in a household is also problematic (Pencaval, 1986, 67).

[3] An increase in wages has two effects. The increase in wages means that an hour of leisure "costs" more in terms of wages foregone; this tends to increase work-effort as a household *substitutes* other goods for leisure. At the same time, however, an increase in wages means that a person earns more income with the same hours of work; if leisure is a normal good so that people want more of it with increasing income, then some of this *income* will be used to buy more leisure and to work less. Most empirical work finds that the substitution effect outweighs the income effect in the short-run, but the income effect probably outweighs the substitution effect in the long-run.

characteristics *Q* is supposed to control for these factors, but it is hard to know what *Q* should be, and it is asking a lot for it to do so completely. This is a general problem with econometric work where an independent variable such as income acts as a proxy for other factors that lead to the outcome, in this case participation, and the problem is acute when studying political participation.

Although the common-sense notion that people devote time to working in order to obtain income is sustained by this analysis, the relationship between hours worked and income is very complicated suggesting that an equally complicated relationship might hold for political participation. Moreover, the model does not include income inequality so that it provides no guidance for how inequality might affect political participation. But the model does provide some insights into how income might matter.

If political participation involves giving time to activities and if the benefits are related to the amount of time contributed, then participation will be like hours devoted to work so that income and substitution effects with respect to the benefits from participation might play a role in the amount of participation. The net result could be an ambiguous relationship between the income obtained from political participation and the amount of participation. But the benefits from political participation are seldom defined as clearly as wages from working and the total expected benefits are typically fairly small. Consequently, it seems likely that at most, increased benefits from political participation will elicit more hours of political participation, with no discernible income effect which might depress participation. Despite this positive relationship between benefits from political participation and the amount of participation, this mechanism is unlikely to be the explanation for the oft noted positive relationship between overall individual income and participation because the benefits from participation are at most only a small part of individual income.

The impact of income from non-participation, similar to the *V* term in equation (1), is also unclear. If political participation is just like work so that it only generates utility by the monetary benefits (analogous to wages) it yields, then an increase in non-participation income should decrease political participation according to the model above. But if participation is a pleasurable hobby for some people, something which provides utility even if there are no benefits beyond the act itself, and if the only cost of participation is the time spent doing it, then increased income might free-up some work-time and provide more hours for political participation which would be traded off against the requirement to work enough to afford other consumption items and the need to get some leisure as well.[4] This observation suggests that we might think of participation as a consumption good that gives pleasure to people.

[4] If *A* is hours of political activity, then the model in this case would be the same as before except that the utility function would include a third argument for political activity, *U(C,L,A)* and the hours constraint would be *T = H+L+A*. In this case, increases in wages would typically decrease political activity and increases in non-labor income would increase it. The model could be elaborated by assuming that participation returned some benefits, but it should be obvious that as soon as an hour of participation provides benefits equal to or greater than wages from work, then the person would stop working and just engage in political activity which is both pleasurable and remunerative, unlike work. The model could be elaborated still farther if participation cost money as well as time in which case the budget constraint would have to include the cost of participation as an expenditure item.

The standard model of consumption assumes that people maximize utility for two commodities $U(X_1, X_2)$ subject to a budget constraint $p_1 X_1 + p_2 X_2 = Y$ where X_1 is the amount of the first commodity and p_1 its price, X_2 the amount of the second and p_2 its price, and Y the person's income. In this case, the amount of commodity X_1 demanded (that is, the amount of the person's participation in the market for X_1) would be:

$$(2) \qquad X_1 = f(p_1, p_2, Y, Q, \alpha, \varepsilon) = \alpha_0 + \alpha_1 (p_2/p_1) + \alpha_2 (Y/p_1) + \alpha_3 Q + \varepsilon,$$

Where as before, α_0, α_1, α_2, and α_3 are parameters, ε is an error term representing unobserved heterogeneity, and Q is a vector of observable qualities such as age, sex, or education often called "taste shifters." Economic theory makes some predictions about the signs of the parameters in this equation, depending upon the nature of the goods. In most cases, α_1 will be positive and α_2 will be positive so that higher prices for the first commodity will lead to less demand for it while higher prices for the other commodity will lead to more demand for the first commodity.[5] The impact of higher income depends upon the type of good, with demand for inferior goods decreasing with income (α_3 will be negative) and the demand for normal goods increasing with income (α_3 will be positive). Most goods, certainly most broad classes of goods, tend to be normal goods, but the theory provides no way, independent of the empirical sign of Y, to distinguish inferior and normal goods.

As with equation (1), equation (2) refers to ceteribus paribus changes; it does not necessarily explain simple correlations across people in a cross-sectional sample. Thus, in a cross-sectional sample we might find that spending on country and western music goes down with income (suggesting that country and western is an inferior good), but an increase in the income of a country and western music fan might increase spending on this music. Thus, cross-sectional increases in income might proxy changes in tastes which are supposed to be controlled by Q, but which might not be. Once again we encounter the problem that income might be a proxy for some other factor.

The consumption model seems readily applicable to participation involving money such as political contributions C where X_1 is the number of political favors purchased for the price p_1 for each favor (and $C = p_1 X_1$). Since political favors are most likely a normal good, an increase in the price of the favors would diminish demand for them and an increase in income would increase it. But both the number of favors purchased and the price of favors are usually unknown, so most studies of political contributions simply treat the amount of money contributed C as an indicator of X_1, which amounts to assuming that the price p_1 is fixed, which may or may not be true for the case at hand.

The consumption model could also be applied to a case where utility is gained simply from the act of participation itself, and the number of acts of participation X_1 for contributions would be equal to the contribution C. In this case, p_1 would be equal to one. Equation (2) still holds, but only the impact of p_2 and Y matter. Increases in the price of all other goods p_2 will decrease contributions, and increases in income will increase contributions.

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[5] This assumes that the first commodity is not an unusual type of good called a Giffen good.

These models suggest that income, although not income inequality, might figure prominently in explaining political participation, but there will be a positive relationship between overall income and participation only under certain conditions. For activities that involve the investment of time, it is not enough for political participation to provide benefits, like wages for work, in return for the hours spent doing it. Participation probably also has to provide intrinsic pleasure for there to be a positive relationship between income and political activity. For activities that involve the investment of money, but not time, the assumption that political contributions are a normal good yield the desired result, although more by definition than anything else. There is no intrinsic reason why political activity has to be a normal good, but most of the things produced by political contributions such as policy outcomes or the election of favored politicians are probably normal goods, if not luxury goods.

These economic models provide insight into the relationship between income and participation, and they provide enough justification to argue that the amount of income might help to explain the level of political participation. But these models also suggest that income could be proxy for other factors such as people's circumstances or their preferences. And because most forms of participation are not traded in a market it is hard, if not impossible, to get information on some of the basic features of the models such as the prices or benefits of participation. To salvage the model, prices might be interpreted as costs, which every form of participation certainly incurs, but these costs, except in the case of political contributions, are typically not monetary. Rather, the costs are time, social opprobrium, and possibly the threat of persecution. Since there are no clear-cut prices for these things, it is not clear how, if at all, the budget constraint should hold, and therefore, it is not clear that income should enter into a participation equation, except perhaps in the case of monetary contributions.

In fact, the explanatory force of the economic model follows because prices, wages, and income provide people with substantial motivation and with significant information about the consequences of economic participation, and the empirical reach of the model follows because analysts have access to plentiful data on prices, quantities, and income. Very little of this kind of information seems available and maybe even pertinent for political participation. Moreover, although economists have exhibited great confidence in the theoretical power and tractability of the labor supply and consumer demand models as theories of economic participation, empirical results are sometimes mixed, and Pencaval (1986, 95) ended his review of labor supply research by lamenting that "only a relatively small proportion of the variation in hours of work of prime-age men in the population is removed by the set of variables on which information is collected in most surveys [and] we need to know more about what this 'unobserved heterogeneity' represents."

The limitations of the models may go even deeper than that. They say nothing about how goods are combined with leisure to create activity, nothing about how people choose among activities, and nothing about how people learn about wages and prices. While the wage of a job or the price of a commodity is important, so too are job security, the organization of the workplace, social connections, fashion, trust, habit, motivations, and many other factors. And these factors might be the ones that must be included in Q in order to control for changes in tastes or opportunities. Similarly, the importance of the monetary costs of participation may pale in comparison to the many other factors that affect participation.

Household Production Models of Participation – The home production model (Becker 1965; Lancaster 1966) responds to some of these criticisms by taking activities[6] as the basic unit of analysis. It assumes that people get utility $U=U(Z_1,...,Z_n)$ from N activities $Z = (Z_1,...,Z_j,...,Z_n)$, and each activity is produced according to a production function $Z_j = f_j(X_j, T_j)$ from a vector of commodities X_j and from time T_j. One of these activities (such as Z_n) is work, which produces income. Another could be political participation. The only constraint is that the sum of hours allocated to the activities $\Sigma_j T_j$ must equal the total number of available hours T. The model makes predictions about tradeoffs of time and goods depending upon their prices, the form of the utility function, and the form of the production function. The model's emphasis upon time and production seems better suited to studying political participation where monetary costs may often be trivial in comparison to other factors such as the time commitment or the need to have certain skills to run a meeting, write a letter, or make a speech.

Because the activities are unobserved in the economic context, Gronau (1986, 279) notes that "any empirical investigation based on this theory is therefore confined to the study of inputs," but "the study of inputs is hampered by the fact that data on inputs are not readily available … and prices (specifically the price of time) are unknown." Two types of surveys, consumption expenditure surveys and time budget surveys, however, do provide some information about commodities X and time T_j although there is almost no data on the allocation of both goods and time. These data make it possible to learn something about variation in inputs, and most importantly they have focused attention on the use of time (Juster and Stafford 1991). In the study of political participation, the activities themselves are observed, and recent surveys have asked about the inputs to participation such as time, money, and skills.

This theory has many advantages. Thinking about the production of activities by combining commodities and time is much more conductive to understanding participation than thinking about choosing commodities. And the theory has been applied to many areas of participation including crime (Ehrlich 1973), religion (Azzi and Ehrenberg 1975; Iannacc one 1998), travel (Gronau 1970), and family production (Michael 1973). But there are still problems. Can religious participation really be explained by a utility function with "afterlife consumption" in it (Azzi and Ehrenberg 1975)? How much does travel time and foregone work activity really matter for voting and other forms of political and community participation? How does economic inequality fit into the picture?

A Simple Model of Political Contributions – One of the problems with these models as they are applied to political participation is that they focus more on the resources that go into participation than on the benefits of participation. Legislative vote buying models (e.g., Snyder, 1999; Groseclose, 1995; Groseclose and Snyder, 1996) solve this problem by assuming that people trade resources such as money for favors provided by a legislature. None of these models says much about income or income inequality, but they do suggest that one of the features of a successful model of political participation is that it must incorporate a purpose for participation such as garnering favors. One purpose of participation, of course, could be pure consumption in

[6] The literature often calls the Z_j commodities and the X_i goods, but we follow Gronau (1986) in using the term activities for Zj.

which case participation would be a commodity like food or clothing, but although participation may sometimes be a pure consumption good, it seems likely that it is also something more than that.

The following simple model suggests how income and income inequality might both affect participation in a model of governmental policy-making. Consider a model with two groups, called zero and one, with different gross incomes, $Y_0 < Y_1$, so that group zero is the "low income" group and group one is the "high income" group. Assume that there are M people in group zero and N people in group one. Also assume that the government imposes a proportional tax t on all income above Y_0. The government then takes these tax receipts ($Nt(Y_1 - Y_0)$) and gives them back to each member of a group in proportion to the amount of political contributions given by the member of the group. Each group chooses a common contribution rate for members, c_0 for group zero and c_1 for group one.

The net income Y_0* for a member of group zero is:

(3) $$Y_0^* = Y_0 + (c_0/[Mc_0 + Nc_1])\, Nt(Y_1 - Y_0) - c_0.$$

This amounts to the member's gross income Y_0 plus the proportion of the tax receipts which the member receives $(c_0/[Mc_0 + Nc_1])Nt(Y_1 - Y_0)$ minus the political contribution c_0 which is spent to get this share of taxed income. The formula for a typical member of the higher income group is:

(4) $$Y_1^* = Y_0 + (1-t)(Y_1 - Y_0) + (c_1/[Mc_0 + Nc_1])\, Nt(Y_1 - Y_0) - c_1,$$

which is similar to the formula for group zero except for the fact that the higher income group has $t(Y_1 - Y_0)$ of its gross income of Y_1 taxed away leaving it with $Y_0 + (1-t)(Y_1 - Y_0)$ of its gross income after taxes. Both formulas can be summarized as follows for $j=0$ *or* 1:

(5) $$Y_j^* = Y_0 + (1-t)(Y_j - Y_0) + (c_j/[Mc_0 + Nc_1])\, Nt(Y_1 - Y_0) - c_j.$$

Each group has to choose its contribution c_j to maximize its net income Y_j*. The first order condition for this maximum leads to:

(6) $$c_0 = (N/4M)\ t(Y_1 - Y_0) \text{ and } c_1 = (1/4)\ t(Y_1 - Y_0).$$

If, as is typically the case, N << M, so that the higher income group is much smaller than the lower income group, then the typical contribution of a member of the lower income group is smaller by a factor of (N/M) than the typical contribution of a member of the higher income group.[7]

We can combine the two equations in (6) to find that contributions c_j for a person with income Y_j fit the following equation:

[7] Note that even with N << M, it is possible that w_0 could be bigger than the amount of money available to a person in the zero group. If, for example, t=½, N = (1/4)M, Y_0 = \$10,000 and Y_1 = \$330,000, then c_0 = \$10,000 which is everything that a member of the zero group has. But these are rather extreme numbers.

(7) $$c_j = -[(M-N)/4M]\ t\ Y_0 + [(M-N)/4M]\ t\ Y_j + [N/4M]\ t\ (Y_1 - Y_0)$$

$$= \alpha_0 + \alpha_1 Y_j + \alpha_2 (Y_1 - Y_0).$$

Consequently, an increase in income Y_j leads to an increase in contributions c_j (because $\alpha_1 = [(M-N)/4M]$ is positive) and an increase in income inequality $(Y_1 - Y_0)$ leads to an increase in contributions (because $\alpha_2 = [N/4M]$ is positive). Thus, this equation suggests that both individual income and income inequality should affect contributions. It also suggests that political contributions increase with income level because there are fewer rich people than less well-off people. This reason is quite different than the reasons suggested earlier which were that participation provided intrinsic gratification and that participation was a normal good so that its consumption increased with income. If we add uncertainty to the model by assuming that political contributions only increase the contributor's odds of a favorable outcome in a lottery of redistributive policies, then risk aversion would also lead those with gross income to give less than those with more, everything else equal.

