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Governments and Growth: Size Matters

Country Size, Government Size, and Economic Growth

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ABSTRACT

Big governments lead to lower levels of short-term economic growth. But is the size of this negative effect the same in different nations? I argue that big government matters less for growth in small countries than it does in large ones, because large countries are more dependent on domestic sources of production and consumption for their economic growth than are small countries. I find support for this argument in a panel study of 23 industrialized nations. I also find support for a subsidiary hypothesis linking big government in the US and/or Japan with low levels of growth across the industrialized world, but especially among small open economies.

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1. Introduction

How does government policy affect economic growth? Do governments presiding over large welfare states grow their domestic economies at a slower rate than do governments that more strictly limit the scope of their own activity? One conventional line of scholarship argues that large swathes of government spending are inefficient, do not contribute to the production functions of wealth-generating firms, and are financed by tax revenues that create a disincentive against investment (Barro 1991; Rebelo 1991; Ahmed and Miller 2000).

In this paper, I accept the argument that big government may be bad for growth over the short term, but I argue that the size of this effect will differ markedly across differently-sized nations. Specifically, I argue that growth rates in large (and therefore

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comparatively domestic-focused)[1] economies are more susceptible, over the short term, to changes in government size than are growth rates in small or comparatively trade-focused economies.

The factors that drive growth in small or trade-focused economies lie, much more so than in large or more closed economies, outside the control of national governments. For instance, a sharp drop in trade volumes between Asia and North America would have a strong negative impact on the economy in Singapore (a major trading post for goods between the two regions), and there is little to nothing the Singaporean government could do about it. Inter-continental trade volumes are beyond the control of the Singaporean government in the same way that Costa Rica cannot control the disposable incomes of its American tourists, and New Zealand cannot control the world price for wool. A drop in trade with Asia might also negatively affect the US, but it will negatively affect only a small proportion of the US economy and the US government is powerful enough to effectively counteract or even reverse those negative effects. This paper's argument relies on the fact that the government is more powerful *viz* international factors in large or closed economies than it is in small or open economies.

I test the empirical implications of this argument using data from advanced industrialized democracies stretching from 1960 to 2002. The data reveal statistical evidence to support my central claim that smaller, more open economies can have bigger governments with fewer growth-reducing consequences. This evidence is robust to a number of different specifications.

I proceed in the following fashion. After briefly exploring relevant parts of the vast literature on economic growth, I outline the bases for my theoretical expectations, concentrating on building a theory of differential effects from small microfoundations upwards. I then test my theory on data from 23 advanced industrialized democracies from 1960-2000. Finally, I look at the implications of this finding for the practice of politics by placing it in the context of the debate over whether parties of different ideological persuasions can really choose different policy settings in the face of mobile capital and integrated financial markets.

2. Government and Growth.

> *"By pursuing his own interest he frequently promotes that of society more effectually than when he really intends to promote it."* – Adam Smith - *The Wealth of Nations*, Modern Library Edition (New York: Random House, 1937), p.423
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> *"…government is not the solution to our problem; government is the problem."* – Ronald Reagan, January 20th 1981.

There is a long tradition of associating large governments with poor economic performance. Successive partisan proponents of small government have argued that such a decentralized economic system, relying on Adam Smith's "invisible hand" for the allocation of resources, leads to an economy that runs better and grows faster. At its base, this argument boils down to the popular sound bite "the best judge of how to spend your money is you, not the government." This contention finds support in the vast academic literature on growth

[1] There is a strong correlation between country size and economic openness, and that correlation will be the subject of discussion later in the paper.

economics. Without attempting a complete review (see Putterman, Roemer and Silvestre 1998), this section briefly explores some of the work linking government size with growth rates.

In a widely cited piece, Robert Barro (1991) argues that government spending can be split into two constituent parts. "Productive spending" describes government programs that enhance the ability of economic actors to pursue their self-interest, and includes many forms of law enforcement, protecting the currency and defending the country. "Unproductive spending," on the other hand, describes government programs that impede economic actors from pursuing their self-interest. Ahmed and Miller (2000, p. 124) summarize this argument succinctly, saying:

> "The traditional view argues that government expenditure crowds out private investment. Higher government expenditure, whether financed with taxes or debt, increases the demand for goods and services, raising interest rates, making capital more expensive and, as such, reducing private investment."

This unproductive spending includes all but the basic functions of government from the other "productive" category. Such programs require tax revenue, at least over the longer term. When the government taxes and spends that money, it cannot be spent, saved or invested by other economic actors (individuals, firms) in the system. Therefore rates of investment, spending, and private savings drop, in turn causing both demand and supply for goods and services to fall, heralding an economic slowdown. The broad argument that higher levels of government spending lead to lower levels of growth has received empirical support in a slew of studies, including Jones and Manuelli (1990), Rebelo (1991), Rivera-Batiz and Romer (1991), Engen and Skinner (1996), and Ahmed and Miller (2000).

Other scholars, however, contend that higher rates of taxation and government spending lead to *higher* economic growth. They generally agree with Barro's assertion that some parts of government expenditure are economically productive while others are not, and demonstrate that productive spending positively affects on GDP growth. Easterly and Rebelo (1993) show, for example, that expenditure on communications and transport infrastructure is good for growth, while Putterman, Roemer, and Silvestre (1998) marshal evidence from multiple sources (Perotti 1996, Barr 1992, Maddison 1991) demonstrating that higher marginal tax rates, average tax rates, and levels of public investment are all good for growth. Scholars arguing that tax can be good for growth often emphasize the capacity building aspects of various kinds of public investment or the certainty that left wing governments (combined with powerful labor unions) can bring to industrial relations negotiations (Garrett 1998). Another, more indirect argument is that decreased taxation leads, over time, to increased economic inequality (c.f. Boix 1998), which is bad for growth (Persson and Tabellini 1994).

Importantly, these capacity-providing and/or certainty-building effects take root over the medium- to long-term, as overnight improvements to either capacity or certainty are not possible. Investment returns, however, can be reduced in literally seconds following a change in tax rates or government size. Equally importantly, those scholars who have found positive relationships between government size and growth do not deny the existence of an investment effect. Instead, they maintain that there are other, countervailing effects. In this paper I intend to remain agnostic about the effects of big government on long run growth, concentrating only on the short term, where the immediate impact of big government on investment is felt but the capacity building benefits are not. If research design can isolate the

short term impact of changes in government size, I can examine the differential impact of the disinvestment / capital flight effect of taxation in different countries without worrying about the long-term effects of government size on growth. After outlining my theory of differential effects in section three, I outline and implement this research strategy.

