“Globalization and Central Bank Independence: A partisan explanation”

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Abstract
While globalization has led some scholars to suggest that there has been or will be a convergence in economic policy, especially by leftist governments, evidence in favor of the convergence hypothesis is mixed. Studies have focused largely on the instruments of economic policy such as taxation or spending while ignoring institutional mechanisms that leftist government could use to tie their hands and demonstrate credibility to international investors. I argue that as countries become more globalized, leftist governments will be more likely to reform the central bank. On the other hand, conservative governments will be less likely to reform the bank as globalization increases as granting greater independence to the central bank will remove one of their electoral advantages. To test these hypotheses, I use generalized estimating equations and logit analysis on a sample of 48 developed and developing countries for the period 1973 to 1998. The findings are consistent with the hypotheses: as a country becomes more exposed to the international economy, leftist governments are more likely to reform the central bank. There is no relationship between reform of the central bank and exposure to the international economy under conservative governments.
During the 2002 Brazilian presidential election campaign, the eventual winner, leftist candidate Luiz Inacio “Lula” da Silva, advocated several populist policies, among which was a plan to replace the current central bank president, who was popular with the international markets, with someone from his own party. Wary of Lula’s non-liberal policies, many international investors fled Brazil, causing the value of the currency and the stock market to decline. In response, Lula softened his anti-market rhetoric and promised that Brazil would honor its debt. He even proposed granting the central bank greater independence shortly after elected, though he did replace the central bank governor. Other examples of leftist governments adopting policies more commonly associated with the right abound, including Blair’s adoption of a “Third Way” between socialism and capitalism and Labour’s quick move to give the Bank of England greater independence after winning the 1997 election.

Such examples highlight the pressure on leftist parties to at least appear to adopt neoliberal policies in order to appease investors and are anecdotal evidence that, in the face of globalization, economic policy will converge to a set of policies favored by international investors. The broader cross-national statistical evidence for convergence is mixed, however. But most studies have examined only economic policy, ignoring institutional mechanisms such as fixed exchange rates or central bank independence that could be used by the left to build credibility with international investors.

This paper fills this gap. If, as Grilli, Masciandaro, and Tabellini argue, “the main virtue of having an independent central bank is that it can provide credibility,” then countries with a dependent central bank have an incentive to increase the autonomy of the central bank as a

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country becomes more globalized. This incentive should disproportionately affect leftist governments, which may need more credibility with international investors. As a result, these governments should be more likely to reform the bank as globalization progresses in order to demonstrate a commitment to neoliberal policies. Conservative governments, on the other hand, will not want to give the bank more independence as globalization increases because doing so may benefit their leftist opponents at election time. If a more independent bank makes international investors less wary of leftist governments, conservative governments have reason to maintain a dependent central bank. Domestic political institutions should also influence the likelihood of central bank reform: the presence of multiple veto players in government will make changes to the status quo more difficult.

To test the arguments, I use both generalized estimating equations and logit analysis to examine the likelihood of central bank reform in a sample of 48 developed and developing countries over the period from 1973 to 1998. The results strongly support the hypothesis that leftist governments are more likely to grant independence to the central bank as exposure to the international economy increases, suggesting that leftist parties are concerned about the effect their economic policy has on international investment and will take steps to mollify investors. Also, as expected, conservative governments rarely reform the central bank during periods of increasing globalization. Finally, while the effect of institutions is in the correct direction, it is not statistically significant, suggesting that domestic political institutions do little to constrain central bank reform.

The rest of the paper proceeds as follows. The first section briefly reviews the literature on the effect globalization has on the economic policies of the left. The literature has so far ignored the possibility that the left may use economic institutions in order to gain credibility with

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international markets. I expand on this critique of the literature in the second section, noting that central bank independence is one potential mechanism leftist governments could use to establish credibility. Although there does not seem to be a natural relationship between central bank independence and leftist governments, globalization has altered the preferences of leftist governments over the issue, much as it is argued to have altered their preferences on economic policy. In the third section, I discuss the operationalization of the variables and test the argument using GEE and logit while the fourth section concludes.