This model has some unrealistic features, but it also has some features that can serve as the basis for a more complete model. Perhaps the most unrealistic feature is that it completely ignores the free rider problem, and as a result it leads to unreasonable predictions about the size of contributions. It predicts, for example, that the upper income group will contribute a sum equal to one-quarter of its tax bill in political contributions. In the real world, of course, there are incentives for individuals to forego their contributions c_j and to free-ride on the contributions of others. There is also uncertainty in whether or not contributions will lead to the desired result. But free-riding is a problem with almost all participation models,[8] and in this case it has the desired effect of reducing the amount that will be contributed – although preliminary work suggests that, as with voting models (Aldrich, 1993), it leads to reductions that are too large.

Another unrealistic feature of this model is that gross income is assigned to people, and they cannot choose the number of hours they work in order to substitute leisure for taxed work. A more complex model which incorporated some of the ideas discussed earlier could take this into account. It might also be useful to expand the model to think of political participation as the allocation of time as well as money.

On the plus side, however, the model provides an indication of how both income and income inequality could enter into a participation equation. It also suggests the importance of having income classes who can differentially benefit from government programs, and this seems to capture one of the basic elements of classical theories of the role of social class. We will use this formulation in our development of an empirical specification for studying the impact of income and income inequality. But first, we explore how political scientists have studied political participation. Among other things, the many factors identified by political scientists suggest some ways that the free-rider problem might be overcome.

Approaches to Political Participation -- How do political scientists approach the problem of participation? As with any area of research, there are some stylized facts that shape research

[8] In other work, I am generalizing this model to deal with multiple income classes, free-riding, and uncertainty.

questions. Early empirical research pointed out the many types of political participation (Verba and Nie 1972; Barnes and Kaase 1979), the strong positive relationship between participation and socio-economic status, especially education (Lane 1959; Verba and Nie 1972; Verba, Nie, and Kim 1978; Wolfinger and Rosenstone 1980), life-cycle changes in participation (Verba and Nie 1972; Barnes and Kaase 1979), and the greater equality of participation in those countries with significant left-wing parties and unions (Verba, Nie, and Kim 1978). Early theoretical work pointed out the paradox of people voting when the expected benefits seemed slight given the costs of voting (Riker and Ordeshook 1968) or when free-riding seemed like a more rational strategy (Olson 1965). Later research has been concerned with providing a theoretical rationale for participation (Aldrich 1993; Brady, Verba, & Schlozman, 1995; Verba, Schlozman, and Brady 2000), with explaining the empirical facts (Rosenstone and Hansen 1993; Verba, Schlozman, and Brady 1995; Nie, Junn, and Stehlik-Barry 1996), and with explaining an apparent long-term decline in participation in America (Putnam 1995a; 1995b; 2001).

Like economists, political scientists have looked in detail at how resources (the inputs in the models described above) such as time, money, and skills affect participation (Brady, Verba, & Schlozman, 1995), but unlike economists, they have also tried to measure the household's actual participation (the Z_j above), to explore people's motivations (their utility functions and the results they seek to obtain through participation), and to study their production functions (the f_j above) for participation. They have also considered how information and social networks matter for participation.

Table 2 summarizes the factors that have been identified by political scientists as important determinants of political participation. This list is drawn from the references at the end of the paper.

The heart of the traditional models of political participation has been socioeconomic measures of education, occupation, and income supplemented with some demographic variables. Early work did not differentiate between education, occupation, and income, but recent work (Wolfinger and Rosenstone, 1980; Verba, Schlozman, Brady 1995; Leighley and Nagler 1992; Nie, Junn, Stehlik-Barry, 1996) has tried to identify the separate impacts of education, occupation, and income. Almost all research tries to control for demographic characteristics such as sex, age, race, ethnicity, marital status, living arrangements, religion, and place of residence. Some work has tried to understand how these variables operate although sex and marital status (Kingston & Finkel, 1987; Burns, Schlozman, and Verba, 2001), race and ethnicity (Ellison & Gay, 1989; Tate, 1991; Portney & Berry, 1997; Leighley & Vedlitz, 1999), and place of residence (Oliver, 1999, 2000, 2001). Recent work by Campbell (2002) has started to take age seriously.

The problem with the socio-economic model of political participation is that, unlike the economic participation models described above, it does not distinguish among preference, resource, and opportunity explanations for participation because socioeconomic and demographic characteristics can be proxies for all three factors. In economic models, for example, a correlation between income and the ownership of yachts undoubtedly reveals more about resource constraints than about preferences. But a correlation between gender and ownership of purses reveals more about preferences than resource constraints. Finally, a correlation between education and college teaching indicates more about opportunities, and

perhaps individual resources, than preferences. At best, the socioeconomic model is a "reduced form" explanation of participation which does not separate out the structural conditions that affect participation. We cannot know whether more highly educated people prefer to participate more, have the resources (such as skills) to participate more, or have the opportunities to participate more.

In order to sort out what income means in the socio-economic model, we need to determine more about the choice situation faced by the individual. Individuals might be simply using income to cover the costs of "consuming" participation as in the consumption model described above. In that case, the most important question is whether participation is an inferior or a normal good. Or they might be using income as political contributions (or time as political work) in order to get their share of government benefits as in the simple model of political contributions described earlier. Or income might be a proxy for preferences as in the example about country and western music, or it might be a proxy for the available participation opportunities as in the example regarding different kinds of jobs which required different skills.

In the 1960s through 1990s, a great deal of research focused on attitudinal measures such as interest in politics, political efficacy, personal effectiveness, sense of governmental responsiveness, trust in government, political cynicism, but much of this work is subject to the criticism that these variables are very close to the dependent variable – so close that they might be the result of participation as much as its cause. Political efficacy, for example, asks people whether they believe that the opinions of people like themselves are taken seriously, and it seems likely that those who participate are more likely to think that their opinions matter (Finkel, 1985, 1987). Hence, explaining participation with these variables is somewhat dangerous unless care is taken to determine whether they really cause participation. More recently (Putnam, 2001; Uslaner, 2002) there has been upsurge of interest in social trust which may be an important determinant of participation, but it suffers from the same problems of being very similar to the phenomenon that is being explained.

The strength of political beliefs as measured by strength of partisanship, candidate preference strength, and ideology are somewhat more removed from participation itself, and they have significant impacts on participation. As we would expect, those with stronger political beliefs are more likely to participate, presumably because they care more about the issues at stake and are more connected with the institutions that mobilize participants. One interpretation of political beliefs is that they measure preferences, but they may also reflect greater knowledge and information or even resources. Political factors such as being contacted (Rosenstone and Hansen, 1993; Wielhouwer and Lockerbie, 1994) or registered to vote (Wolfinger and Rosenstone, 1980; Nagler, 1992) also have an important impact on political participation. These may measure political opportunities, but there are reasons to believe that they also measure political preferences and resources (see, for example, Brady, Schlozman, Verba, 1999).

Researchers have also looked for contextual effects for the state or electoral unit that might affect participation. Political factors such as the legal framework for voting, the competitiveness of political parties (Brown, Jackson, & Wright, 1999; Hill & Leighley, 1993), political expenditures, and the strength of unions and other organizations appear to matter for political participation in some circumstances (Jackson, 1993; 1996; Hill & Leighley, 1994). Presumably

they help to shape the political opportunity structure. For electoral participation, the political offices at the top of the ticket (Presidential, Senatorial, Gubernatorial) and the degree to which it is contested matters for participation (Boyd, 1989). Finally, some research has found that the region, especially the South, can have an impact on participation.

Finally, there are certainly cycles in participation and there may be time period effects. Electoral activity is reduced in midterm elections, and it increases significantly in presidential races.

The Civic Voluntarism Model – Perhaps the most complete model of political participation is the Civic Voluntarism Model of Verba, Schlozman, and Brady (1995). This model starts from SES and demographic variables and shows how they work through individual circumstances to produce political participation. The model emphasizes how institutions such as jobs, organizations, and churches shape political participation. It also distinguishes among *resources* (Brady, Verba, Schlozman, 1995) such as time, money, and civic skills, *opportunities* such as social networks (Brady, Schlozman, and Verba, 1999), and *motivations* for participation (Schlozman, Verba, and Brady, 1995) such as interest in politics and specific issue concerns.

Empirical Models of Political Participation and Inequality

Empirical Work on Political Participation and Income Inequality – In studies of political participation, the impacts of income have been given far less attention than the impacts of education and occupation, and there has been even less attention to how income inequality affects participatory inequality. One of the reasons why the effect of income inequality has been neglected is that most of the work on political participation is cross-sectional so that the degree of income inequality is fixed. Even when the impact of income on participation over time has been studied, much of the work has considered aggregate data such as national turnout over time or how participation has changed over time by occupational, educational, or income groups. As a result, very little thought has gone into the ways that income inequality might affect participatory inequality.

A General Empirical Model of Participation – The theoretical models discussed earlier suggested some ways that income and income inequality might matter for political participation. The challenge for empirical work is to develop a specification that can encompass these theoretical notions.[9] It is useful to begin with a simple model. Assume that data on political activity A_{ist} is available for a sample of individuals i in state (or unit) s at time t. Individuals are the obvious unit of analysis because they decide to participate or not to participate, and there are good reasons to assume that the participation of an individual will change over time. Furthermore, there are reasons to suspect that context, represented by the unit or state might have an impact.

Further assume that participation is the result of some row-vector of independent variables X_{ist} and some unobserved factors e_{ist} which explain participation according to a linear regression equation:

[9] The following model owes a great deal to comments at the Thursday, Janaury 23rd, 2003 Russell Sage Inequality seminar at Berkeley, California. Comments by Michael Hout, Gene Smolensky, and Sidney Verba were especially helpful, although the entire discussion was very useful.

(8) $A_{ist} = a + X_{ist}\, b + e_{ist}$.

In this equation, X_{ist} is a J-row vector $(X_{ist1}, \ldots, X_{istj}, \ldots, X_{istJ})$ of various explanatory variables and b is a J-column vector of regression coefficients. Further assume that the expected value of $E(e_{ist}|X_{ist})$ is zero which implies that the error term is uncorrelated with the included independent variables. This assumption is quite standard for regression analysis, but it is not a trivial one. It requires careful checking and justification, but it allows us to go on to the next step. We shall return to this assumption as we go along.

Assume that X_{ist} can be partitioned into variables related to income, Y_{ist} and those not related to income, Z_{ist}. Therefore, $X_{ist} = [Y_{ist}, Z_{ist}]$. Then we can write:

(9) $A_{ist} = a + Y_{ist}\, b_1 + Z_{ist}\, b_2 + e_{ist}$.

Where $b = [b_1, b_2]'$. For simplicity, consider the specification with just income variables:

(10) $A_{ist} = a + Y_{ist}\, b_1 + e_{ist}$.

This undoubtedly omits some important determinants of participation, but it simplifies some of the following presentation. We shall return to the more general model later.

<u>*A Simple Model of Participation and Income*</u> – The simplest model of participation and income treats income as an input into the act of participation. In this model, income represents resources and social connections:

(11) $A_{ist} = a + f(Y_{ist})\, b_1 + e_{ist}$,

where Y_{ist} is the individual's income and f is some functional form. Two questions immediately present themselves: First, how should Y_{ist} be measured? Second, what functional form should f be?

Measurement -- Consider the measurement question first. Because many surveys simply measure total family income, we put aside such complicated questions as whether income should be individual or family income and whether it should be just wage income or wage plus non-labor income. Instead we focus on whether income should be:

- Current, nominal income, Y_{ist}
- Inflation adjusted real income, $y_{ist} = Y_{ist}/I_{st}$ where I_{st} is some consumer price index
- Relative income which can defined as a ratio or a difference relative to some reference group. The ratio definition is: $R_{ist} = Y_{ist}/Y_{+st} = y_{ist}/y_{+st}$, where Y_{+st} is the average nominal income and y_{+st} is the average real income over relevant individuals to which person i compares himself or herself. Note that for this definition the results for nominal and real income are the same. The difference definition is: $r_{ist} = (y_{ist} - y_{+st})$. In this case, it does matter whether nominal or real income is used, and I have chosen real income.

It seems unlikely that current, nominal income Y_{ist} is the right measure. Although some economists, especially Keynesian economists and those writing on the Phillips' curve made much of nominal income increases and wage illusion, most economic effects and certainly all long-term economic effects are driven by real income. If income affects participation it seems likely that real income is what (mostly) matters.

If real income $y_{ist} = Y_{ist}/I_{st}$ matters, then Y_{ist} must be adjusted by some price index I_{st} which could vary just by time or by state as well. There are many possible choices, and more thought should be given to the best one. In most cases below we use a national price index, but state-wide indices could also be used.

But the most important issue is whether real or relative income matters. If participation is a commodity, then real income should probably matter and whether or not participation increases with income should depend upon whether participation is an inferior, normal , or even a luxury good. Political contributions may be the form of participation that is most like a "participatory commodity" so that for contributions we might expect real income to matter. Yet there are good reasons to think that for many other forms of participation the monetary costs are relatively slight and that income affects participation through social processes that have more to do with a person's social standing than with the amount of money they have. In this case, relative income matters. Hence, there are arguments for both real and relative income.

If relative income matters, then the question arises of "relative to what?" A general answer is that an individual's income is relative to some average Y_{+st} over relevant individuals which affect the person's behavior or to which the person compares himself or herself. We shall call this the reference group, and the effect is a contextual one. Without knowing more about the social processes involved, it is hard to know what this reference group should be. One simple assumption is that what matters is the mean income for some unit in which the person is embedded such as a county or state.

Functional Form -- Now consider the question about functional form. Economists often take the logarithm of income and there are theoretical reasons to believe that this measure is more basic than income itself. Taking the logarithm yields a more symmetrical distribution of income and the logarithm of income appears in studies of how education affects income. Moreover, Figure 3 shows that for an eight act measure of participation on the 1990 Citizen Participation Study, the fit of participation to log income is nearly linear, and the correlation between participation and family income is only .299 while the participation between participation and the log of family income is .359. This result suggests that there are good reasons to take the logarithm of income when trying to explain the number of participatory acts that people undertake.

This assumption may not be so good when trying to explain political contributions or the amount of time devoted to politics. Figure 4 shows that total political contributions are not even linearly related to family income, and that those at the upper-end of the income distribution give much more heavily to politics than those in the middle or at the bottom. Figure 5 shows that the

relationship between total number of hours devoted to politics and family income is approximately linear.

Because all the empirical results discussed below are for either voting or for the number of participatory acts, we shall use a logarithmic functional form. This approach also simplifies the mathematical presentation. If a logarithm form is used along with a ratio definition of relative income, then there is a simple relationship between relative income, individual real income, and mean income for the reference group:

(12) $\text{Log}(R_{ist}) = \text{Log}(y_{ist}/y_{+st}) = \text{Log}(y_{ist}) - \text{Log}(y_{+st})$.

