State-Owned Enterprises, Political Ideology, and Redistribution*

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Abstract

State-owned enterprises still play a considerable role in many economies. In this paper we empirically test the argument that this is so because these enterprises are major instruments of income redistribution and, in countries with significant degrees of income inequality, segments of the population that benefit from this redistribution use their political power to oppose their dismantlement. Using cross-country data on the relative size of the state-owned-enterprise sector, we find strong empirical support for this hypothesis. We also find robust evidence that left-wing (vis–vis right-wing) governments are associated with greater redistribution through the state-owned enterprise sector in more unequal societies. Further, this effect is non-linear, implying possibly that redistribution becomes more costly at higher levels of inequality. We also find the same result for authoritarian (vis–vis democratic) governments.

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1 Introduction

Recent years have witnessed a widespread attempt in developing countries to dismantle one of their most entrenched institutions - the state-owned enterprises (SOEs). The significant headway that some countries have made in the privatization drive shows up in some figures: the share of SOEs in GDP of middle income countries was around 6% in 1996, compared to the pre-privatization share of 10% in 1985 (Megginson and Netter 2001). Given the extensive discussion on privatization and the huge literature that followed, one might be tempted to conclude that SOEs have mostly disappeared from the economic scene. In this paper we argue that rumors of SOEs’ demise have been greatly exaggerated. A closer look at the data shows that many countries still have substantially large SOE sectors, even today. Looking at the emerging economies, SOEs’ share in the GDP was 29.7% in China and 13.2% in India in 2006 (OECD, 2009). This number for Vietnam was 36% in 2010. Kikeri and Kolo (2006a) report that SOEs accounted for more than 50% of GDP in Middle East and North Africa and Central Asia and more than 15% in Sub-Saharan Africa in 2003. Further, state ownership is widespread in many sectors of the economy. More than 40% of capital stock in India and 57% of industrial assets in China are state-owned. Infrastructure, finance, services, telecommunications, and utilities sectors are all dominated by government ownership in developing as well as some developed countries. For instance, power supplies are owned and operated in more than half of the developing countries and 70% of Sub-Saharan African countries. More than 60% of telecommunications, 60% of water, and 70% of transportation sectors have not had any sort of private participation in these economies. Finally, as of 2003, public commercial banks held more than 70% of banking assets in India and in ratios varying between 20% to 40% in other developing countries (Kikeri and Solo 2006a).

This paper asks the question: why do some countries find it so difficult to dismantle their SOEs? One plausible answer is that SOEs operate in sections of the economy where market failure is likely and/or private ownership is risky. However, given the wide cross-section of sectors in which SOEs are still functional, this explanation is not entirely convincing. We, thus, focus on a different explanation: political economy considerations. Simply put, we argue that the SOE sector is a major instrument of income redistribution, especially for countries undergoing a taxing structural adjustment. In the words of an acute observer writing about Turkey for the 1990’s, “... the privatization drive ... has lost its attractiveness to the extent that it would impede the state from using the SOEs to ease the pain of other components of the structural adjustment process.” Similarly, Megginson and Netter (2001) point out that the main obstacle

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1 Kikeri and Solo (2006a, p.2) argue that several countries such as Argentina, Brazil, Mexico and Chile have been successful in their privatization drives, whereas the state sector remains largely untouched in many other economies. Kikeri and Solo (2006b, p. 4) argue that privatization activity was concentrated in a small group of active countries, while only scratching the surface in others.

2 See Waterbury (1992, p.194).
to the privatization of the Chinese SOEs is the “social welfare responsibilities” they shoulder.

The SOEs owe their genesis to the adoption of strategies of import-substituting industrialization and the need for income redistribution. Waterbury (1993, p. 263) stresses that “...the political logic that gave rise to the SOE sectors in the first place [was] the need to redistribute income...” In some cases these policies had been implemented quite early. For instance, in Turkey the SOE sector dates back to the late 1920’s, in Mexico to the 1930’s, in India to the late 1940’s. In most cases the common ostensible rationale for establishing SOEs was that the existing private sector was weak, unable to compete with foreign goods or prone to the formation of alliances with foreign capital to the detriment of national interests, as well as employment maximisation, regional development, and rescue of failing firms. It soon became clear to economists and policy-makers alike that the performance of the SOE sector left something to be desired: SOEs experienced chronic losses which resulted in rising domestic budget deficits and inflation. The response was attempts at rationalizing and streamlining the SOE sector. This soon proved difficult.

In order to explain why such attempts were likely to fail, we will focus in what follows on two main factors that contribute to the losses commonly registered in the SOEs: high wages to SOE employees and “surplus labor”, both of which are typically used as instruments for income redistribution.

First, a clarification. When we say the SOEs pay high wages we mean that the SOEs typically pay wages that are higher than those paid by private enterprises in a given country. It is frequently the case that SOEs are monopolies and labor unions negotiate high wages without fearing a depression in wages caused by attraction of labor to SOEs from competing private firms. The SOEs may also pay a compensating wage differential when they operate in locations where private firms may be reluctant to locate. The full compensation package of the SOEs may include superior leave privileges and retirement benefits. Furthermore, even if wage rates in the SOEs are similar to those offered by private firms, given the low productivity endemic in the former, the ratio of wages to marginal productivity of labor is higher. Finally, there is strong empirical evidence from Latin America, Africa, and Southeast Asia that supports the observation that the SOEs pay high wages. These higher wages redistribute income from taxpayers to the employers of the SOEs.

Second, casual empiricism as well as careful empirical studies suggest that the SOEs carry “surplus labor”, that is, they employ more workers than their operations would justify on strictly rational economic grounds. Thus, for instance, an official study found that though the output of the SOEs in the Western and Mid-Western states of Nigeria remained unchanged in the period 1963-1967, the wages and salaries’ bill more than doubled. Complaints by management

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3 For the evidence see Ramanadham (1988), ch.2.
of surplus workers in the SOEs in Sri Lanka, Trinidad and Tobago, India, and Britain, inter alia, are well documented. The wages paid to the surplus workers transfer income from the rest of the population to those who are fortunate enough to be employed by the SOEs.

