

# The State, Property Rights, and the Middle Class: Empirical Support for an Aristotelian Observation

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## ABSTRACT

For decades, economists argued that property rights emerge when commodities become scarce enough to ‘merit’ property rights for their protection and trade. More current scholarship, however, finds no historical support and no theoretical merit in this argument. Our research defends the competing argument that property rights emerge when governments grant and protect them to self sustain. Scarcity (or expectations of future scarcity) may be a necessary condition, but only government intervention is sufficient for the protection of property rights. In this paper, we revisit the Aristotelian observation that the well being of states depends on the extent to which their constitutions protect the welfare -- i.e. the property rights -- of their middle class. Here, we test whether the welfare of the middle class correlates with the sustainability, consolidation, and prosperity of the state; our empirical analysis indicates that it does.

## INTRODUCTION

Property rights are known to be a key to social organization and economic performance. Therefore, their establishment and preservation are of great interest. For decades, economic theory assumed that property rights emerge when a commodity becomes scarce enough to ‘merit’ property rights to protect and trade scarce commodities in the market (Alchain, 1961; Demsetz, 1967). As dissatisfaction arose with this assumption, considerable effort was invested in explaining the ‘spontaneous’ emergence of property rights using the logic of repeated games (Sugden, 1986; Taylor, 1987). According to this logic, in equilibrium, unconstrained players without the presence of any third, governmental, party, would settle on some self enforcing governance of property rights. Two main results in the late 1990’s challenged this argument. First, a series of results established that self enforcement is unlikely in most realistic environments (e.g. Calvert, 1995). Relatively insignificant increases in the number of agents involved, or moderate levels of future discounting, quickly erode any hope for even minimal realizations of self-enforcing property rights. A second series of results illustrated and formally proved that governments are actually rather robust and reliable enforcers of property rights. Under very general conditions, governments can be relied on to enforce property rights in large scale and societies should fare better with governments that protect property rights (Sened, 1997). This line of work has established a very simple and straightforward role for governments to play: protect the property rights of their constituents. Though government enforcement is expected to be inefficient, due to monopolistic power in the grant and protection of property rights and the derivative monopolistic pricing in the grant and enforcement of those rights, property rights should be under supplied and over priced as the taxes levied by government to provide their services as the sole protector of those rights are expected to exceed the efficient level (Sened, 1997). Governments are mostly motivated by distributive and redistributive rather than efficiency concerns (Knight, 1992). And yet, government involvement in the granting and protection of property rights seems a necessary and sufficient condition for markets to emerge, in

spite of the generic inefficiency associated with government's monopolistic and politically motivated protection of property rights (Levi, 1988; Sened, 1997).

One hypothesis that may be derived from this argument is that government may protect the property rights of the middle class as that class, under many circumstances, may be the most likely to yield high returns for the protection of their well being, both in tax revenues and political support. A first step towards the development of such an argument is to establish whether the protection of the property rights of the middle class is correlated with economic growth and social prosperity. Our data confirms this expectation. Thus, our work provides a theoretical foundation and interesting empirical support to Aristotle's (*Politics*) famous argument that the wealth of nations depends on the wealth and size of the middle class and the extent to which it is protected by sound political constitutions. We provide a theoretical explanation as to why this argument is so immediately and directly derived from simple principles of neo-classical economics. We also submit a rich empirical data analysis to support the argument.

### **THE WELL BEING OF THE MIDDLE CLASS AND THE WEALTH OF NATIONS**

The fact that the wealth of the middle class and its size are critical for sustainable economic growth is usually regarded as well known but has not received the appropriate attention in the literature. Certainly, the literature has linked the middle class with both democracy and economic growth. Modernization theorists (e.g. Lipset, 1960) have suggested that economic development encourages the empowerment of a democratically inclined middle class. Indeed, Pye (1990) argues that the collapse of communism in the former Eastern Bloc was a demonstration of modernization theory. However, much of the literature on income inequality and economic growth has focused on the negative effect that reducing income inequality may have on economic growth. This argument follows two main lines of reasoning.<sup>1</sup> The first states that greater equality may have a negative effect on growth through a negative impact on aggregate savings. If income is redistributed through transfers from those individuals capable of saving more to individuals with a lower propensity to save, in the aggregate, the level of savings will be lower, thereby decreasing the level of investment and economic growth (Kaldor, 1956). The second line of reasoning states that governments promote redistributive policies to favor the poor in order to alleviate political pressures through progressive taxes on the increment in the stock of wealth. These taxes, imposed at the margin, should affect the incentives for investment and translate to a negative effect on the rate of growth (e.g. Alesina and Rodrik, 1994).

Empirical studies, however, aimed at testing the effects of income inequalities on growth yields non-conclusive results at best. Rigorous recent studies are consistent with our results, presented below, and show quite consistently an inverted U shaped relationship between income inequality and economic growth. Most notably, Banerjee and Duflo (2005) find that the relationship between inequality and economic growth is non-linear and follows an inverted U-shaped function of lagged inequality. None of these recent studies advances a thematic theoretical argument to explain these results.

Part of the reason why transfer and savings arguments fail empirically may be the generic low levels of savings in modern economies that may have pulled the rug from under this argument. Here, however, we suggest a more generic, diminishing returns argument to explain the empirical findings: Excessive wealth in the hands of very few is likely to result in two types of major inefficiencies. First, a simple diminishing returns argument would suggest that those who accumulate immense sums of money would use investment strategies with quickly diminishing returns. Second, huge financial conglomerates that usually manage the financial

assets of institutions and multi-billionaires are likely to experience large x-inefficiencies more typically associated with the conduct of central governments but for the same reasons. Being huge administrative apparatuses, they tend to invest their capital and manage it as inefficiently as central governments. Recent figures on corporate earnings clearly indicate how wide spread this phenomenon is. Much attention has been directed recently to the excessive salaries of many of the corporate leaders who run these corporate conglomerations often with little or no success to show for their inflated salaries. The mismanagements and basic management failures of many of these major corporations has been widely discussed in the media in the context of the 2007-2011 economic recession. In addition, those at the top of the earning pyramid have every reason to be conservative in their investments. They have enough to last a lifetime and a reputation to defend. There is less incentive to get into high-risk investment once you have established yourself at the top of the pyramid of wealth.<sup>2</sup>

At the other end of the spectrum, transfers to the poor may be easy to justify normatively but are likely to confirm worries about the ineffectiveness of political transfers and the negative effect that such transfers may have on saving and other economic activities. With all likelihood, such transfers aid the poor in very basic survival at best and do not result in entrepreneurial investment in the economy. We note the reputed success of poverty alleviation and social security policies in various countries, including developing countries (e.g. Sandbrook et al, 2007). However, the developmental state characteristics of these countries were likely more powerful than the welfare state characteristics in their ability to promote prosperity, though both sets of characteristics are relevant for political consolidation. We also note, however, the excellent study of *The Samaritan's Dilemma*, (Gibson et al, 2005) that illustrates so effectively the rampant failure of philanthropic policies of poverty alleviation around the globe.

Due to the correlations between education and middle class income as well as other measures of well being that characterize any healthy middle class family, this strata of society is likely to use a fair amount of its free income to reinvest in its own economic development and, indirectly, in the development of the society as a whole. Given the fact that middle class investors usually depend on their savings and investments for the education of their children and for retirement and health related expenses and given the somewhat limited resources that each family in this group of society has at its disposal, this class of citizens is likely to manage its finances efficiently and invest wisely. This class of individuals usually possesses the information and skills to succeed in their efforts to invest wisely and protect their investments against different threats and risks.

Finally, a strong middle class should be able to affect political institutions so as to better protect its wealth and property rights to this wealth. Such institutions will in turn impact the security of more members of the society that, with a little bit of help from government and financial institutions, can join the middle class and further strengthen it. While perfectly consistent with the by now classic argument of Douglass C. North of how economic firms affect the evolution of political institutions, North (1990) overlooks the fact that strong segments in society can affect the evolution of political institutions not through the economic leverage they may control, but as private individual citizens through the political process. Indeed, the power resources approach (e.g. Korpi, 2006) argues that the middle class, motivated by the potential gains to be derived from collective action, will engage in potentially positive-sum conflicts with employers through political parties and labor unions.

An important means by which individuals may resist the predation of their governments is through the use of their political institutions. Monarchs, military juntas, presidents, and other

executives of the state tend to attempt to acquire and control as much of the resources from their societies as is feasible (Levi, 1988). In the absence of constraints on these actors, property rights tend to become less secure and the incentive to invest diminishes.