GLOBALIZATION AND THE LEFT

Globalization’s effect on the policies of leftist governments has sparked a raging debate in political science in the last ten years. As international investment and trade have grown more important, some scholars have suggested that leftist parties have lost their ability to pursue their preferred economic policies and must move their economic policies toward the center to remain competitive. This convergence hypothesis suggests that in order to maximize profits, international investment will flow to countries with low tax rates and low inflation. Because leftist parties are generally associated with higher spending and tax rates, and because they prefer lower unemployment to lower inflation, leftist parties will have no choice but to abandon these preferences or risk an economic downturn as investment flees the country for more attractive and profitable settings.

So far, however, empirical evidence in favor of the convergence hypothesis has been mixed. While some studies have found strong evidence of a convergence in economic policies, the argument about the effect of globalization on leftist parties is part of a wider literature that examines the effect of globalization on the expansion of the welfare state. The evidence in favor of convergence without respect to partisanship is also mixed (Garrett 2001; Garrett and Mitchell 2001; Crepaz 2001). To the extent that there are clear partisan differences in economic policy

7 The argument about the effect of globalization on leftist parties is part of a wider literature that examines the effect of globalization on the expansion of the welfare state. The evidence in favor of convergence without respect to partisanship is also mixed (Garrett 2001; Garrett and Mitchell 2001; Crepaz 2001). To the extent that there are clear partisan differences in economic policy.
other studies have found that leftist parties are able to maintain their traditional policies in the face of increasing globalization. Other evidence suggests that globalization’s effect on leftist parties depends on the type of policy examined. Demand-side policies such as taxation and interest rates appear to converge while leftist and conservative parties retain distinctive supply-side policies such as spending on education or workforce training. Finally, some scholars suggest that evidence for convergence has not been found because the economic policies of different types of parties have never been that distinct.

An assumption common to all studies that look for evidence of convergence is that leftist parties will alter their policies in order to earn the trust of international investors. Economic policy, however, is not the only tool with which leftist parties can gain the confidence of international investors. Scholars examining the impact of globalization on the left have largely ignored institutional mechanisms that could be used by the left to gain credibility. Economic institutions can be used to tie the hands of the government, preventing it from engaging in activist economic policy and limiting inflation. The institutions should also increase the credibility of leftist governments; such efforts, though, have been largely ignored by scholars examining globalization’s effect.

Central bank independence is one such mechanism. As mentioned above, central bank independence lends credibility to a government. Substantial evidence exists that central bank

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11 Clark 2003.
12 While Maxfield (1997) does suggest that a middle-income country that experiences increasing integration into the international economy is more likely to increase the independence of its central bank, she also ignores partisan differences that will affect the need for credibility.
independence is associated with lower rates of inflation, at least in developed countries. Some scholars also find that, in contrast to theoretical expectations, greater independence does not appear to adversely affect macroeconomic variables such as employment or growth. Also, Pastor and Maxfield argue that international investors view central bank independence as a signal of more credible economic policies and find that higher levels of central bank independence have a positive and significant effect on investment in developing countries.

CENTRAL BANK REFORM

Partisanship and globalization. Despite these advantages, central bank independence also has drawbacks that suggest there is not a natural affinity between leftist parties and central bank independence. Traditionally, because leftist parties have drawn their support from the working class, they have favored more expansionary policies aimed at lowering unemployment (Hibbs 1977; Alesina 1988; Lange and Garrett 1985, 1987; Oatley 1999). Central bankers, on the other hand, care relatively more about inflation than they do about unemployment. An independent bank will raise interest rates when it believes inflation pressures are building. Because they are more concerned about prices than leftist parties, the bank will dampen an economic boom earlier than a leftist party would prefer. Findings by Prast and van Lelyveld offer direct empirical support on the preferences of leftist parties and their supporters. Prast, in a survey of households in the Netherlands and Italy, finds that political orientation significantly influences a respondent’s perceived trade-off between unemployment and inflation: left-wing party supporters tend to be more concerned about unemployment. She also finds that while supporters

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15 Rogoff 1985.


17 Pastor and Maxfield 1999.
of all parties prefer to let the government have the final say over monetary policy, supporters of left parties reveal a stronger preference for this option than conservative party supporters.\textsuperscript{19} Similarly, in his study of responses to a 1976 Eurobarometer, Van Lelyveld finds evidence that individuals with a leftist ideology care relatively more about unemployment than about inflation.\textsuperscript{20}

Additionally, independence may have detrimental effects on the economy. An independent central bank restricts the ability of a government to pursue an expansionary economic policy.\textsuperscript{21} Central bank independence is also associated with deeper recessions\textsuperscript{22} and higher disinflation costs.\textsuperscript{23} Finally, independence appears to affect some types parties more than it does others: In a study of 16 OECD countries, Way finds that “independent central banks produce sharply lower inflation rates where Left cabinets are prevalent but at a cost of increasing unemployment.”\textsuperscript{24} In contrast, conservative parties with an independent central bank do not have lower inflation rates but do see lower unemployment (Way 2000).