It is, therefore, not surprising that the SOEs suffer from chronic losses given the wages they pay and the surplus labor with which they operate. And, they do so partly because they are instruments of income redistribution. Furthermore, this redistributive tool seems not to be shunned by governments either on the left or on the right (though as we show below not to the same extent), by governments democratic or dictatorial. Thus, for instance in Bolivia which is ruled by the left-wing MNR (Movimiento Nacionalista Revolucionaria) by the early 1960s a form of state capitalism developed, controlled and exploited by various competing groups of the middle classes. The state enterprises became a source of enrichment for these private factions, some civilian and some military. Under the right-wing rule of General Hugo Banzer, who was installed as president of Bolivia following a coup d’etat in August 1971, “...the public enterprises served frequently as a mechanism to transfer state-owned (or state-guaranteed) resources to privileged groups in the private sector. Access to government officials and government contracts was considered the most important asset from the viewpoint of many private-sector businessmen.” Further, “[...] in fact, a non-negligible part of the support for the Banzer government and succeeding military regimes was the willingness to create employment in the public sector. The return to democracy in 1982 was also accompanied by a big spurt in the expansion of jobs in the most important public enterprises, particularly in COMIBOL.” When in 1970 the Mexican president Diaz Ordaz had to choose his successor unilaterally, the new president “... Echeverria faced the difficult task of creating his own supporting coalition after assuming office. The simplest method of shoring up the weakening political consensus was to spend on everyone’s behalf: dole out subsidies to education and agriculture, increase government jobs for the middle classes, grant large wage increases to mollify organized labor, etc. ... Between 1970 and 1976, the number of federal government employees doubled and the growth rate of general government employment averaged 10.8 percent. A series of large wage hikes after 1972 further inflated the government wage bill.”

In what follows we thus take it for granted that the SOEs are used to re-

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7 This is not to deny that there may be other reasons for carrying surplus labor, including moral hazard (for an interesting survey of the soft budget constraint syndrome see Kornai, Maskin, and Roland (2003)). Nor do we want to suggest that surplus labor is the only reason for the losses SOEs suffer. However, the literature is quite clear that the main reason for surplus labor is the wish to transfer resources to those who are thus employed. Similarly, the literature singles out the use of surplus labor as one of the main reasons why SOEs lose money. This is why the first action taken after a privatization is the laying off of the excess labor.
10 Ibid. p.197.
distribute income. This means, *inter alia*, that here we do not deal with the question as to why they are used as a tool of redistribution when there could be more efficient tools.\(^{12}\) One possible answer to this question is that the lack of transparency in generating redistribution through nonmonetary transfers makes SOEs a politically efficient tool. Coate and Morris (1995) provide a formal model that shows that politicians would prefer to redistribute via public works rather than cash transfers when voters lack information. The question that remains to be answered then is: Under what conditions are they used as a means of income redistribution? There are two possible explanations. First, as long as the median wealth is less than the average wealth, the majority of the population will prefer to redistribute income. Insofar as SOEs are used to redistribute income, the majority would then support the establishment of an SOE sector for this purpose. In a democratic setting with majority voting this implies, under certain conditions, that we can invoke the median-voter theorem to suggest that an SOE sector would be established for redistributive purposes. Otherwise, we surmise that the preferences of the majority would, through other unspecified channels, find expression in policies that favor redistribution some of which would take place through the SOEs. These channels may take the form of a desire on the part of dictators (as in the case of Banzer in Bolivia) or autocrats (as in the case of Echeverría in Mexico) to find popular support for their rule. A corollary to this reasoning is that the more unequal the distribution of wealth (as measured by the difference between median and average wealth) the more extensive will be the SOE sector.\(^{13}\)

Secondly, pro-labor governments whose constituents are workers and need their political support would be more likely to use the SOE sector for redistribution.\(^{14}\) It is also possible that such pro-labor left-wing governments place a higher weight on egalitarianism. Pro-capital right-wing governments, on the other hand would be more likely to adopt policies that reflect the preferences of their capital-rich constituents and choose smaller SOE sectors and less redistributive purposes.

\(^{12}\)Other policy instruments that can be used for redistribution include trade policy, education, health, and social security (some of these may overlap with SOEs).

\(^{13}\)Another way of looking at this proposition is to see whether the privatization of the SOE sector increases income or wealth inequality (in the data these two measures are highly correlated). There is an extensive literature that argues that this is indeed the case. For instance, two of the most prominent authorities in this area, Birdsall and Nellis (2003), conclude in their survey that that many privatization programs have worsened the distribution of assets and income. Similar results are reported, among others, by Carrera, Checchi, and Florio (2005), Ugaz and Waddams Price (2003), and Freije and Rivas (2005). See also the papers collected in Birdsall and Nellis (2005).

\(^{14}\)Shleifer and Vishny (1994) provide a model where, because “the public is disorganized” politicians cater to interest groups rather than the median voter. Among others, Claessens and Djankov (1998) find empirical support for this view using data from seven central and eastern European countries.
Such an interpretation would be consistent with the approaches of Hibbs (1977) and Alesina (1987) in a macroeconomic setting or with that of Dutt and Mitra (2005) in an international trade framework.

In our empirical analysis, we use both cross-sectional and panel data. In the broadest setting we measure the relative size of the SOE sector in three different ways: the share of the SOE production in GDP, their share in non-agricultural GDP, and their share in total investment. Our measure of inequality is income Gini, with the alternatives also considered. Across most measures we find empirical support in favor of our hypothesis that an increase in inequality is associated with a larger SOE sector. Further, we find that this effect is non-linear, rather than linear. Statistically even stronger results are associated with political ideology. We find that left-wing governments are involved with greater redistribution through SOEs, compared to right-wing governments. In addition, center-wing governments and governments whose political ideologies cannot be clearly specified generally tend to use redistribution more often as a policy tool, relative to right-wing governments. Thus, our results suggest a strong divide between right-wing and non-right-wing governments in terms of approach to redistribution. Furthermore, the political ideology channel also works in a non-linear fashion. That is, non-right-wing governments are involved with redistribution at a decreasing rate. This is intuitive in that redistribution may become costly to society at higher levels of inequality. These results are robust in relation to how political ideology is measured.