The empowerment of institutions outside of the executive branch forms a bulwark against predatory governance. A primary responsibility of a legislative branch, for instance, is to oversee the operations of the government and to hold the executive, and his or her subordinates, to account. Likewise, a critical function of an effective judicial branch is to permit individuals, and business entities, to receive an impartial adjudication of their complaints vis-à-vis their governments, as well as against others parties. In this way, these other branches of government encourage 'good governance' and the 'rule of law,' helping to move states' bureaucracies closer to the Weberian ideal of hierarchy, specialization, meritocracy, and rules-based operation – characteristics that have been linked to effective state intervention (e.g. Rueschemeyer and Evans, 1985). The legislature, especially, also helps to strengthen the state by improving policy outputs and by further integrating society into policymaking. Legislatures can provide superior *functional representation* (the provision of public goods and social services of interest to the public) due to legislators being far more accessible to the public than are executives. Additionally, legislators can be expected to better understand the concerns and needs of their constituents. Moreover, *descriptive representation* (the extent to which a political institution reflects the demographics of society) is superior within the legislature because legislators are usually chosen by their various communities. Lijphart and Rogowski (1991) contend that whatever descriptive representation exists within the executive branch may be perceived as mere token representation by officials who do not genuinely work for 'their' communities; estrangement between the executive and a significant segment of society may result. Hence, the demographic diversity of society can be better expressed within the legislative branch; and we expect better descriptive representation, *ceteris paribus*, to strengthen the state.

Given the foregoing conversation, our causal mechanism can be outline as follows. An emerging middle class will identify potential gains that can be achieved via collective action. For the purpose of structuring this collective action, the middle class will instigate the creation and/or strengthening of organizations and institutions. The middle class may create or strengthen civil society organizations, such as professional associations and labor unions. Further, the middle class may seek to create or strengthen explicitly political organizations, such as political parties. Lastly, the middle class may propose the creation or strengthening of state institutions that are designed to promote limited government and to thereby protect its property rights and welfare (Weingast, 1995); these may include: rights-respecting constitutions, impartial courts, representative legislatures, and 'Weberian' bureaucracies. A consolidating state will accept the creation and/or strengthening of these types of organizations and institutions. In order to successfully instigate the creation and/or strengthening of the above organizations and institutions, the middle class requires power, in terms of size and resources. Hence, our hypothesis:

*H1: As the size and strength of the middle class increases, state consolidation will increase.*

The middle class is motivated by potential material gain. However, some members of the wealthy and the poor also recognize such institution building as a positive-sum conflict; thus, they form allies of the middle class. The state is motivated by survival and by revenue generation. This is true whether we consider the state as a monolithic actor or as a disaggregated

set of actors. By accepting these middle class demands the state will enhance its political support and its tax revenues, by means of economic growth. Hence, the state furthers its consolidation by two methods: increased process legitimacy and increased performance legitimacy. The empowerment of state institutions that protect the property rights of the middle class, e.g. legislatures and courts, deepens the state, makes it more representative and responsive, and thereby increases the state's process legitimacy. Moreover, secure property rights will lead to a larger and more prosperous middle class, thereby increasing the state's performance legitimacy. Conversely, a state that does not accept and meaningfully implement these middle class demands will further feelings of economic insecurity, will underperform economically, and will lack representative and responsive institutions. Process and performance legitimacy will suffer; such a state will be viewed as predatory and will be non-consolidating.

### **AN OPERATIONAL, RATHER THAN THEORETICAL, DEFINITION OF THE MIDDLE CLASS**

A theoretical definition of the middle class is far beyond the scope of this paper. The much easier definition of the poverty line has been a subject of controversy for decades. It is relatively straightforward to argue that the lower bound of the membership in the middle class is the poverty line and by the same token, the upper bound is a (likely arbitrary) threshold of income or asset ownership (for further discussion of this strategy see Banerjee, Abhijit and Duflo, 2008). Such definitions suffer from the same shortcomings of contemporary definitions of the poverty line and others due to an upper bound that is likely to be as arbitrary as the lower bound. In this paper, we avoid this controversy by using a practical, albeit imperfect, proxy instead of a definition. It seems to us that the Gini coefficient is a good empirical proxy to the strength of the middle class and allows us to bypass the definitional controversy. It is of great interest to pursue a more theoretical approach to the definition of what constitutes membership in the middle class but it is way beyond the scope of our effort here. The Gini coefficient is clearly not a perfect measure of the size and strength of the middle class. But after giving it much thought, it seems the most likely candidate for the best viable proxy we could come up with. Thus, in the absence of a good theoretical definition, while others use as operational definition based on somewhat arbitrary cut points, we use the Gini coefficient as our operational definition of the middle class.

If our argument is correct, moderate levels of Gini Coefficient coupled with actual protection of the welfare of the middle class should be the main variables to look at when we try to explain economic growth and sustainable social success. Interestingly, however, our analysis shows a very interesting tension between the two. Again, the theoretical argument is very straightforward. A degree of inequality is necessary in any society to provide the entrepreneurial elements in society with enough incentives to develop the engines of any economy. However, every level of inequality introduces some level of tension into the very fragile fabrics of society. It is too early to establish what the right amount of inequality is to generate enough economic incentive for economic growth, but our analysis provides three important lessons on the subject. First, economic inequality begins to affect negatively the sustainability of nations at very low levels, way below the levels optimal for economic growth. Second, the benefit of economic inequality clearly follows the law of diminishing returns. At around 0.4 on the Gini coefficient, the benefits of inequality begin to wear off. At .5 they turn negative as we begin to slide down the right hand side of the inverted U shaped relationship. Finally, this leads us back to the main argument of our current project. High levels of inequality are clearly detrimental to economic

growth. In other words, to the extent that the Gini coefficient— albeit problematic — measures the size and contribution of the middle class to the overall economy, it is clear that high Gini coefficients provide an indirect indication of the weakness of the middle class.

In terms of measurement, a strong middle class with moderate excess capacity among the very rich and limited transfers to the poor should correlate with moderate Gini coefficients on the right hand of the equation and a thriving economic environment on the left side of the equation.

Why inverted U shape? We know that high Gini Coefficients are indication of a large class of poor and a small class of very rich. Moderate Gini Coefficients are indication of some redistribution but not too much of it. Low Gini coefficient indicate one of two situations.<sup>3</sup> Either everyone is very poor, or a sizable middle class with very few poor and very few rich. In other words, countries with high Gini Coefficients clearly have a small middle class. Countries with moderate Gini coefficients may have a sizable middle class (at least defining the middle class in relative terms). Very low values of the Gini coefficient indicate that either everyone is poor or a sizable portion of the population is in the middle class. In a large cross-section of heterogeneous nations, the likelihood of very low Gini coefficients representing a stronger middle class is lower than with moderate Gini coefficients where this correlation is likely to be high in all cases. Hence the inverted U shaped relationship.

Probably the most important lesson that our analysis provides is in highlighting the tension between income inequality as necessary for economic growth and the negative effect of this same income inequality on the viability of the state. The painful lesson is rather straightforward: Strong states can afford higher levels of inequality that further their economic achievements, and eventually their long term viability. The U.S. is an obvious example of that category. But those nations most in need of economic growth, can probably not afford the negative effect of policies that allow those inequalities to grow in the name of their beneficial effect on economic growth because those policies jeopardize the very viability of the political structure on which all economies and societies more generally, depend. China may be an example for this category of nations. The tentative solution for this obvious tension lies again in the strength of the middle class. This is the only segment in society that can be provided incentives to do better economically without immediately endangering the fabrics of society.

Acemoglu and Robinson (2005) suggest yet another link between inequality and governance. They view forms of government as arising from a fundamental conflict over the implications of forms of government for the distribution of resources in a society. Governments provide an aggregation mechanism for determining a tax rate with far reaching implications for both the type of institutions and their stability. Indeed, they write of “... an inverted-U-shaped relationship between inequality and democratization. Highly equal or highly unequal societies are unlikely to democratize. Rather, it is societies at intermediate levels of inequality in which we observe democratization ... having democratized, democracy is more likely to consolidate in more equal societies” (244). This consolidation is quite obviously related to political stability. Here, we provide important insight and further evidence to the Acemoglu and Robinson Hypothesis as stated above.

To summarize, we highlight a tension between the economic growth implications of inequality, on the one hand, and the political instability engendered by that same inequality, on the other. In the next section, we statistically assess and illustrate the validity and reliability of these claims.