So while leftist parties do not have a natural preference for a more independence central bank, globalization will alter their preferences just as it is said to have changed the economic policies of leftist parties. If the left continues to pursue lower unemployment at the cost of higher inflation, it risks antagonizing international investors, whose influence in the domestic economy has grown with globalization. The ease with which capital can flow across borders means that investors can easily move their investments to countries with higher rates of return. To prevents investors from leaving the country or to bring in more investment from outside the

\textsuperscript{18} Prast 1996; van Lelyveld 1998.
\textsuperscript{19} Prast 1996.
\textsuperscript{20} van Lelyveld 1998.
\textsuperscript{21} Kurzer 1987; Lohmann 1998; Clark and Reichert 1998; Franzese 1999.
\textsuperscript{22} Debelle and Fisher 1994.
\textsuperscript{23} Posen 1995a, 1995b; Walsh 1995; Gartner 1996.
country, leftist governments have an incentive to reform the central bank in order to demonstrate a commitment to more credible economic policies. Therefore, as globalization increases, leftist governments should be more likely to increase the independence of the central bank.  

Conservative governments, on the other hand, do not face the same constraints as globalization increases because their preferred economic policies—lower taxes, low inflation, and low social spending—have greater credibility with profit-maximizing international investors. Also, their relatively larger concern with prices means that an independent central bank will not offer as much benefit in terms of lower inflation, so conservative parties have less of an incentive to use central bank reform as a credibility-building measure.

Moreover, conservative parties will be reluctant to reform the central bank because doing so may help their opponents. When inflation is an electoral issue, then, as Milesi-Ferretti suggests, a government with a reputation as an inflation-fighter has a reason not to make the central bank independent or to fix the exchange rate. Maintaining a floating exchange rate or a dependent central bank gives the inflation-fighting party an advantage over parties that are seen as lax on inflation. Undertaking the reform, he concludes, “would benefit the opposition party, with weaker credentials in that area, more than the incumbent.”

25 This raises the question of why a leftist government would alienate its core constituency as globalization increases by reforming the bank. The answer, I believe, has to do with electoral concerns. As long as the party is outside the mainstream, as long as it has little chance of entering government, it can ignore the concerns of international investors and, in fact, campaign against the pernicious influence international investors hold over the domestic economy, advocating heterodox economic policies. As the party moves into the mainstream, it may have to moderate its economic policy because of pressure from the international market. By refusing to moderate its policies, a newly-elected leftist party would risk starting its government in an economic downturn and hurting its reelection prospects from the beginning.
27 See, for example, Way 2000.
29 Milesi-Ferretti 1995, 1382.
as globalization increases. Given that central bank independence is associated with higher levels of international investment,\textsuperscript{30} if international investors are concerned about the possibility of a leftist government, conservative governments will have little reason to make the bank more independent. Tying the left’s hands with respect to monetary policy by reforming the bank will ameliorate investor concern about a leftist government as an electoral issue, taking away an advantage of the conservative government. Hence, while increasing exposure to the international economy should encourage leftist parties to reform the bank, it is unlikely to have the same effect on conservative parties.

\textit{Domestic political institutions.} In addition to partisanship, domestic institutions may affect the likelihood of reform. Parties may not be able to act on their preferences unilaterally, but instead may be constrained by the country’s political institutions, especially the number of veto players. According to Tsebelis, “a veto player is an individual or collective actor whose agreement (by majority rule for collective actors) is required for a change in policy.”\textsuperscript{31} All else equal, the presence of multiple veto players makes it more difficult for a government to reach agreement on changes to central bank laws. Assume that a two-party coalition government exists so the consent of both parties is necessary to change the status quo. Party L prefers a more independent central bank, because it wants to gain credibility with international investors. Party R, on the other hand, prefers a more dependent central bank. As long as the status quo level of independence is between the most preferred points of the two parties, it will be impossible to change. While each party would like to move the autonomy of the bank closer to its own preferred point, doing so would move the bank further from the preferred point of its coalition partner who would then use its veto power to stop the changes. Therefore, governments with

\textsuperscript{30} Pastor and Maxfield 1999.
\textsuperscript{31} Tsebelis 1995, 301.
multiple veto players, including governments with multiple leftist parties, will have a more
difficult time reforming the central bank than will governments with single veto players.