As Dutt and Mitra (2005) point out, this line of reasoning could be couched in terms of the approach in Grossman and Helpman (1994) who use their political-contributions approach to provide micro foundations to the political-support function approach. Thus, suppose that the government’s objective function (sometimes called the political-support function) is a weighted sum of the welfare of workers and capitalists. One can then think of a switch from a left-wing to a right-wing government here as reflecting a rise in the weight of capitalists in the government’s maximand due, perhaps, to higher contributions by the latter. Furthermore, the political-contributions approach of Grossman and Helpman (1994) can be derived from a model of electoral competition (Grossman and Helpman, 1996), where it is possible for party platforms to remain divergent.

Bortolotti et al. (2003) find that right-wing governments are more likely to privatize, but this effect is significant with cross-sectional data and insignificant with panel data.

Hibbs (1977) argues that politicians are “partisan”. Left-wing and right-wing governments have different objective functions and shows that countries and periods with left-wing governments had lower unemployment and higher inflation than others. In the rational partisan theory of Alesina (1987) the left-wing party attaches a higher weight to unemployment relative to inflation. Hibbs and Vasilatos (1982) and Hibbs, Rivers, and Vasilatos (1982) find that blue-collar groups are typically more concerned about unemployment while the major concern of their white-collar counterparts is inflation. Dutt and Mitra (2005) find strong and robust support for the hypothesis of a partisan, ideology-based model in that left-wing governments adopt more protectionist trade policies in capital-rich countries, but adopt more pro-trade policies in labor-rich countries, than in right-wing ones.

Dutt and Mitra (2005) also find strong empirical support for the hypothesis that left-wing governments tend to redistribute more via trade policy than right-wing governments.

It is also worth noting that our empirical findings are also consistent with the literature that emphasizes the concept of common property and the attempt by different groups in societies to appropriate the common property (See, for instance, Tornell and Velasco (1992) and Benhabib and Rustichini (1996)). These models are said to apply to societies where there is “extreme inequality”. If the resources of the SOEs are viewed as common property by the
In addition, we test whether democracies are more prone than dictatorships to redistribute income through the use of the SOE sector. We find that authoritarian governments are involved with higher redistribution, and, again, this effect is non-linear. This finding is consistent with Alesina and Rodrik (1994) who show that when it comes to distributional issues even dictators bow to popular will. This result is also related to the view advanced in Acemoglu and Robinson (2000), who derive a non-monotonic relationship between inequality and democracy. Treating democracy as a tool for redistribution (with commitment), they find that, for low levels of inequality, higher inequality is associated with “more” democracy (redistribution), but further increases in inequality lead to less democracy (redistribution). In our analysis, we arrive at the same general conclusion as Acemoglu and Robinson: whether measured by democracy or SOE sector size, higher inequality is associated with higher redistribution, and this effect is non-linear.

Further, we also check whether we can replicate for the SOEs the result obtained by Pagano and Volpin (2005) that once the electoral systems and legal origins are controlled for, the political ideology of the government ceases to have explanatory power for cross-country differences in employment protection. Controlling for proportional (vs majoritarian) electoral systems, the political ideology of the government, and the origin of the legal system in our models does not change our main results relating to left-wing and unspecified-wing governments.

To sum up, the paper contributes to the empirical literature on redistribution, on the role of political ideology, with and without democracy, and the continued struggle related to the privatization of state owned enterprises.

Section 2 describes a simple theoretical framework and the empirical testing, section 3 discusses the results, while the last section provides some concluding remarks.

2 Empirical Analysis

2.1 Theoretical Considerations

Although our question is primarily empirical, there are several theoretical arguments that can back up the question. First, one can focus on a median agent and suggest a proposition that the lower the median agent’s capital endowment is relative to that of the average agent, the bigger will be the size of the SOE sector. To see why, consider some tax rate. Will the median agent have a higher utility if the tax rate is raised? Or, to put it differently, would the median agent prefer a higher tax rate? The answer is more likely to be in the affirmative the smaller the median agent’s endowment is relative to the endowment of the various competing groups of the middle classes” then our findings should be interpreted as also giving empirical support to the common property notion and the models built to elucidate it.

20 See also Botero et al. (2004) for a similar result concerning the regulation of labor.

21 The median agent is defined here to mean the agent that owns the median capital stock.
average agent. Intuitively speaking, this proposition belongs to a class of results obtained in the political economy literature that redistributive instruments will be preferred by a median voter whose wealth (or income) lies below that of the average agent. In other words, (i) the majority of the population would prefer to have an SOE sector as long as the median agent’s capital endowment is smaller than that of the average agent, and (ii) this majority would be a larger fraction of the population the lower the median agent’s capital endowment is relative to that of the average agent. This establishes a direct link between inequality and the size of the SOE sector, and the ultimate political factors can give the channel a finer link, such as the regime type. For instance, Banzer of Bolivia and Echeverria of Mexico seem to have been motivated to use the SOEs to redistribute income to obtain the support required. It is well-established that even dictators need popular support to maintain their power (Alesina and Rodrik 1994).

Second, capital-rich agents would prefer to have lower taxes, less redistribution, and, thus, smaller SOE sectors. In the partisan politics approach, pro-capital right-wing parties that rely on the political and financial support of capital-rich agents would then opt to reduce the size of the SOE sector. Similarly, pro-labor left-wing parties that rely on the support of capital-poor agents would then choose to increase the size of the SOE sector and redistribute more. The depth and duration of these policies would depend on exogenous changes in global economic conditions, or on domestic social, political, economic realities, which might, and routinely do, trigger realliances of political forces. The choices of a Banzer or an Echeverria reflect these changing conditions, which can also be thought of as changes in the weights that a government attaches to the welfare of different groups in the Grossman and Helpman (1994) approach.