If a linear form is used along with a difference definition of relative income, then there is a corresponding relationship between relative income, individual real income, and mean income for the reference group:

(13) $r_{ist} = (y_{ist} - y_{+st})$.

For either of these situations, we can write down a model that includes both the relative and real or absolute income situations as subcases. Consider the logarithmic model:

(14) $A_{ist} = a + b_{11} \text{Log}(R_{ist}) + b_{12} \text{Log}(y_{+st}) + e_{ist}$,

$= a + b_{11} [\text{Log}(y_{ist}) - \text{Log}(y_{+st})] + b_{12} \text{Log}(y_{+st}) + e_{ist}$,

Clearly if b_{11} is significant (and presumably positive) and $b_{11} = b_{12}$, then only real or absolute income matters because the terms involving the reference group drop out. If b_{11} is significant but $b_{12} = 0$, then only relative income matters. If b_{11} is zero but b_{12} is significant, then there is only a contextual effect which might, for example, be the result of "level of development" in the state as indexed by average state income. Perhaps those states with higher average state incomes have more participation (if b_{12} is positive) because some infrastructure has been developed that makes participation easier. Other cases, of course, are also possible, and they might be the result of some combination of contextual and individual level effects, although without better theories about the mechanisms linking income to participation, they might be hard to interpret.[10]

Impacts of Increased Inequality – If (14) is a correct model, then we can use it to investigate how increases in income inequality might affect political participation. Not surprisingly, the impacts on participation depend upon how income inequality increases and upon the significance and size of the coefficients b_{11} and b_{12}.

Perhaps the easiest way to think of income inequality increasing is for income to be taken from someone below the mean in a state and to be given to someone above the mean. This kind of

[10] The difference definition of relative income is:

$A_{ist} = a + b_{11} (r_{ist}) + b_{12} y_{+st} + e_{ist} = a + b_{11} [y_{ist} - y_{+st}] + b_{12} y_{+st} + e_{ist}$.

Precisely the same conditions apply for the coefficients b_{11} and b_{12}.

change would increase all standard measures of income inequality. Consider, for example, the following Logarithmic Variance (Cowell 1977, page 25) measure:

(15) $LV_{st} = (\text{Log Variance})_{st} = \sum_i [\text{Log}(y_{ist}/y_{+st})]^2/I = \sum_i [\text{Log}(y_{ist}) - \text{Log}(y_{+st})]^2/I.$

Note that this measure is the average of the square of logged relative incomes as well as the variation of the logged incomes around the log of the mean of the incomes.

This measure is zero if everyone in the state has the same income (if $y_{ist} = y_{+st}$), and it is positive in all other cases. Furthermore, it has the desirable feature that it stays the same if there is a proportional increase in all incomes (if the new incomes $y_{ist}^* = h\, y_{ist}$ where h is a constant) because the mean increases by the same proportion and the ratio of each y_{ist}^* to the new mean y_{+st}^* is the same as the ratio of y_{ist} to y_{+st}. But clearly it increases if some income d is moved from a person i below the mean to a person j above the mean.[11]
Equation (15) is also generally highly correlated with other measures of income inequality such as the ratio of the average income of the top quintile to the bottom quintile or the Gini index.[12]

Now moving income from one person to another does not change the average income y_{+st} so that $\text{Log}(y_{+st})$ would be unchanged, but it would increase $\text{Log}(R_{ist})$ for the person who was above the mean whose income was increased and it would decrease $\text{Log}(R_{ist})$ for the person below the mean whose income was diminished.

If b_{11} is significantly positive, then the average of A_{ist} would increase for those above the mean and it would decrease for those below the mean. Participatory inequality would increase because of an increase in income inequality. Note that if all we know is that b_{11} is significantly positive, then we cannot tell whether this increase in participation is working through absolute real income or through relative income.

If the same kind of change occurred but b_{11} was zero so that neither individual absolute nor relative income mattered, then there would be no impact on participatory inequality, even if b_{12} were non-zero, because the state mean would not change.

However, if everyone's income increased proportionately (which for most inequality measures does not lead to an increase in inequality), then there would be no impact on participatory inequality if only relative income matters (if $b_{12} = 0$), but there would be an impact if something more than relative income matters (if b_{12} is not equal to zero) because the increase in average income would affect participation through either or both of two mechanisms. Either absolute real income would matter or some contextual effect other than just relative income would be operative.

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[11] For the former person $[\text{Log}(y_{ist} - d) - \text{Log}(y_{+st})]$ is clearly more negative than $[\text{Log}(y_{ist}) - \text{Log}(y_{+st})]$ and for the latter person $[\text{Log}(y_{jst} + d) - \text{Log}(y_{+st})]$ is more positive than $[\text{Log}(y_{jst}) - \text{Log}(y_{+st})]$. Hence the square of both terms is larger when d is moved from the lower income person to the higher income person, and the LV increases.

[12] There are exceptions. For example, if income is take from someone with below average income in the second quintile and given to someone with above average income in the fourth quintile, then LV will increase but the ratio of the average income of the top quintile to the bottom quintile will not change at all.

Other Models of the Impact of Income – Equation (14) is perhaps the simplest model of the impact of income on participation, and it clearly shows that with this model, increases in income inequality can have an impact on participatory inequality. But the impact is entirely through income – with increased income inequality there are more poor people who participate less because they are poorer and more rich people who participate more because they are richer. There is no direct impact of income inequality.

Other models are possible. Consider, for example, the following model which has the LV on the right-hand side:

(16) $A_{ist} = a + b_{13} (\text{LV})_{st} + e_{ist}$.

This model implies that increases in inequality in a state have a direct impact – of the same magnitude – on everyone in that state. As a complete picture of how income affects participation, this model seems implausible for two reasons. First, it implies that income has no cross-sectional impact on participation within a state, even though there is abundant cross-sectional evidence that income matters as in equation (14). Thus, at best, this LV term would probably have to be added to (14). Second, the model implies that as inequality increases, there is the same impact on everyone. This result might be true if there is some statewide mechanism that affects everyone equally, but it is hard to identify a way in which increasing income inequality could have this kind of impact. One possibility, however, is that b_{13} is positive and more income inequality mobilizes all groups because of the increasingly fractious politics regarding income distribution. It is harder to think of mechanisms that would lead to b_{13} being negative.

Another possible model is that income inequality is especially bothersome to the lower classes and they participate more than the upper-class when income inequality increases because of their indignation over their immiseration. One way to capture this phenomenon is to construct a variable that increases with inequality and decreases with relative income:

(17) $A_{ist} = a + b_{14} (\text{LV})_{st}/R_{ist} + e_{ist}$.

If b_{14} is positive, this equation implies that an increase in inequality mobilizes the lower classes relative to the upper classes. If b_{14} is negative, then an increase in inequality mobilizes the upper classes. This model has some appeal because it suggests that income distribution might not only have an impact on participation because of the resources and social structural advantages it provides, but it might also have an impact because it represents an issue that matters for participants. Thus a complete model might be:

(18) $A_{ist} = a + b_{11} \text{Log}(R_{ist}) + b_{12} \text{Log}(y_{+st}) + b_{13} (\text{LV})_{st} + b_{14} (\text{LV})_{st}/R_{ist} + e_{ist}$,

where the first two terms get at the impact of resources and social structural advantages and the second two terms measure people's concern with inequality as an issue. We shall refer to the first two terms as the "individual income" variables and the second two terms as the "contextual inequality variables."

Note that estimates of this model could lead to opposing impacts of income distribution. If, for example, b_{11} is significantly positive and b_{14} is significantly positive (and b_{12} and b_{13} are assumed zero for simplicity), then an increase in income inequality would reduce the degree to which lower income people participated because their resources and social connections as indexed by $\text{Log}(R_{ist})$ would decrease for some of them and increase the degree to which upper income people participated because $\text{Log}(R_{ist})$ would increase for some of them. At the same time, the increase in income inequality would increase the participation of lower income people because their indignation as measured by $(\text{LV})_{st}/R_{ist}$ would be greater than the indignation of upper income people. Needless to say, these conflicting tendencies might make it difficult to assess the impact of income inequality.

Aggregating the Model -- We know of no studies of the impact of income distribution on participation in the literature which have tried to estimate (18) directly, but we report some estimates of related models below. To the extent that there have been studies, they have tended to look at participation over time by aggregate income group (e.g., Leighley & Nagler, 1992), and we report a great deal of that kind of data below as well.

But aggregate studies have their dangers for the simple reason that they tend to look at the relationship between some measure of inequality across time or states (or both) and some measure of participatory inequality. This approach will get at the net effects of equation (18), but they will not sort out the two major ways that income inequality might affect participation – by affecting the distribution of resources and connections and by motivating people to participate.

Specification Problems – In order to simplify matters, we assumed earlier that conditional on the inclusion of the explanatory variables X_{ist} the expected value of the error term would be zero. That is, we made the specification assumption that $\text{E}(e_{ist}|X_{ist}) = 0$. We then went on to consider models which only incorporated income or income inequality. Based upon our literature review, it is obvious that income variables do not exhaust the determinants of political participation, and it seems highly unlikely that the specification assumption would hold without including demographic, other SES, and many other variables listed on Table 2. Certainly education, age, sex, marital circumstances, and other variables should be included. Omitting education, for example, would clearly bias the coefficient for income upwards because education has a strong positive impact on participation and it is positively correlated with income. If education is omitted, then income would "take-up" and proxy its effects.

The greatest threat to the validity of the empirical work reported below is the omission of important variables such as education that might affect the putative impact of income and income distribution. For both the individual income variables and the contextual inequality variables, the lack of a clear-cut mechanism by which income or income inequality affects participation must make us wary of any effects that we appear to find. We can increase our confidence in our results in two ways. One method is to include more control variables that improves the fit and leaves less room for omitted variables to nullify the impacts of income or inequality. This approach, however, requires confidence that the control variables belong in the regression equation, and it founders on the fact that there is almost always enough room left for some omitted variable to confound our results. Another method is specifying mechanisms and

mediating variables that increase our confidence that income and inequality are really having an impact on participation. This approach requires better theory and the collection of information on mediating variables that can be used to test for the operation of the mechanisms. The results reported below are preliminary, and we have not yet done enough to find additional explanatory variables or to explore the mechanisms by which income or inequality could affect participatory inequality.

Empirical Results

The empirical results reported in this section deal with voting turnout and participation in twelve political acts such as contacting, attending rallies, petitioning, or writing a letter. For simplicity, we shall call refer to these as "voting turnout" and "participation" respectively. The data on turnout come from the Current Population Survey, November Supplement, and they are available for every biennial election from 1972 to 2000. The data are described in Table 3. The data on participation come from the Roper and Political Trends Dataset which extends from September 1973 until June 1994 with ten studies in most years. Table 4 describes these data.

Unfortunately, none of these studies measure political contributions in any way. The American National Election Studies (ANES) do ask about contributions, but they are only biennial, they are relatively small samples (around 2000), and they only ask whether contributions were made. Omitting contributions is a major omission if, as some (including the author of this paper) have claimed, politics is moving away from "time-based" activity towards "contribution-based" activity. Furthermore, based upon Figure 4, it seems likely that the biggest impact of growing income inequality would be to increase the inequality in political giving

Aggregate Results on Turnout— There is a very large literature on turnout (e.g., Brody, 1978; Reiter, 1979; Wolfinger and Rosenstone, 1980; Shaffer, 1981; Abramson and Aldrich, 1982; Powell, 1986; Bennett, 1990; Rosenstone and Hansen, 1993). But there is surprisingly little work on inequality in turnout and income inequality (however, see Leighley and Nagler, 1992). We used the Current Population Survey data from 1972 to 2000 to study inequality and turnout.

Figure 6 shows the percent voting by household income quintile by year.[13] The top, solid line is the turnout rate for the top quintile. The bottom, dashed line is the turnout rate for the bottom quintile. The middle, dotted line is the turnout rate for the three middle quintiles. All these turnout rates are somewhat too high because of the well-known problem of over-reporting, and this may create some problems for our interpretations (Brady, 1999). There are two features of this picture which stand out. First, the "saw-tooth" pattern vividly depicts the standard pattern of turnout being highest during presidential elections and then falling at midterm elections. Second, there is a significant gap between the turnout of the highest and lowest quintiles. Inequality in turnout is certainly related to inequality in income.

[13] Along with the decennial census, the CPS provides the data of record for income in America. Consequently, we can feel very confident in the CPS income quintile data. However, there are some complexities because income is categorized on the available dataset and these categories do not always yield equal sized quintiles. Nevertheless, it is possible to get most quintiles within one to two percent of the mark.

Figure 7 computes the ratio of average turnout in the top income quintile to the bottom income quintile. The calculation is made separately for presidential and mid-term elections. If one ignores 1976, the line for presidential elections seems to indicate increased inequality in turnout after 1980 (which is when income inequality started to increase), but the evidence is not overwhelming, especially if 1976 is considered. The line for midterm elections is also hard to interpret, and it is decreasing until 1986 when it turns around and increases in 1990 and 1994. All in all, there is not much evidence for a linkage between income inequality and turnout inequality in this figure.

Perhaps the problem is that the data are too aggregated. Using data from the Census Bureau on inequality in the 50 states plus the District of Columbia since 1977,[14] Figure 8 plots the ratio of turnout for the top to the bottom quintile in each state in each year versus the corresponding ratio of the average income of the top to the bottom quintile. The line is a Lowess non-parametric regression which suggests that there is absolutely no relationship between income inequality and turnout inequality.

There are two ways to interpret these results. On the one hand, given what we know about voting turnout and its relatively weak relationship to income (Wolfinger & Rosenstone, 1980), not to mention the theoretical literature's conclusion that the cost of voting is not the major determinant of turnout decisions, the results seem unsurprising. On the other hand, this bivariate analysis may miss omit important factors (a specification problem), and it may conflate the way that increasing inequality both demobilizes voters (through individual income effects) and mobilizes them (through contextual inequality effects). That is, in equation (18), the impacts of the first two individual income effects may be cancelled out by the impacts of the second two contextual inequality effects.

Aggregate Results on Participation—The Roper data come from in-person clustered samples of about 2000 respondents in each of ten surveys conducted every year. These data were not designed to carefully measure income, and they have a number of peculiarities (see the codebook, Brady et al, 2001). Consequently, it makes sense to check their validity.[15] The first check we perform is to see whether household income as recorded by the Roper studies follows the same pattern as the CPS pattern displayed in Figures 1 and 2. Figure 9 plots average real household income for the top quintile versus the bottom quintile. The diagonal lines representing the averages for the studies indicate the impacts of categorization. When Roper changed its income categories, abrupt changes occur. Nevertheless, the pattern of the ratio of the average income for the top to the bottom quintile depicted in Figure 10 is remarkably similar to that in Figures 1 and 2.