Thus, three hypotheses can be derived from the convergence and veto player literature
and will be tested in this paper:

Hypothesis 1: As globalization or exposure to the international economy increases, leftist
governments will be more likely to reform the central bank in order to gain credibility
with international investors.

Hypothesis 2: As globalization or exposure to the international economy increase,
conservative parties will not reform the central bank because doing so will help their
leftist opponents.

Hypothesis 3: The presence of multiple veto players will decrease the likelihood of
central bank reform because more veto players make it more difficult to reach agreement
on an alternative to the status quo.

DATA AND OPERATIONALIZATION

The hypotheses will be tested on a selection of 48 developed and developing countries for
the post-Bretton Woods period. The focus has been limited to the period between 1973 and
1998 for two reasons. First, monetary policy played a secondary role in economic policy under
the Bretton Woods agreement in force between 1945 and 1973. When exchange rates are fixed,
central banks do not have as much say in economic policy. Monetary policy is used to maintain
the value of the currency rather than for domestic purposes. In fact, “When a nation fixes its
currency’s value to that of another nation, it is, to a large extent, delegating monetary policy to a
foreign central bank.” The role of monetary policy, and therefore central banks, was also
limited during this time by the dominance of Keynesian policy which posited a diminished role

32 Countries were chosen from Western Europe, Africa, the Americas, Asia, and Oceania. I
excluded Eastern and Central European countries from consideration. In selecting the
developing countries, I opted for large countries or smaller countries that had experienced long
periods of political stability (e.g., Costa Rica and Botswana).
34 Bernhard, Broz, and Clark 2002, 695.
for monetary policy compared to fiscal policy. Thus, until the early 1970s, the level of central bank independence was not a strong concern of the government. With the end of Bretton Woods and the rise of stagflation in the 1970s and early 1980s, it became clear that Keynesianism was no longer working. Politicians and the public worried more about inflation and, consequently, about the role the central bank should play in the economy.

Second, the end of the Bretton Woods period coincided with a large increase in capital flows, especially as countries began to remove restrictions on capital mobility.\footnote{Garrett 2000a.} Portfolio investment and foreign direct investment’s share of world GDP have both increased substantially since 1970.\footnote{Garrett 2000b.} The trend has continued in the 1980s. Cohen points out that an increasing amount of dollars, deutschmarks, and yen circulate in foreign markets, creating competition for domestic currencies.\footnote{Cohen 2000.} And more capital is going to developing countries: “During the early 1990s net capital flows to developing countries averaged more than $130 billion a year, nearly four times the level of flows during the 1980s.”\footnote{Biersteker 2000, p. 148.} Such increases in the mobility of capital, therefore, make credibility a much larger issue with governments now.

\textit{Dependent variable: Central bank independence.} In this paper, two indicators are used to measure the dependent variable, central bank independence. The first is the change in the level of independence, based on Cukierman, Webb, and Neyapti’s index, measured as independence in year t-1 subtracted from independence in year t and then multiplied by 100 to make the coefficients larger and easier to grasp. Cukierman, Webb, and Neyapti derive independence scores for 72 countries for 4 time periods (1950-59, 1960-72, 1973-79, and 1980-1989). I have updated the scores for the countries in this sample that reformed their banks between 1973 and 1998. The scores are based on a weighted
calculation of 16 indicators in 4 categories: Chief Executive Officer, Policy Formation, Objectives, and Limitations on Lending to the Government.\textsuperscript{39} The indicators cover such areas as: who appoints the Governor of the Bank, how long is the Governor’s appointment, who formulates monetary policy, does the central bank have the stated objective of price stability, and does the central bank set the terms of lending to the government. For each of the indicators, possible scores run in intervals from 0 to 1 with the intervals depending on the number of categories. For example, there are five categories in the central bank governor’s term of office indicator: 0=under four years or at the discretion of the appointer; .25=4 year appointment; 0.50=5 years; 0.75=6 to 8 years; 1=more than 8 years. Scores from the individual indicators are then aggregated into their broader categories as such: the four indicators in the CEO category are averaged; policy formation is a weighted average of the 3 components with who formulates monetary policy and role in government’s budgetary process worth a quarter and resolution of conflict worth one half; objectives and the first four indicators in limitations on lending were each treated separately; finally the last four indicators in limitations on lending were averaged. These aggregate scores were then summed to get an unweighted average independence score.\textsuperscript{40} To get the weighted average used in most studies, including this one, the weights listed in the Appendix were applied to each of the aggregate scores and then the totals were summed. The aggregate CWN scores range from a possible 0 to a possible 1, with 1 representing the most independent possible central bank.

