

It's the (World) Economy, Stupid!

International Determinants of Presidential Success*

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Abstract

Economic voting is a widely accepted regularity in the political science literature; voters hold governments accountable for economic performance, rewarding them in good times and punishing in bad ones. Yet most of the literature on economic voting in developed countries either assumes that economic performance is a result of governments' decisions or that, in case it is not, voters are aware of that. In this paper we show that this assumption does not fly well into less developed democracies, where uninformed voters punish and reward presidents based on factors which are utterly exogenous to leaders' decisions. Our study reveals that it is possible to predict presidential popularity with high confidence in Brazil without resorting to a single domestic economic factor, just based on the behavior of commodity prices and international interest rates. These findings have important implications for the literature on economic voting in less developed countries, and challenge the notion of accountability ex-post in Latin America.

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The last jobs report released before the 2012 Election Day in the United States boosted optimism among president Barack Obama's supporters. Even though the 7.9 percent jobless rate was historically high, and had slightly worsened since the previous report, it seemed particularly auspicious considering that no president had been re-elected in the country with an unemployment rate above 8 percent since Franklin Roosevelt, a fact widely publicized in the American media.

This episode illustrates the widespread belief, among analysts and voters alike, that political success is associated with economic performance. It also reveals that the parameters used to evaluate economic performance matter. Unemployment figures by the end of Obama's first presidency were marginally higher than when he was inaugurated in 2009, but they were far below the maximum of 10 percent reached late in that year and, most importantly, had been displaying a downward trend in the months that preceded the poll.

Finally, the debate that followed the release of unemployment figures raises questions about attribution of responsibility. Is Barack Obama to blame for high unemployment rates? On one side, the president assumed first and foremost responsibility for economic results during his mandate. Yet, he repeatedly contended that it was unfair to evaluate them without taking into consideration the state of the economy when he was elected, and the global recession started still during the presidency of George W. Bush, not to mention a Republican Congress that barred many initiatives, and the independence of the Fed in the design of monetary policy.

The economic vote is a widely accepted regularity in the political science literature. Scholars since Kramer (1971) have long established a positive correlation between economic performance and the success of politicians and parties in office. In its simplest form, economic voting posits that citizens hold the government responsible for economic events, rewarding incumbents in good times and punishing in bad times.

Nevertheless, as the debate about unemployment rates during the 2012 campaign illustrates, a number of caveats apply to this simple notion. Among them, scholars have debated whether economic voting is a matter of sanction or selection (retrospective or prospective), if it is sociotropic or egotropic, which instances of government get punished and rewarded under different institutional settings, and what determines the aspects of the economy voters respond to.

More directly relevant to our analysis, scholars have been increasingly interested on whether and how voters differentiate economic performance which results from policy-making from that caused by exogenous factors beyond governments' control. It is no coincidence that the news so often cited Franklin Roosevelt, a president who governed under severe economic conditions not of his making.

Initial studies of economic voting did not problematize whether economic performance was actually a function of governments' competence. Only more recently authors have begun to focus on voters' behavior in a scenario where performance results not only from competence but also from exogenous factors beyond government control. Yet, models generally assume that voters are capable of identifying one from the other and therefore to punish/reward competence after discounting luck.

Although this assumption seems to find support in the literature dedicated to economic voting in the OECD, here we argue that it should not fly well into less developed democracies, in which low levels of education and information, especially with respect to the world economy, prevent voters from making this distinction.

Latin American countries are particularly suitable for this analysis since they share a longer democratic history than other emerging economies, and many institutional similarities—such as fixed terms, and presidential systems that concentrate strong power in the executive branch—that favor comparative analyses of the impact of economic performance on incumbents' success.

Also very importantly, not only these economies are heavily dependent on exogenous factors, but these factors have been extensively studied by economists. Since Latin American countries are mostly commodity exporters and have very low levels of domestic savings, economic performance in the region is highly determined by the behavior of commodity prices and of capital flows that vary with fluctuations in international interest rates. Latin American economies suffer when commodity prices are low and international interest rates are high, and do particularly well when the opposite occurs.

There are many reasons to believe that Latin American voters are unaware of these cycles. In 2000, the region displayed an average of 64 daily newspapers per 1,000 people, compared with 197 in the United States and 313 in the Netherlands.¹ As late as 2006, only 33 percent of Latin Americans in college age were enrolled in university. In addition,

¹Source: World DataBank online.

Latin American democracies are relatively young, and countries have a long tradition of inward looking economic development, which suggests that citizens are less oriented towards the world economy than, for example, Europeans.

For all these reasons, we hypothesize that Latin American voters are oblivious to exogenous determinants of economic performance, and therefore should reward lucky incumbents in “good times” and punish the unlucky ones in “bad times.”

Our results strongly support this hypothesis. We show that Latin America experiences waves of high and low reelection rates that are directly associated with the performance of commodity prices and interest rates, and that occur irrespectively of president’s ideology or competence.

We then examine the case of Brazil, a country we find to be particularly exposed to these exogenous factors. We demonstrate that it is possible to satisfactorily predict presidential popularity, on a monthly basis and for more than a decade, with a model limited to *two* economic variables—commodity prices index and US interest rates—, both of them *exogenous* to president’s decisions.

These findings have important consequences for the study of economic voting. They suggest that, in less developed democracies, uninformed voters are not always capable of correctly attributing responsibilities to incumbents. If this is true, the linkage between punishment/reward and performance is broken, potentially decreasing governments’ electoral incentives to improve policymaking, and loosening the connection between economic voting and democratic accountability.

Particularly in Latin America, our findings fundamentally challenge the established notion of *accountability ex-post* (Stokes 2001), which contends that incumbents’ frequent breaking of electoral promises does not affect democratic accountability because voters’ ultimate concern is with their material conditions, and they can always reward or punish incumbents depending on the economic impact of their policy choices. We argue that accountability *ex-post* is meaningless if economic performance is mostly determined exogenously and voters are unaware of that.

This paper is organized as follows. In the next section we discuss why and how exogenous factors determine economic performance in Latin America, and lay out our hypothesis that presidents in countries whose economies are particularly determined by exogenous factors are rewarded and punished based on luck, more than merit. The next

section tests this hypothesis by examining incumbent party reelection in a large sample of Latin American countries. The subsequent section shows that monthly presidential popularity can be predicted well by commodity prices and US interest rates in a country that conforms to our scope conditions, but not in a country that does not. We conclude with a review of the findings and a discussion of their broad implications.

Exogenous Determinants of Economic Performance

Students of economic voting have paid serious attention to the problem of assigning responsibility for economic performance. Most of this research examines institutional characteristics of political systems, and how they concentrate or disperse responsibility for the economy among different branches of government. Samuels (2004), for example, shows that in presidential systems electoral sanctioning is stronger when presidential and legislative elections are concurrent; Johnson & Schwindt-Bayer (2009) reinforce these findings in a sample restricted to Central American countries. Benton (2005) argues that citizens punish incumbents when electoral laws are more restrictive, limiting party competition. Cutler (2004) contends that federalism and intergovernmental policymaking may reduce voters' ability to hold their governments accountable.