## THE STATISTICAL MODEL

In recent years, statistical models using measures of formal institutional structures, such as veto players and other structural variables, have often given rise to contradictory inferences or conclusion. Consequently, we suggest that an analysis based solely, or even mostly, on formal institutions is unlikely to produce consistent and meaningful results; this is a failing of the ‘old institutionalism’ (i.e. constitutionalism). Institutions that aggregate preferences, for example, may yield different outcomes that depend on the distribution of preferences to be aggregated. Institutions are hardly monoliths.

We approach this problem in a novel way. First, we use the country experts based, *Polity IV* dataset (Marshall and Jaggers, 2002) as measures of formal institutions alongside measures of their function. As a measure of state consolidation we use the indicators of the *Failed States Index* (Fund for Peace, 2006), which is further described below. Most importantly, this index provides a wealth of proxies for protection of the middle class from predatory behavior of the elite. While imperfect, these variables clearly fared, in our statistical model, a lot better than variables constructed on the basis of formal characteristics of regimes and institutions. Furthermore, past studies indicate that there is no single set of magical institutions. The participation of country experts in compiling these data allows us to capture the operation, or lack thereof, of formal and informal institutions. Hence, this analysis proceeds within the paradigm of the ‘new institutionalism.’ Indeed, this multiplicity of quality institutions is a key motivation for our empirical analysis in the next section.

Subsequently, our dependent variables will initially number twelve; however, we later reduce these to one, as described below. The twelve dependent variables are taken from the *Failed States Index* (Fund for Peace, 2006) and are described below. The index is compiled using a proprietary Conflict Assessment Software Tool (CAST). CAST searches millions of documents each year; information that is pertinent to the index’s 12 indicators, and more than 100 sub-indicators, is identified, collected, and converted into country scores via various algorithms. The country scores are further verified and refined by experts’ quantitative and qualitative analyses.

Demographic pressure, identified as FSI 1 in Table 2, represents measures including: disease, pollution, food scarcity, malnutrition, and mortality. Refugees and internally displaced persons, FSI 2, represents measures including: displacement, refugee camps, and refugees/IDPs per capita. Group grievance, FSI 3, represents measures including: discrimination, powerlessness, and violence related to pluralism. Human flight and brain drain, FSI 4, represents measures including: migration per capita human capital, and emigration of educated people. Uneven economic development, FSI 5, represents measures including: urban-rural service distribution, access to improved services, and the slum population. Poverty and economic decline, FSI 6, represents measures including: government debt, unemployment, youth employment, GDP per capita, and GDP growth. State legitimacy, FSI 7, represents measures including: corruption, political participation, protests and demonstrations, and power struggles. Public services, FSI 8, represents measures including: education provision, water and sanitation, healthcare, infrastructure, and policing. Human rights and rule-of-law, FSI 9, represents measures including: political freedoms, civil liberties, political prisoners, torture, and executions. Security apparatus, FSI 10, represents measures including: rebel activity, military coups, small arms proliferation, bombings, and fatalities from conflict. Factionalized elites, FSI 11, represents measures including: power struggles, defectors, and flawed elections. External intervention, FSI 12, represents measures including: sanctions, foreign assistance, presence of peacekeepers, and

the presence of UN missions. High FSI values indicate state failure; thus, independent variables' negative coefficients signal where they are aiding the consolidation of the state.

Our independent variables number nine, allowing us to control for a variety of potential determinants of state consolidation. First, our key variable of interest, the size and strength of the middle class, is operationalized with the Gini coefficient (World Institute for Development Economics Research, 2005), as explained in the prior section. Second, executive constraints, measures 'checks' or other institutional constraints on presidents and prime ministers; it is operationalized with the XCONST variable (Marshall and Jaggers, 2002). Third, urban population, represents the percentage of the national population which is identified as living in an urban area (World Bank, 2005). Fourth, rentier states, are those states identified as deriving >50% of their government revenue from minerals or energy; this was determined by inspecting the countries' statistical appendices produced by the International Monetary Fund. Fifth, trade, measures foreign trade as a percentage of GDP (World Bank, 2005). Sixth, ethnolinguistic fractionalization, measures socio-cultural heterogeneity (Roeder, 2001). Seventh, party fractionalization, represents the number and relative size of the polities' political parties; this is operationalized with the FRAC variable (Beck et al, 2001). To assess the robustness of our findings, two additional independent variables are included. The eighth, economic freedom, is operationalized with the IEF variable (Beach and Kane, 2008); and the ninth, the prevalence of corruption, is operationalized with the 'violations' variable (Fisman and Miguel, 2006).

Our empirical strategy comes in four parts. First, we provide a loose illustration of the relationship between income inequality and economic growth. Second, we compile evidence concerning the relationship between income inequality and the principal component of a host of indicators of failed states. Third, we turn to models of the individual components of state failure to demonstrate general patterns in the determinants of state failure. Fourth, we combine the results from the regression models of the individual components to argue that the most appropriate empirical strategy should extract the principal component of the multiple indicators of state failure and explain variation in this broader measure of state failure. We engage in this last step due to the nature of our dependent variables. The twelve FSI variables are latent variables; further, some of the observed indicators are continuous while some are ordinal. Most models are inappropriate when the observed indicators comprise such a combination of continuous and ordinal data; indeed, they will produce falsely precise, less precise, and/or biased estimates. The Markov Chain Monte Carlo model presented below is the most appropriate for our multivariate analysis with combined continuous and ordinal data (Quinn, 2004).

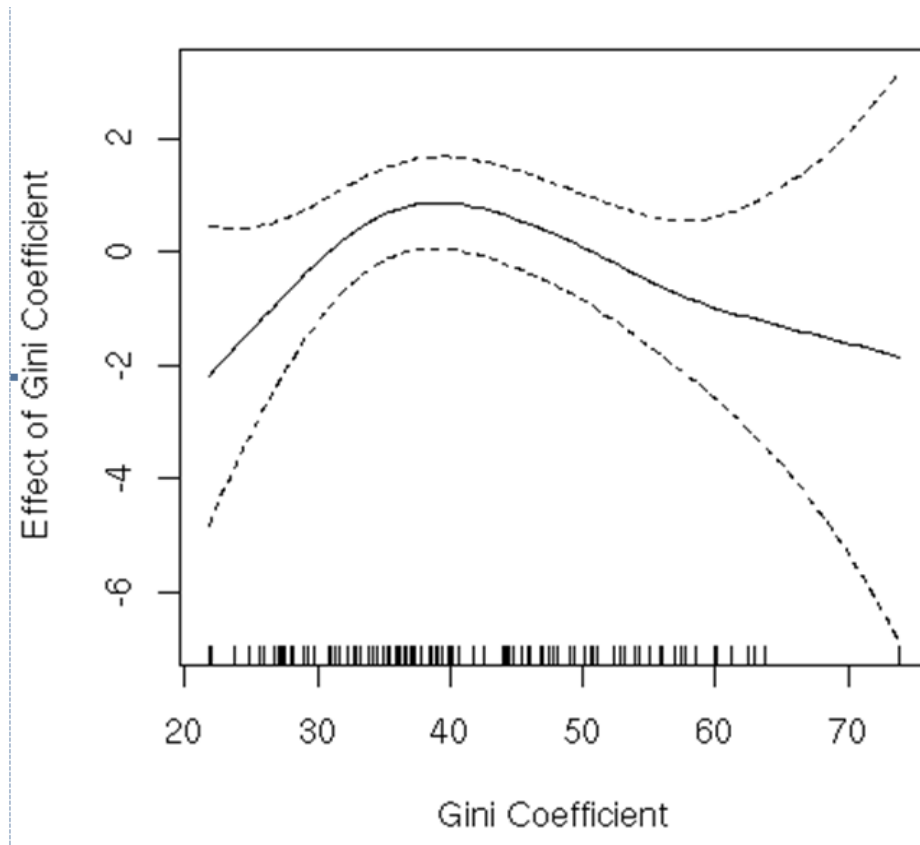
## **SOME BIG PICTURE RESULTS**

First, we demonstrate the relationship between inequality and growth. As mentioned before, at the lowest levels of inequality, increases in inequality improve a country's growth rate (or have less negative effects), while there is an inflection point (roughly at the value of inequality present in the United States). Because this relationship has been investigated in significant detail elsewhere, we simply provide face validity for the fact that it holds in these data as well. Our method for doing this utilizes standard linear regression techniques combined with local-regression smoothing on income inequality. We specify a model identical to our regression model of the elements of state failure in the following section, though these results are only meant to showcase the influences on per capita economic growth. As Figure 1 showcases, there appears to be a level of inequality that is optimal for growth rates. Higher or lower levels of



inequality seem less beneficial in as much as they seem to indicate somewhat reduced levels of the incentive needed in any society to generate economic growth rates.<sup>4</sup>