There are a couple of limitations to focusing on the amount of change. First, because central bank reform is rare, the substantive impact of the independent variables will be very small and difficult to interpret. Second, the Cukierman, Webb, and Neyapti index is based upon a certain conception of independence which rewards a central bank that has greater control over

\textsuperscript{39} A list of all of the indicators and their weight are listed in the Appendix.

\textsuperscript{40} If the legislation does not cover one of the indicators, it is not coded as 0. Instead, “the weights of the missing variables are allocated proportionally to the remaining variables within the subgroup” (Cukierman, Webb, and Neyapti 1992, p. 12).
monetary policy (the Bundesbank model). An alternative conception, based on a principal-agent framework, has arisen in recent years. In this model, the government announces a target range of inflation for the Bank to achieve and the Bank can use any mechanism at its disposal to do so. In limited circumstances, inflation targets can be ignored for a short time in order to deal with more pressing problems. The Bank receives incentives for hitting the targets and is forced to pay a penalty if it fails. Banks that adopt this model of independence will have lower scores on the current indices, though it is questionable whether they are less independent.

In light of these problems, the second dependent variable is a dichotomous variable that is coded as one for the year in which a central bank reform went into effect; if there was no change in the central bank law or if the level of independence decreased, the dependent variable receives a score of zero.

Between 1973 and 1998, there were 32 increases in central bank independence and 9 decreases out of 1241 observations. The recoded amount of change varies from –8 in Panama to 83 in Spain with an average change of 27.2. Of the 48 countries in the sample, 27 granted their central bank more autonomy at some point during this period; some countries reformed their central bank more than once. The probability of an increase of independence in a given country in any year is 2.6%. (See Table 1 for a list of the reforms and the amount of change in the indices.)

Independent variables. The level of independence in a country depends on the interaction of economic and political variables. In this section, I discuss how the explanatory variables are measured and how the interactions are formed. Table 2 summarizes information about the

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41 Fratianni, von Hagen, and Waller 1997.
explanatory variables and gives the expected direction of each variable. (More detailed information on how each variable is coded is available in the Appendix.)

[Insert Table 2 about here]

**Number of veto players.** The number of veto players is treated as dichotomous, following Hallerberg and Basinger. When a single party controls the government with a majority of seats in the legislature, the variable is coded as zero; it is coded as one when no party has a majority in the legislature or when more than one party is in the government (for example, a coalition government or a government where the executive and legislature are controlled by different parties). Minority governments are considered to have multiple veto players because they need the agreement of at least one other party for a majority in the legislature; a minority government is not able to pass legislation unilaterally.

**Partisanship.** Each party that took part in government at some point in the 48 countries examined here has been classified as leftist, center, or conservative based on the judgments of experts. Castles and Mair and Huber and Inglehart both asked country experts to place parties in their country of expertise on a numerical scale with one extreme representing the far left and the other the far right. Individual scores for each party were then averaged by Castles and Mair and Huber and Inglehart to derive an ideological score which I used to categorize the parties.

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42 Hallerberg and Basinger 1998.
43 Although it is difficult to find specific placements for parties in developing countries similar to the ones used in developed countries (Castles and Mair 1984; Laver and Hunt 1992), information about a party’s more general position is readily available (Coppedge 1997; Huber and Inglehart 1995). It is possible to classify most parties as either leftist, centrist, or conservative, even in developing countries.
44 Castles and Mair 1984; Huber and Inglehart 1995.
For the countries not included in these two studies, I coded parties based on broad measures that classified parties as left, center-left, center, center-right, or right.\footnote{Coppedge 1997; \textit{Political Parties of the World} various years; and \textit{Europa Yearbook} various years.}

When there is some discrepancy about a party’s position, I opted for the broad ideological category agreed upon by a majority of the experts. When there is a great deal of confusion about a party’s ideology, I coded the party as centrist. A party is also considered centrist if no identifiable ideology could be assigned to it. Insofar as was possible, I avoided coding parties as centrist as this coding does not add much information to the analysis. So, when parties are considered to be center-left or center-right, I have coded them as left or right, respectively.