Figures 11-13 present another test of the data. It is well known that the ratio of the average income for those with a college education to that of those with just a high school education increased dramatically around 1980. Figure 11 presents this result taken from Katz and Autor (1999) who rely upon CPS data. Figure 12 shows the time path of average income for those

[14] We obtained these data in spreadsheet format directly from the Census Bureau. Data are only available from 1978.

[15] Our work with these data have convinced us that they are quite useful and reliable, but additional testing is always useful.

with college education and those with high school or less education in the Roper data, and Figure 13 shows the ratio which is remarkably similar to Figure 11. Once again, the Roper data seem to check out.

Figure 14 gets at the basic question of how participatory inequality changed from the 1970s to the 1990s. The average number of the twelve acts for the top and bottom income quintiles, and the bottom decile,[16] is plotted for each survey over time. As we would expect, the top quintile is much higher than the bottom quintile, and the bottom decile is the lowest of all. In addition, following a pattern made famous by Robert Putnam (2001), there is a clear over-time decline in participation, at least among the top quintile. Figure 15 shows the ratio of the participation index for the top and bottom income quintiles over time. Upside down, this curve follows the changes in income inequality (see Figure 9) perfectly, but right side up, it is just the opposite. In the middle of the 1970s when income inequality is down, participatory inequality is up; in the middle of the 1980s when income inequality is up, participatory inequality is down. Figure 16 confirms this by plotting the ratio of the participation indices for the top and bottom income quintiles to the ratio of the average incomes for the top and bottom quintiles. There is a clear negative relationship: as income inequality goes up, participatory inequality goes down. The same result occurs if we compare the ratio of the participation indices to the Census ratio of average incomes for the top and bottom quintiles instead of the Roper ratio of average incomes.

This result is surprising, and it makes sense to seek additional confirmation of it. Does it, for example, hold up across the states? Answering this question runs up against one of the limitations of the Roper data. Unlike the CPS data which are designed to be representative of the states, the Roper data were not designed to be representative of each state. In fact, not every state is represented in the sample for the entire time period, but information on 29 states is available from 1973 to 1994. It is a bit heroic to treat these data as representative of the states, but it is worth a try.

Figure 17 plots the log of the ratio of the participation indices for the top and bottom quintiles for each of the 29 states in 1985 versus the census ratio of average incomes in the top and bottom quintiles in the same year. We use the logarithm of the participation ratio because there are substantial differences across the states and the logarithm makes the results tractable. Using an ordinary least squares fit of the data-points, we see, somewhat surprisingly, participatory inequality increasing with increasing income inequality across the states. Figure 18 confirms this result by plotting the average from 1978 to 1994 of the log participation ratio for each state versus the average of the Census ratios of the average income for the top to bottom quintiles over the same period. The result is a strong positive relationship between increases in income inequality and increases in participatory inequality.

Thus we are faced with a cross-sectional increase of participatory inequality with increases in income inequality and a time series decrease of participatory inequality with increases in income inequality. Moreover, the cross-sectional result dominates the time-series result as shown in

[16] Even more than with the CPS data, the Roper data presented problems in creating consistent quintiles and deciles. The quintiles are typically with a few percentage points of the mark, but the decile averages about 6% of the sample and varies by a few percentage points as well. One of our goals for future work is to create better quintiles and deciles through statistically reasonable imputation and sorting methods.

Figure 19 where we plot the log of the participation ratios for each state for each year versus the Census ratio of the average income for the top to bottom quintiles. The result is a strongly positive relationship.

How can we sort this out? The obvious answer is an appeal to a micro-level model that takes into account time-series and cross-sectional variation. We leave that to future work.

Conclusions

The goal of this paper has been to provide an analytical perspective for studying the relationship of income inequality to participatory inequality. The preliminary empirical work using this framework has not yielded any definitive results, but it does suggest that the effort to unpack the relationship carefully by thinking about how it might operate is very important. Increasing income inequality might operate in contradictory ways by reducing the wherewithal for lower income people to participate but simultaneously increasing their motivation to become engaged. The net result can only be determined by sorting out the possible paths by which income and income inequality might operate.

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Table 1

Classifying Political Activities

I. Actions Meant to Influence Politics Indirectly

A. Discuss politics
B. Recruitment---Try to persuade or convince someone to do something

II. Electoral Activity---scheduled by the political system

A. Voting
   1. Vote intention
   2. Registration
   3. Report of vote: previous elections; currently
   4. Parent's vote
B. Campaign Activity:
   1. Meetings
   2. Work
   3. Money
   4. Display preferences through signs, buttons, or stickers
   5. List of activities
C. Party Membership or Member of a Political Club

III. Non-Electoral: With others or alone

A. Non-electoral--Conventional
   1. Informal community
   2. Contacting
   3. Organizational memberships
   4. Attending meetings or serving on boards
B. Non-electoral--Unconventional
   1. Petitioning
   2. Lawful demonstration
   3. Boycotts
   4. Joining in wildcat strikes
   5. Refusing to pay rent or taxes
   6. Occupying buildings
   7. Blocking traffic
   8. Destroying property
   9. Terrorism and assassination

Table 2: Explanatory Factors

Individual:

- *Demographic*
  - Sex
  - Age
  - Race
  - Ethnicity
  - Marital Status/Living arrangements
  - Religion
  - Place of residence
- *SES Measures*
  - Education
  - Occupation
  - Income
- *Individual Circumstances*
  - Employment status
  - Type of employment
  - Union member
  - Organizational memberships
  - Religious attendance and membership
  - Media Usage
  - Social Connectedness
  - Homeownership
  - Length of residence
- *Attitudes*
  - Interest in politics
  - Efficacy
  - Personal effectiveness
  - Government responsiveness
  - Trust in government
  - Political cynicism
  - Social trust
  - Partisan strength
  - Candidate preference strength
  - Ideology
  - Knowledge
- *Political Factors*
  - Registered to vote
  - Contact attempts
  - Discuss politics
  - Influencing others

State, County, Electoral Unit

- *Demographic*
- *SES and economic*
- *Political factors*
  - Registration laws
  - Party competitiveness
  - Political expenditures
  - Party control
  - Union/interest group strength
- *Political offices*
  - Top of ticket
  - Contested races
  - Incumbency
- *Region*
  - Region/south

Time Period

- *Type of Election*
  - Presidential/midterm
- *Period*

<TABLE 3>

CURRENT POPULATION SURVEY (CPS) --- NOVEMBER SUPPLEMENT

Presidential Elections: 1972, 1976, 1980, 1984, 1988, 1992, 1996, 2000

Mid-Term Elections: 1974, 1978, 1982, 1986, 1990, 1994, 1998

Number of Cases Per Survey: Approximately 150,000

Dependent Variable:

Turnout

1 = Voted
0 = Did not Vote
Missing = Don't know/Refused to respond etc..

Registration

1 = Registered
0 = Did not register
Missing = Don't know/Refused to respond etc..

<TABLE 4>

ROPER SOCIAL AND POLITICAL TRENDS DATA

Year: Sept 1973 - June 1994

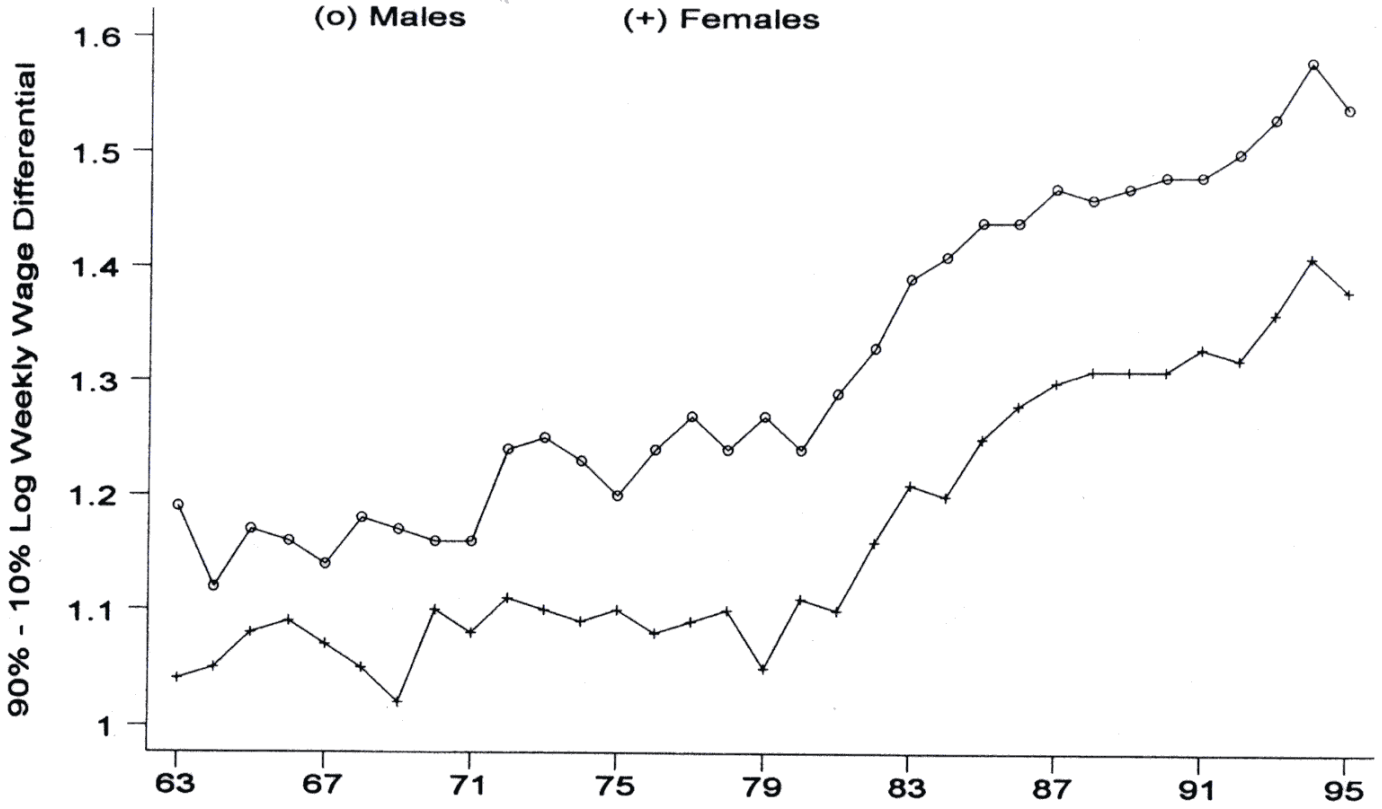
Number of Studies Per Year: 10; Except 1973 (2 studies), 1991 (8 studies), 1994 (6 studies)

Number of Respondents Per Study: Approximately 2000

Dependent Variable: Participation Index (Min=0, Max=12)

Contact	Written your congressman or senator
Attend Rally	Attended a political rally or speech
Public Meeting	Attended a public meeting on town or school affairs
Office	Held or run for political office
Committee	Served on a committee for some local organization
Officer	Served as an office of some club or organization
Letter	Written a letter to the paper
Petition	Signed a petition
Party Work	Worked for a political party
Speech	Made a speech
Article	Written an article for a magazine or newspaper
Organization Member	Been a member of some group like the League of Women Voters, or some other group interested in better government

FIGURE 1

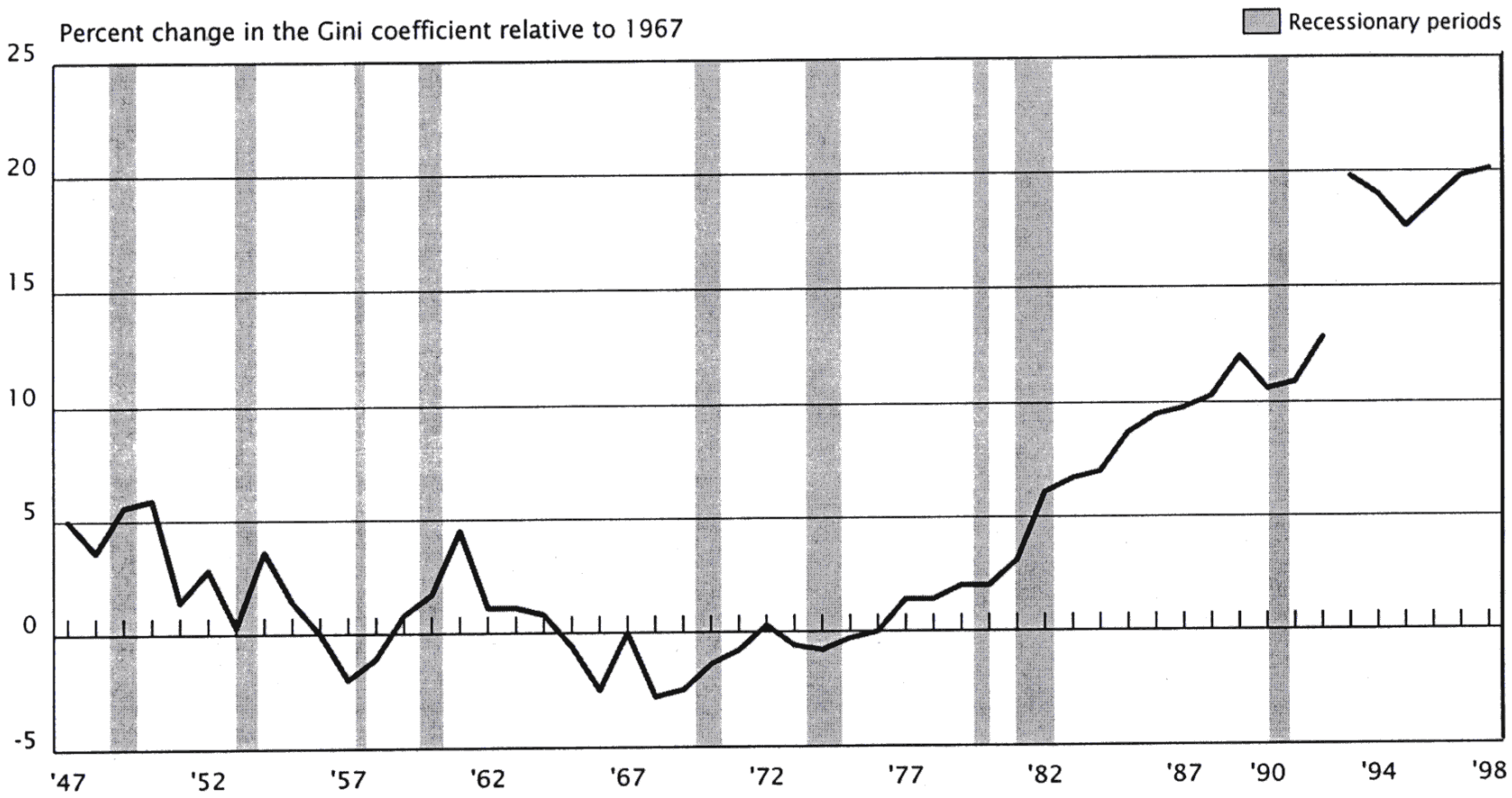


Overall US wage inequality, 1963–1995.