Rodrik (1998) finds that there is a relationship between an economy's openness to trade and the size of its government sector, and that this relationship is robust to intervening variables, sample size, and various other attempts to destroy it. Rodrik hypothesizes that more open countries need larger government sectors as a means of insuring themselves against external risk, and uncovers a range of evidence consistent with that proposition. He argues, therefore, that the government sector plays an important income-stabilizing role in open economies, and that its success in performing that role increases with government size. This paper seeks to build on Rodrik's findings by examining one of the key consequences of government spending in open and closed economies: growth.

3. Theory: Why small countries can have bigger governments with fewer consequences?

As outlined above, previous literature has shown that government is bad for growth over the short term because of the recirculation costs of taxation. Increases in government size, Barro (1991) assumes, will be (eventually) funded through increases in taxation in the economy. This increase in taxation reduces the pool of income available to individuals and firms to spend or invest in new economic activity. This decrease in investment leads to an economic slowdown, leading to this paper's first hypothesis.

Hypothesis 1: *Increases in the size of government will have a negative short-term effect on the rate of economic growth in all countries.*

Hypothesis one is simply a restatement of expectations drawn from previous research on this issue: there is already wide scholarly support for hypothesis one.

My argument, however, is that the extent of those costs will vary systematically with the proportion of economic growth in a country that is domestically determined. To illustrate this argument, consider two firms in the same country: Firm A sells its goods exclusively to a domestic market; Firm B exports its entire product to other countries. Also assume (for now) that any change in government policy in this country affects demand inside the country but not in other countries. If the government increases general taxation (on both incomes and profits), both Firm A and Firm B will lose reinvestment capability because they will keep less of their gross profit. Firm A, however, faces an additional cost: its domestic customers also face a decrease in their disposable incomes as a result of the taxation rise, and therefore Firm A is likely to face decreased demand in addition to its increased tax on profits. Firm B faces no such decrease in demand, because the taxation increase its international customers. Therefore a tax increase will hurt domestically focused firms more than export-oriented firms, at least over the short term.

Therefore economies will feel more pain from tax increases if a large proportion of the firms sell to a primarily domestic market than if a large proportion of firms sell to international customers. This leads to hypothesis two:

Hypothesis 2: *Economic growth in export-oriented economies will be less responsive to government size than growth in domestically focused economies.*

The anecdote above does make one important simplifying assumption: that changes in the tax rate would only affect domestic actors and not the disposable income of actors from other countries. That assumption is more likely to be true in small economies than in large ones. A taxation rise in a large country will, according to Barro's theory, slow down economic activity among all domestically focused actors. Some of those actors also import goods from other countries, which will thereby slow economic activity in the export focused actors in those other countries. This overseas slowdown will in turn cause decreased demand for goods produced by the first (large) country's export oriented actors. This type of chain reaction is least likely to occur is response to a tax increase by the government of a small country, as overseas actors are unlikely to notice the very small change in global investment capital / disposable income that the tax rate would cause. Therefore, even holding trade openness constant, the effect of government size on growth is likely to be greater in big countries than in small ones. This leads to hypothesis three and, in the current environment of globalization, also to hypothesis four:

Hypothesis 3: *Economic growth in small economies will be less responsive to government size than growth in large economies.*

Hypothesis 4: *The size of government in the largest economies will affect economic growth in all other economies.*

4. Statistical Tests

I test hypotheses 1-4 using World Bank (2004) data from 23 advanced industrialized democracies across the period 1960-2002. Patterns of key independent variables for these countries (as at 1999) are presented in Table 1. Central government size ranges from about 14% of GDP (Switzerland) up to 27% of GDP (Sweden). The largest two economies (Japan and USA – representing 16% and 26% of world economic activity respectively) are also the countries with the two lowest levels of exports (about 10% of GDP). The most export-driven economy in the sample is Luxembourg, which exports 152% of its GDP annually. Belgium and Ireland also exported more that 80% of the value of their GDP.

[Table 1 about here]

Initial pairwise correlations are consistent with hypotheses one through three. Overall government size is negatively correlated with economic growth (rho=-0.374, $p<0.001$), and country size is negatively correlated with government size (rho=-0.131, $p<0.001$). If government size had the same effect on growth across large and small countries alike, we should therefore expect a negative correlation between country size and growth. There is, however, no significant correlation between these variables (rho=0.009, p=0.779). This pattern of correlations is consistent with my theory but it cannot be treated as conclusive due to the possible effects of other, excluded variables.

Basic comparisons of growth rates in Table 2 also provide good support for the idea that government size is more important for growth in large countries. No matter what cut point is chosen between large and small countries, the marginal impact of government size on growth is greater for large countries than it is for small countries. These are very simple analyses, however, and to more fully explore the dynamics behind the differences observed in Table 2, more sophisticated techniques are required.

[Table 2 about here]

The dependent variable for the regressions in Tables 3 and 4 is the annual rate of GDP growth. The independent variables of interest in these regressions are final government consumption as a percentage of GDP (*Government Size*); exports as a percentage of GDP (*Openness*)[2]; the size of the economy as a percentage of the world economy (*Country Size*); and interaction terms between government size and openness (*Openness Interaction*) and between government size and country size (*Size Interaction*).

In a paper with the simultaneously amusing and intimidating title "I Just Ran 4 Million Regressions," Sala-i-Martin tests no fewer than 63 variables that academics have argued affect GDP growth, and says that there exist many more variables that he did not test. Most students of economic growth have a favorite right-hand-side variable, maybe two. Most are displeased when their variable of choice is omitted from a growth regression in favor of someone else's. Worst of all for my purposes, there is almost no consensus as to the set of independent variables that *must* go into a growth regression. This paper approaches this specification problem by using a lagged dependent variable model. Growth from year (t-1) enters the regression as an independent predictor for growth at time t, acting as a proxy for the multitude of true causal factors not included explicitly in the regression. This approach is not unusual in recent empirical studies of growth (see for example Garrett 1998; Clark 2003).

The maintained assumption inherent in this strategy is that many of the sources of growth are "sticky" in that they do not vary much within a particular country from one year to the next. For many variables that affect GDP growth – such as initial level of GDP, geographic factors, political institutions, and the industrial breakdown of the economy – this assumption is entirely plausible. These variables hardly vary at all within a particular country, let alone from year to year. For other factors that do vary in the short term, one of two assumptions can be maintained. The first is that variables are themselves caused by changes in *Government Size* or *Openness* and therefore would act as intervening variables This first assumption is appropriate for variables such as unemployment or inflation. The second possible assumption is that year-to-year changes in those factors are random with respect to changes in *Government Size* or *Openness*. This second assumption is helpful for phenomena such as natural disasters or shifts in global supply and demand for particular goods and services.