2.2 Econometric Specification

The simple theoretical arguments outlined above predict that the more unequal the distribution of wealth, the more likely it is for a country to operate an SOE sector as a redistributive tool. To test this prediction, we estimate cross-country regressions of the following type:

\[ SOE_i = \alpha_1 + \alpha_2 INEQ_i + \delta X + \varepsilon_i \]  

where \( SOE \) is an indicator of the relative size of the SOEs in overall economic activity, \( INEQ \) denotes a measure of inequality, and \( X \) is a vector of control variables.

To capture the underlying data generating process as much as possible, we also consider several plausible scenarios related to the use of SOEs as a redistributive tool. First, can governments redistribute indefinitely? That is, in terms of our theoretical framework, can the government keep levying taxes on the capital-rich? This calls for modelling a possible non-linearity in the inequality-redistribution relationship, which we do by employing a squared \( INEQ \) variable in Equation (11). Second, as their core clientele spans capital-poor labor, left-wing governments are, \textit{ceteris paribus}, expected to redistribute
more in a society with higher inequality compared to right-wing governments. The non-linearity argument may also apply to this channel in that there may be a limit to which left-wing governments can be engaged in redistribution. Third, in relation to political regimes, the difference between authoritarian and democratic regimes in redistribution is an important question to explore.

The political ideology considerations suggest the following estimating equation:

\[
SOE_i = \beta_1 + \beta_2 \text{INEQ}_i + \beta_3 \text{INEQ}^2_i + \beta_4 \text{WING} + \beta_5 \text{WING} \times \text{INEQ} + \beta_6 \text{WING} \times \text{INEQ}^2 + \theta \mathbf{X} + \mu_i
\]  

(12)

where \( \text{WING} \) comprises indicators of the government’s political ideology, i.e., left-, center- or right-wing. The effect of democracy is tested through:

\[
SOE_i = \gamma_1 + \gamma_2 \text{INEQ}_i + \gamma_3 \text{INEQ}^2_i + \gamma_4 \text{DEMOC} + \gamma_5 \text{DEMOC} \times \text{INEQ} + \gamma_6 \text{DEMOC} \times \text{INEQ}^2 + \lambda \mathbf{Z} + \nu_i
\]  

(13)

where \( \text{DEMOC} \) is a measure of democracy.\(^{22}\) While Equation (11) tests redistribution as a macro issue in the political-economic structure, Equations (12) and (13) will shed light on more specific channels of redistribution.

Several control variables are used to help identify the impact of the state variables on \( SOE \). First, we control for oil producers, as oil may result in state monopolization in the economy. We also control for small island countries, whose economies may be dominated by fishery or tourism, implying a smaller role for the state. The level of state involvement in the economy might also be affected by sectoral composition. We control for this with an urbanization variable. In addition to being highly correlated with sectoral shares (such as agriculture and manufacturing), urbanization also helps control for overall level of development.\(^{23}\) Further, we control for democracy (except of course in Equation (13)), because \( \text{WING} \) comprises left-, center- and right-wing executives, with no distinction made between democratic or authoritarian (military, etc) regimes. Finally, we control for region-specific effects.\(^{24}\) The notion of political ideology (i.e., left-wing vs right-wing) may differ across country groups (see Dutt and Mitra 2005, p. 69), which we control for through regional dummies.

### 2.3 Data

We employ two types of datasets: cross-sectional and panel. The former includes the 1978-1991 averages of the data, and the latter spans the time period

\(^{22}\) \( \mathbf{Z} \) is \( \mathbf{X} \) but democracy. Civil liberties is our preferred democracy measure as it comprises freedom of speech and association. Political rights and civil liberties, the components of democracy, are highly correlated.

\(^{23}\) Our dataset includes both developing and developed countries. We initially used income per capita in 1970 to control for the stage of development, but because this variable was highly correlated with urbanization, it was dropped from the regressions.

\(^{24}\) It must be noted that Schultz (1998), among others, found that regional effects explain an important portion of the cross-country variation in inequality. Hence, we are careful with a possible multicollinearity between regional dummies and \( \text{INEQ} \).
1970-2004 in five-yearly time windows. For the dependent variable, we have two SOE measures in the cross-sectional dataset: the share of the SOEs’ production in GDP and in non-agricultural GDP. The data come from Bureaucrats in Business: The Economics and Politics of Government Ownership (1995) as averages of the 1978-1991 period.\footnote{The source actually provides the data in a panel format, but many missing observations prevent us from forming a viable panel dataset. Thus, we average the available data to use for the cross-sectional analysis.} The panel data measure is the share of SOEs in total investment activity, the data of which are obtained from Fraser Institute’s Economic Freedom of the World database (Gwartney, Lawson, and Norton 2008). The latter is a very comprehensive database with a broad country coverage, and is used widely to analyze the impact of institutions on economic performance.\footnote{See, among others, La Porta et al’s (1999) "The Quality of Government".} The data are available in five-yearly time windows between 1970 and 1995 and annually after 2000.\footnote{We average the annual observations between 2000 and 2004 so as to form a panel comprising five-yearly periods of 1970, 1975, 1980, 1985, 1990, 1995 and 2000.} We also convert this measure into cross-sectional form, which enables us to use three different SOE measures in the cross-sectional analysis. The explanatory variables are utilized both in cross-sectional and panel datasets accordingly.

One concern with the SOE investment measure is that government investments can be based on purely economic and non-political grounds. However, most political scientists would strongly argue for the presence of political motives behind SOE investments, and suggest that investment is at least partially determined by redistributive concerns, political ideology, and the type of political regime. We check for the cross-sectional correlation between the share of SOE production and SOE investment in GDP, and find it to be 0.52. Bearing in mind that the data come from different sources, we consider this correlation to be moderately high. Thus, we utilize SOE investment as another measure of SOE size.\footnote{Regarding the SOE investment measure, the constant term in the regression can help clarify its effects: in the context of Equation (11), any systematic non-model variation in the dependent variable, such as rational investments in energy or manufacturing sectors, would be captured by the constant term. Thus, our state variables would capture the redistributive components in the dependent variable over and above the systematic non-model variation that is captured by the constant term. This logic also applies to SOE production in GDP and non-agricultural GDP.}

We use income Gini coefficient (denoted by $\text{GINI}$) as the measure of $\text{INEQ}$. As income distribution becomes more unequal, the share of SOEs in GDP would increase, and hence, we expect a positive sign for $\text{GINI}$. The data have been obtained from UNU/WIDER (2005). We also considered the share of median quintile in income distribution as a measure of (reverse) inequality. The correlation between this measure and income Gini is found to be -0.95, and thus, we do not pursue this variable further in this paper. We also experiment with land Gini as an indicator of wealth inequality. The data are obtained from Deininger and Olinto (2000).