Less attention has been paid, however, to another aspect of the assignment of responsibility problem: whether voters can identify and, if so, how they respond, to circumstances in which economic performance has an important exogenous component. This has become more of a concern with economic integration which, in theory, should increase the portion of economic performance determined by exogenous factors.

Alesina & Rosenthal (1995) offer a foundation for this analysis by proposing a model in which economic growth is established as a function of a natural rate plus unanticipated shocks that are caused by incumbents' competence, as well as by an exogenous component. In this model, voters can not identify the components of economic shocks, but by learning the variance of these shocks over time allows them to attribute more or less responsibility to incumbents for the economy. Scheve (2000) uses a similar framework to argue that globalization, by reducing the variance of exogenous shocks, should increase voters' capacity to punish/reward governments' competence.

More recently, Duch & Stevenson (2008) propose a modification to Alesina & Rosenthal's (1995) model, which establishes two different types of decision-makers: electorally

dependent (EDDs) and non-electorally dependent (NEDDs). The first one includes elected officials, and the second encompasses firms, interest groups, bureaucrats, foreign lenders, international institutions, and any other non-elected actors whose decisions have an impact in the economy. In this model, competency shocks are associated with the decisions of EDDs, and exogenous shocks with that of anyone else. The authors propose that the impact of institutional changes on economic voting should be considered in light of their impact on the proportion of EDDs versus NEDDs. As a result, the variance in the overall competence shock should be larger in countries in which EDDs make most of the relevant economic decisions. In those countries the competence signal should be stronger, and voters should have a clearer picture of the impact of governments on economic performance. As a result, these are the countries in which economic voting should be observed.

Conversely, voters should be less likely to punish/reward governments in economies in which NEDDs make most of economic decisions. Fully rational voters can distinguish variations in competency shocks from variations in exogenous shocks, and do not punish or reward governments that are not mostly responsible for economic performance. Duch & Stevenson (2008) find support for this assumption in Europe, by showing that citizens who perceive domestic fluctuations as diverging from those in the overall European economy are more likely to register an economic voting. Ebeid & Rodden (2005) use data from gubernatorial elections in the United States to show that the connection between macroeconomic performance and incumbent success is weak in states dominated by natural resources and farming, but strong elsewhere.

In this paper, we argue that there are few if any reasons to believe that this assumption holds in less developed democracies. We look at Latin American countries, because they share a longer democratic history than other emerging regions, and many institutional similarities that favor comparative analyses of that sort. All Latin American countries have presidential systems which, with some variation, concentrate strong power in the executive branch. Not surprisingly, studies on economic voting in Latin America are mostly focused on presidential elections (Samuels 2004, Benton 2005, Johnson & Sooh-Rhee 2010, Baker & Greene 2011). Presidential terms are fixed in the whole region, which eliminates potential endogeneity on incumbents' decision to call elections. In most countries the central bank has some level of independence, but in most of them this

independence can be quite limited.²

Table 1: Exposure to Commodities and International Interest Rates (2000)

	Trade%GDP	Comm.% Exports	Savings%GDP	Ext.Debt%Exports
Argentina	28	69	27	450
Bolivia	22	84	10	302
Brasil	14	47	18	316
Chile	34	83	24	174
Colombia	15	62	14	222
Ecuador	25	90	19	261
Mexico	27	16	19	89
Paraguay	44	85	14	114
Peru	16	79	18	296
Uruguay	21	63	14	322
Venezuela	30	86	33	125

Source: World Databank.

More importantly, not only Latin American economies are heavily dependent on exogenous factors, but these factors are known and have been extensively studied by economists. With the exception of Mexico, most countries in the region are essentially commodity exporters, and therefore economic performance is very dependent on internationally-determined commodity prices. Throughout this paper, we use UNCTAD’s aggregate “free market commodity prices” index as an indicator of international commodity prices.

Latin American countries have also in common very low rates of domestic savings, which makes them extremely reliant on foreign capital. Yet economists have shown that inflows of capital to the region are largely driven by fluctuations in international interest rates, and in particular US interest rates (Calvo, Leiderman & Reinhart 1996, Gavin, Hausmann & Leiderman 1995). When rates are low and liquidity is high, capital is more likely to flow to Latin America. When the opposite happens, international capital flees to safer havens. In this paper, we use the US 10 Year Treasury Constant Maturity Rate, provided by the Federal Research Bank of Saint Louis (FRED), as an indicator of interest rates.

As a result, economies in Latin America tend to do exceptionally well when interest

²According with the IMF, central banks are closer to independent in Peru, Chile, Colombia, Bolivia, Mexico and Dominican Republic, and less so in Argentina, Brazil, Venezuela, Costa Rica, Nicaragua, Paraguay, Guatemala, Honduras, Uruguay. (IMF Working Paper/05/114–*Latin American Central Bank Reform: Progress and Challenges.*)

rates are low and commodity prices are high, and are likely to suffer when the opposite occurs (Maxfield 1998, Calvo, Leiderman & Reinhart 1996, Gavin, Hausmann & Leiderman 1995, Izquierdo, Romero & Talvo 2008). Izquierdo, Romero & Talvo (2008) show that both capital flows and economic growth in Latin America are fundamentally determined by changes in the international interest rates and in commodity prices. Figure 1 evidences the strong association between commodity prices, international interest rates and GDP in Latin America.