To the extent that these assumptions do violence to the facts, the models estimated here are mis-specified. The consequences of this mis-specification are, however, likely to bias the regressions against my hypotheses. Achen (2000), building on work by Griliches (1961) and Maddala and Rao (1973) among others, shows that a lagged dependent variable is not only a sufficient proxy for *excluded* independent variables in a regression, but that it actually over-controls for those factors and artificially depresses the coefficient estimates on *included* independent variables. The effect of using this kind of model, therefore, is to bias the results against each of my four hypotheses. If the empirical results prove robust against this bias then those results would provide strong support for my theory.

A further benefit of this lagged dependent variable model is that it isolates the short-term effects of changes in government size from the long-term effects. The lagged dependent variable captures any significantly lagged effect of government capacity- or

[2] I also re-estimated all regressions using trade as a percentage of GDP as an alternative measure of openness. The results are not significantly different from those reported below.

certainty-building programs at time periods before (t-1). Therefore the lagged dependent variable helps ensure that I am examining only the disinvestment / capital flight effects of government size, and not others.

[Tables 3 and 4 about here]

In Tables 3 and 4 I pool observations from the 23 countries and use panel-corrected standard errors (PCSEs) or country-level fixed effects models to ensure that estimates are as unbiased as possible. Because I am using interaction terms, the results in Tables 3 and 4 do not provide sufficient information to make judgments about hypothesis one, which suggests that government size is bad for growth everywhere. To make these judgments, we must graph the marginal impact of government size on growth across the different values of my hypothesized intervening variables. Those graphs appear in Figures 1 through 4, and they reveal interesting patterns. The marginal effect of government on growth is negative across economies of all sizes (as demonstrated in Figures 1 and 2), providing strong support for hypothesis one. In Figures 3 and 4, however, there is only enough statistical evidence to conclude that increased government spending has a negative impact on growth rates for countries with moderate to low levels of exports. For countries with very high levels of exports, there is not enough evidence to reject the hypothesis that government size and growth rates are unrelated. Given the results in Figures 1 and 2 and the fact that most of the countries in my sample have export rates low enough to put them in the significant parts of Figures 3 and 4, however, the evidence appears on balance to provide good support for hypothesis one.

[Figures 1 through 4 about here]

Evidence supporting hypothesis three, which posits that government size is more important for growth in larger countries, is almost as strong, providing encouraging support for the central claim of this paper. The Size Interaction variable is statistically significant and in the expected direction in all but one of the regressions where it appears. The sole exception (Model 3 in Table 4) is not a particularly reliable test because of the colinearity between country size and openness (see below), and therefore between the size interaction and openness interaction terms. Given that larger countries tend to export less than smaller countries, Model 3 of Table 4 (and indeed Model 6 of Table 4, and Models 3 and 6 of Table 3) is an overly harsh test of hypotheses two and three. In all other regressions, the results show that government size has a larger impact on GDP growth as country size increases.

Hypothesis two, which posits that government size is less important for growth in countries that export a great deal than in countries that export a little, receives only weak support. Disregarding those models where colinearity and double measurement of a similar concept may be suppressing real effects, estimates on the openness interaction variable are all positive, as I hypothesized them to be, and p-values range between 0.07 and 0.16. This is not sufficient evidence to reject the null hypothesis, although an examination of Figures 3 and 4 suggests that the lack of data at very high levels of exports may be partly driving these null results. In both Figures, the lower bound of the 95% confidence interval surrounding the estimated marginal effects has (as expected) a positive slope through the part of the data range where most of the data are located. It is only when the estimates are taken out to the sparsely-populated part of the data range that the slope on this lower bound turns around and becomes negative again. We might suspect, therefore, that the null finding here is driven

by the structure of the dataset rather than by true nullness, but we cannot confirm this suspicion with certainty.

Figures 1 through 4 also underscore the substantive importance of the findings on hypotheses two and three. In all cases, the point estimate on government size's marginal impact on growth is at least twice the size for the largest / most closed economies as is the estimate for the smallest / most open economies. These results estimate that big government has double the impact on growth in a country like the US than is the impact in a country like Belgium.

The evidence on hypothesis four, which suggests that government size in the very largest economies are likely to affect economic growth everywhere, appears mixed at first glance but is actually strong. In the last three Models of Table 4, the US government size variable was a consistently significant predictor of growth rates in all OECD countries. Increases in the size of the US government are bad for growth in all countries, as hypothesized. In Table 3, however, the US Government Size variable is not statistically significant; indeed it is not remotely close to statistical significance. This lack of significance in Table 3 is due to the design of the PCSE estimator rather than a lack of explanatory power on the part of the variable. PCSEs are designed to control for "contemporaneous correlation across panels", and to remove the effects of this phenomenon from the regression results (Beck and Katz 1995, 637-638). Such contemporaneous correlation is generally the result of a single event causing growth to rise or decline across the sample. That is precisely the process through which US Government Size affects growth in other countries: changes in US government size cause a shock that contemporaneously affects growth rates in all countries in the sample. Therefore the design of the PCSE estimator specifically suppresses the kind of effect that I hypothesize the US Government Size variable has on growth. Once I use a more appropriate estimator for testing this particular hypothesis, the effect of US Government Size gains high statistical significance.

Does the US government effect affect all countries equally? The mechanism linking US government size and economic growth in other countries is trade – the only way a change in US disposable income affects the economy in another country is if that country is linked by trade to the US or the US's trading partners. Therefore we would expect the US government effect to be larger for countries that are heavily export-focused than for countries that are more domestically focused. To test this subsidiary idea, I re-estimated Model 5 of Table 4 with the addition of an interaction term between US Government Size and Openness. Figure 5 plots the marginal effect of changes in US government size across different levels of exports.[3] As expected, countries that are more export-focused face a steeper decline in growth in response to an increase in US government size than do comparatively closed economies. When exports fall below 25% of GDP, the US government effect is no longer statistically significant.[4]

[Figure 5 about here]

As a further test of hypothesis four, I re-ran the fixed effects regressions that included the US government variable (Models 4-6 of Table 4) with the inclusion of a variable

[3] The results from this regression are available from the author.