The political ideology data have been obtained from Database of Political Institutions (Beck et al 2001). This database includes data for the period 1975-
2006, and provides qualitative information on the political leaning of the executive power for each country in the form of leftist, centrist and rightist ideologies. We utilize this information in several ways for the WING variable. First, we use the shares of years in which each ideology reigned in the country over the course of the relevant time period (i.e., the period of 1978-1991 for the cross-sectional dataset, and within each five-yearly interval for the panel dataset). This provides a continuous measure of political ideology. Second, we adopt the discrete form of the measure by creating dummy variables (i.e., leftist, centrist and rightist dummies): When a regime is observed over more than half of the relevant time period in the country, the dummy takes the value 1, otherwise, zero. A few marginal cases have been handled using the approach of Dutt and Mitra (2005). An important issue here is the “unspecified” category of the political leanings. Beck et al. (2001) list some country-year observations as having “no information”. For instance, the Mahatir period of Malaysia, several monarchs in the Middle East such as King Hassan of Morocco, King Hussein of Jordan, Sheikh Zayed of UAE, several governments that ran Pakistan during the 1980's and 2000's, and some military regimes in Africa are listed with no specific information regarding their ideologies. We manage the unspecified category in several different ways. First, we treat these rulers as “unspecified-wing”, i.e., a fourth type of political leaning, and include them in the regressions to explore the related implications. Second, we incorporate them into the centrist category (as in Dutt and Mitra 2005). Third, we remove them from the sample. Our results are robust to different ways of managing this category.

Table 1 presents the summary statistics of the cross-sectional data, their sources, and some relevant explanations.

2.4 Estimation Methodology

We use Two-Stages Least Squares (2SLS) for the cross-sectional analysis and Generalized Method of Moments (GMM) for the panel analysis. In both cases, the underlying problem is the endogeneity of inequality. GINI may be endogenous because the size of the SOE sector may affect income inequality. In other words, countries with high income inequality may be associated with greater redistribution that aims at reducing inequality. Thus, GINI needs to be instrumented. Our choice of instrumental variables (IVs) relies on Li, Squire and Zhou (1998), who find that, in a cross-country context, democracy, M2/GDP (as a measure of financial deepening), initial years of schooling, and land Gini explains income inequality. Whether or not these variables constitute viable

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29 See Dutt and Mitra (2005, pp. 63-64). In our case Argentina had six years of centrist and six years of autocratic regimes, while Uruguay had seven years of autocratic and seven years of rightist regimes. We assumed these governments to have centrist ideologies. Our results are robust to variations in such classifications. We also followed a similar strategy for the panel dataset, and these results, too, are robust to variations in categorizations.

30 We also considered an ordinal approach to political ideology whereby leftist regimes could take the value 0, centrist regimes 1 and the rightist regimes 2. In doing so, countries with unspecified political leaning had to be removed from the sample. Our results are robust to this approach as well.
IVs is an issue, however. Specifically, for a valid instrumentation, IVs should be strong, exogenous, and excludable from the SOE equation. We already use democracy as a control in the SOE equation, therefore, it cannot be a distinct IV. Regarding M2/GDP, it is well-known that SOEs run chronic losses, which may be monetized, and this may lead to a rise in the monetary base, affecting M2/GDP. Thus, this variable may not be an exogenous IV. We believe that average years schooling in 1965 and land Gini constitute valid IVs. First, they are not expected to be directly influenced by SOE, and therefore, they are exogenous. Second, regressing GINI on these variables delivers high F-statistics (greater than 10), implying that they are strong instruments (see Stock and Yogo 2005). Third, we do not expect that schooling directly influence SOE, thus it is excludable. One can argue that schooling may act like a measure of development, and hence, may capture the level of capital depth in the country, affecting the use of SOEs. Note that we use urbanization as a control, which would address this issue.\footnote{All controls are included in the first-stage regressions, helping utilize the exogenous variations in the instrumental variables.} On the other hand, land Gini may directly influence SOE through the suggested mechanism in this paper. To explore the direct relationship between land Gini and SOE, we run a number of regressions under several plausible scenarios, but never find a significant direct relationship.\footnote{Note that land Gini would be exogenous to SOE in our context, so using it as a regressor instead of income Gini, would not require instrumentation.}

An additional issue with GINI is that UNU/WIDER reports GINI observations as based on income vs consumption, net vs gross income, and person vs household income constructions, as well as referring to other income types such as earnings and monetary income. In addition, UNU/WIDER provides a quality indicator for the income distribution series (quality depends on the original source of data). Knowing the source of the measurement and quality differences helps address it; we use NET, PERSON, EARNINGS, MONETARY and CONSUMPTION dummies\footnote{Kuznets (1989) favors gross, household-based income to measure inequality.} and the QUALITY variable as IVs.\footnote{The QUALITY indicator takes values 1, 2, 3 and 4, with the lowest value representing the highest quality.} \footnote{Deininger and Squire (1996) suggest adding 6.6 points to expenditure-based Gini coefficients to address the construction differences. This practice seems more relevant for the old version of the dataset; the data have been updated since with new observations. Importantly, there are other construction issues that affect the Gini observations (e.g., some Gini values are based on net, personal, monetary incomes). We do not prefer this sort of mechanical approaches (where the values to be added or excluded can be obtained, for instance, through averaging or regression-based methods). With this practice, at least in theory, Gini values can exceed the maximum value of 100. One might also recommend using only high quality Gini data, but these data do not provide enough data points (given the need to cover a specific time period such as 1978-91).} This IV strategy resulted in the number of instruments being greater than the number of independent variables - thus, our equations were over-identified.\footnote{Our controls oil, small island dummy and regional dummies are strictly exogenous to SOE. We do not expect democracy and urban population to be endogenous to SOE, but use their 1970-74 values as a safeguard. GINI* is also instrumented with the quadratic values of the continuous IVs wherever it applies.}
We then performed the suggested Sargan tests. In the case of cross-sectional data we failed to reject the null hypothesis for every specification. Having valid instruments at our disposal, we next conducted Durbin-Wu-Hausman tests to check whether the endogeneity of \( GINI \) is statistically supported (Davidson and McKinnon 2004, p. 338). These tests showed that inequality is indeed endogenous to \( SOE \) for most of the specifications and across different \( WING \) measures. To conclude, with all tests approving our instrumentation strategy, our estimation methodology for cross-sectional analysis is 2SLS.