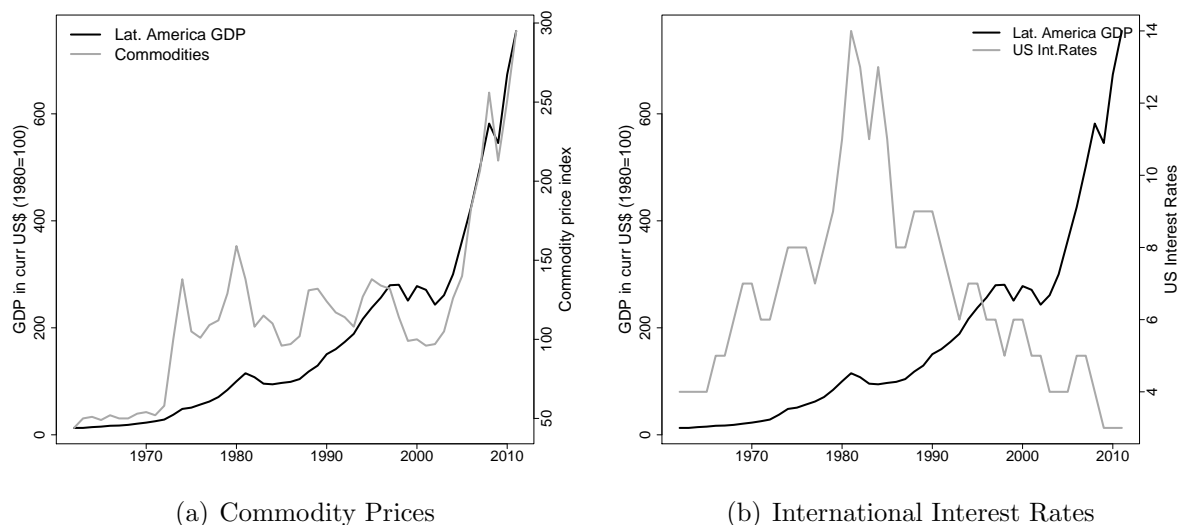


Figure 1: International Factors and GDP

Yet even if most of Latin America should be subject to these conditions, there is some variation on the extent to which domestic economies follow our two variables of interest. Table 2 presents the scope conditions of our argument very succinctly, reporting the relevance of US interest rates and the commodity index for each country's economic performance. Estimates in the table were obtained from regressions ran separately for each country. GDP as normalized to an index in which the value in 1980 corresponds to 100, and we dealt with the time structure in the data very crudely, by simply including the lagged dependent variable³ The table shows the coefficients of the two variables of interest, as well as the results of an F-test for the joint significance of both variables.

Table 2 shows a few striking results. Latin America's economy, taken as region, is heavily influenced by exogenous factors. In all latin American countries, estimates of

³Future versions of the paper we will pay more attention to the time structure in these data.

Table 2: Commodities, International Interest Rates and GDP (1980–2011)

	Interest Rates	log(Commodities)	Joint F-test
Latin America	-5.94*	119.13**	10.21**
Uruguay	-2.05	85.47**	18.54**
Paraguay	-2.92	127.91**	16.79**
Bolivia	-0.69	69.69**	13.55**
Brazil	-7.96*	222.65**	13.39**
Panama	-0.51	49.74**	8.63**
Chile	-8.66*	144.69**	7.48**
Colombia	-5.96.	145.64**	7.09**
Peru	-3.92	105.54**	6.61**
Argentina	-4.32	99.89**	6.36**
Guatemala	-2.34	51.59**	5.10*
Venezuela	-4.67	106.45*	4.64*
Ecuador	-3.84.	65.49*	3.84*
Dom. Republican	-6.53	89.64*	3.44*
Costa Rica	-4.04	63.69*	3.21.
El Salvador	-3.39*	13.77	2.27
Nicaragua	-2.48	27.51	1.72
Mexico	-4.71	36.39	1.02
<i>USA</i>	<i>0.18</i>	<i>-5.48</i>	<i>0.40</i>
Honduras	-0.57	11.60	0.24

the effect of interest rates are negative while those of commodities are positive, which conforms perfectly to the story told above. Moreover, the table lists countries by the magnitude of the F statistic, meaning that the economies of countries near the top are heavily influenced by the international variables, and as such meet the scope conditions of our argument. The commodities index is a significant determinant of economic performance many countries. International interest rate is significant less often, but quite important in more advanced countries such as Brazil and Chile. More importantly, the two variables are jointly significant at a level of 0.05 in 13 countries, borderline in one and not significant in four.

Mexico is the largest among the four countries whose economy does not follow the general pattern. This is not surprising given that Mexico is—by far—the latin american country least dependent on commodity prices. The other smaller economies in the same category are heavily dependent on aid, tied to the US economy as well. In fact, the inclusion of the US to Table 1 reinforces the general findings. As an advanced industrial

country, not only the US's relationship with the world economy is completely different than that of Latin American countries. The fact that it comes out near the bottom of the table, and is the only country in which the signs of the variables are reversed, reinforces the differences between it and its neighbors to the South.

It is important to clarify that we are not claiming that the economy in countries in the bottom of the table does not depend on international conditions. We are simply claiming that they do not depend in the same way as the others. Their economies might (and probably do) follow other exogenous indicators beyond US interest rates and international commodity prices.

In a context of low information, a tradition of inward-looking development and relatively recent integration into the world economy, there are few reasons to expect Latin American voters to be aware of the relevance of exogenous determinants of economic performance, or to be able to distinguish between competence and exogenous shocks.

It follows that, if economic performance is mostly exogenously determined and voters are oblivious to that, Latin American presidents should be often punished and rewarded on the basis of luck, not merit. This is what we test in the next two sections.

International Factors and Presidential Reelection

If economic performance in Latin American countries is strongly determined by the behavior of commodity prices and international interest rates, we should observe a high incidence of presidential reelection in good times, when commodity prices are high and international interest rates are low, and a low incidence of reelections when the opposite occurs. This should be particularly true in the countries in the upper portion of Table 2, whose economy is more strongly tied to these two exogenously determined variables.

As a first approximation of the role of international economic factors in determining the fate of Latin American presidents, Figure 2 shows the behavior of the two main international economic indicators, and re-election rates in the countries most exposed to these factors⁴ in the three decades since redemocratization.⁶ With very few exceptions, we

⁴There were 107 total elections in Latin America in the 16 countries we are considering. After excluding the first elections, for which there was no incumbent, and after eliminating elections that were not free and fair,⁵ we were left with 94 elections. Given that our argument only applies to countries whose economies follow commodity prices and international interest rates, we report, in Figure 2 69 elections in the countries most exposed to the international economy, as defined in Table 3.

⁶Although we refer to the three periods as the 1980's, 1990's and 2000's, we partitioned our data so

defined reelection as any case in which the incumbent party won the subsequent election.⁷

Panel 2(a) shows that international economic conditions were worse in the first period (high US interest rates and low commodity prices), best in the latest period (low US interest rates and high commodity prices). Reelection rates, as reported in panel 2(b) increased markedly from 19% in the worse period, to 67% in the best period.