[4] While the marginal effect of US government size also loses statistical significance when exports rise above 125% of GDP, this is likely due to the paucity of observations in that part of the dataspace (only Luxembourg has exports exceeding 100% of GDP)

measuring the size of the Japanese government. I included the Japanese government variable both instead of and in addition to the US government variable. With either the openness interaction or both interactions included simultaneously, the Japanese government size variable performed as expected – when the Japanese government was bigger, growth throughout the OECD was lower. These results held whether the US government variable was also included or not. In regressions using only the size interaction, however, the Japan government variable's effect was statistically indistinguishable from zero, although the US government variable (when included) continued to perform as hypothesis four predicts. Taken together, this battery of tests provides strong support for hypothesis four: big government in big places is bad for economic growth everywhere.

To verify the robustness of my results I performed two further sets of regressions. First, I re-estimated all the regressions in Tables 3 and 4 using a one period lag for the measures of government size, openness, country size, and their interactions. These robustness checks are designed to capture the idea that there may be a short delay between changes in the size of government and the resulting change in rates of economic growth.

The results from these additional tests are encouraging, although they do differ from the main results. The one-period lag on government size has strong predictive power over growth rates: big governments are predicted to produce lower growth than small governments in all twelve additional models, and this variable is statistically significant on each occasion. This lends further strong support to hypothesis one. The pattern of support for hypothesis four – linking the size of the US government with poor economic performance everywhere – also remains unchanged. That hypothesis finds strong support in the fixed effects models but no support in the PCSE models, for the reasons I outline above.

The most interesting part of these additional regressions is in relation to hypotheses two and three. While the main regressions found strong support for hypothesis three but little support for hypothesis two, these lagged regressions find the exact opposite. There is very strong support for hypothesis two, linking progressively more open countries with a smaller marginal effect of government on growth. The interaction coefficient is in the expected direction and significant at $p<0.10$ on all eight occasions when it is included in one of the new regressions; and it is significant at $p<0.05$ on six of those eight occasions (all tests two-tailed). The interaction coefficient for country size, testing the hypothesis that smaller countries have a smaller marginal effect of government on growth, does not fare as well in these models. That coefficient is estimated to be in the expected direction on seven of the eight occasions where it enters a model; it is significant at $p<0.10$ on four of those seven occasions; and it is significant at $p<0.05$ on two of those four occasions (all tests two-tailed).

[Table 5 about here]

The second set of additional regressions used civilian government expenditure rather than the entire government sector as the measure of government size. Table 5 displays the patterns of statistical significance for these tests. I ran these tests because of concern that the military component of total government spending (which is notably correlated with size) may be either masking or driving some of the observed results. The results portray a now familiar pattern. There is generally strong support in the data for hypothesis one, which links big government to slow growth. There is again strong support for hypothesis four (linking the size of the US government to low growth everywhere else) in the fixed effects models. In this set of regressions, there is very strong support for the *Size Interaction* proposed in

hypothesis three, linking smaller countries with a smaller marginal effect of government on growth, and there is almost no support for hypothesis two, the *Openness Interaction*.

The empirical findings of this paper provide support for my argument that the size of government affects growth rates smaller, more open countries than it does in larger, more closed countries. The results do not, however, enable us to decipher whether it is the smallness or the openness of these countries that is most important. It is difficult to distinguish between the two because country size and openness are significantly correlated variables (the correlation across my N>900 panel sample exceeds 0.4, and is significant at $p<0.001$). So while I cannot *precisely* determine which particular aspect of small, open, countries makes their growth rates less susceptible to changes in government size, it is clear that those countries truly are less susceptible. Nonetheless, the findings strongly support hypotheses linking bigger government to lower growth; linking bigger government in very large economies with lower growth everywhere; and linking small, open economies with a lower marginal impact of government on growth.

5. Implications: Do these Results Actually Matter?

This paper's main empirical finding – that small, open economies can have larger government sectors with fewer GDP growth consequences – is only important to partisan actors if they are free to change the size of their country's government sector. Much debate has recently emerged in the political economy literature about whether governments can indeed change their size in this age of globalization, capital mobility, and ever increasing streams of information about government activity. Three recent studies address this empirical question directly.

Boix (1998) finds that socialist control of government leads to significant increases in education spending, significantly more active labor market policies, significantly less privatization of state assets, and significantly more progressive taxation regimes. And Garrett (1998) finds that leftist control of government coupled with strong labor unions leads to increases in various measures of government consumption and that the size of these effects actually *increased* as capital became more mobile. He also found "good evidence that the relationship between left-labor power and larger and more progressive systems of taxation strengthened with globalization" and that left-labor government led to increases in both budget deficits and real interest rates, particularly when capital was mobile.

Taken together, Boix and Garrett's evidence appears to show that left-leaning governments do retain the ability and the propensity to preside over larger, more activist governments, even in an age of increasing trade and capital mobility. Clark (2003), however, argues that self-interested politicians seeking the support of the median voter, rather than ideological politicians seeking the support of their partisan bases, are the true drivers of macroeconomic policy. His argument relies on establishing that politicians manipulate the economy in election years (the "electoral hypothesis"), a proposition for which Clark finda ample evidence. The presence of electorally motivated behavior in election years does not, however, imply the absence of ideologically motivated behavior in other years. Therefore Clark's argument also relies on the proposition that left-leaning politicians do not manage the economy in a manner significantly different from that of right-leaning politicians (the presence of such a difference is the "partisan hypothesis"). In establishing this second hypothesis, Clark clashes with Garrett.

The key difference between Clark and Garrett is one of interpretation. Clark re-runs Garrett's regressions with no change other than a presentationally useful transformation on one variable, leading to more intuitive interpretation of the models' interaction effects. Both Clark and Garrett agree that there is considerable empirical support for the notion that leftist governments tend to spend more than do rightist governments, even in an environment of mobile capital. Both also agree that the evidence linking leftist governments with increased government revenue is weaker, but not non-existent. They also agree that the evidence on budget deficits and interest rates is somewhat mixed. Judging these results together, Garrett believes that these results are evidence of "increasing partisan distinctiveness of spending and taxation" (1998, 103); while Clark concludes that "the partisan model of macroeconomic policy may be fundamentally flawed" (2003, 82).

It is tempting to simply declare this an open question and move on, but further analysis of the Garrett/Clark results provides a fair amount of evidence that leftists do indeed run larger governments than rightists. I explore the data from the Clark/Garrett sample to see whether leftism is a significant predictor of government consumption, revenue, and economic position across the range of the real world data that generate the estimates. This is a useful exercise because it helps to discriminate between two different causes of the null results that lead Clark to dismiss the partisan hypothesis: an indeterminate relationship in the data; or a simple lack of data. With the conditional coefficients dependent on three interacting variables (leftism and capital mobility with either trade openness or the exchange rate regime), this can become problematic if particular areas of the dataspace contain few or no observations. Using the real world values to test the partisan hypothesis eliminates the problem of nullness due to missingness, leaving the null results to represent, as far as possible, estimates of a truly null relationship.