SOURCE: KATZ & AUTOR, 1999.

FIGURE 2

Change in Income Inequality for Families: 1947-1998



Note: Change in data collection methodology suggests pre-1993 and post-1992 estimates are not comparable (see A New Mode of Data Collection).

Source: U.S. Census Bureau, Current Population Survey, March 1948-1999.

Figure 3--Participation by Log of Household Income

Citizen Participation Study, 1990

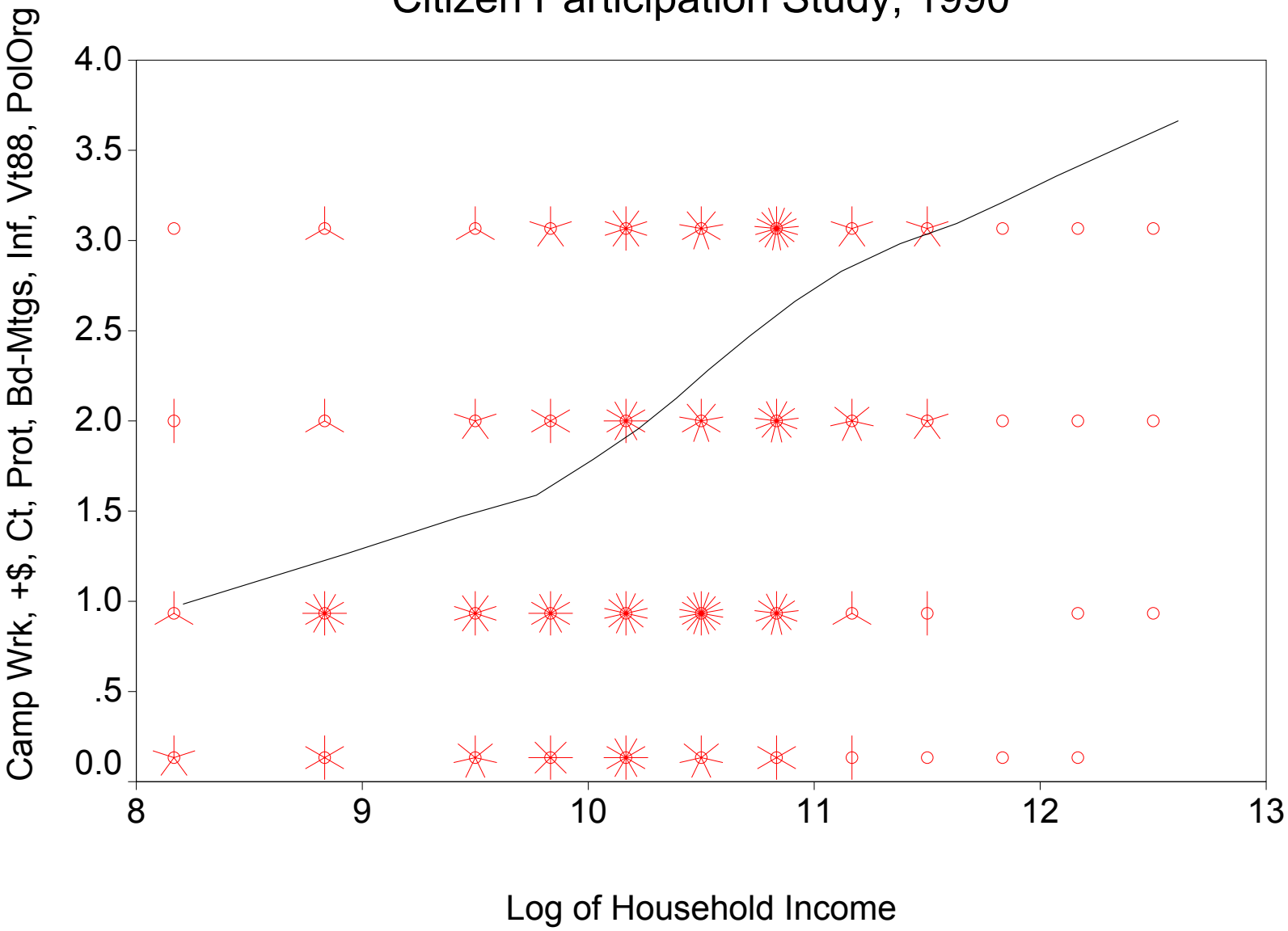


Figure 4 -- Political Contributions by Family Income

Citizen Participation Study--1990

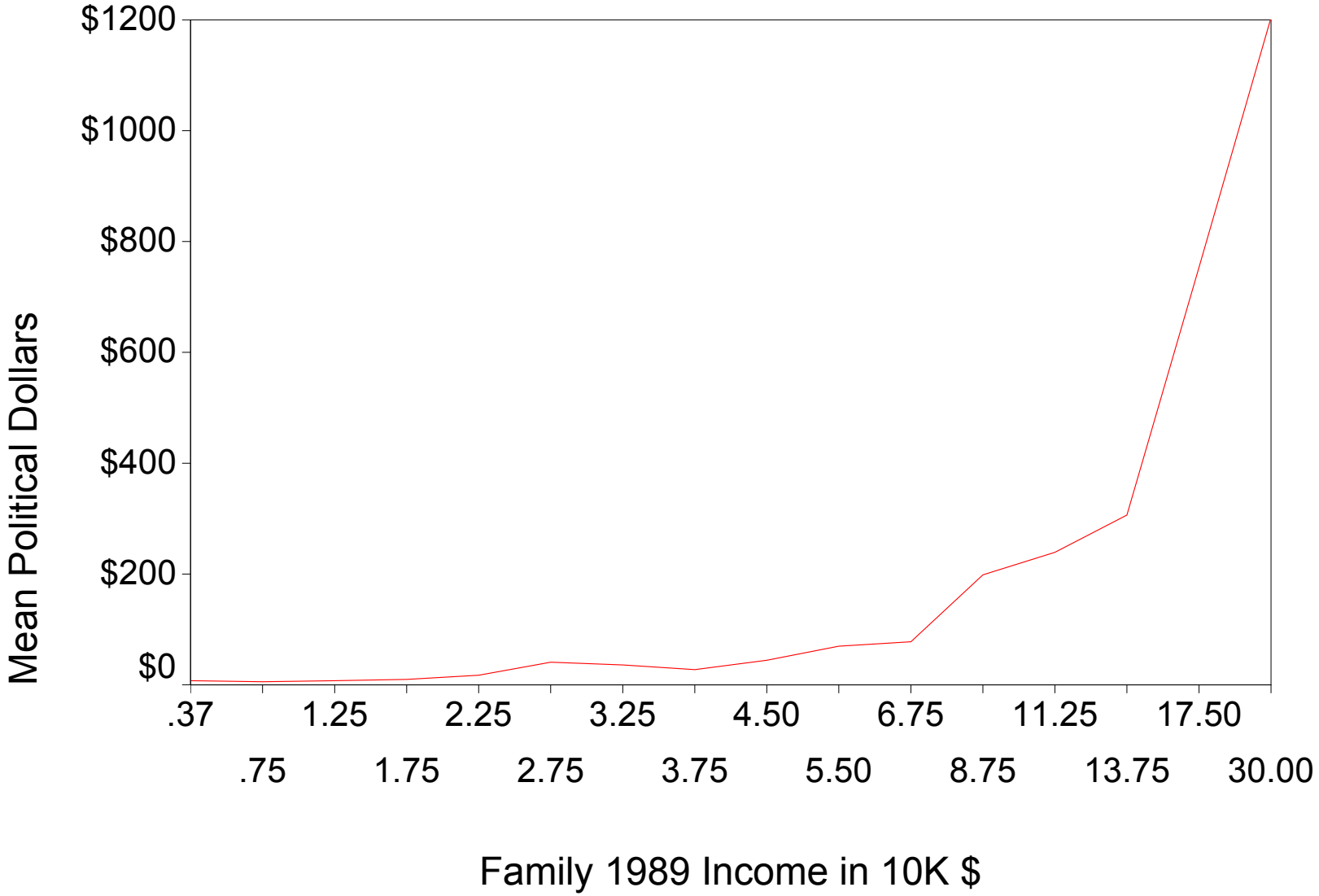


Figure 5--Political Hours by Family Income

Citizen Participation Study--1990

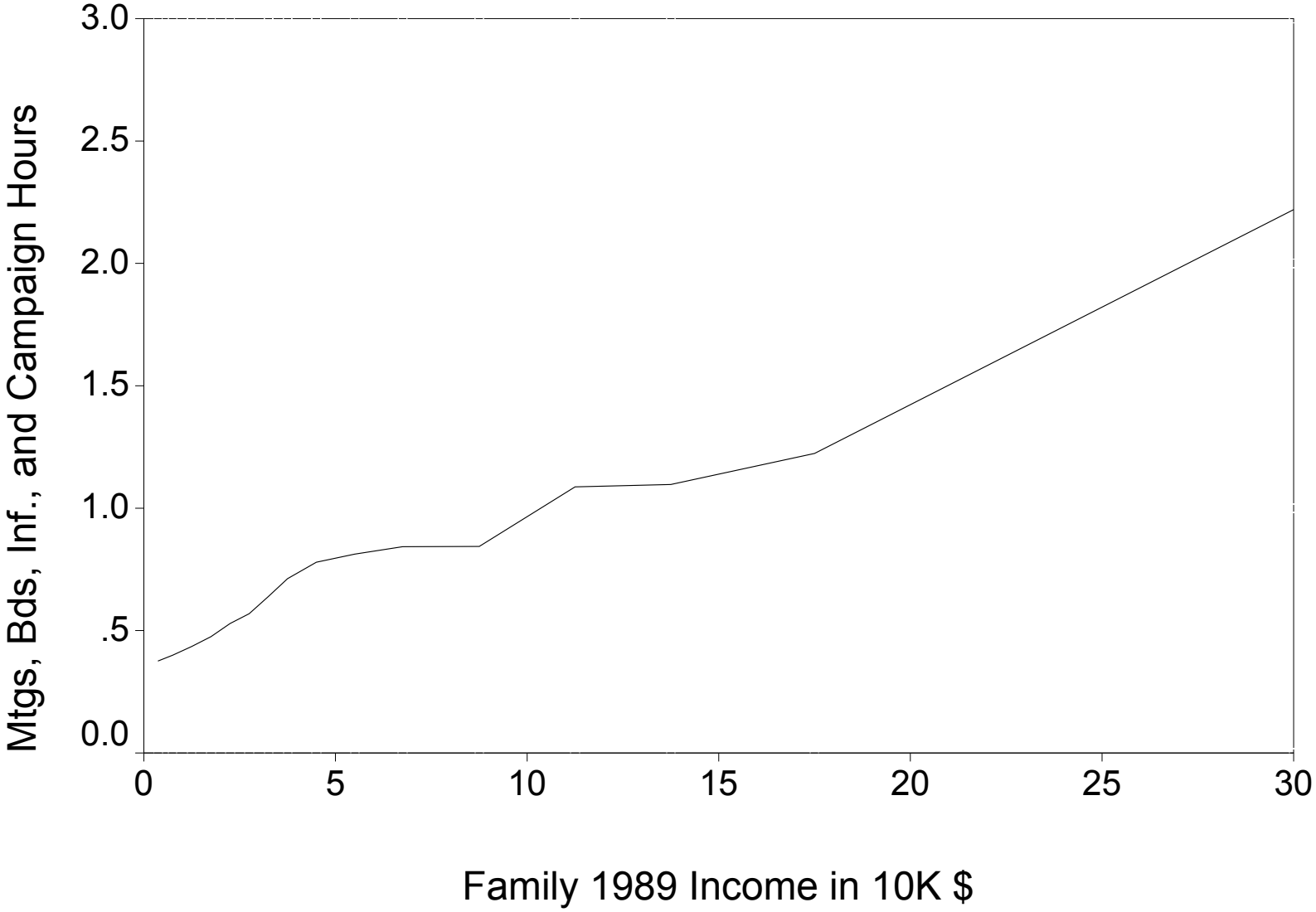


Figure 6--Percent Voting by Quintile by Year

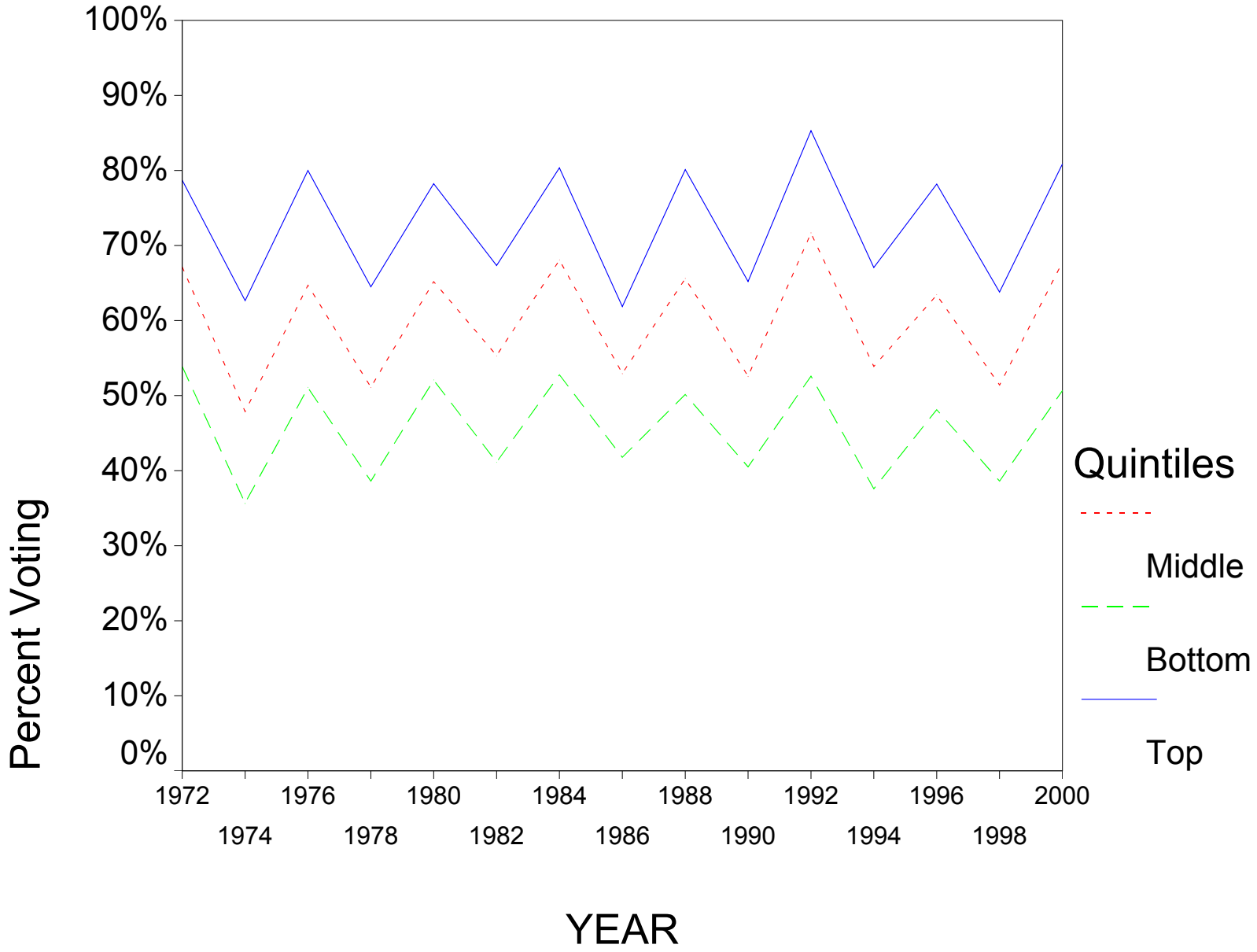


Figure 7--Ratio of Turnout for Top to Bottom Quintile by Presidential and Mid-Term Elections