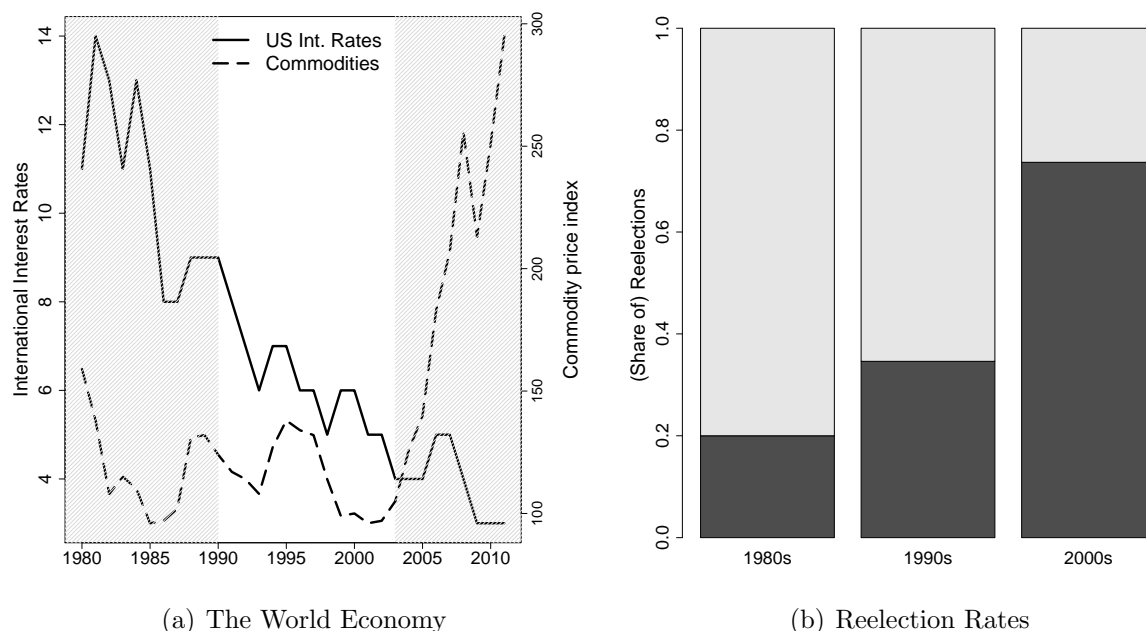


Figure 2: Reelection Rates and the World Economy

In order to further assess the relationship between international factors and presidential reelection in the region, we ran a simple probit analysis of the effects of US interest rates and commodity prices on reelection—computed as the average values of each dependent variable in the twelve months prior to the election date—with standard errors clustered by country. Table 3 reports coefficients for the same regression ran on a sample of all latin american countries, and two smaller samples of countries for which the two international variables are jointly significant at the 0.1 level (“exposed countries”) and at the 0.05 level (“most exposed countries”), as reported in earlier in Table ??.

that we would have a similar number of elections in each period. As such, the 1980’s cover 1982—1994, the 1990’s cover 1994-2004, and the 2000’s cover 2005-2012.

⁷We considered Cardoso’s first election as a case of reelection, even though Franco was not technically part of Carodoso’s party as Cardoso ran with support of the party-less Franco. We also considered Blanco, in the Dominican Republic as not a case of reelection even though Guzmán (his predecessor who died in office) and Majulta (the vice president that succeeded Guzmán) were from his party. This is because Blanco was a bitter rival of both other men, and represented entirely different wing of the party.

Table 3: International Economic Factors and Incumbent Party Reelection (1980–2012; Probit Estimates)

	All Countries	Exposed	Most Exposed
Intercept	-1.434	-4.351	-4.981
Std. Error	3.133	3.099	3.437
p-value	0.647	0.160	0.147
US Interest Rates	-0.129	-0.114	-0.123
	0.045	0.037	0.046
	0.004	0.002	0.008
log(Commodity Index)	0.385	0.960	1.093
	0.599	0.615	0.677
	0.521	0.119	0.106
Countries	16	12	11
N	94	77	69
Pct Correct	0.660	0.727	0.725
Prop. Reduction in Error	0.111	0.276	0.269

The dependent variable is a binary indicator of whether the incumbent party was reelected. Each column reports the fit of the same simple model to different samples, as explained in the text.

Results are in-line with our expectations. Interest rates have significant negative effects on the probability of reelection of incumbent parties in all samples. The effects of commodities increase in magnitude considerably from the full sample to the most exposed sample, and approach lax levels of statistical significance.

The model fits the exposed countries, correctly predicting about 73% of the cases, which imply a reduction in error of about 27% relative to the baseline. These are much better statistics than those observed in the full sample.

Results in the exposed subsample also lead to very substantively meaningful first differences. In the most exposed sample, a change from one standard deviation below the mean to one standard deviation above the mean interest rate in the period leads to a reduction in 0.26 in the probability of reelection. Conversely, a similar change in the commodity index leads to a 0.10 increase in the probability of reelection.

The much more favorable economic conditions in the 2000s, this suggests, go a long way towards explaining the change in the probabilities of reelection of Latin American incumbent parties. Elections, however, are relatively rare events, and can be determined by many factors besides the state of the economy. The Chilean case illustrates these perils very well: Our model predicts a slow and steady increase in the probability of reelection

over time. Governments in Chile were reelected three times throughout the nineties when our model predicted somewhat lower probabilities of reelection, and failed to elect a successor in the 2000's, when our model predicted a higher probability of reelection. However, all elections in Chile were very close, and very likely determined on the margin, by less structural issues than we discuss here. As such, the ultimate test of our argument should not rely on reelection rates, but rather on much more fine-grained data, such as can be obtained on presidential popularity.

International Factors and Presidential Popularity

In order to test the relationship between international factors and presidential success, we examine presidential popularity rates in Brazil to determine the extent to which it can be predicted by commodity prices and US interest rates—both exogenously-determined variables. Brazil appears high in Table 2, and as such is clearly within the scope of our argument. Moreover, it is one of the few in which both commodity prices and interest rates are highly significant predictors of economic performance.

We compiled 375 observations of presidents popularity, taken by four polling firms, and spanning the period between march 1987 and september 2012.⁸ We converted these observations originally taken at irregular intervals into monthly observations by averaging multiple observations per month, which led us to 218 observations spanning 307 months, and imputed the missing 89 observations using Amelia II (Honaker, King & Blackwell 2011).⁹ All independent variables were also observed monthly.

We fitted regression models with just US interest rates and commodity index, as well as models that added dummies for pollsters, months in office (or, alternatively a dummy for a six-month honeymoon period), as well as dummies for political crises.¹⁰ As detailed in the appendix, we ran multiple diagnosis for time structure and stationarity. Below, we report specifications that include lag dependent variable and/or correct for

⁸These observations are mostly publicly available. 73% of all our observations were compiled by journalist Fernando Rodrigues (noticias.uol.com.br/politica/pesquisas/), but our data set greatly expands the number of observations by using several other sources.

⁹We worked with five imputed sets in the analysis. All results presented combine the analysis in the five sets and correct standard errors accordingly. Details of the imputation process and its results are provided in the Appendix.

¹⁰A month was coded as 1 if a major scandal or crisis was on the front pages of the main print media outlets.

AR-1 processes.

Figure 3 reports coefficients of the variables of interest across six different specifications. While domestic political crises take a popularity toll of close to two percentage points, the effects of both commodities and interest rates are in the correct direction and statistically significant across *all* models.