Based on the coding of the individual parties, I placed each government into one of five groups: (1) Left—the party or parties in government all have a leftist orientation; (2) Center-left—a coalition is equally represented by leftist and centrist parties or is dominated by leftist parties with a couple of smaller center or conservative parties; (3) Mixed—the party or most parties in government have a centrist orientation or leftist and rightist parties have about the same proportion of seats; (4) Center-right—a coalition is equally represented by conservative and centrist parties or is dominated by conservative parties with a couple of smaller center or leftist parties; (5) Right—the party or parties in government all have a conservative orientation. Essentially, a government has been coded as center-left or center-right if, of the parties in government, one type of party has at least double the number of seats as the other types of parties.\footnote{An example may make the coding more clear. In Bolivia, the conservative Accion Democratica Nacionalista Party (ADN) split the government with the leftist Movimiento de la Izquierda Revolucionaria (MIR). The parties had the same number of seats in the Senate (8) and about the same number in the House (38 and 33, respectively) so this government has been}

These codings are then used to create two dummy variables: \textit{left} which takes on the
value of 1 if the government was leftist or center-left and 0 otherwise and right which takes on the value of 1 if the government was right or center-right and 0 otherwise. About a quarter of the sample was coded as leftist or center-left (305 cases) and a little over half was coded as conservative or center-right. The remaining quarter of the cases were coded as centrist governments.

Globalization. To measure globalization, I use two international economic indicators: change in foreign direct investment (FDI) as a percentage of GDP and change in openness. Change in FDI is measured as \((\text{FDI}_{t-1}/\text{GDP}) - (\text{FDI}_{t-2}/\text{GDP})\) while change in openness is measured as \((\text{openness}_{t-1} - \text{openness}_{t-2})\). Both variables were lagged one year, so each is based on the change from two years before the current year to a year before the current year. Change in FDI and openness are used rather than their annual percentage of GDP because politicians will react more to what they perceive to be the trend in these variables than they will to the actual level.

Because capital flows are more important in recent years, as discussed above, governments should become more sensitive to changes in foreign direct investment. Politicians are therefore likely to view a decline in foreign investment as a signal from investors that the country’s economic policies are not attractive. One response to the signal would be to increase the independence of the central bank. So, changes in FDI should have an inverse relationship with central bank independence.

coded as centrist. In contrast, the next government was a coalition of the conservative Movimiento Nacionalista Revolucionario (MNR), the non-ideological Union Civica Solidaridad (UCS), and the leftist Movimiento Bolivia Libre. The MNR controlled 17 of the 27 Senate seats and 52 of the 130 House seats. The UCS had 1 Senate and 20 House seats while the MBL controlled only 7 House seats. This government has been coded as center-right because of the distribution of the legislative seats.
Openness is another variable used in the literature on globalization. As trade increases relative to GDP, a country will be more affected by international economic events. So, I expect that an increase in openness will be associated with a greater likelihood of central bank independence. Trade openness is measured as the total amount of exports and imports as a percentage of GDP.

Interaction. To test the argument that the impact of international economic variables will depend on the type of government in office, two interaction variables have been created. First, the leftist dummy variable is multiplied by each globalization variable to create two interactions. The interaction of leftist governments with change in FDI should have a negative sign while the interaction with openness should have a positive sign. Leftist governments should be more likely to reform the bank in response to negative changes in FDI than should center or conservative governments. Similarly, increases in openness indicate an increase in globalization, which should force leftist governments to give the bank more independence. Second, the conservative dummy variable is interacted with the two international economic variables. Because conservative governments are not expected to be as affected by the need for credibility as leftist governments, the conservative interactions should have the opposite sign as the interaction with leftist governments. That is, in comparison with left and center governments, the level of globalization should have no effect on conservative governments. Therefore, I expect that when the effect of change in FDI or change in openness by itself is added to the appropriate interaction with conservative governments, the combined effect will be zero.