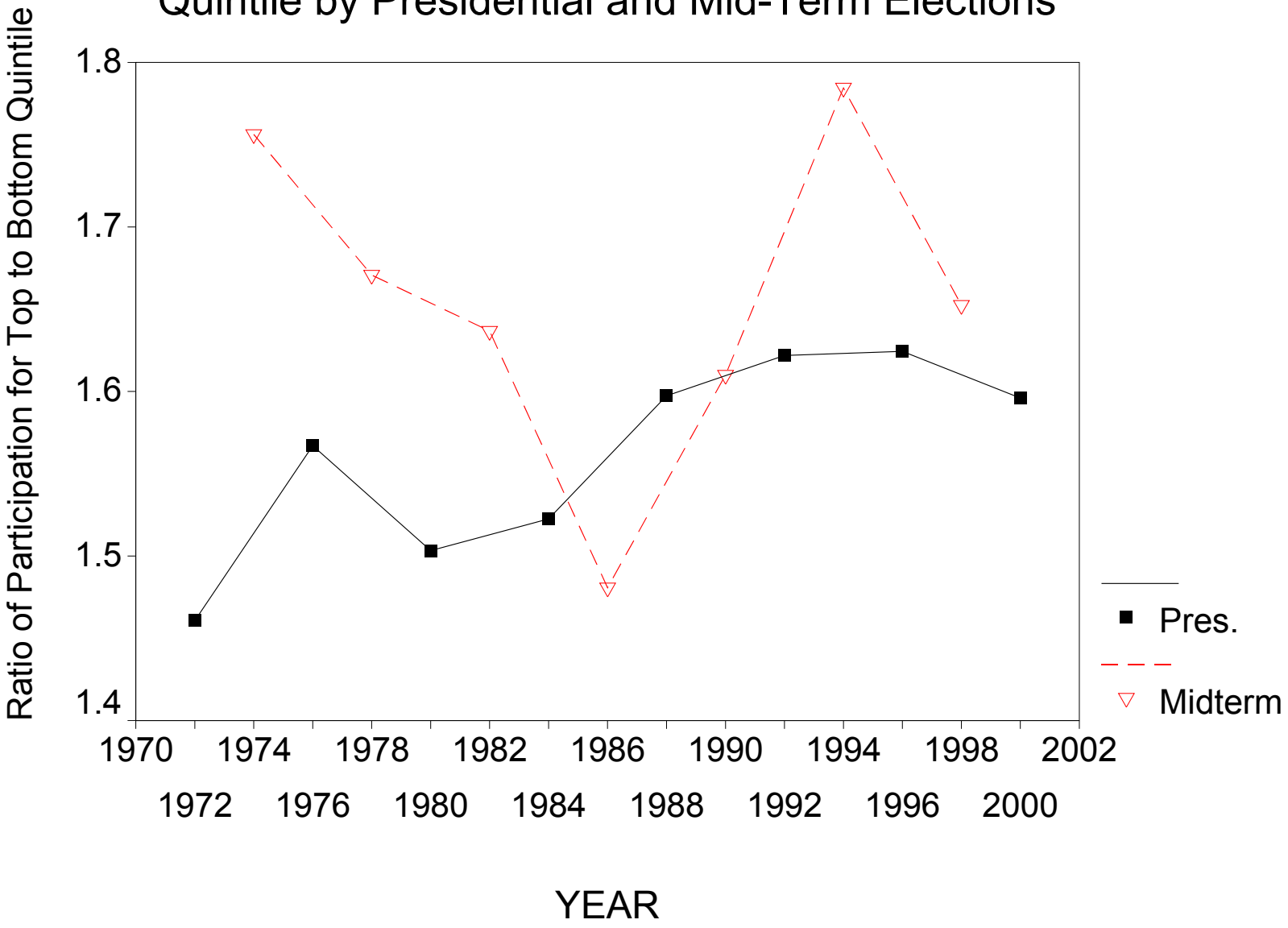


Figure 8--Inequality in Turnout versus Inequality in Income for 51 States and Presidential Elections 1980-2000