I examine the real world values of capital mobility and trade openness or exchange rate regime at the end of the sample period, 1985-1990, for each of the 14 countries in the Clark/Garrett sample to determine whether leftism is a significant predictor of the dependent variable given those conditions. I choose the end of the sample because Garrett's hypothesis is about a relationship that strengthens with globalization, so the best place to look for evidence of that relationship is in the presence of globalization. Clark's argument, by contrast, hypothesizes no relationship during any part of the sample, and therefore this testing period should not bias against his hypothesis. I record the proportion of these simple tests that reveal significant predictive power in favor of the partisan hypothesis, the proportion that reveal a null result, and the proportion that reveal predictions significantly opposed to the partisan hypothesis. The partisan hypothesis predicts that leftist governments should be associated with higher levels of government spending, government revenue, and budget deficits than right-leaning governments.[5]

[Table 6 about here]

Table 6 reports the results of those analyses. For the three key variables[6], estimates are significant and in favor of the partisan hypothesis a clear majority of the time, and there

[5] There is dispute over the expected direction of leftism's effects on interest rates, with Clark arguing that leftism should be expected to lead to lower interest rates (p. 59), and Garrett maintaining that a finding linking leftist government to higher interest rates does no damage to the partisan hypothesis (pp. 99-103). I exclude interest rates from my analysis to avoid taking sides on this complicated issue.

[6] I do not use all twelve dependent variables used in Clark/Garrett because the three key variables are a better yardstick than the full set of dependent variable. The baseline partisan hypothesis contends only that

are no results that run significantly counter the partisan hypothesis. What is one to make of this pattern? The answer is, as Garrett admits, a matter of personal taste, but I would argue that if approximately seven out of ten regressions significantly favor a hypothesis, then that should constitute at least warm support for that theory, particularly because the lagged dependent variable in the estimates biases them all in favor of null hypotheses, as discussed earlier. Therefore all the levels of significant support for the partisan hypothesis in Table 5 must be taken as conservative minimum levels of support.

6. Conclusions

What causes economic growth? This is one of the most important questions in the social sciences, and has been the subject of much previous academic effort. This paper adds to that body of knowledge by demonstrating that the impact of government size on growth is substantially smaller for small, open economies than it is for larger and more closed economies. Government spending can be financed through borrowing or taxation, both of which are drags on economic growth. The extent of this drag, however, depends on the proportion of a nation's economy that depends on domestic production, domestic consumption, or the offshore impact of domestic economic policy choices. The larger and more powerful an economy, the more important this effect proves to be. Analysis of data from 23 OECD countries over a 43-year span provided good support for most of my hypotheses, including the claim that larger US governments are bad for economic growth across the developed world.

These findings are particularly important for leftist parties in small countries. The conventional wisdom amongst economists is that big government is just as bad for growth wherever it is implemented; and therefore they recommended just as strenuously against government expansion in small countries as they do in big countries. My findings provide some evidence that this recommendation is rather simplistic. If big government is as effective at redistributing wealth and reducing unemployment and poverty in small countries as it is in big countries (a premise that appears intuitively appealing but deserves empirical validation), then the net gains (losses) to big government - once the short term cost to economic growth has been paid – will be larger (smaller) in small countries than in larger ones. The implication for political practitioners in smaller or more open countries is that they have more freedom to pursue different, less neoclassically market friendly policies than their counterparts in larger or more closed economies. A second, less appealing, lesson for politicians in small countries is that their economic growth rate (and also their electoral

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governments and deficits will be bigger under the left than under the right, and the headline variables alone provide a good test for that theory. Using all twelve dependent variables from the Clark/Garrett debate, which includemeasures of various sources of taxation, employer contributions to social security, and various types of government spending, tests a much more detailed version of the partisan hypothesis. This more detailed theory predicts that leftists not only preside over bigger governments that rightists, but also that leftists will collect more of their revenue from personal income taxes, corporate taxes, and employer social security contributions, and less of their revenue from consumption taxes than rightists; and will spend more on income transfers, civilian areas of government, industry subsidies, and capital expenditure than rightists. If these additional hypotheses were to find support at the same level as the baseline prediction, it would imply that not only do leftists run larger governments than rightists, but also that leftists and rightists structure their government in substantially similar ways across time and space. That governments do not satisfy this latter, tougher, condition does not imply that they also do not satisfy the first, more general, condition.

future, if you subscribe to any version of retrospective voting theory) is partly determined by politicians in Japan and the US.

The findings I offer in this paper are in many senses preliminary. Does this mediating effect work in developing economies in the same way that it does in developed economies? Is big government worse for growth in India than in Sri Lanka? Does the kind of big government on offer have an effect on government's impact on growth? For example, would increasing government size to subsidize domestic food production, transferring money from the population to a productive and strategically-important sector, have the same effect on growth as a new, similarly-sized program to provide publicly-funded healthcare to the unemployed and the underemployed? The answers to these questions are beyond the scope of this paper, but are interesting and important questions nonetheless.

However preliminary the findings, it is useful to know that one economic policy size really does not fit all, neither in theory nor in practice. The extent to which big government affects economic growth depends on how much global economic weight that big government has to carry around – a big national government can carry a light global economic load more successfully than it can carry a global heavyweight.

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Table 1: Government Size, Country Size, and Exports in 23 countries, 1999

Country	Government Size *(% of GDP)*	Country Size *(% of world GDP)*	Exports *(% of GDP)*
Australia	17.92	1.35	21.37
Austria	19.14	0.78	52.45
Belgium	21.67	0.92	85.36
Canada	18.94	2.07	43.81
Denmark	25.86	0.60	45.07
Finland	20.81	0.48	39.78
France	23.23	5.22	27.93
Germany	19.00	7.80	35.10
Greece	15.28	0.42	22.66
Iceland	23.63	0.03	40.99
Ireland	14.69	0.32	98.16
Italy	18.82	3.55	28.35
Japan	17.36	16.47	10.36
Luxembourg	16.83	0.07	152.39
Netherlands	23.17	1.45	65.30
New Zealand	17.87	0.21	35.67
Norway	20.27	0.52	45.70
Portugal	20.66	0.38	30.95
Spain	17.50	2.09	29.92
Sweden	27.24	0.85	45.33
Switzerland	14.01	0.98	45.12
United Kingdom	19.28	3.86	26.96
United States	15.09	25.90	10.32

Table 2: Introductory Comparisons

Cut Point (% world GDP)	Marginal Effect of Government Size on GDP Growth Small OECD Countries	Large OECD Countries
1%	-0.321* (<0.001)	-0.446* <0.001)
2%	-0.336* (<0.001)	-0.443* (<0.001)
3%	-0.335* (<0.001)	-0.532* (<0.001)
4%	-0.335* (<0.001)	-0.529* (<0.001)
5%	-0.344* (<0.001)	-0.505* (<0.001)

Note:
* indicates that the coefficient is significant at $p<0.01$. Two-tailed p-values appear in parentheses. Estimates are from cross-section time-series regressions (N=913) also including a constant and a lagged dependent variable term and including country fixed effects.