In panel data analysis, we first adopted the conventional cross-sectional time series approach with a motivation to account for country-specific fixed and/or random effects. Using the same set of instruments defined above, but utilizing them in panel form, we ran pooled data regressions. In these regressions, Sargan tests did not allow for over-identifying restrictions. A number of exercises showed that the problem originates from variables that control the construction differences in \( GINI \). This is not surprising because measurement error creates complex problems in panel data (Woolridge 2002, pp. 311-314). We did not elect to play with the IV matrix as it is essential to control for construction differences in \( GINI \). Thus, we did not pursue this panel approach - instead, we changed the panel design, and employed the data as cross-sections pooled over time, estimating equations relating to each time period in a system of equations framework. We adopted GMM to estimate the system (and used the same set of IVs as in the cross-sectional case). In doing so, we controlled for time-specific effects by allowing the intercepts vary over time, but imposed coefficients to be the same for right-hand side variables. The J-statistic obtained from the GMM minimization criterion was used to construct Sargan test statistics, which suggested to accept the over-identifying restrictions for the system (Woolridge 2002, p. 201).

We also adopted a general-to-specific modeling approach a la Hendry (1995) by removing insignificant controls from the regressions, a procedure justified with Wald tests, both to check the sensitivity of the state variables and to save degrees of freedom. Overall, we obtain robust results from both cross-sectional and panel data.

### 3 Results

Table 2 presents the first-stage results of \( GINI \). Regressing \( GINI \) on all instruments finds that the majority of instruments are significant except monetary income and earnings (Model 1). Removing the latter in two steps (Model 2 and Model 3) yields that the remaining instruments are highly significant.\(^{37}\) The model has an F-statistic of 20, rejecting the presence of weak instruments. The model also estimates all the instruments with expected signs: higher land inequality and person-based income Gini construction are associated with higher income Gini observations, while higher average years of schooling in 1965 and

\(^{37}\)A Wald test shows that removed instruments are jointly insignificant whereby the p-value is 0.71.
net income- and consumption-based Gini constructions are associated with lower Gini values. In addition, higher quality Gini observations are on average lower. In what follows, we use the explanatory variables in Model 3 (Table 2) as instruments.

### 3.1 Simple Relationship between SOE Size and Income Inequality

Tables 3a, 3b and 3c present the estimation results for Equation (11) and as such portray the simple and direct relationship between SOEs’ roles in the economy and income inequality. Using all the three dependent variables, $SOEGDP$, $NONAG$, and $SOEINV$, and OLS estimation, Table 3a clearly shows that the relationship is non-linear, rather than linear. Further indications of the non-linear relationship are in Figures 1 and 2. The locally weighted regression lines between $GINI$ and $SOEGDP$ and $SOEINV$, respectively, are estimated to be non-linear. The estimation results with 2SLS are reinforcing (Table 3b). Although the linear relationship is weakly significant with $SOEGDP$ and $NONAG$, the non-linear relationship is statistically stronger across all the three SOE measures. Table 3c presents the sensitivity of the 2SLS results to control variables. The latter are added to the regressions in two steps. Model 1 includes oil exporter and small island dummies, democracy, and urbanization. Model 2 includes, in addition, the regional dummies. Focusing on Models 3, 6 and 9, non-linearity prevails when $NONAG$ is the dependent variable, is weakly significant using $SOEGDP$, and loses significance when $SOEINV$ is the dependent variable. These results encourage us to look for further factors that play a role in the data generating process, and which we believe are related to the political ideology of the government.

### 3.2 Political Ideology and Redistribution

Tables 4a and 4b present the estimation results for Equation (12), again using the three SOE indicators. Table 4a presents the OLS results while Table 4b presents the results with 2SLS. Our focus will be on the 2SLS results; Table 4a is presented only to show that our results with 2SLS are robust across different estimation methods. Also, DWH tests, presented at the bottom of Table 4a, show that it is prudent to address the endogeneity of $GINI$. The measure...
for \textit{WING} is the continuous measure, where ‘unspecified’ wings are treated as a separate group. For each dependent variable, three models are presented. In the first, Equation (12) is estimated without controls; in the second, controls are included, and in the third, insignificant controls are removed. As before, the removal of the insignificant controls is justified with Wald tests.

We next proceed with 2SLS (Table 4b). Hansen’s J-statistics presented justify our instrumentation procedure. While we touch upon all models for discussion, our focus will be on Models 3, 6 and 9 which are obtained through the general-to-specific approach. In all these models, there is overall a very consistent pattern in the estimated coefficients, with significance levels varying mostly within conventional levels. First, there is a strong non-linearity regarding the impact of \textit{GINI} on SOE. Non-linearity is also observed in regard to government’s political ideology in that there is a limit to which political ideology is associated with higher redistribution through SOEs. Specifically, compared to right-wing governments, left-wing, center-wing and unspecified-wing governments redistribute more through SOEs, but this effect tapers off at higher levels of inequality.