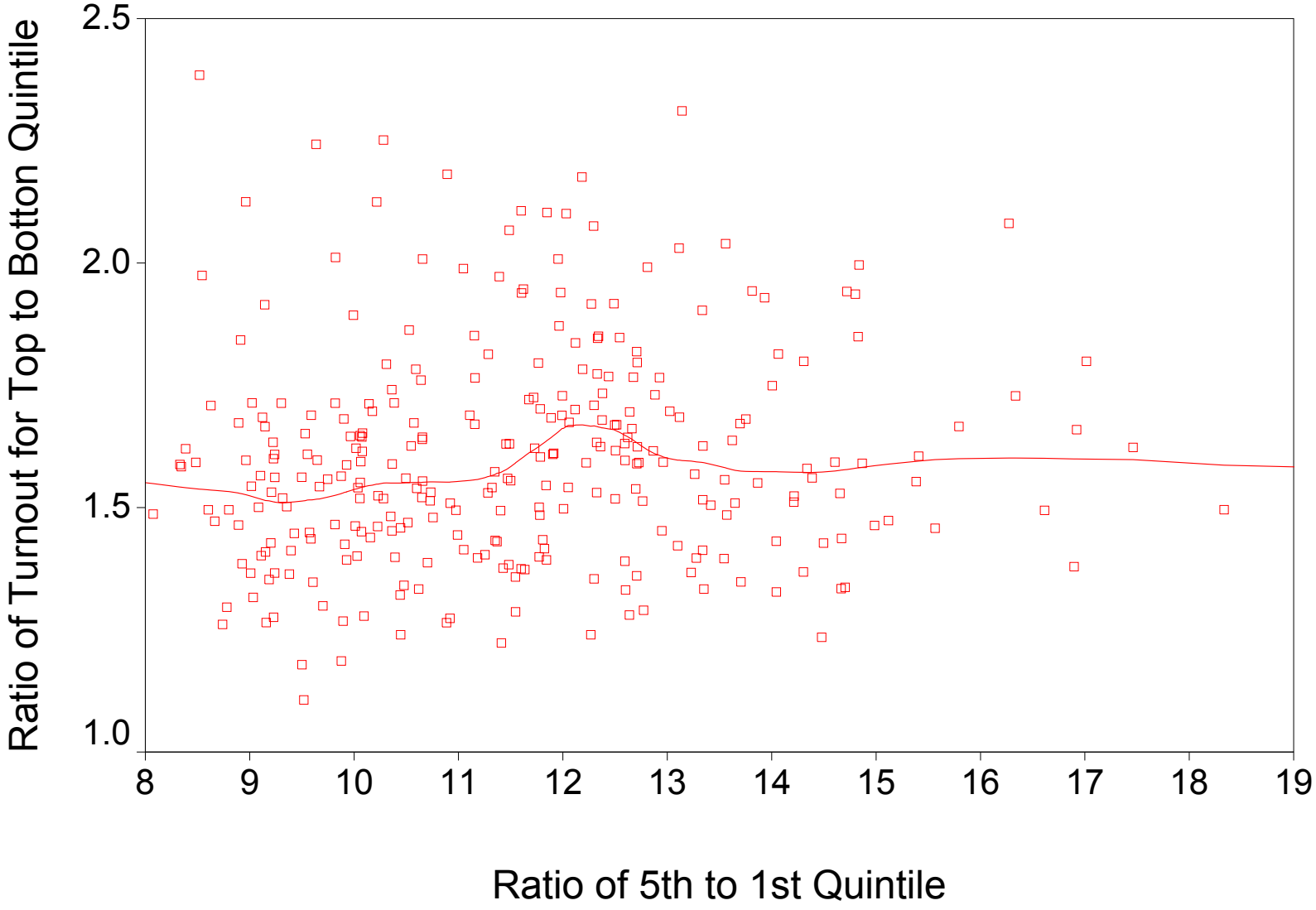


Figure 9--Mean Household Income by Top and Bottom Quintiles

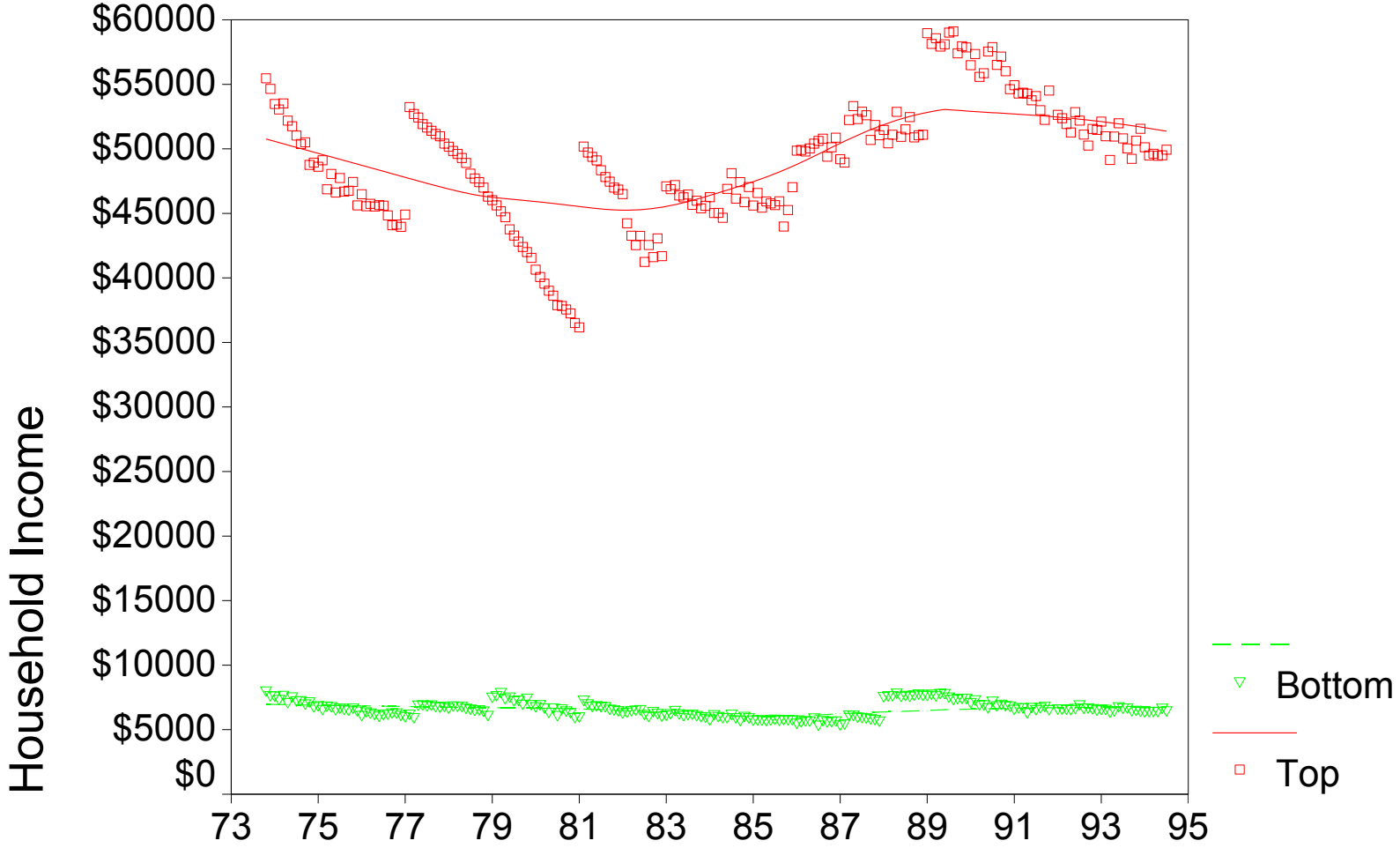


Figure 10--Ratio of Mean Household Income for Top to Bottom Quintile

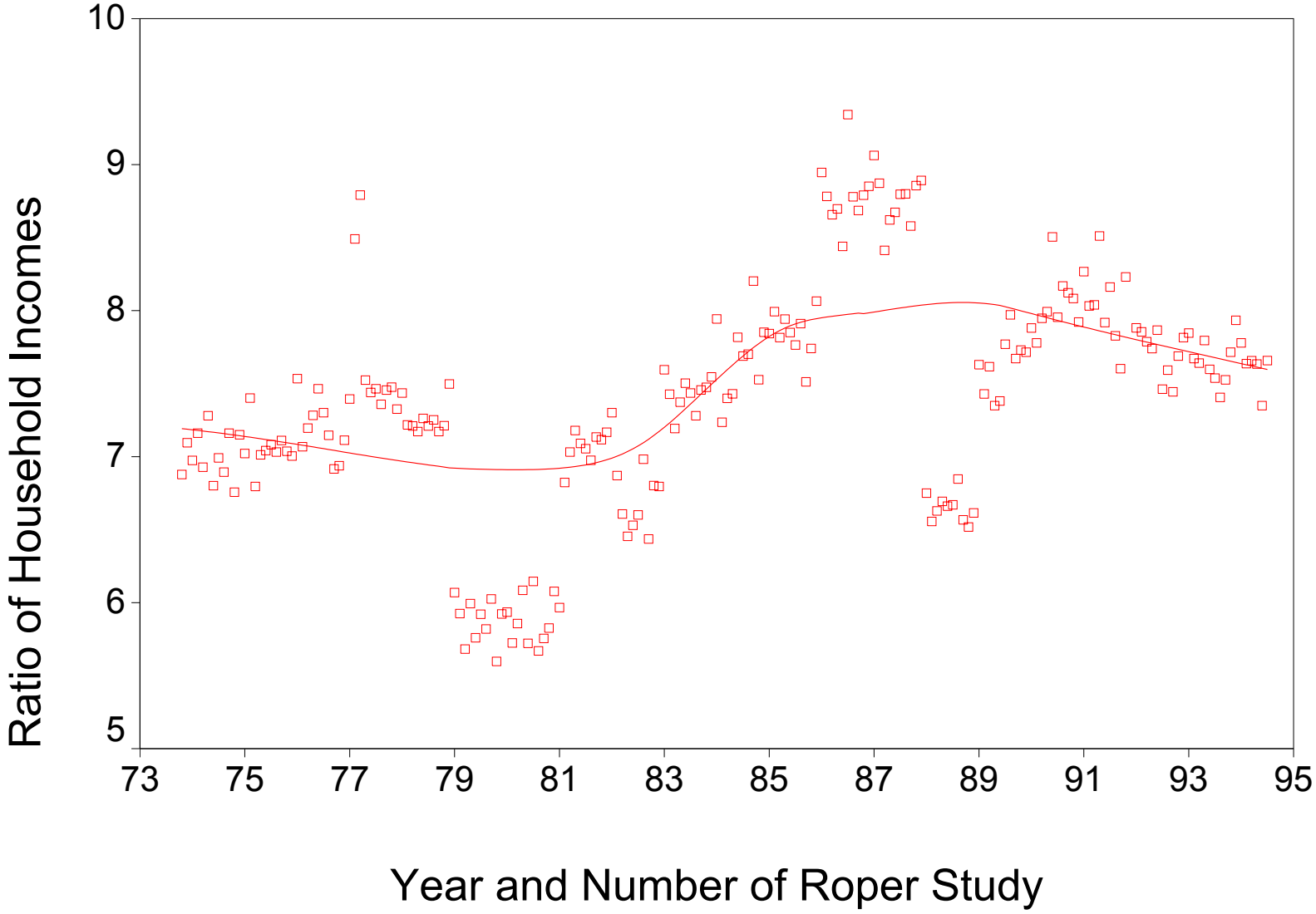
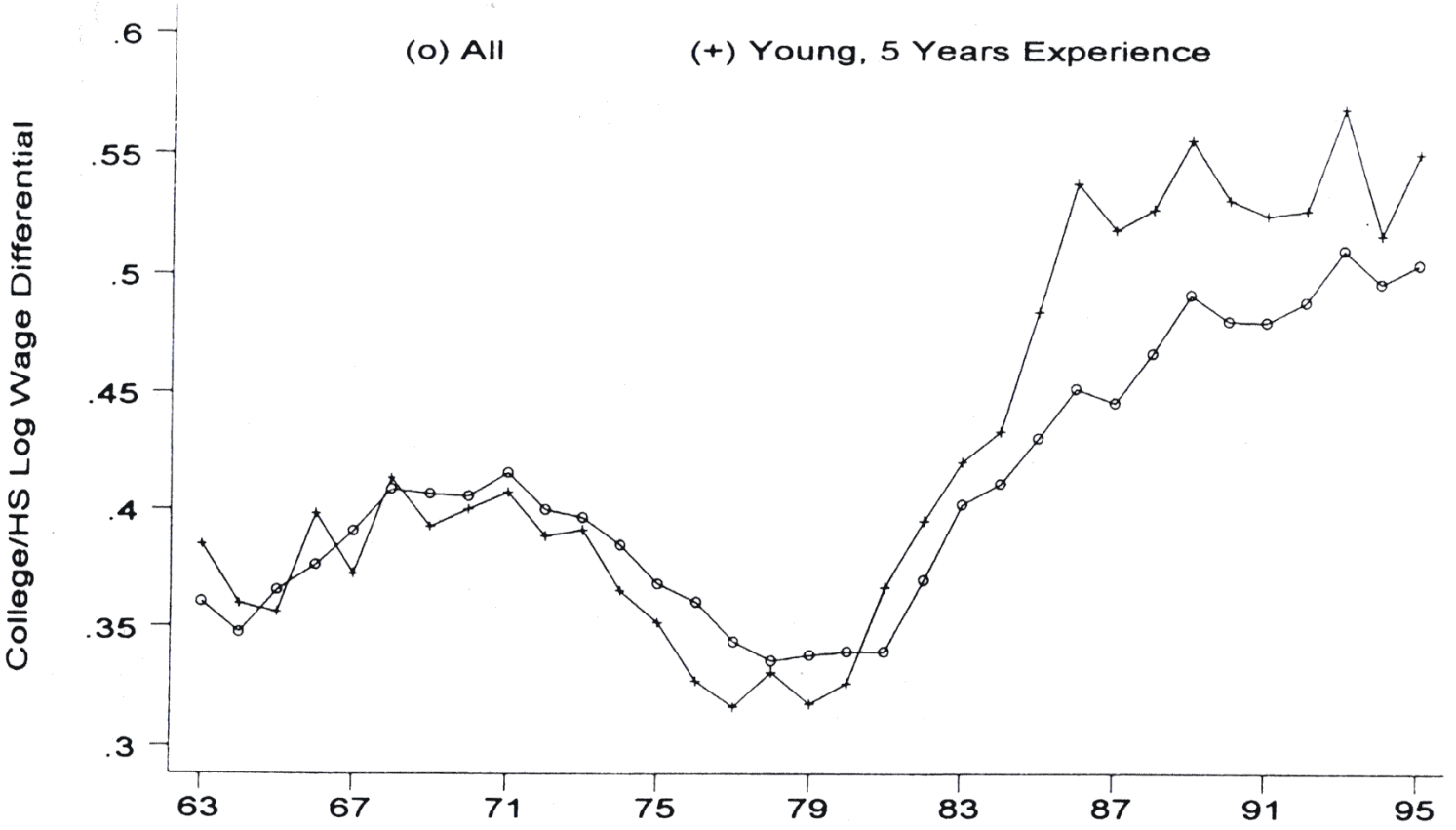


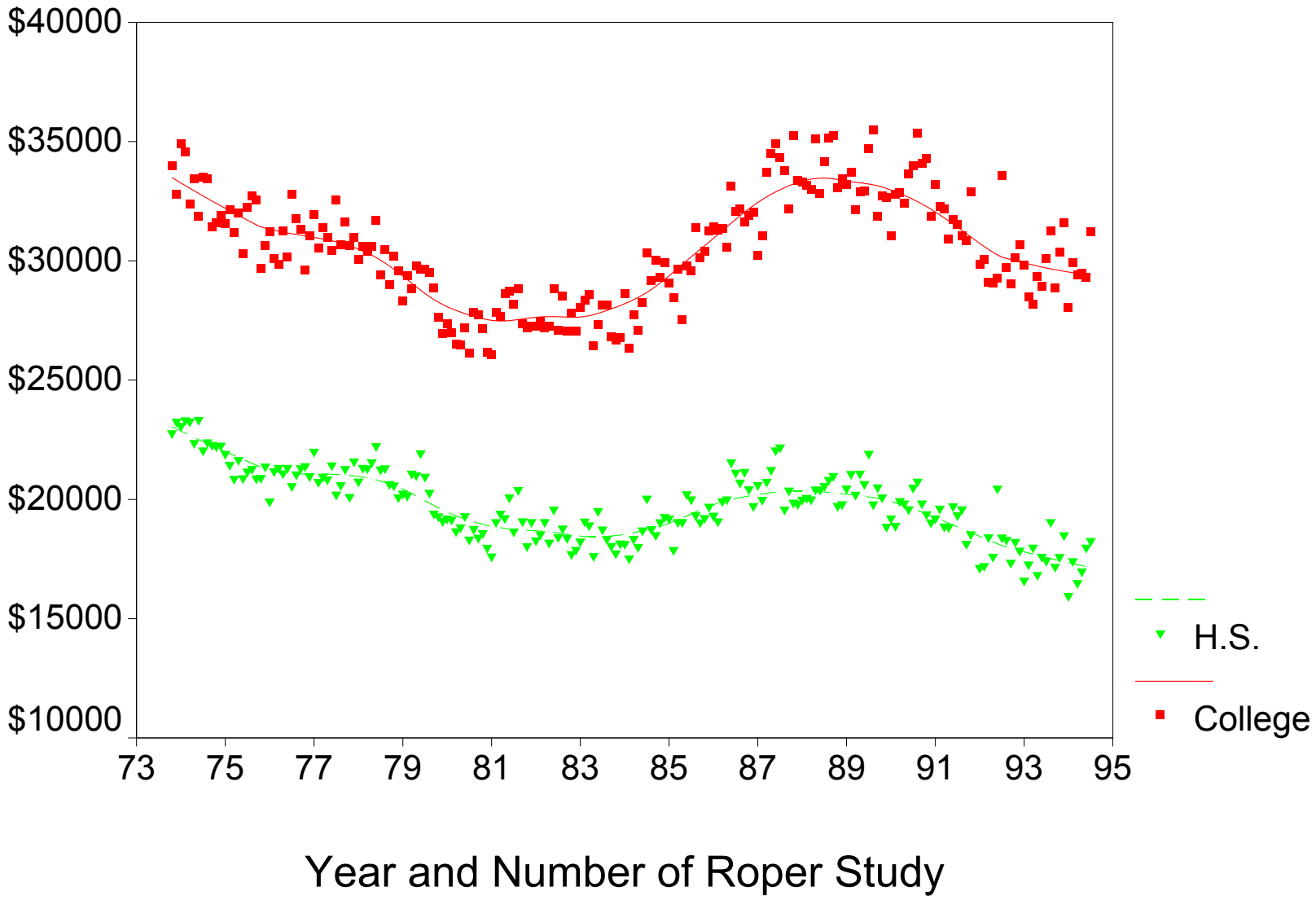
FIGURE 11



COLLEGE/HS LOG WEEKLY WAGE DIFFERENTIAL
1963-1995

SOURCE: KATZ & AUTOR, 1999.

Figure 12--Household Income for College Educated and for High School or Less Respondents