Table 3: Interactive Effects of Government Size on GDP Growth

Dependent Variable	GDP growth (%)					
Estimation Method	XTPCSE	XTPCSE	XTPCSE	XTPCSE	XTPCSE	XTPCSE
Model	(1)	(2)	(3)	(4)	(5)	(6)
Constant	4.298***	5.425***	4.784***	5.489***	6.572***	5.825***
p-value	(0.000)	(0.000)	(0.000)	(0.004)	(0.002)	(0.006)
Government Size	-0.118***	-0.203***	-0.162***	-0.113***	-0.204***	-0.150***
p-value	(0.000)	(0.000)	(0.003)	(0.000)	(0.000)	(0.007)
Size Interaction	-0.012***		-0.009**	-0.017***		-0.014***
p-value	(0.003)		(0.024)	(0.000)		(0.004)
Country Size	0.178***		0.152**	0.238***		0.209***
p-value	(0.007)		(0.027)	(0.001)		(0.006)
Openness Interaction		0.002	0.001		0.002	0.001
p-value		(0.156)	(0.429)		(0.157)	(0.521)
Openness		-0.022	-0.10		-0.021	0.008
p-value		(0.327)	(0.666)		(0.326)	(0.731)
Lagged GDP growth	.374***	0.374***	0.369***	0.278***	0.382***	0.374***
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
US Government Size	-	-	-	-0.092	-0.087	-0.087
p-value				(0.496)	(0.519)	(0.518)
N (countries)	23	23	23	22	22	22
N (ceses)	913	913	913	872	872	872

Notes:
Two-tailed p-values appear in parentheses. * indicates p<0.10; ** indicates p<0.05; *** indicates p<0.01
US data excluded from columns 4-6 to obtain a fair test of hypothesis four.

Table 4: Fixed Effects Estimates

Dependent Variable	GDP growth (%)					
Estimation Method	XTREG +country FE	XTREG +country FE	XTREG +country FE	XTREG +country FE	XTREG +country FE	XTREG +country FE
Model	(1)	(2)	(3)	(4)	(5)	(6)
Constant	9.272***	10.042***	9.853***	12.120***	12.579***	11.987***
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Government Size	-0.332***	-0.476***	-0.427***	-0.338***	-0.501***	-0.403***
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Size Interaction	-0.018**		-0.014	-0.039***		-0.037***
p-value	(0.039)		(0.128)	(0.001)		(0.003)
Country Size	0.099		0.069	0.211		0.215
p-value	(0.638)		(0.743)	(0.432)		(0.434)
Openness Interaction		0.002*	0.002		0.003*	0.001
p-value		(0.096)	(0.301)		(0.077)	(0.587)
Openness		-0.010	0.239		-0.013	0.015
p-value		(0.725)	(0.920)		(0.628)	(0.603)
Lagged GDP growth	0.252***	0.246***	0.240***	0.232***	0.247***	0.220***
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
US Government Size	-	-	-	-0.171***	-0.155**	-0.153**
p-value				(0.004)	(0.010)	(0.010)
N (countries)	23	23	23	22	22	22
N (ceses)	913	913	913	872	872	872

Notes:
Two-tailed p-values appear in parentheses. * indicates p<0.10; ** indicates p<0.05; *** indicates p<0.01
US data excluded from columns 4-6 to obtain a fair test of hypothesis four.

Figure 1: The Mediating Role of Economy Size (PCSE model)