Diagnosis suggests that the models with lagged dependent variables (dark symbols) achieve a more unambiguous purge of any time-structure. Even in these more conservative models our two variables of interest are substantively relevant. Consider that Cardoso's popularity at the eve of his reelection was 42.2%. Had he faced the same international conditions Lula faced at a similar point in his first term, based on the model with lagged dependent variable and AR-1 correction, Cardoso could have enjoyed a popularity rate of 49.7%. In contrast, Lula's popularity at reelection was very close to what the model predicted, at 49.7%. Had he faced the much more unfavorable conditions Cardoso faced, his popularity could have been as low as 35.5%.

To illustrate the power of international factors, Figure 4 reports actual popularity and the popularity predicted by the simplest OLS regression that includes only the two international economic variables of interest. We chose this model for this illustration as it *does not* include a lagged dependent variable, which would “artificially” improve the fit. The R^2 of this very bare-bones model is still a whopping 0.66. The inclusion of political crisis, pollster dummies and time in office increases the R^2 to close to 0.7, still even without a lagged dependent variable.

For the sake of comparison, a model including only “domestic” economic variables (i.e. income, growth and inflation in the preceding six months, unemployment, and exchange rate) yields the same R^2 of 0.66. The fact that a model relying on only two international economic variables can predict popularity as well as a model with several domestic economic variables is striking has important implications for democratic accountability. We return to this point in the closing discussion.

Figure 4 shows that the fit of the regression is better after the economic liberalization of the Collor-Franco government. It also shows that Cardoso over-performed in his first term, and Lula in his second term, which suggests that there is some room for deviations from the international determinants. Cardoso reaped the rewards of stabilization, and Lula probably reaped rewards of increased redistribution. Though both stabilization and

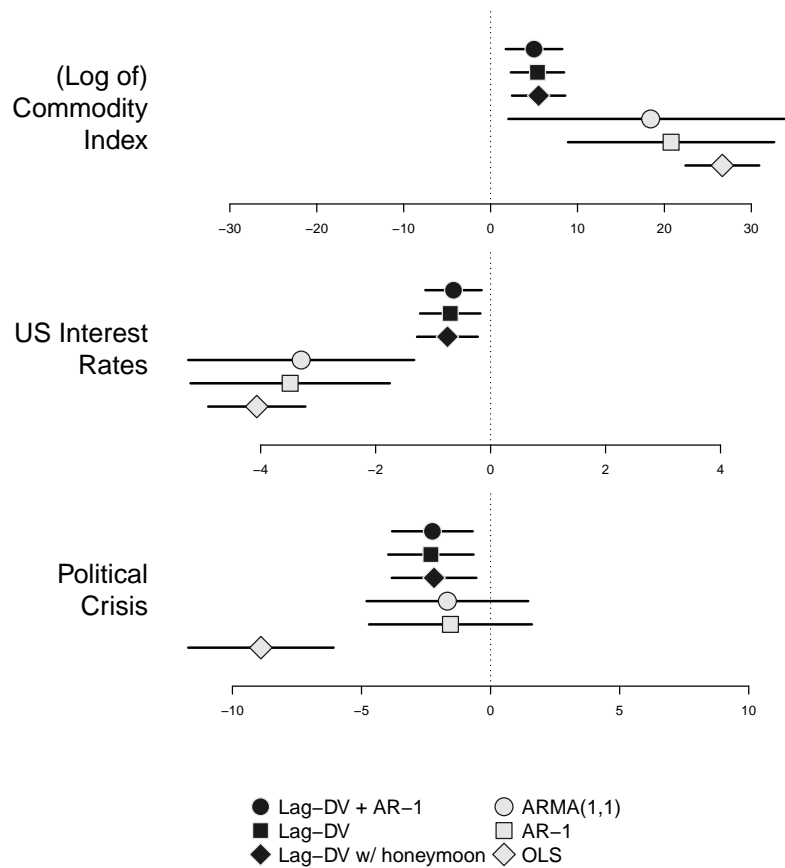


Figure 3: International Economic Determinants of Presidential Popularity in Brazil (1987–2012)

Figure shows coefficients on the variables of interest in six regressions specifications that deal differently with the time structure in the data. All regressions also included pollster fixed effects, a time variable (which was measured as months in office in five of the models, and as a honeymoon dummy for the first six months in office in one model).

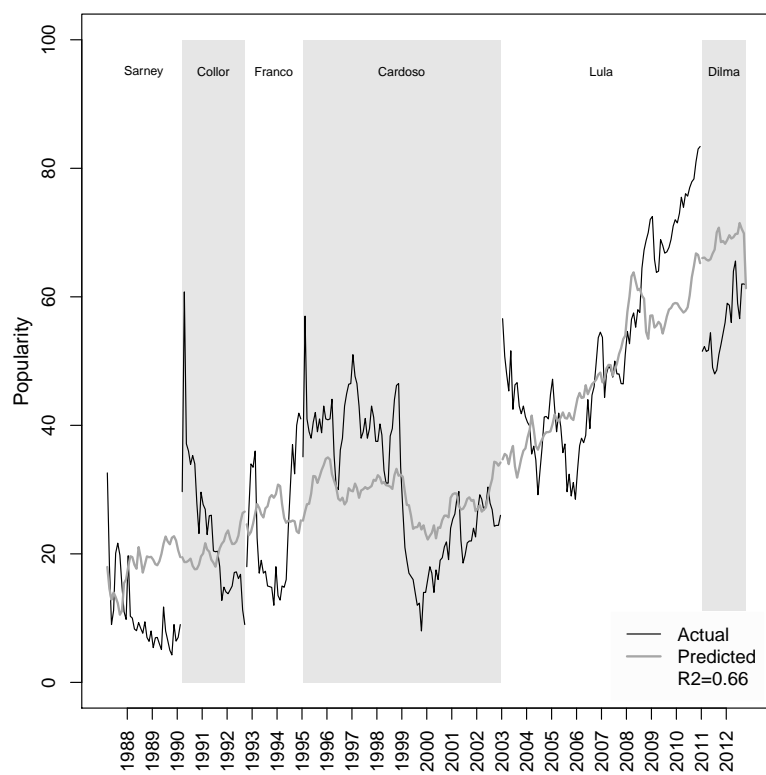


Figure 4: Predicted and Actual Popularity of Brazilian Presidents (1987–2012)

redistributive social policy were at least partially made possible by a benign economic outlook, in both moments presidents were able to make the most of good economic times.

Exploring The Scope Conditions

Our argument is that voters reward/punish presidents for economic performance even if it is determined by external factors beyond presidents control. The fact that we can clearly see this process in Brazil, one of the cases that most neatly conforms to the scope conditions of our argument, suggests our argument does in fact hold. Our confidence that this is the mechanism at work is bolstered if we can show that the link between these two international economic factors and popularity does not exist in a country in which the economy is not determined by these same variables.

We turn, for this exercise, to the US. The US clearly does not conform to the scope conditions of our argument, as is revealed by its position in the bottom of Table 2. As a developed and capital intensive economy, the US relates to the rest of the world much differently than do commodity exporters, and its economy is not be determined by commodity prices. While US interest rates should be expected to affect the US economy—even if in different ways than in Latin America—it is independently set by the Federal Reserve Bank, and as such can be treated as exogenous to the president’s control.