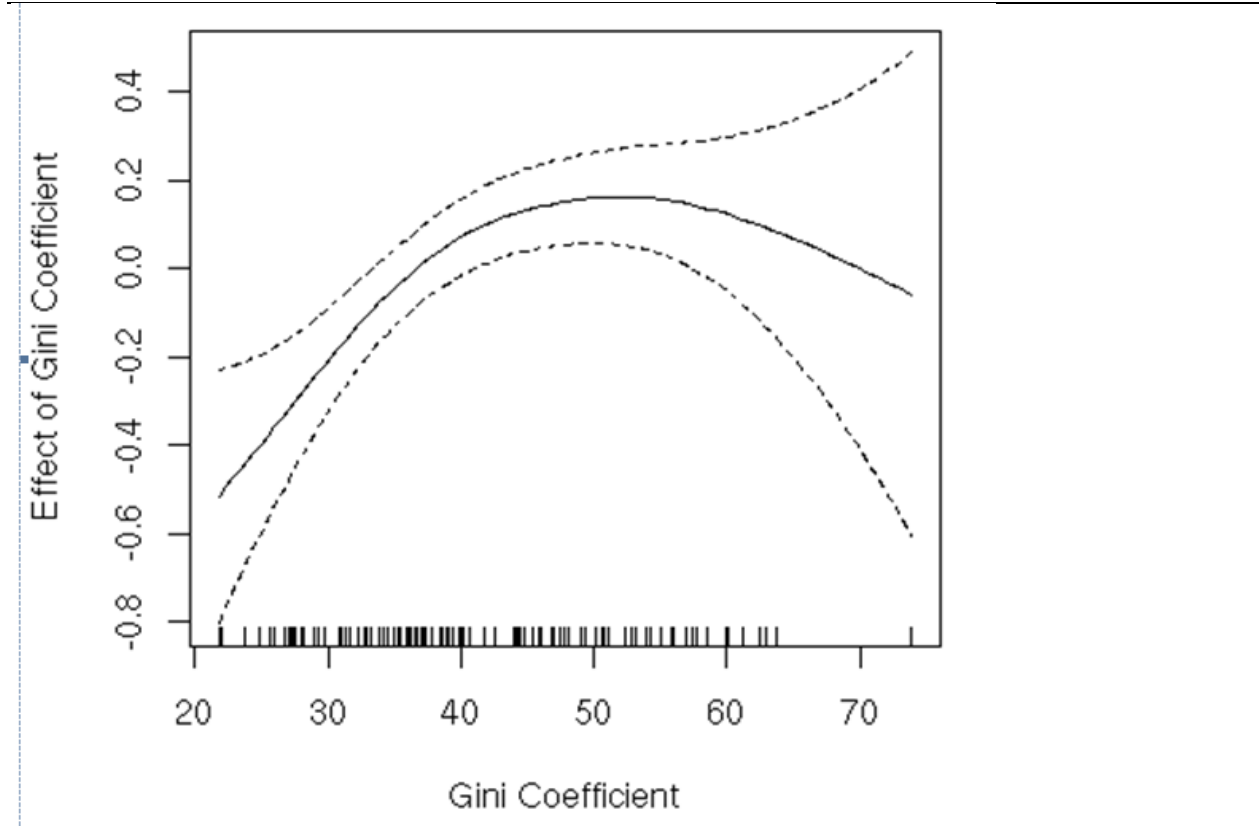
**FIGURE 1. GDP GROWTH AND INCOME INEQUALITY**



Sources: World Bank (2005) and World Institute for Development Economics Research (2005).

As the second part of the empirical demonstration, Figure 2 shows the downside of the same story. Following the growing awareness of the phenomenon illustrated in Figure 1, many countries allowed or fostered, in the last couple of decades, higher levels of inequality to their social and economic systems by reducing barriers to competition and the magnitude of transfers and protection to the middle class and the poor. As inequality grows, the fabrics of society weaken and run an increasing risk of state failure.<sup>5</sup> Russia and Argentina are two, among many, examples of this largely ignored phenomenon. More recently, the so-called ‘Arab Spring’ is a blunt illustration, if one was needed, for a series of state failures due to increased inequality without the necessary middle class or institutional buffers needed to allow the consequent economic growth to be sustainable.

**FIGURE 2. STATE FAILURE AND INCOME INEQUALITY**



Sources: Fund for Peace (2006) and World Institute for Development Economics Research (2005).

### **THE EMPIRICAL STRATEGY FOR THE REMAINING EVIDENCE**

The bulk of the empirical analysis comes in two parts. First, we rely on traditional evidence obtained from a host of indicators of state failure by relying on linear regression models. Though we are hesitant to make too much of any particular regression result, the evidence we obtain leads us toward a unifying empirical approach. The two important pieces of information to glean from the individual regressions are (i) the relative consistency of relationships between covariates and the various elements of state failure and (ii) the amount of residual correlation among components of state failure even after controlling for an array of potential determinants including constraints on the executive, the degree of urbanization, rentier states, the level of trade openness, ethnolinguistic<sup>6</sup> and political fractionalization, and the level of income inequality.

The unification is premised on extracting a principal component of state failure ( $\theta(i)$ ) for each country  $i$  using a regression model for combined continuous and ordered factors. The basic model comes in two parts (one for the ordered data, the other for the continuous data) playing off of two basic regression equations. For each of the  $j$  ordered indicators, we estimate a latent variable regression of the form,

$$Y^* = \alpha(j) + \beta(j) * \theta(i) + \varepsilon(i,j)$$

With  $y$  linked to  $Y^*$  by a series of cut points defining differentiation in the density of the latent variable ( $y^*$ ) that correspond to the probabilities of discrete outcomes. For a  $k$  category ordered variable, there are  $k-1$  cut points. The probability that  $Y(i) = k$  is simply

$$\Pr(Y(i,j)=k) = F(\alpha(j,k) + \beta(j) * \theta(i)) - F(\alpha(j,k-1) + \beta(j) * \theta(i))$$

such that  $\alpha(i,0)$  equals negative infinity for all  $j$  and  $\alpha(j,k)$  equals infinity for all  $i$ .<sup>7</sup> This ensures that the probability that the discrete ordered categories of  $Y(i)$  can be sorted with an appropriate probability distribution. In our case, the cumulative distribution of interest is assumed to be a standard normal distribution.

The continuous variables (call them  $Y$ ) enter the determination of the latent factor in a similar way (after a  $z$ -transform to standard normal) so that

$$Y = \alpha + \beta * \theta(i) + \varepsilon$$

The technique for extracting the latent factor is a Bayesian Markov Chain Monte Carlo algorithm developed by Quinn (2004). The latent factor is assumed to follow a standard normal distribution and can be identified with a simple directional prior on one of the inputs (for reasons of invariance that we detail in the analysis sections). From the factor analysis, one can glean important information. Of particular interest, comparing the parameters  $\beta(j)$  across equations provides information about how much change in the  $j^{\text{th}}$  ordered indicator is caused by a unit change in  $\theta$ . Furthermore, such comparisons are rendered valid because the underlying factor and the probability distribution that defines the ordered scale are equivalent across equations so the metrics being compared are identical.

Our inferential strategy, given measures of the latent factor, is simply to draw 1000 independent draws from the posterior density of  $\theta(i)$  and to use these as dependent variables in a linear regression model. We then perform inference on the distribution of regression coefficients and  $t$ -statistics to incorporate the fact that the dependent variable is measured with some uncertainty as it is, after all, only an estimate. We summarize the relationship in Figure 1 with a quadratic, though the formal gam prediction obtained using weighted least squares<sup>8</sup> suggests that a fraction of an additional degree of freedom is required.

We have adopted this flexible strategy for analyzing the determinants of a novel index tracking the key elements of state failure. Table 1 lists the indicators of the Failed States Index, which were described above.

The remaining empirical analysis comes in two parts. First, we present individual regression results derived from Zellner's method of seemingly unrelated regressions. The SUR method extends standard ordinary least squares to the case where the stochastic component is likely to be correlated across equations. Because we are fitting the same model to a host of divergent indicators, it is likely that there is a varying degree of residual correlation across indicators. The consequence of residual correlation is that the ordinary least squares estimates of residual variance are likely to be in error. Indeed, as we will see shortly, this is the case. However, diagnostics indicate that residual correlation is not a threat to valid inference employing standard diagnostic tests.