Figurre 13--Household Income for College Educated

to Household Income for H.S. or Less Respondents



Figure 14--Political Participation by Top Quintile,

Bottom Quintile, and Bottom Decile

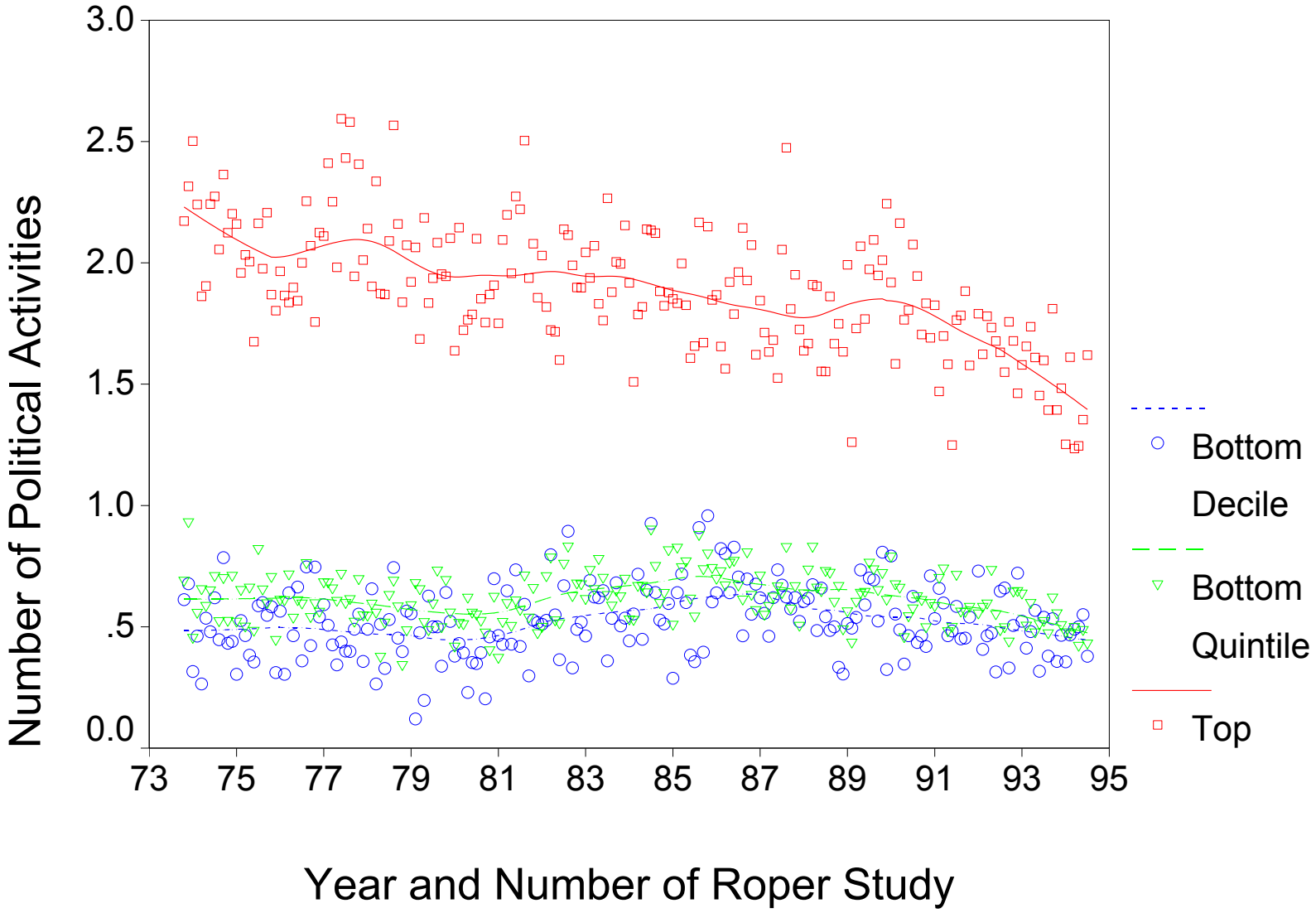


Figure 15--Ratio of Participation Index for Top to Bottom Quintile

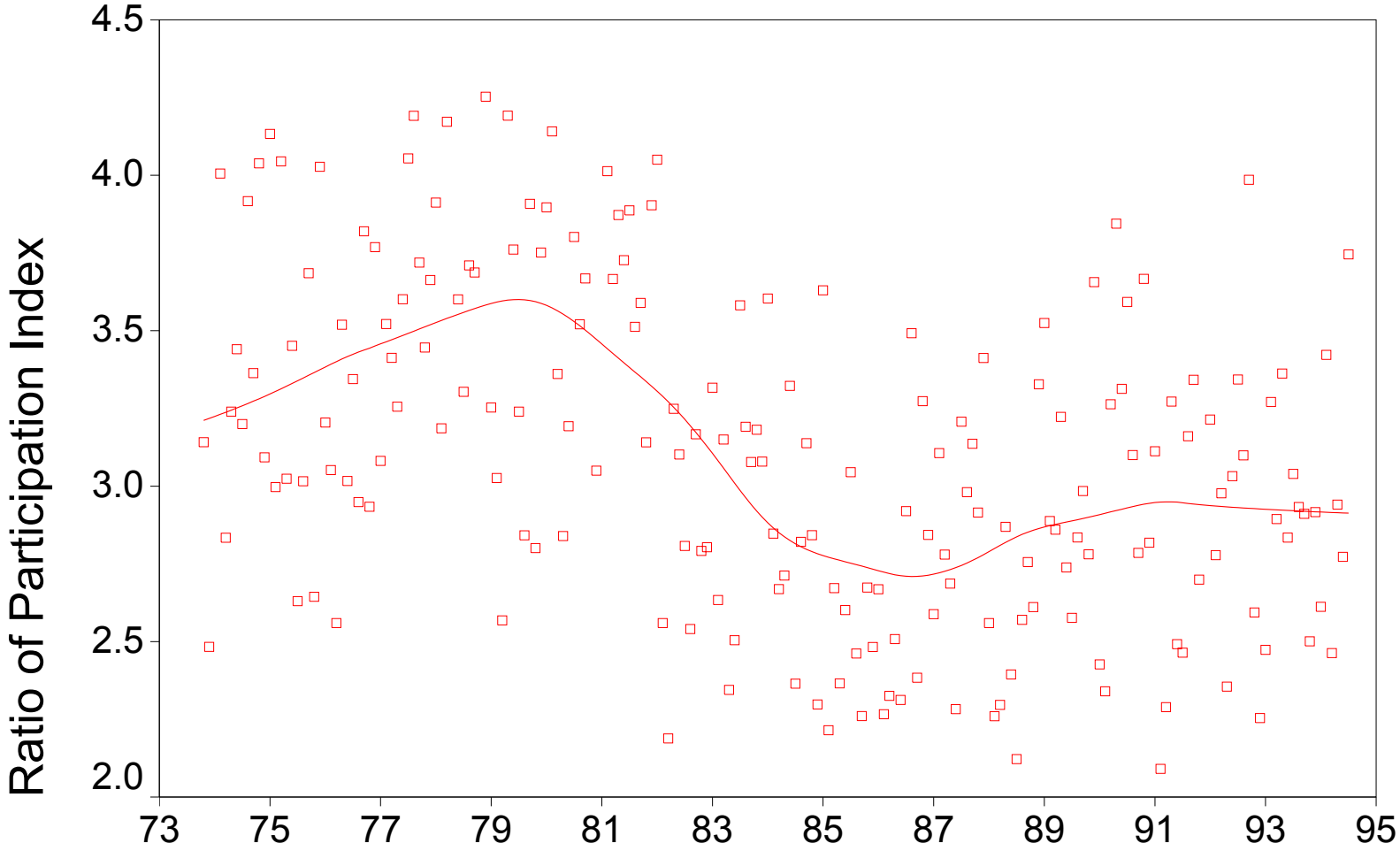


Figure 16--As Income Inequality Goes Up

Participatory Inequality Goes Down (1973-1994)

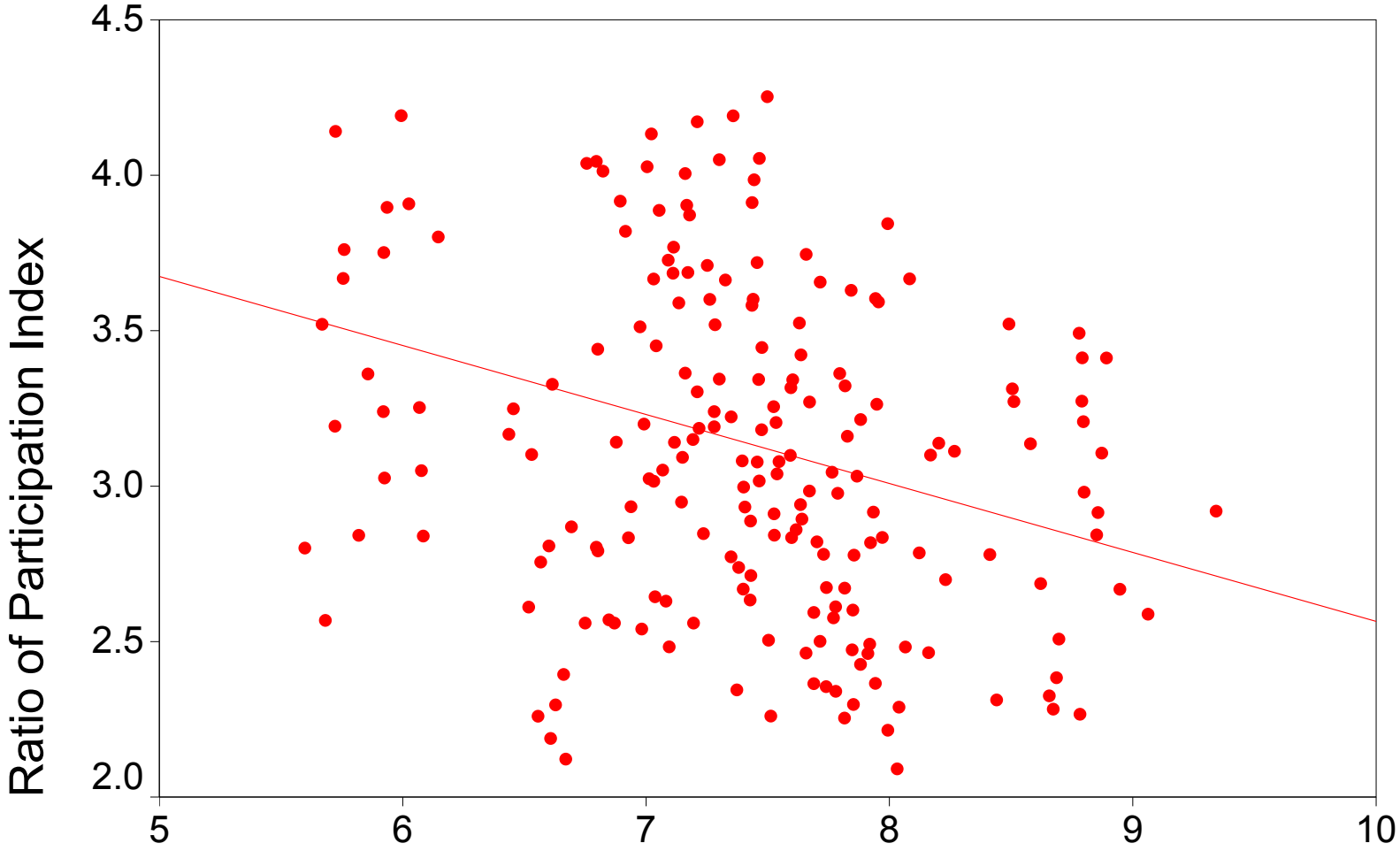


Figure 17--Log of Participation Ratio for 29 States

by Ratios of Income for 5th to 1st Quintile in 1985

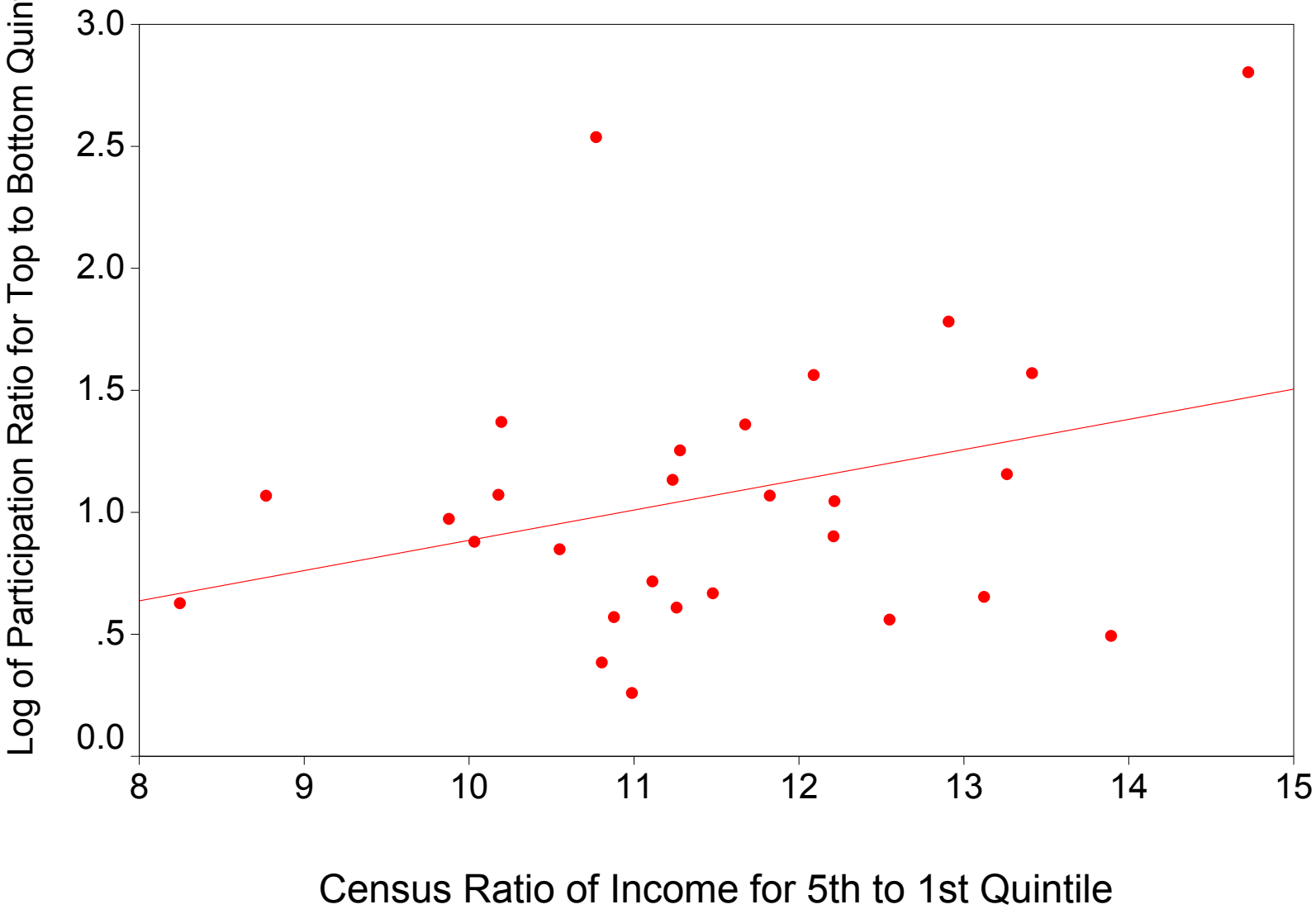


Figure 18--1978-1994 Average of Log of Participation Ratio for

29 States by Average of Income Ratios of 5th to 1st Quintile

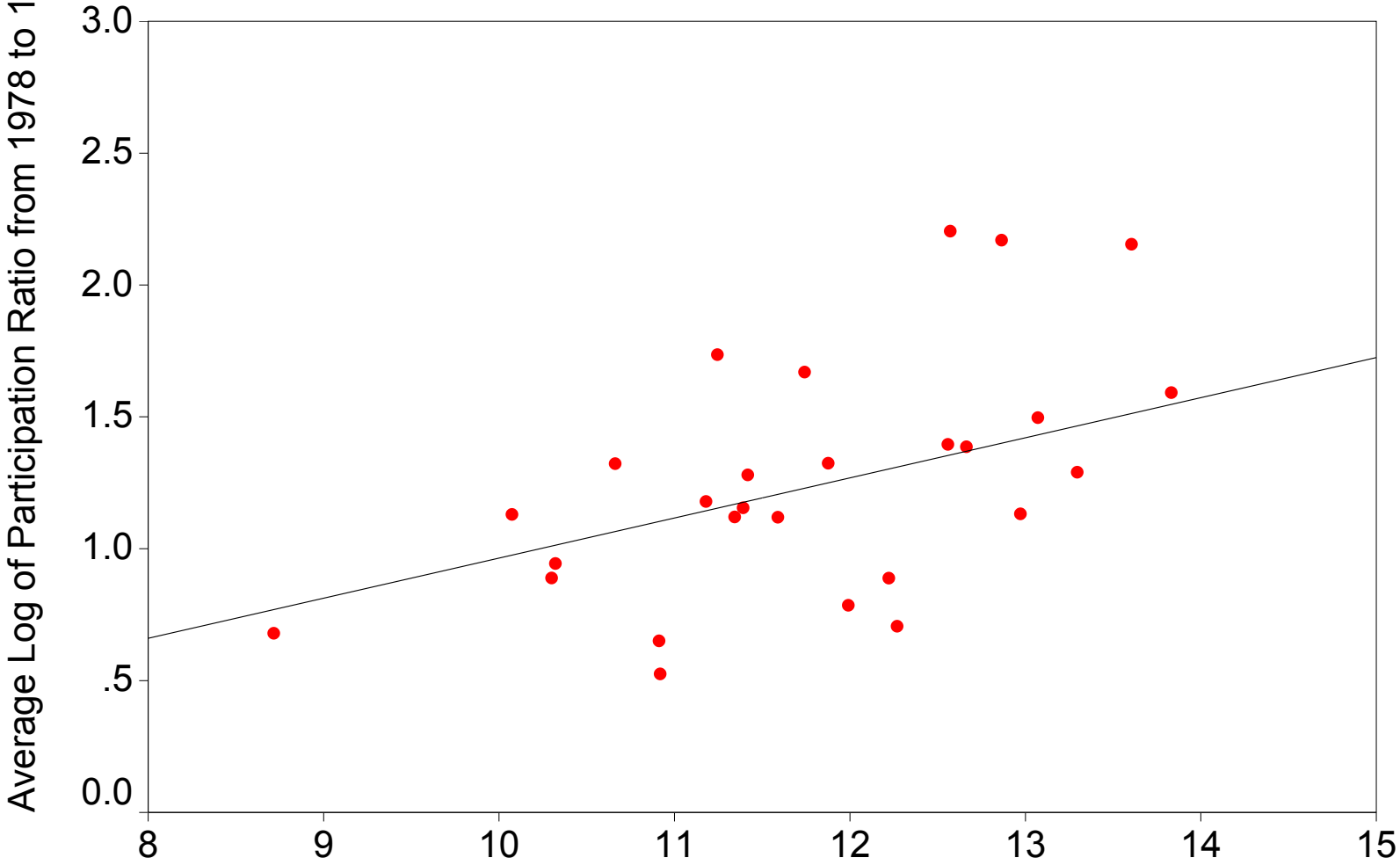


Figure 19--Log of Participation Ratio by Yearly Ratio of 5th to 1st Quintile for 29 States from 1978 to 1994