The popularity of US presidents is easily available since the Kennedy administration (www.presidency.ucsb.edu/data/popularity.php), but for symmetry we concentrate here in the same period for which we have data from Brazil, and estimate the exact same models. The contrast is stark: where the most basic OLS model—with just the two explanatory variables—had yielded an R^2 of 0.66, we find now only 0.31. More importantly, as Figure 5 shows, the “effect” of the two variables on popularity virtually disappears after correcting for the time structure in the data. Even though commodity index is significant for the US, it is in the opposite direction than in Brazil (as expected, given that the US is an importer of commodities) and has a much smaller in magnitude.

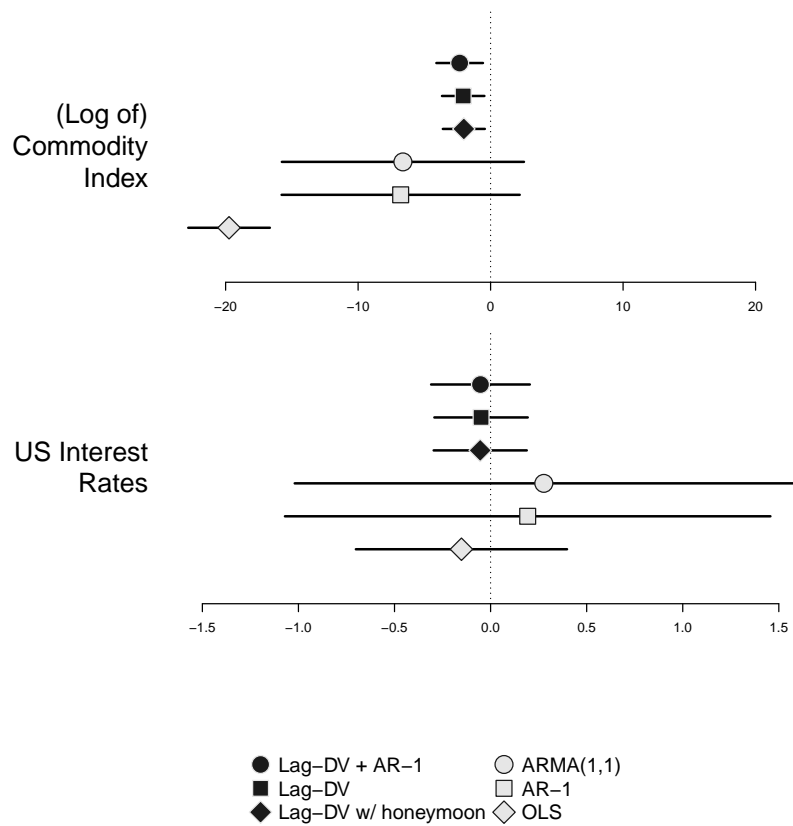


Figure 5: International Economic Determinants of Presidential Popularity in the USA 1987–2012

Figure shows coefficients on the variables of interest in six regressions specifications that deal differently with the time structure in the data. All regressions also included time variable in office in five of the models, and as a honeymoon dummy for the first six months in office in one model).

Conclusions and Implications

This paper examined the hypothesis that voters reward/punish presidents for economic performance even if it is determined by external factors beyond presidents control.

We show that in most of latin american countries, international commodity prices and US interest rates have strong effects on economic performance; that these same variables are strong predictors of re-election rates, and that this effect is stronger in the countries whose economies are more exposed to these two variables. We also show in more detail that these same two international economic variables have substantial effects on the popularity of presidents in Brazil—a country that is among the most exposed—while being all but irrelevant to explain popularity of presidents in the US—a country that is not determined by these factors.

Granted, our results provide some glimpses that presidents are able to marginally affect their own destiny. Reelections are not perfectly predicted by our international factors, and even within Brazil, the country which we examine in more detail, presidents have occasionally over-performed relative to the state of the world economy.

We find, however, that models relying on only two international economic variables can predict popularity as well as a models with several domestic economic variables, and this has very important implications for democratic accountability. It means, in essence, that incumbents are punished or rewarded according to luck, and not merit, much in the same way as voters have been shown to punish incumbents for shark attacks and droughts (Achen & Bartels 2006).

These findings have important consequences for the study of economic voting. They suggest that, in less developed democracies, uninformed voters are not always capable of correctly attributing responsibilities to incumbents. If this is true, the linkage between punishment/reward and performance is broken, potentially decreasing governments' electoral incentives to improve policymaking, and loosening the connection between economic voting and democratic accountability.

Particularly in Latin America, our findings fundamentally challenge the established notion of *accountability ex-post* (Stokes 2001), according to which incumbents' frequent breaking of electoral promises does not affect democratic accountability because voters' ultimate concern is with their material conditions, and they can always reward or punish

incumbents depending on the economic impact of their policy choices. Accountability ex-post hinges on the capacity of voters to link results to performance. But if economic performance is mostly determined exogenously, the ex-post logic cannot hold.

Much work is needed to understand the full implications of our results. Do politicians facing a threatening international environment attempt to convey to voters information about the state of the world economy? Can voters change their ratings of the president if presented with such information? Can counter-cyclical policies break the transmission mechanism and reduce the effect of international factors? Irrespective of the answers we eventually encounter, the main finding in this paper should prompt democracy enthusiasts to engage in some soul-searching.

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A Imputation of Data

We used Amelia II to conduct multiple imputation of missing values in the monthly data set. All of the missingness occurs exclusively in the popularity data. We used a logit transformation to force Amelia to impute values between 0 and 1, and included leads and lags in the imputation. Figure 6 shows observed popularity values and imputed observation