## TABLE 1. THE ELEMENTS OF STATE FAILURE

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- Mounting Demographic Pressures
  - Massive Movement of Refugees or Internally Displaced Persons creating Complex Humanitarian Emergencies
  - Legacy of Vengeance-Seeking Group Grievance
  - Chronic and Sustained Human Flight
  - Uneven Economic Development along Group Lines
  - Sharp and/or Severe Economic Decline
  - Criminalization and/or Delegitimization of the State
  - Progressive Deterioration of Public Services
  - Suspension or Arbitrary Application of the Rule of Law and Widespread Violation of Human Rights
  - Security Apparatus Operates as a "State Within a State"
  - Rise of Factionalized Elites
  - Intervention of Other States or External Political Actors
  - or Group Paranoia
  - Chronic and Sustained Human Flight
- 

Source: Fund for Peace (2006).

## RESULTS

We examine the overall fit of the models before turning to specific effects of interest. As a whole, the models explain between 35% and 68% of the variance in the components of the failed state index. In each case, the model chi-square statistics are statistically differentiable from zero to the level of computer precision and the estimates generally conform to their directional expectations.

Turning to specifics, though the effect of constraints on executives cannot be distinguished from zero in all models, executive constraints generally decrease the value of failed state components where positive values indicate weaker states. This implies that constraints on the executive decrease the likelihood of components of state failure. Implementing an omnibus test that the effect is zero in all equations yields a joint Wald statistic of 64 (12 d.f.) indicating that constraints on the executive are related to at least some of the components of state failure and in the expected direction. Demographic pressures, vengeance-seeking group grievances, and human flight do not appear to depend much on constraints on the executive. On the other hand, the creation of complex humanitarian emergencies, uneven economic development among groups, criminalization/delegitimization of the state, deterioration of public services, sharp economic declines, violations of the rule of law, police states, fractionalized elites, and intervention of political actors external to the society are statistically less likely in the presence of constrained executives. Comparing magnitudes, because the scales on both sides of the equation are identical, executive constraints have the greatest marginal effect on the security apparatus operating a "state within the state," criminalization and delegitimization of the state, suspension of the rule of law, and the rise of a factionalized elite. Of central importance to the claim that these indicators are all tapping something similar, it is primarily the magnitude of the slope and not variation in standard errors that influences significance levels.

**TABLE 2. ZELLNER'S METHOD OF SEEMINGLY UNRELATED REGRESSIONS**

	<i>FSI 1</i>	<i>FSI 2</i>	<i>FSI 3</i>	<i>FSI 4</i>	<i>FSI 5</i>	<i>FSI 6</i>	<i>FSI 7</i>	<i>FSI 8</i>	<i>FSI 9</i>	<i>FSI 10</i>	<i>FSI 11</i>	<i>FSI 12</i>
	<i>b/se</i>	<i>b/se</i>	<i>b/se</i>	<i>b/se</i>	<i>b/se</i>	<i>b/se</i>	<i>b/se</i>	<i>b/se</i>	<i>b/se</i>	<i>b/se</i>	<i>b/se</i>	<i>b/se</i>
Executive Constraints	-0.038 0.073	0.308** 0.119	-0.199 0.103	-0.087 0.101	-0.174* 0.082	0.300*** 0.087	0.448*** 0.089	-0.249** 0.086	0.436*** 0.083	0.476*** 0.107	0.481*** 0.112	-0.272** 0.093
Urban Population	0.054*** 0.006	-0.022* 0.01	0.034*** 0.009	0.048*** 0.008	0.028*** 0.007	0.051*** 0.007	0.047*** 0.007	0.047*** 0.007	0.036*** 0.007	0.037*** 0.009	0.040*** 0.009	0.029*** 0.008
Rentier States	0.818* 0.349	0.819 0.57	0.418 0.49	0.259 0.481	0.319 0.393	-0.377 0.417	0.871* 0.426	0.938* 0.41	0.681 0.396	1.041* 0.511	1.231* 0.535	0.271 0.443
Trade (% of GDP)	-0.008* 0.003	-0.005 0.005	-0.009* 0.004	-0.008 0.004	-0.004 0.003	-0.004 0.004	-0.002 0.004	-0.002 0.004	-0.003 0.003	-0.006 0.004	-0.004 0.005	0.001 0.004
Ethnolinguistic	0 1.425	1.425 0.274	0.274 -0.353	-0.353 0.866	0.866 0.087	0.087 -0.422	-0.422 0.635	0.635 0.057	0.057 0.923	0.923 0.593	0.593 0.529	0.529
Fractionalization Party	0.464 0.971	0.758 0.615	0.652 1.519*	0.64 1.37	0.523 0.458	0.555 0.854	0.568 1.044	0.546 0.13	0.527 0.258	0.68 0.51	0.712 1.604*	0.589 0.54
Fractionalization Gini	0.514 0.353*** 0.065	0.839 0.192 0.107	0.722 0.291** 0.092	0.708 0.325*** 0.09	0.579 0.222** 0.074	0.614 0.216** 0.078	0.628 0.507*** 0.08	0.604 0.326*** 0.077	0.583 0.354*** 0.074	0.752 0.331*** 0.096	0.787 0.454*** 0.1	0.652 0.299*** 0.083
Gini (squared)	0.003*** 0.001	-0.002 0.001	-0.003** 0.001	-0.003** 0.001	-0.002* 0.001	-0.002* 0.001	0.005*** 0.001	0.003*** 0.001	0.004*** 0.001	-0.003** 0.001	0.005*** 0.001	-0.003** 0.001
Constant	1.261 1.484	2.674 2.422	1.973 2.085	0.929 2.043	3.178 1.672	4.287* 1.773	-0.934 1.813	1.182 1.744	1.8 1.682	1.708 2.172	-0.694 2.273	0.767 1.882
r2	0.673	0.362	0.401	0.479	0.553	0.622	0.705	0.698	0.675	0.621	0.588	0.49
chi2	209.729	57.982	68.409	93.729	126.063	167.759	243.201	235.238	211.911	167.132	145.291	97.978
P	0	0	0	0	0	0	0	0	0	0	0	0

\* p<0.05, \*\* p<0.01, \*\*\* p<0.001

Sources: Beck et al (2001), Marshall and Jagers (2002), Roeder (2001), World Bank (2005) and World Institute for Development Economics Research (2005).

On the development side, countries with higher levels of urbanization are uniformly less likely to score high on any failed state component. With t-statistics that range between 4 and 10, there is strong evidence that countries with greater levels of urbanization are less susceptible to state failure.<sup>9</sup> Rentier states, defined here as states receiving 50% or more of their revenue from the exploitation of a mineral or fossil fuel, are not easy to differentiate from other states, but they are more likely to score highly on some elements of state failure. Furthermore, the precise patterns are interesting. Rentier states are more likely to be subject to mounting demographic pressures, criminalization/delegitimization of the state, deterioration of public services, police states, and factionalized elites. The remaining indicators fail to showcase effects that reach conventional levels of statistical significance. In substantive terms, fractionalized elites are most influenced by rentier state status.

Trade openness is seldom statistically related to elements of state failure.<sup>10</sup> Though vengeance seeking groups and demographic pressures are negatively associated with the level of trade openness, in general, trade flows are weakly related to elements of state failure. Though the signs across equations are almost all negative, there are only two cases where the magnitude is sufficiently large to reject the hypothesis of no effect.

The same tends to be true of ethnolinguistic fractionalization (ELF). ELF is never statistically differentiable at conventional levels. That said, the joint hypothesis test of a zero null across equations can be statistically differentiated from zero at the .01 level of statistical significance, but the individual effects are always zero. Ethnolinguistic fractionalization is weakly related to state failure in the abstract, but not obviously driving any particular element of state failure.

Referencing political fractionalization measured by party fractionalization within the legislature, there are a few strong statistical relationships and the joint hypothesis that political fragmentation is unrelated to state failure can be rejected at conventional levels of statistical significance. Vengeance-seeking group grievances and a factionalized elite are statistically associated with political fractionalization. There is some evidence that failed states are more likely in the presence of political fragmentation. It is likely the case that party fractionalization matters with some classes of states but not with other classes. In some models, not reported, the detrimental effect of fractionalization becomes more pronounced when we control for the agricultural sector's share of the economy. In more rural and agrarian societies party fractionalization may be indicative of ethno-regional segmentation. Whereas, in more advanced economies fractionalization may be indicative of a multiplicity of interests. In the former, the sustainability of the political system may be threatened; in the latter, moderate policy output and the protection of various interests may result.