In Model 3 (Table 4b), all state variables are strongly significant at 1% and 5% levels. To represent the regression output, consider the following estimated equation:

\[
\text{SOEGDP} = 98.68 - 5.03\text{GINI} + 0.06\text{GINI}^2 - 154\text{LEFT} - 285.21\text{CENTER} - 162.94\text{UNSPEC} + 7.79\text{LEFT} \times \text{GINI} + 13.91\text{CENTER} \times \text{GINI} + 8.34\text{UNSPEC} \times \text{GINI} - 0.09\text{LEFT} \times \text{GINI}^2 + 0.16\text{CENTER} \times \text{GINI}^2 - 0.10\text{UNSPEC} \times \text{GINI}^2 + \ldots + u_i
\]

The impact of \textit{GINI} on \textit{SOEGDP} is shown as follows:

\[
\frac{\partial \text{SOEGDP}}{\partial \text{GINI}} = -5.03 + 0.12\text{GINI} + 7.79\text{LEFT} + 13.91\text{CENTER} + 8.34\text{UNSPEC} - 0.18\text{LEFT} \times \text{GINI} - 0.32\text{CENTER} \times \text{GINI} - 0.20\text{UNSPEC} \times \text{GINI}
\]

This derivative implies that redistribution through SOEs depends on the political ideology of the government and the level of inequality. Take, for instance, the minimum Gini value in the sample, 24.5.\footnote{40} If there is a left-wing government in the whole 1978-91 period, then \(-5.03 + 0.12 \times 24.5 + 7.79 \times 1 - 0.18 \times 1 \times 24.45\), which means that a one unit increase in Gini increases the SOE share in GDP by 1.3%. When the government ideology is the ‘unspecified’ type, the same amount of increase are observed.\footnote{41} These effects taper off and

\footnote{SOE measure, evidence for endogeneity is always robust and consistent.}

\footnote{40We disregard the type of Gini construction for the moment.}

\footnote{41When the government possessed a center-wing ideology, a one unit increase in GINI increases SOEGDP by almost 4.95%, but the mean share of center-wing goverments in the sample is low, i.e., around 5%, so such ‘wild’ variations are possible.}
reach a turning point around the mean Gini value, 45, around which Gini has no impact on the SOE share. After this point, higher Gini values start having a negative impact on SOEGDP, possibly because redistribution becomes costly for the society. For instance, around the Gini value 55, and with the full sample period governed by a left- or unspecified-wing government, an increase in Gini by one unit decreases SOEGDP by 0.5%.

Importantly, the impact of left-wing ideology on SOEGDP is seen through the following derivative:

$$\frac{\partial \text{SOEGDP}}{\partial \text{LEFT}} = -154 + 7.79\text{GINI} - 0.09\text{GINI}^2$$

This derivative suggests that between the income Gini levels 27.25 and 61.25, left-wing governments are always associated with a higher SOE share in GDP. The zeal of this effect is around the mean Gini value of 45. Note that these are “corrected” Gini levels, i.e., corrected during the instrumentation procedure, and thus refer to household gross income-based constructions. In our sample, there are two countries with income Gini values lower than 27.25 (Belgium and Denmark), but these values are net income-based constructions; accounting for the “understatement” of inequality would push these countries into the estimated band 27.25-61.25, implying a positive impact of left-wing governments on SOEGDP. Likewise, in our sample there are three income Gini values higher than 61.25 (Sierra Leone, Central African Republic and Senegal). These are person-based income Gini constructions with a quality rating 3; correcting the “overstatement” of inequality would put these countries into the estimated band. This implies that potentially in all countries in our sample, left-wing governments are associated with a higher SOE share in GDP.

In terms of control variables, oil exporter countries and lower levels of democracy are associated with higher shares of SOE in GDP. Comparing Models 1, 2 and 3, it is clear that control variables help identify the impact of GINI and GINI^2 as seen through stronger significance levels, while the effects related to political ideologies are robust with and without controls.

Model 6 (Table 4b) shows that using NONAG as the dependent variable, the results in Model 3 are almost completely replicated, with slightly lower significance levels overall, though at conventional levels. One exception is that the center-wing government effect is not significant. With key point estimates, for example, of GINI and GINI^2 being significant around 10%, we do not attempt to derive numerical inference; however, the effects related to left-wing and unspecified-wing ideologies are found to be robustly significant at the 5% level. The same control variables as before, i.e., oil exporters and democracy, are found to have robust and significant controlling effects.

Model 9 (Table 4b) shows that using SOEINV as the dependent variable also results in the same pattern of signs. However, GINI, GINI^2 and the effects related to political ideology become weaker in significance. Our further exploration (unreported) shows that this is due to the Sub-Saharan African effect, which, if remains in the model during the general-to-specific modelling procedure, tends to wash out the explanatory power of income inequality and related
interaction variables. However, this dummy is generally insignificant itself in affecting the SOE size, and, in most of the cases, is removed from the regression.\textsuperscript{42}

In terms of control variables, oil exporter countries are associated with higher SOE investment, but the magnitude of the coefficient is much smaller compared to SOE production. Additionally, small island economies are involved with less SOE investment, as are countries with higher levels of democracy.

Table 5 shows the results whereby \textit{WING} is represented by a discrete measure. With this measure, the results found in Table 4 are all replicated in terms of the sign structure of the state variables. Considering Models 3, 6 and 9, the overall conclusion is that the impact of \textit{GINI} on SOE works through the political ideology channel. Specifically, left-wing and center-wing governments and their interactions with \textit{GINI} possess robustly significant coefficients. The “unspecified-wing” effect is significant only when SOE production is used as a dependent variable, otherwise it has a t-statistic between 1.18 and 1.62. With these results, we are relatively confident that the political ideology effects are not driven by the \textit{WING} measure. The insignificance of \textit{GINI} and \textit{GINI}^{2} may be due to the fact that the discrete \textit{WING} measure (which is a more aggregate measure relative to continuous) takes away the explanatory power of these variables by encapsulating their effects.

Table 6 presents the results whereby the “unspecified”-wing governments are considered as center-wing. With this exercise too, we obtain similar results as above in terms of the signs of the coefficients. The redistribution effects related to left-wing and center-wing governments are strongly significant across all SOE measures. Considering that \textit{SOEINV} and other dependent variables come from entirely different data sources, the robust redistribution effect of left-wing governments is noteworthy. In an unreported regression, we remove unspecified-wing governments from the dataset. Having around 40 observations in the estimation, the statistical significance of variables is naturally reduced. However, the left-wing government effect is significant around the 12%-15% levels.