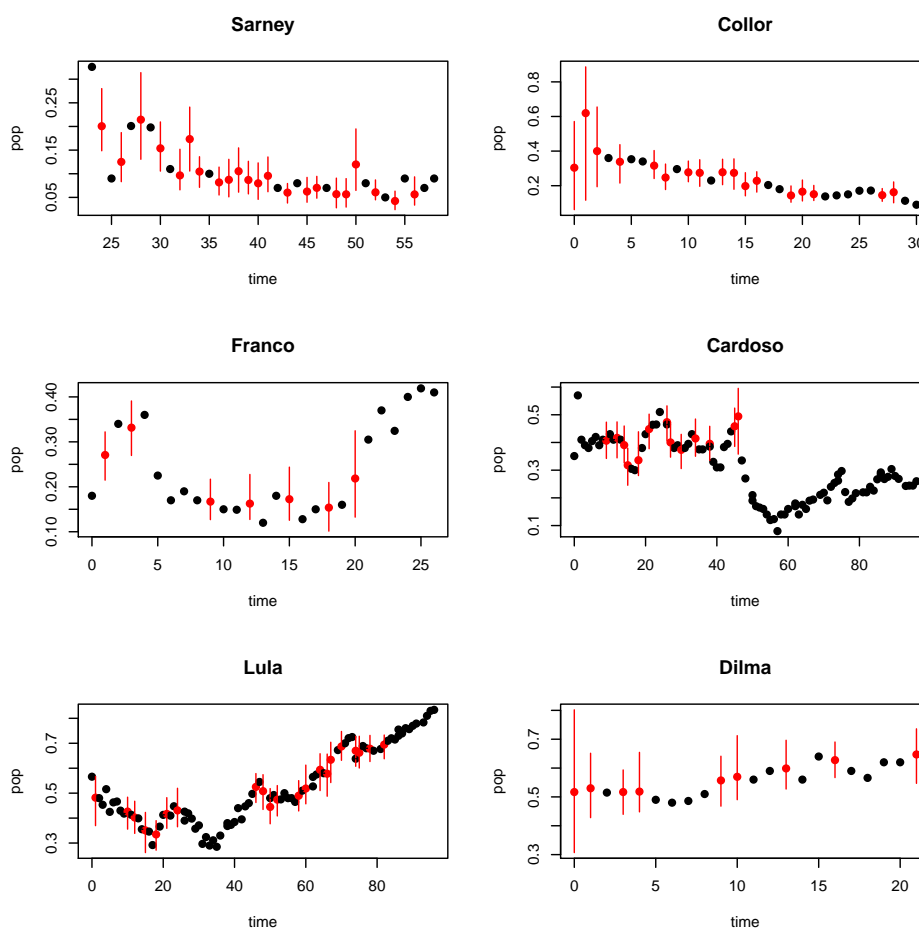


Figure 6: Imputed and Observed Values of the Dependent Variable

B Time Series Diagnostics

We arrived at the results reported in the main body of the paper after exploring characteristics of the time structure in several alternative regression models. As time-series modeling is contingent on several non-trivial empirical choices, we report these alternative models in more detail in this

appendix.

The different model specifications we explored can be grouped substantively into models with international economic factors (henceforth international models), and models with domestic economic factors (henceforth domestic models). The basic international model included simply the international commodity prices index and the US interest rate. The basic domestic model included GDP growth over the past six months, accumulated inflation over the past six months, the unemployment rate, an index of income, and the exchange rate.

Within each family, we fitted models with and without president fixed effects, lagged dependent variables, and either a dummy for start of term (honeymoon period), or a time trend since start of term. All models include dummies for the different polling firms¹¹, and a dummy indicating the existence of political crisis.

We began by fitting a simple linear regression model to the data, analyzed the residuals to identify time structures and/or non-stationarity, and fit models with the appropriate corrections, when necessary. We analyzed the residuals first for stationarity, and subsequently for indications of autoregressive (AR) and/or moving average (MA) data structures. Stationarity was diagnosed by a combination of graphical and formal unit root tests. AR and MA processes were diagnosed by analysis of the ACF and PACF functions, following the standard practices (See, for instance Shumway & Stoffer 2010).

Some domestic models are not stationary. This means that the set of domestic variables is not capable of fully de-trending the data. One could accept this as simply the nature of the data, and perform a correction (such as differencing) to make the data stationary, but substantively, it does not make sense to assume that that presidents will simply grow more popular over time, or that the economic outlook will improve forever.

All variants of the international models are stationary, even those without lagged dependent variables. In other words, once the secular improvement in commodity prices and reduction in interest rates is taken into account, the drift in president's popularity can be fully understood.

Within the international models, the inclusion of the lagged dependent variable removes almost all of the auto-regressive structure in the data. To fully eliminate this structure, we also fit models correcting for an AR-1 process. Figure ?? reports diagnostic for this model (with both AR-1 and lag dependent variable correction), including the plot of the residuals over time, as well as the ACF and the PACF of the residuals, for each of the five imputed data sets that were produced by Amelia. The first row of the figure shows the model is clearly stationary. The second and third rows show that no lags are significant in the ACF or PACF functions of the

¹¹There are observations from four different polling firms, but for some months we aggregated observations from multiple firms, so we created an extra category to indicate this.

residuals.

In the models without the lagged dependent variable, the structure of residuals indicates the presence of an AR-1 or AR-2 process, and possibly also a MA-1 process. Corrections for these models eliminate both AR and MA processes, but actually introduced non-stationarity, which leads us to concentrate, in the main body of the paper, on models with the lagged dependent variable.

Figure 8 reports additional specifications than those reported in the main body of the paper. The inclusion of time in office has almost the same effects as the inclusion of a dummy for honeymoon period (first six months). As such, in the main body we focus only on models with time in office.

All models with the lag dependent variable yield very similar results. The only slight deviation to this rule is the model that includes a president dummy. The president dummy wipes out renders interest rates non-statistically significant, which is simply a function of the fact that international interest rates varies considerable across presidencies. This, in fact, is why analysis often mistakenly attribute popularity to president's policies: exogenous changes in the international economy have coincided with changes in presidents. President fixed effects are not, however, substantively interesting, so we do not focus on this issue any further.

Models without lags produce estimates that are considerably larger than the ones we focus on, which is to be expected. We choose to focus on the models with the lags not only because they are more conservative (and hence, less generous to our hypotheses), but also because diagnostics of lagged models are more robust than those of the AR-1 and ARMA(1,1) models, as mentioned above.

Within the domestic model, the models for which less correction is necessary are the ones that include exchange rate. This is not entirely surprising given that exchange rate is, essentially, an "international" variable. The model that includes a lag dependent variable, exchange rate, and other domestic variables is not unambiguously stationary. Domestic models are not our main focus, so we simply present this information as an illustrative contrast with our own model.