We investigate income inequality using both the Gini coefficient and its square.<sup>11</sup> Consistently, across all equations with the exception of complex humanitarian emergencies, Ginis increase and the likelihood of state failure also increases, while the square term mitigates the effect at higher levels of the Gini. These effects are strongest for criminalization of the state and the rise of a factionalized elite, but in all cases, a similar pattern emerges. Income inequality makes state failure more likely to a point, but the relationship has an inflection point that depends on the particular component of failed states. There is a robust inverse U-shaped relationship between the likelihood of state failure and the level of income inequality, measured by the Gini coefficients.

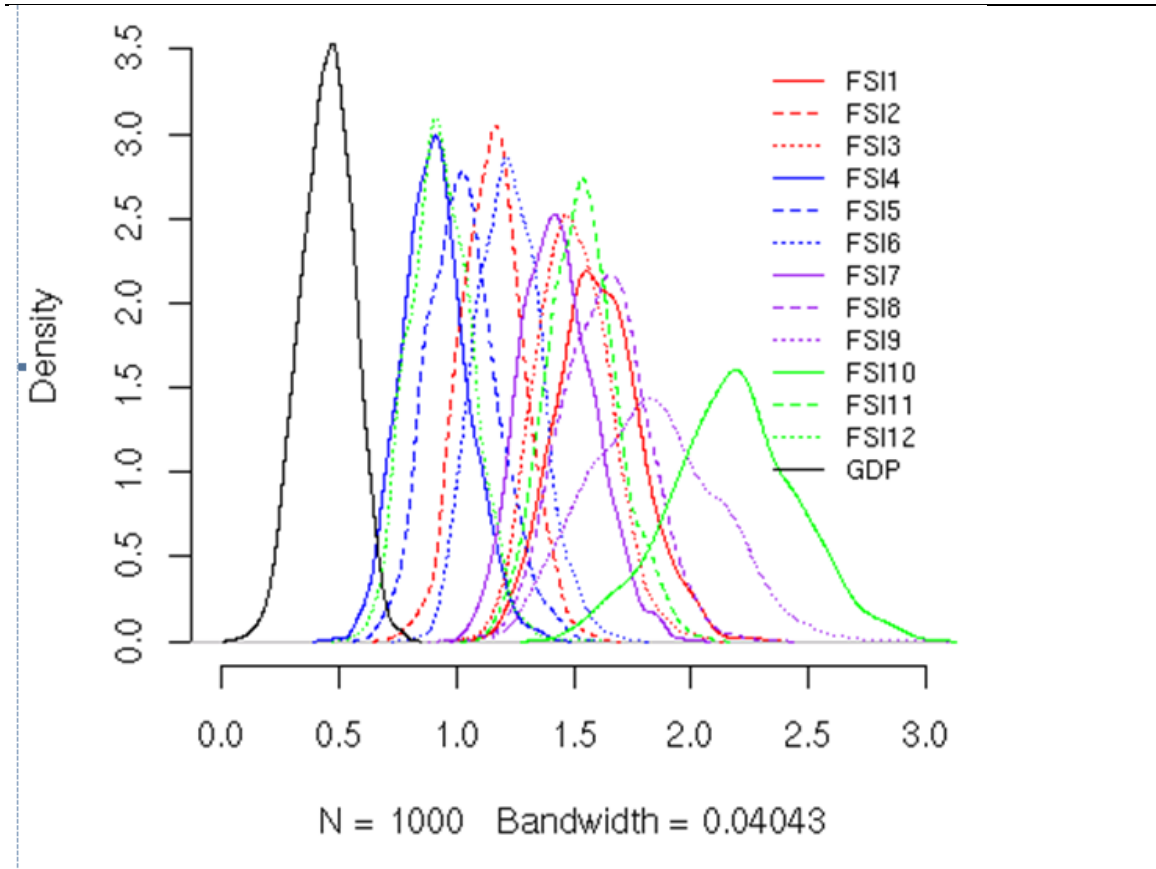
The Table following the regression results reports the residual correlations from the SUR estimates. Our choice of Zellner's SUR estimator ultimately rests on convenience. Because the matrix of regressors is the same without regard to the equation, the BLUE estimator is an OLS estimator equation-by-equation. The advantage of the SUR system is simply the automation of calculating the correlation matrix of the residuals. A convenient feature of equivalence is that we can utilize simple equation by equation diagnostics to assess the quality of inference.

We rely on a few tests to justify t inference. First, we employ White's test for general heteroscedasticity, as homoscedasticity is required for the OLS estimator of the variance of the regression coefficients to be valid (in the BLUE sense). Second, we employ a test based on the third and fourth moments of the residuals to rule out skewness and kurtosis of the residual vectors to justify normality and, by extension, chi square inference. In cases where we find evidence sufficient to reject the null hypothesis of constant error variances, we have examined White's (1980) robust covariance matrix and utilized this variance/covariance matrix to validate inference. The results are strengthened by relying on the robust covariance matrix. With departures from normality, there is little that can be done, though we note that there are only two such departures and they may only work against our central claims to the extent that they accompany statistically insignificant findings on our variables of interest.

The omnibus Breusch-Pagan test of independence yields a chi-square statistic of 1701 with 66 degrees of freedom, statistically significant to the level of computer precision. This implies that there are clear remaining correlations among the residuals net of the model, this despite the reasonable fit of the models. We point to a few patterns in these correlations before examining the interrelations among the indicators in a more systematic fashion. The strongest residual correlations involves the criminalization of the state, suspension of rule of law, and police state. Others are more moderate though all showcase significant residual correlations. In face of the considerable amount of shared variation, we turn to an alternative modeling strategy based upon the extraction of a common variance factor to create a composite measure that combines common information about the prospect of state failure.

The factor analysis is constructed by relying on an estimator presented by Quinn (2004) and made publicly available in software by Martin and Quinn (2007). The essence of the procedure is a mixed factor analytic model that combines ordered and interval-scale data into a unified factor analytic routine.<sup>12</sup> In basic terms, we have a series of ordered and continuous factors that are affine linear functions of some latent factor that is assumed to be normally distributed with mean zero and variance one. To achieve identification, we simply assume that the first component of FSI is positively related to a single underlying factor.<sup>13</sup> We are not forced to identify the minimum and maximum or any other relation and diagnostics suggest that posterior convergence has been achieved in considerably fewer iterations than the 500,000 that we allow for the Markov chain to burn-in.<sup>14</sup> We first describe the results of the factor analysis and pay particular attention to the relationship between the elements of state failure and the level of societal development.

**FIGURE 3. DISCRIMINATION PARAMETERS**

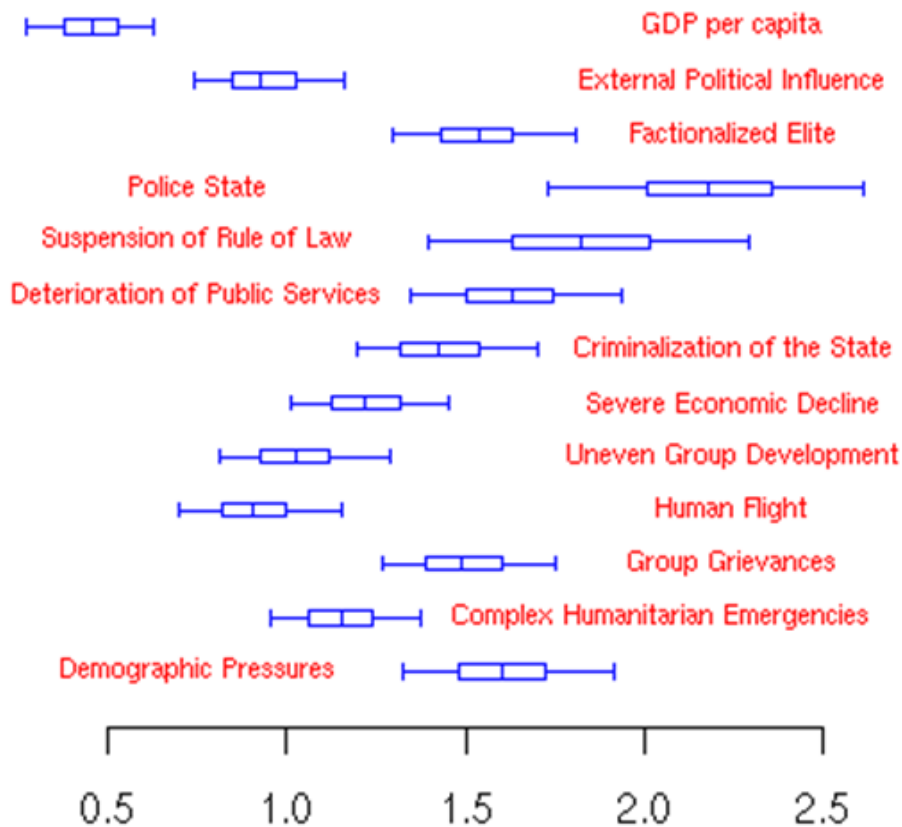


Sources: World Bank (2005) and World Institute for Development Economics Research (2005).