Control variables. Economic variables are also suspected to affect the level of CBI; two were included as control variables: inflation and economic growth. Inflation should have a positive

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relationship with independence—countries that have experienced high inflation in the past may be more likely to adopt an independent bank. Inflation is measured as the lagged log of the change in CPI. Economic growth is measured as the lagged growth in GDP in constant dollars but its effect on CBI is less certain. It may be the case that when growth is slow, investors prefer a leftist government with control over monetary policy in order to prime the pump and increase growth; at the same time, when the economy is growing, the left may feel less of a need for institutional reforms because investors are attracted to the strong economy.

One another control variable is included, a dummy variable for European Union countries that takes effect beginning in the year 1990 or the year in which the country entered the EU. The Delors Report, released in 1989, proposed a three-stage approach to European Monetary Union. To gain membership into the EMU, countries had to, in essence, give up monetary autonomy to the European Central Bank. Before the EU countries joined the EMU, though, they had to grant their central banks a specified level of independence. This requirement forced countries that may not have otherwise reformed their bank to do so in order to reap the benefits of EMU membership. Therefore, it is expected to have a positive relationship with the likelihood of reform.  

The hypotheses examining the interaction of the globalization variables and government ideology will be tested separately. The two regression equations are as follows:

(1) CBI = VP + Left + Right + Globalization + Left* Globalization + f(Controls)
(2) CBI = VP + Left + Right + Globalization + Right* Globalization + f(Controls)

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49 Even though Britain, Sweden, and Denmark did not join the EMU at its start, they did have the option to join and have been coded as 1 on the EU variable. Austria, Finland, and Sweden joined the EU in 1995; they were coded as 1 on the EU variable from 1995 through 1998.
RESULTS

Because of the well-known difficulties cross-sectional time-series data cause OLS, the first tests of the hypotheses are conducted using the method of generalized estimating equations (GEE). GEE is an appropriate method to use when there is uncertainty about correlation in the data as it compensates for the potential problems of both autocorrelation and heteroskedasticity in cross-section time-series data. The results are presented in Table 3.

When change in FDI is used as the measure of exposure to the international economy, three variables are significant: the EU dummy, change in FDI, and the interaction between change in FDI and leftist governments (Columns 1 and 2). The EU control variable is, as expected, positive and significant. Although its impact is a bit small, this reflects the numerous cases where an EU country had the opportunity to reform its central bank but did not. The movement from a non-EU country to an EU country only increases the independence score by 3 points on the scale to 100 (see Table 3).

Both change in FDI and its interaction with leftist governments are negative and significant. As foreign investment either comes in at a slower rate than in the past or starts to leave the country, governments, especially leftist governments, will increase the independence of the central bank in order up credibility. A leftist government that suffered a 3 percent decline in FDI in the previous year was likely to increase independence by about 3 points, about the same effect as EU membership. When economic control variables are included, change in FDI by itself drops out of significance, but its interaction with leftist governments is still negative and significant. So, the more international investment declines, the more autonomy leftist governments will give the central bank.

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51 Zorn 2000, no date.
In contrast, conservative governments do not have the same concerns as FDI declines. Column 3 shows the results when an interaction between conservative governments and change in FDI is added but the interaction between leftist governments and change in FDI is removed. While the interaction between change in FDI and conservative governments is close to significance when economic controls are included (column 3), it does not reach conventional significant levels. Moreover, the sign on the interaction is positive and about equal to value on the change in FDI variable, suggesting that change in FDI has a minimal impact on conservative governments. The veto player variable is not significant in any of the models when change in FDI is used as the measure of globalization. While the coefficient has a negative sign when the economic controls are not included, the sign becomes positive when the economic controls are added.

The results when change in openness is used as a measure of exposure also support the argument (columns 4, 5, and 6). Focusing first on the models testing the leftist government hypothesis, the only significant variables are the EU control variable and the interaction between leftist governments and change in openness, though the latter is positive and significant at the .1 level in the models with and without the economic controls. As openness increases under leftist governments, they will grant more independence to the central bank. This suggests that leftist governments may use independence as a signal to international investors as their exposure to the international economy increases.

On the other hand, the interaction between conservative governments is not significant. So while increasing trade openness increases the likelihood that leftist governments will increase the independence of the central bank, it does not have an effect on conservative governments. The results from the panel models, then, suggest that increased globalization has different effects
on leftist and conservative governments, causing the former but not the latter to seek institutional mechanisms to mollify international investors. Again, the number of veto players does not have a significant impact on central bank reform.