Table 7 presents the panel data results. Noting that we use only \textit{SOEINV} as the dependent variable, the overall evidence found using cross-sectional analysis is generally replicated. Specifically, the redistributive engagement of left-wing governments and that this engagement is non-linear along income Gini values are robustly mimicked by the panel data. Likewise, the same effect is shown robustly for governments of the unspecified wing as well. On the other hand, the evidence varies for center-wing governments. A U-shape sign structure is obtained for redistributive engagement when a continuous \textit{WING} measure is used, although this effect is not robust to the use of a discrete \textit{WING} measure, or to the treatment of unspecified-wing as center-wing. Given that only 5% of the governments were centre-wing in the sample period, we do not read much into the centre-wing results. Similarly, the stand-alone level effect of \textit{GINI} and \textit{GINI}^{2} varies across the use of controls and the treatment of unspecified-wing as center-wing. The inverted-U structure obtained in the cross-sectional analysis

\textsuperscript{42}We note again the Schultz (1998) finding that regional effects and inequality are correlated.
is found only when control variables are not used and the $WING$ measures are continuous and discrete. Note that our panel data set brings together a collection of cross-sectional data sets with short time windows (i.e., each covering five-yearly time periods), and therefore, the relationships found may differ compared to a cross-sectional data set, which captures a longer time span (such as 1978-1991 above). It must be stressed, however, that the redistributive involvement of left-wing governments and the fact that this effect is non-linear emerges as robust evidence in our cross-sectional and panel data analyses.

3.3 Further Links

**Democracy vs Dictatorship.** In the introduction we have argued that policymakers tend to be responsive to the concerns of the majority of the population whether they are democratically elected or not. One could, however, plausibly counter that there certainly might be a significant difference in degree if not in kind between dictatorial and democratic policymakers (see our discussion in section 2.1 above). To investigate this claim in the context of the SOE sector as a means of redistribution, we estimate Equation (13), (with $GINI$ again instrumented). In doing so, we also relate our results to Acemoglu and Johnson (2000), who argue a non-monotonic relationship between inequality and democracy. In their context, democracy is a tool for redistribution, whereby initially higher inequality is associated with “more” democracy (redistribution), but later higher levels of inequality lead to less democracy (redistribution). Using initial levels of democracy, the results, reported in Table 8, are significant for $SOEGDP$ and $NONAG$. Both stand-alone effects of inequality as seen through $GINI$ and $GINI^2$ and the effects that depend on the level of democracy are significant in conventional limits. As $DEMOC$ is a reverse measure of democracy, a positive coefficient points to autocratic regimes redistributing more through SOEs, with, however, the effect decreasing over higher levels of inequality. This enables us to arrive at a general conclusion in the light of Acemoglu and Robinson: whether measured by democracy or the SOE share in production, higher inequality is associated with higher redistribution, and this effect is non-linear. Our results additionally suggest that (as far as redistribution through the SOE sector is concerned) dictatorships are as responsive to majoritarian concerns as democracies: a conclusion in conformity with the anecdotal/historical evidence a limited selection of which we cited in our introduction.

**SOEs and Employment Protection.** Pagano and Volpin (2005) analyze the political determinants of investor and employment protection. They find that proportional (vs majoritarian) electoral systems, political ideology of the government, and origin of the legal system explain cross-country differences in em-

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43 Using the average democracy score as the measure of $DEMOC$ delivers insignificant results across different SOE measures. If inequality causes democracy in the Acemoglu-Johnson sense, then the insignificance of $DEMOC$ is understandable.

44 Alesina and Rodrik (1994) also conclude that “... even in a dictatorship, distributional issues affecting the majority of the population will influence policy outcomes.” Dutt and Mitra (2002) reach a similar conclusion in their empirical investigation of the political economy of trade policy.
ployment protection. Further, once the electoral systems and legal origins are controlled for, the political ideology of the government ceases to have explanatory power (see also Botero et al. 2004 for regulation of labor). As SOEs have long been argued to be instruments for the creation of secure employment, we include the Pagano-Volpin variables to our models to check for this effect. As shown in Table 9, inclusion of these variables in our models does not change our main results related to left-wing and unspecified-wing governments. The center-wing government effect becomes insignificant only when \( SOEGDP \) and \( NONAG \) are used.\(^{15} \)

4 Conclusion

The paper investigates a popular argument to explain the persistence of the SOE sector in many less-developed countries (as well as in transitional countries like Russia). In its broadest outline, the argument is that the SOE sector is used as a redistributive device and cannot be easily given up especially given the pains of other reforms that form a package of structural adjustment. The paper finds strong and robust empirical support for this hypothesis. Specifically, we test the two questions that generally come up in the political economy literature: (i) whether and to what extent the political ideology of government affects redistribution, and (ii) whether democracies are more likely to be responsive to popular pressures when it comes to redistribution. First, we do find strong evidence that non-right-wing governments are more prone to use the SOE sector as a redistributive device. This effect is particularly robust for left-wing governments as the result holds regardless of the dataset used (cross-sectional vs panel), different measures regarding political ideology and the role of SOEs in the economy, and several specifications of the econometric model. Further, this effect is found to be non-linear, pointing out that there is a limit to which governments can be engaged with redistributive activity. Second, we find that autocracies would be more likely to redistribute through SOEs than democracies, and this effect, too, is non-linear.

The next natural question, given the result obtained, is how to explain successful privatization experiments such as Argentina’s. To answer the question one can point out that factors that are not taken into account in the present paper drive the process of privatization. For example, Waterbury (1992) argues that this process is driven by fiscal crises of varying intensity coupled with inflation, reduced international credit-worthiness, and impediments to export promotion. We have abstracted from such considerations in this paper, which is left to future research.

\(^{15}\)Our results also show that the British legal system and in one case the German legal system are associated with higher SOE shares in the economy (with respect to the French legal system). This seems to contradict Pagano and Volpin (2005) (who use the OECD data), as they find that these legal systems are associated with lower employment protection. However, different models and different country compositions in the datasets can explain the differing findings.
References