To summarize the results of the factor analysis before turning to models of the estimated factors score, we examine Figures 3 and 4. Figure 3 presents density plots of 1000 posterior draws for each of the discrimination parameters (regression parameters relating the latent factor to the observed outcomes). The x-axis is the regression coefficient metric while the y-axis simply measures density. Two points are worthy of note. First, the level of development, proxied by per capita (PPP) GDP - the solid black density on the far left - is strongly related to but not the primary determinant of the first common factor to the state failure index. In fact, it has almost no overlap with the other densities that are all larger in absolute terms. Second, not all individual FSI components are equally related to the composite factor. Though most of the parameter densities have considerable overlap, the solid blue - chronic and sustained human flight - and the dotted green - intervention of external political actors - densities have very little of the parameter space in common with the solid green - suspension of the rule of law/repression - and dotted purple - police state - densities and the latter are clearly larger. In more substantive terms, variation in the latent factor causes greater variation in observed levels of things like the existence of elements of a police state and suspension of the rule of law than it does for things like human flight and external political intervention.<sup>15</sup> We now explore the ordering of these inputs in determining the latent factor employing a box plot in Figure 4.



**FIGURE 4. DISCRIMINATION PARAMETERS**



Sources: World Bank (2005) and World Institute for Development Economics Research (2005).

Figure 4 displays box plots derived from the 90% credible range of the discrimination parameters.<sup>16</sup> The x-axis describes the magnitude of the discrimination parameters while the elements of the Failed State Index are given brief descriptions next to the corresponding boxplots. The points made in the previous paragraph are amplified by this data summary, GDP per capita is clearly, but most weakly, related to variation in the latent factor. Of the elements of the Failed State Index, once again we find that human flight and external political influence are the weakest. Of middling impact, we find uneven group development, then complex humanitarian emergencies and severe economic decline. Criminalization of the state, demographic pressures, a factionalized elite, the deterioration of public services, and group grievances form the next cluster of relations; these can be differentiated from the weakest factor loadings, but overlap considerably with the two strongest Failed State components: suspension of the rule of law and the existence of a security apparatus that operates as a “state within a state”. It is clear that the various elements of a broader Failed State Index are differently related to the principal common factor. To conclude our analysis, we turn to the determinants of this common factor employing a linear regression model.

Our inferential strategy must confront the fact that we have uncertainty about the true value of this factor for any given state. Thus, our approach is to take 1000 draws from the posterior density of each state's factor score and estimate 1000 linear regressions using the estimates and their standard errors to form a sampling distribution of t-statistics.<sup>17</sup> We present these results in Table 3.

**TABLE 3. REGRESSION RESULTS BASED ON 1000 POSTERIOR FACTOR SCORES**

Variable	b		t-statistics	
Name	[95% C. I.]		[95% C. I.]	
Executive	-0.123		-3.805	
Constraints	-0.163	-0.084	-4.973	-2.467
Urban	-0.014		-5.346	
Population	-0.019	-0.011	-6.775	-3.939
Rentier	0.192		1.215	
States	0.028	0.366	0.179	2.376
Trade	-0.003		-2.401	
(% of GDP)	-0.005	-0.002	-3.454	-1.141
Ethnolinguistic	0.15		0.723	
Fractionalization	-0.083	0.404	-0.399	1.898
Party	0.316		1.34	
Fractionalization	0.099	0.55	0.412	2.418
Gini	0.1		3.348	
	0.067	0.129	2.199	4.346
Gini (squared)	-0.001		-2.958	
	-0.001	-0.001	-3.992	-1.863
Constant	-1.159		-1.716	
	-1.851	-0.502	-2.745	-0.728

Sources: Beck et al (2001), Marshall and Jagers (2002), Roeder (2001), World Bank (2005) and World Institute for Development Economics Research (2005).

Table 3 presents two sets of estimates. The first numerical column presents the 95% quantiles of the regression coefficients from 1000 draws of the factor scores for each nation for which data exist; the second numerical column presents associated t-statistics for each of the 1000 regressions. As the Table makes clear, the results are similar to those we obtained with the SUR system. For example, constraints on the executive always have a negative impact on latent state failure and the associated 95% range is always greater, in absolute value, than the t critical value at the 0.01 level (2.37). Executive constraints robustly discourage state failure. A similar finding emerges with the size of the urban population. The 95% interval of t-statistics has a lower bound of -3.94; there is considerable evidence that larger urban populations are present in states less likely to fail. Rentier states are only weakly correlated with the principal component of state failure. While the regression coefficient is always greater than zero implying that rentier states are more likely to fail, the bounds on the t-statistics suggest that the standard errors of these effects are usually quite large. With regard to trade openness, the estimated effect is always negative and the median of the sampling distribution of t-statistics exceeds the .01 level critical value. At the same time, there is sufficient mass

below this critical value to cast some doubt on the robustness of the relationship. Elements of fractionalization result in similar if not weaker findings. The median t-statistic lies below standard thresholds of statistical significance though there are draws of the primary component of failing states that would allow a rejection of the hypothesis of no effect.

Lastly, and most robustly, the Gini coefficient yields a positive relationship with the principal component of failing states and the associated t-statistics are always greater than two. Consistent with the previous patterns, the square of the Gini coefficient maps to state failure negatively suggesting that the net effect of the Gini coefficient is to increase the scores on the principal component of failing states, but to do so at a decreasing rate with an inflection point that will become clear shortly.

*In short, we recapture the robust inverse U relationship between income inequality and the likelihood of state failure. We plot this result in Figure 2.* The x-axis maps the in-sample range of Gini coefficients (20 to 75) while the y-axis demonstrates something akin to the factor analytic scale (normal, mean zero and variance one). Because of the factor analytic basis in a standard normal variable, we can interpret the effects in standard deviations, though the y-axis is, in some sense, arbitrary. Figure 2 makes clear that, as income inequality increases, states first experience an increasing likelihood of the components of state failure, but the relationship then inflects about 50. With these results in mind, we can safely conclude that constraints on the executive and urbanization clearly reduce the essential elements of state failure, but of utmost importance income inequality can both increase and decrease the likelihood of state failure, as highlighted by Figure 2.

To further assess the robustness of these claims, we have undertaken a variety of robustness checks. For example, it has been suggested that the security of property rights, corruption, and similar factors are likely to mitigate the relationships that we have presented. Tables 4 and 5 present results that fail to falsify the central results regarding income inequality and the likelihood of state failure, in the aggregate. For example, to measure general economic freedoms, we have utilized the same factor analytic techniques that we used to derive the common element to the indicators that comprise the Failed State Index. Included among the measures in the Index of Economic Freedoms are measures of business freedom, trade freedom, fiscal freedom, government size, monetary freedom, investment freedom, financial freedom, property rights, freedom from corruption, and labor freedom (Beach and Kane, 2008; ch. 4).

For example, examining Table 4, we find that the effects of Executive Constraints and the size of the urban population are, to a degree, mitigated, but given that the results reflect draws from the posterior density of two common factors, the fact that the 95% credible intervals of the effects never cross zero gives us considerable faith that the general arguments hold up in the face of more rigorous statistical tests.<sup>18</sup> Though the effects are attenuated to a notable degree, the evidence still supports our general claims. Indeed, perhaps the most impressive piece of evidence is that, for both Executive Constraints and the urban population, the median t-statistic is considerably greater than one standard deviation away from zero.

**TABLE 4. REGRESSION RESULTS BASED ON 1000 POSTERIOR FACTOR SCORES (SOME CONTROLLING FOR THE PRINCIPAL COMPONENT OF ECONOMIC FREEDOM)**

	beta			t-stat		
	2.50%	50%	97.50%	2.50%	50%	97.50%
Exec. Const.	-0.1073	-0.0484	-0.0003	-2.8165	-1.3159	-0.0062
Urban Pop.	-0.0122	-0.0076	-0.0033	-3.6101	-2.2899	-0.9882
Rentier	-0.1351	0.087	0.3266	-0.7236	0.4881	1.7687
Trade	-0.0046	-0.0028	-0.0007	-2.8833	-1.7628	-0.4124
ELF	0.0698	0.3609	0.6138	0.3185	1.5367	2.5543
Party Frac.	-0.0337	0.2614	0.5333	-0.1299	0.976	2.0931
Gini	0.0262	0.0628	0.0983	0.7158	1.7646	2.7225
Gini-sq	-0.0009	-0.0005	-0.0001	-2.29	-1.3862	-0.3372
IEF	-0.5124	-0.3369	-0.1653	-5.8257	-3.8148	-1.8564
Intercept	-2.0326	-1.3006	-0.5082	-2.5491	-1.6738	-0.6474

Sources: Beck et al (2001), Marshall and Jagers (2002), Roeder (2001), World Bank (2005) and World Institute for Development Economics Research (2005).