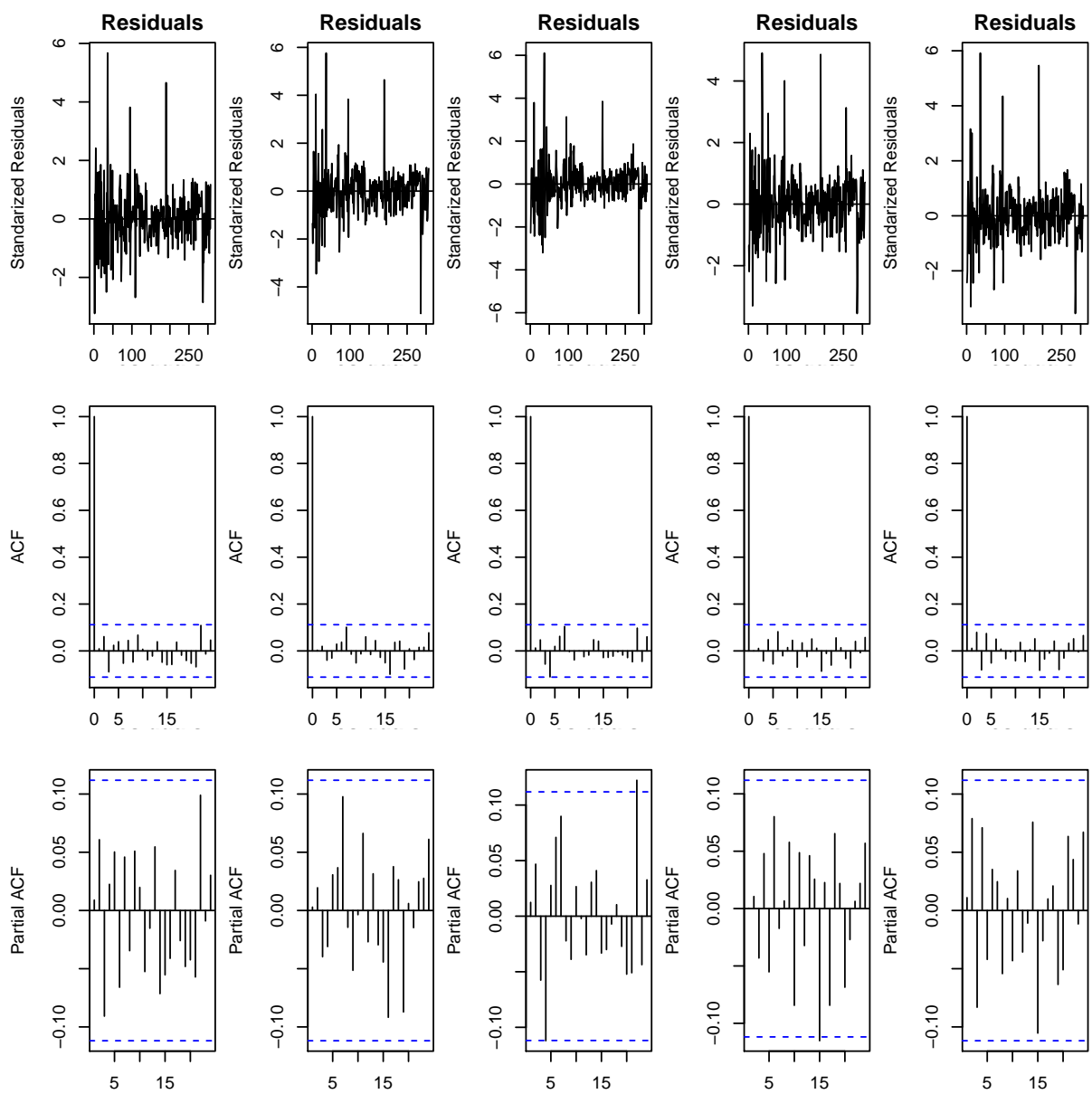


Figure 7: Diagnosis of Five Imputed Datasets

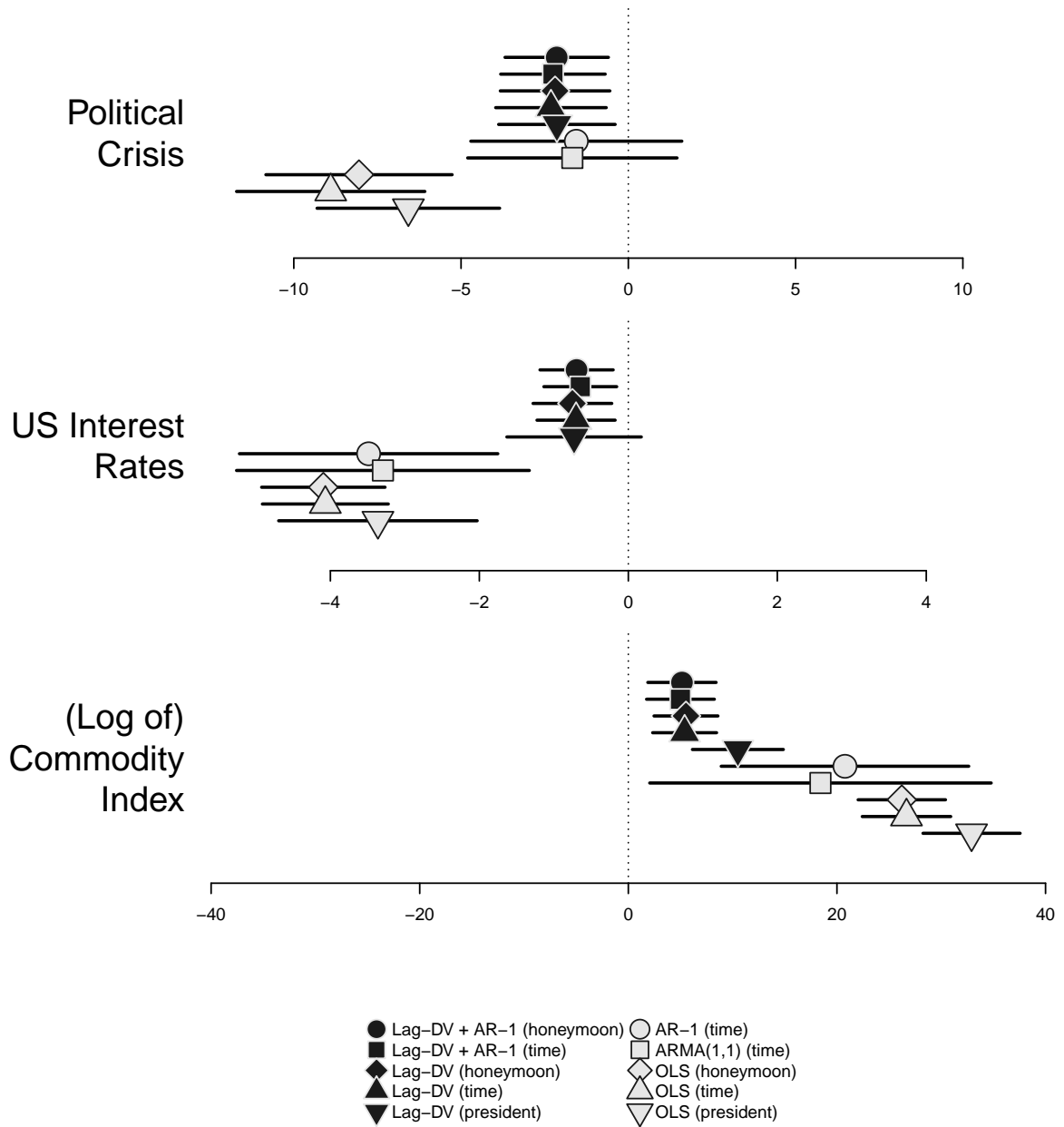


Figure 8: Additional Specifications of the International Model