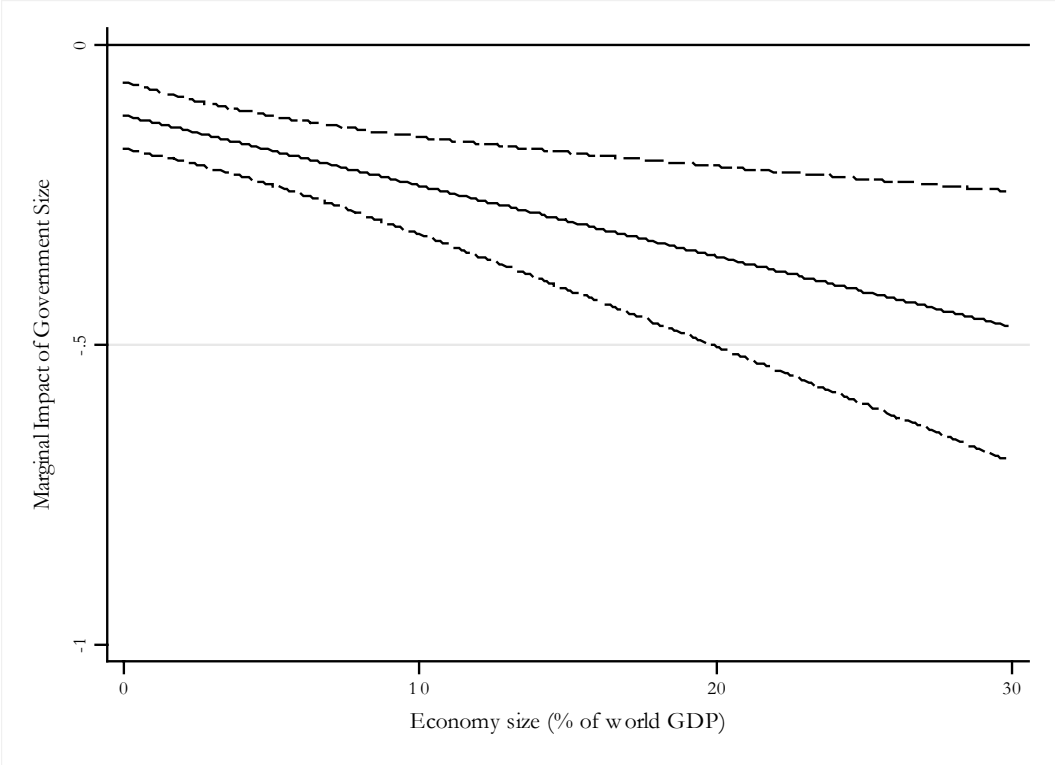
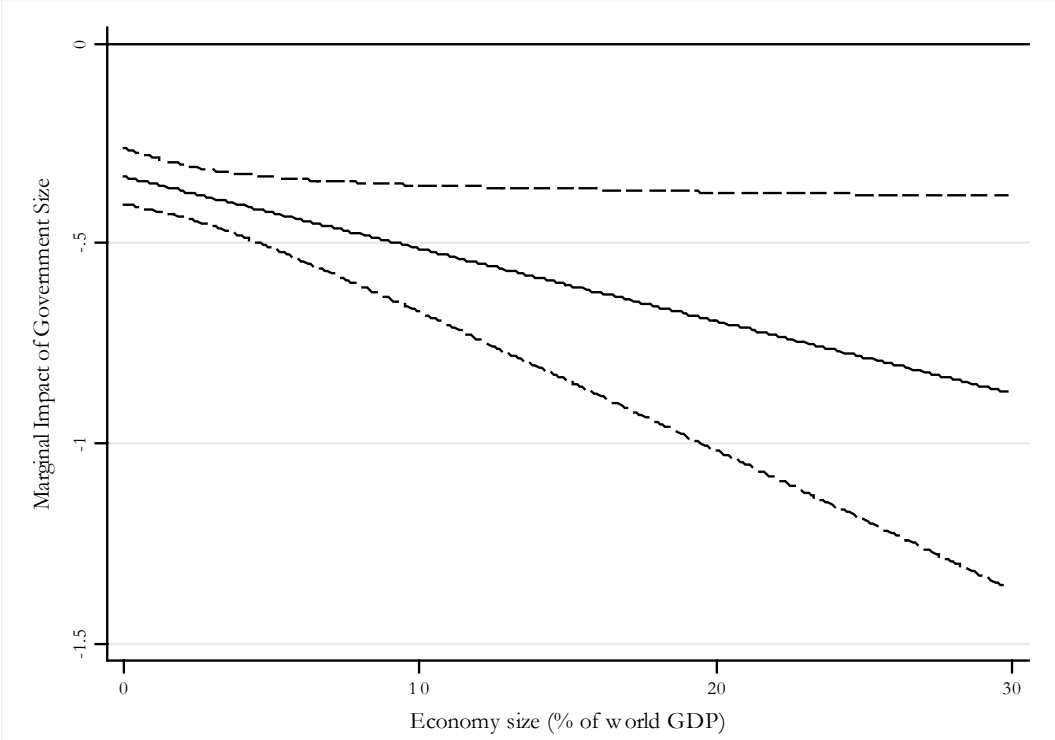


Figure 2: The Mediating Role of Economy Size (FE model)



Note: The solid lines represent point estimates; the dotted lines represent upper and lower bounds for 95% confidence intervals. Figures generated by software from Brambor, Clark, and Golder (2005).

Figure 3: The Mediating Role of Openness (PCSE model)