Turning to the effect of income inequality, we uncover the same pattern as before. Though the individual terms are diminished in magnitude, the same functional form continues to describe the relationship and the statistical evidence continues to allow us to reject the hypothesis of no effect for both the Gini coefficient and the square of the Gini coefficient. Moreover, we have additional confidence derived from the fact that both parameters do not contain zero even in the tails of their 95% credible intervals.

**TABLE 5. REGRESSION RESULTS BASED ON 1000 POSTERIOR FACTOR SCORES (CONTROLLING FOR CORRUPTION USING THE INSTRUMENT OF MIGUEL AND FISMAN AND THE PRINCIPAL COMPONENT OF ECONOMIC FREEDOM)**

	b			t-statistic		
	2.50%	50%	97.50%	2.50%	50%	97.50%
Exec. Const.	-0.1042	-0.0464	0.001	-2.7854	-1.2849	0.0286
Urban Pop.	-0.0113	-0.0067	-0.0024	-3.3167	-2.0003	-0.7262
Rentier	-0.1229	0.0997	0.3364	-0.6582	0.5621	1.8628
Trade	-0.0044	-0.0025	-0.0003	-2.8144	-1.6216	-0.2031
ELF	0.0329	0.3346	0.5967	0.1466	1.4324	2.4864
Party Frac.	0.0064	0.2946	0.5679	0.0259	1.1218	2.2777
Gini	0.0264	0.0636	0.0997	0.7648	1.8042	2.8238
Gini-sq	-0.0009	-0.0005	-0.0001	-2.3165	-1.3696	-0.3368
IEF	-0.4891	-0.3193	-0.1472	-5.6697	-3.6828	-1.6982
Violations	0.0031	0.0048	0.0064	1.469	2.3158	3.063
Intercept	-2.2511	-1.5264	-0.7209	-2.9095	-1.9792	-0.9447

Sources: Beck et al (2001), Marshall and Jagers (2002), Roeder (2001), World Bank (2005) and World Institute for Development Economics Research (2005).

Examining Table 5, we add the instrument for corruption proposed by Fisman and Miguel (2006). The findings remain largely in tact. For example, though the coefficient on Executive Constraints now crosses zero in the far tail, the preponderance of the evidence continues to support the general claims. The credible interval for the effect of urban population never crosses zero. Just as before, the median t-statistics are greater

than one standard deviation from zero in both cases. Controlling for corruption and for economic freedoms, our general claims cannot be rejected. Moreover, the evidence is even stronger for the effects of income inequality.

Income inequality also withstands these robustness checks and the functional form remains almost identical. Looking first at the second through fourth columns of Table 5, we see that as the Gini coefficient increases from zero, the factor describing failed states also increases but at a decreasing rate. Just as we have shown in Figure 2, there is an inflection point at around 50 and from this point, increases in the Gini coefficient imply a reduction in the factor describing the Failed State Index.

To summarize the results in this section, we have found that Executive Constraints and urban populations reduce the likelihood of state failure and that the robust relationship between income inequality and state failure is nonmonotonic. In addition to a host of controls, we have shown that these relationships are robust to economic freedoms and freedom from corruption and that the results, though differing in magnitude, are remarkably consistent in terms of statistical evidence and functional form. In short, inequality has opposite influences on economic growth and political stability.

## **DISCUSSION AND CONCLUSIONS**

The lessons of our efforts are rather straightforward. First, middle class size and strength, at least to the extent that it is well proxied by the Gini coefficient, seems to emerge as a key component in the explanation of the economic and social welfare of nations. Second, a tension between the effect of income inequality on economic growth and the effect it has on the likelihood of social and political failure deserve more attention. Third, executive constraints are tremendously important though these mechanisms merit considerable further elaboration. Other often used formal measures of executive constraints, while not reported in this analysis, fail to show any significant effect on any of the measures of social, political or economic success of nations. Fourth, rentier states do not seem to develop well. This observation is clearly connected to the general theme of the paper. Rulers who depend on income from sources other than their own middle class are unlikely to treat this middle class very well; the insights of Bueno de Mesquita, Smith, Siverson, and Morrow (2004) are relevant to the extent that leaders under these circumstances are unlikely beholden to the middle class for their political survival without institutions that force them to be so beholden. Finally, the correlation between urban population and development is well documented in many places. Again, it is clearly related to the fact that the middle class tends to reside, at least in the last several centuries, in urban rather than rural environments. In other words, the measure of urban development is yet another indirect proxy of the strength of the middle class rather than an alternative explanation.

Besides the usual caveat on improving measurements and data sets more generally, we advocate a more in depth look at the entire web of formal and informal institutional conditions that determine the well being of this ‘maudite petit bourgeois.’ Because this ‘cursed’ class seems to hold an important key to both economic development and political stability – social well being -- that seems to have been noticed by laymen but largely overlooked by modern scholarship.

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<sup>1</sup> Ray (1998). See Thorbecke and Charumilind (2002) and Banerjee and Duflo (2003) for a comprehensive survey of the theoretical literature.

<sup>2</sup> We owe this remark to David Levinson, former commissioner of insurance in Delaware and currently a developer who heard our argument at a conference and made this comment ‘speaking from experience.’

<sup>3</sup> Because one of the key inputs, the Lorenz curve, is an empirical cumulative distribution function, the Lorenz curve must be weakly increasing, as follows directly from the definition of a cumulative distribution function. At the same time, because it is a measure of dispersion, it is ‘location independent’ in the sense that two societies with vastly different levels of average income or wealth can have identical Gini coefficients.

<sup>4</sup> Caveat: we use a single annual growth rate. To strengthen the evidence, we rely on exhortations of Barro, Sala-i-Martin and others to take long-term averages of annual growth rates to smooth year-to-year variation.

<sup>5</sup> To the extent that the level of inequality that maximizes growth minimizes the viability of the state, this is consistent with Huntington's claims regarding rapid growth and political pressures, though the mechanism and a single causal input driving both is quite different.

<sup>6</sup> For an empirical alternative to ethnolinguistic fractionalization see Cederman, Wimmer, and Min (2010).

<sup>7</sup> By definition, the  $\alpha$ 's are a strict order in  $k$ . Furthermore, without loss of generality, this notation assumes that the arbitrary ordered scale has been reoriented to consecutive positive integers.

<sup>8</sup> The weights in the weighted least squares arise from the posterior standard deviation of the factor scores.

<sup>9</sup> An omnibus test that the effect across all equations is equal to zero yields a chi square statistic exceeding 160 with 12 degrees of freedom which is statistically differentiable from zero to the level of computer precision.

<sup>10</sup> The joint test that the effect across equations is uniformly zero cannot be rejected at the .05 significance level.

<sup>11</sup> A joint test of each component and of all 24 estimates involving the Gini coefficient reject the null hypothesis of no effect to the level of computer precision.

<sup>12</sup> The elements of the Failed State Index are technically ordered but take on a number of discrete values. We must pay close attention to ordering in the construction of a common factor, but dispense with the innate inefficiency of estimating multiple cut points alongside the statistics central to our interest.

<sup>13</sup> By pinning down this relation, we can avoid the fact that inversion of the factor analytic model results in an identical set of estimates with only interchanged signs.

<sup>14</sup> A host of convergence diagnostics indicate that we have arrived at the target distribution.

<sup>15</sup> An anonymous reviewer has pointed out that these indicators are relatively diverse in their relation to State Failure and the evidence is consistent with this in an entirely plausible way. Those that are most indicative of state failure such as the rule of law and arbitrary security apparatuses are most strongly related while those that are ‘a greater stretch’ are most weakly related to the derived factor.

<sup>16</sup> The 90% credible range is the Bayesian equivalent of a confidence interval (though the interpretation differs because of the inherent subjectivity of probability in Bayesian statistics).

<sup>17</sup> We also employed weighted least squares estimation techniques that confirm the results that we present.

<sup>18</sup> It is important to note that the factor describing the Index of Economic Freedoms is strongly and negatively related to the Failed State Index. The importance and magnitudes of these effects underscores their usefulness for evaluating the robustness of our claims.