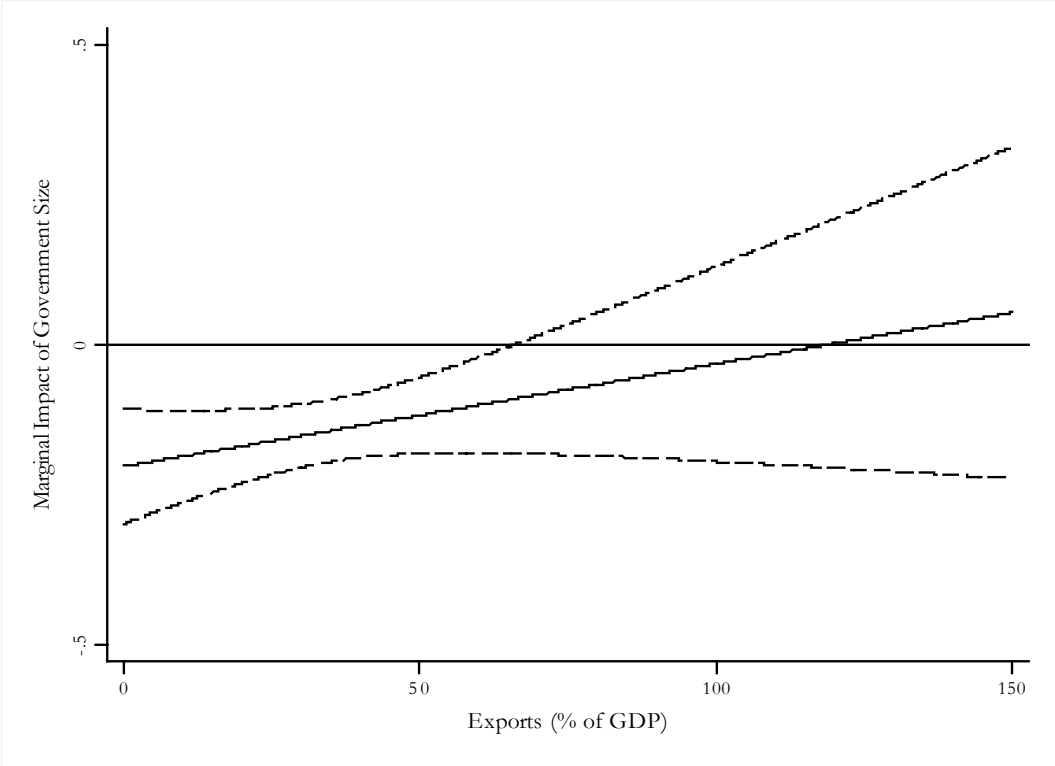
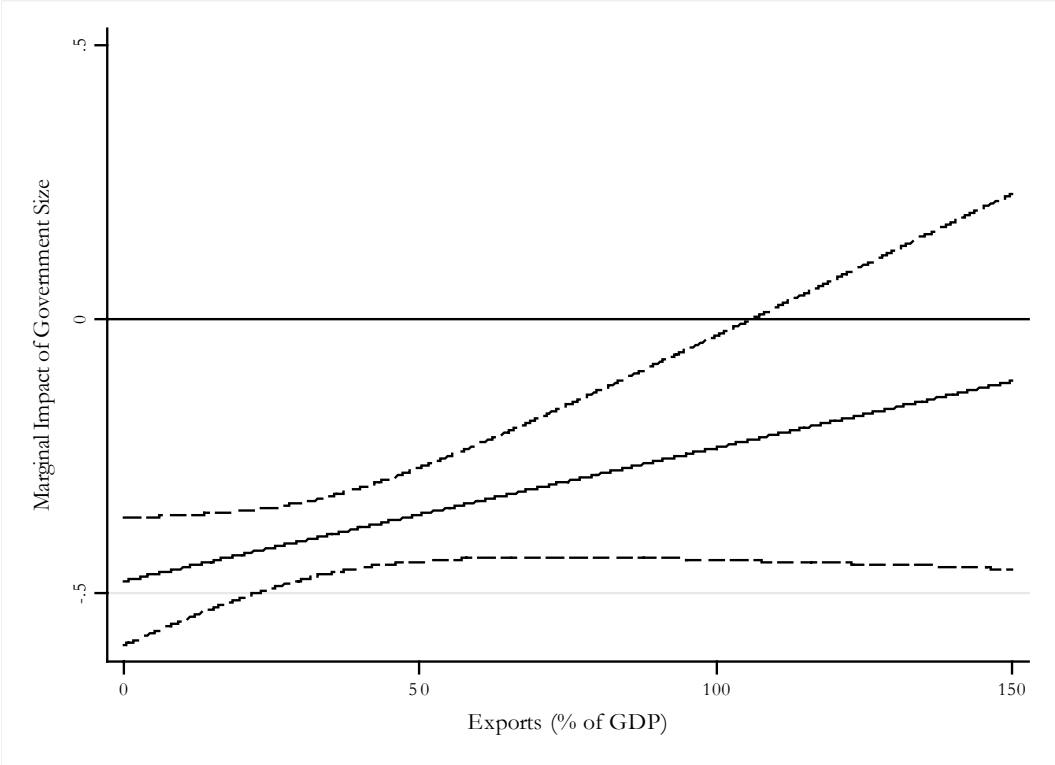
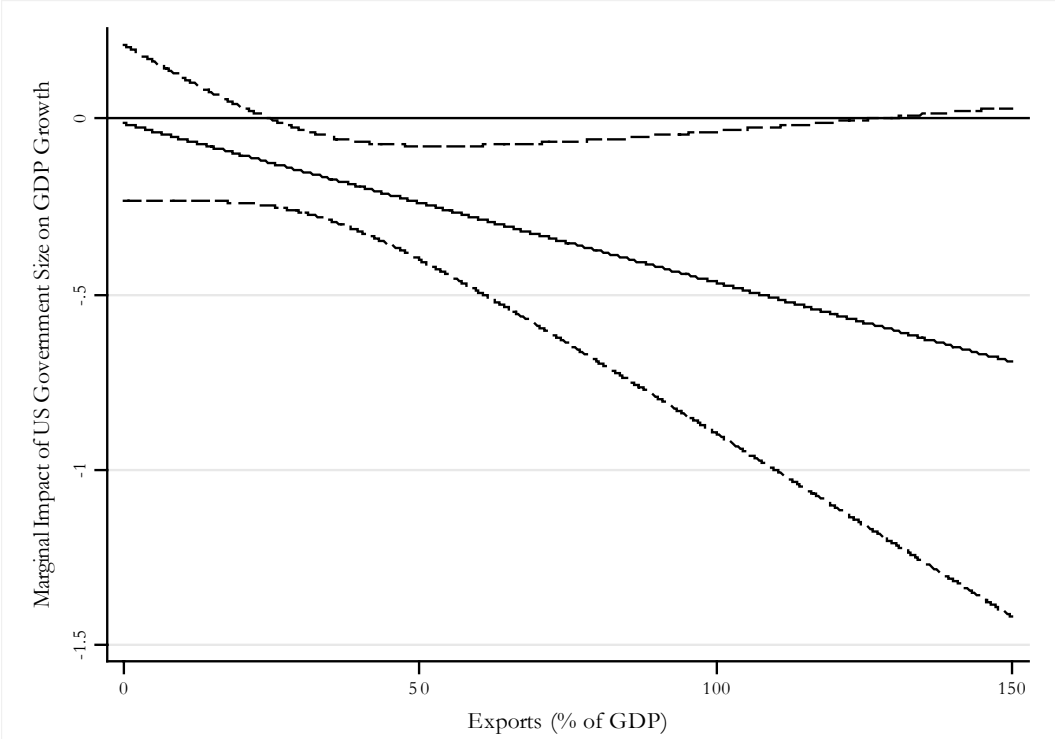


Figure 4: The Mediating Role of Openness (FE model)



Note: The solid lines represent point estimates; the dotted lines represent upper and lower bounds for 95% confidence intervals. Figures generated by software from Brambor, Clark, and Golder (2005).

Figure 5: Openness' Mediating Role Over the US Government Effect



Note: The solid lines represent point estimates; the dotted lines represent upper and lower bounds for 95% confidence intervals. Figures generated by software from Brambor, Clark, and Golder (2005).

Table 5: Re-testing the Hypotheses using Civilian Government Consumption

Dependent Variable	GDP Growth (%)					
Method	XTPCSE					
Hypotheses being tested	1 & 2	1 & 3	1, 2, & 3	1, 2 & 4	1, 3, &4	All
Government effect (H1)	**	**	N/S	**	**	N/S
Openness interaction (H2)	N/S	-	N/S	N/S	-	N/S
Size interaction (H3)	-	**	*	-	**	*
US government effect (H4)	-	-	-	N/S	N/S	N/S
N	342	342	342	342	342	342

Dependent Variable	GDP Growth (%)					
Method	XTREG with Country Fixed Effects					
Hypotheses being tested	1 & 2	1 & 3	1, 2, & 3	1, 2 & 4	1, 3, &4	All
Government effect (H1)	**	**	N/S	**	**	N/S
Openness interaction (H2)	*	-	N/S	*	-	N/S
Size interaction (H3)	-	**	**	-	**	*
US government effect (H4)	-	-	-	**	**	*
N	317	317	317	317	317	317

Notes:

* denotes $p<0.05$; ** denotes $p<0.01$ (all tests two-tailed);

All significant coefficients were significant in the direction predicted by the relevant hypothesis;

Tests of the Government effect (H1) and the interaction hypotheses (H2 and H3) now use the IMF measure of Civilian government consumption rather than the total size of government. All other variables remain the same as in Tables 3 and 4.

Table 6: Given globalization, can governments alter their size?

Group of dependent variables	Percentage of results (based on country observations) that are… Significant and in favor of the partisan hypothesis	Null	Significant and opposed to the partisan hypothesis
Both conditions	70%	30%	0%
Openness condition	79%	21%	0%
Exchange rate condition	62%	38%	0%

Note:
Row percentages do not always add to 100% due to rounding.