Logit results. As mentioned above, there are limitations to looking at the amount of change in central bank independence. In this section, logit analysis is used to examine how the independent variables affect the probability of central bank reform. Logit computes log-odds ratios for each variable to determine the probability of an event occurring. To convert the log-odds to standard probabilities, one takes the anti-log. A binary logit model is used with robust standard errors clustered on the country variable. Because the data are cross-sectional time-series, the observations are not really independent within a country so clustering is appropriate. The results are presented in Table 4.

[Insert Table 3 about here]

Change in FDI. The results of the logit analysis when change in FDI is used as a measure of globalization confirm the results of the panel analysis. Both change in foreign direct investment by itself and its interaction with leftist governments are significant at the .05 level (change in FDI by itself is significant at .01). Both also have a negative sign, indicating that negative changes in FDI increase the probability of reform. Leftist governments facing a one percent decline in FDI are 2.3 times as likely to reform the bank as leftist governments facing no change in FDI. The veto player variable is not significant, though it is in the correct direction.

In addition, analyses were run using time-series logit with random effects and with King and Zeng’s relogit technique. Random effects were chosen because some countries did not reform their bank during this time period and would be dropped from the sample if fixed effects were used. King and Zeng’s relogit technique corrects for rare events bias in a sample. The results of these analyses support the logit analysis with one exception. While the interaction between leftist governments and change in FDI remains significant at the .05 levels using either alternate technique, the interaction between leftist governments and change in openness falls out of.

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52 In addition, analyses were run using time-series logit with random effects and with King and Zeng’s relogit technique. Random effects were chosen because some countries did not reform their bank during this time period and would be dropped from the sample if fixed effects were used. King and Zeng’s relogit technique corrects for rare events bias in a sample. The results of these analyses support the logit analysis with one exception. While the interaction between leftist governments and change in FDI remains significant at the .05 levels using either alternate technique, the interaction between leftist governments and change in openness falls out of.
Also, neither ideology variable is significant, suggesting that at low levels of globalization, neither left nor right governments are likely to reform the central bank.

In column 2 of Table 3, the results are shown when the economic control variables are included. While change in FDI by itself drops out of significance, the interaction between change in FDI and leftist governments is still significant. Its magnitude is similar as well: Again, leftist governments facing a one percent decline in FDI are 2.3 times as likely to reform the central bank as leftist governments facing no change in FDI. Neither inflation nor change in GDP is significant. As expected, the EU variable is positive and strongly significant in both models. EU countries are between 5.5 and 6.7 times as likely to reform the central bank as non-EU countries.

The third column shows the results when the interaction between conservative governments and change in FDI is included in the model. As expected, the interaction between conservative governments and change in FDI is not significant: conservative governments do not respond to changes in FDI by reforming the central bank. Change in FDI by itself is negative and significant, presumably reflecting the fact that leftist governments were likely to respond to declines in FDI by reforming the central bank. Again, while the sign on the coefficient of the number of veto players is in the correct direction, it is not significant. There is little evidence then that the number of veto players, as measured here, has a significant impact on the probability of reform.

*Change in openness.* The results using change in openness support the argument as well. Again, neither government ideology variable nor the number of veto players is significant, though the number of veto players is again in the correct direction. Change in openness by itself

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significance when the random effects logit analysis is run. Because the standard logit results are a little easier to understand, only they have been presented.
also fails to reach significance. The interaction between change in openness and leftist governments, however, is significant and positive. As trade increases as a proportion of GDP, leftist governments are more likely to give the central bank independence. The relationship holds when the economic controls are included. As shown in column 6, changes in openness have no effect on conservative governments. Change in openness by itself is also not significant.\(^{53}\)

**Conditional probabilities.** To get a better understanding of what the results mean, I calculated conditional probabilities to determine the probability of central bank reform at different levels of the independent variables. Since the main variable of interest here is the interaction between leftist governments and change in exposure, I examine how the probability of reform will change at different values of the interaction term. To calculate the probabilities, the CLARIFY program was used in Stata.\(^{54}\) The probability of reform was estimated at different levels of both change in FDI and change in openness. In both cases, the models used to obtain the results included the economic control variables.

*Change in FDI.* Although the conditional probabilities tend not to be very large, it must be remembered that there were only 32 instances of reform in the 1241 cases, so the probabilities clearly demonstrate the effect of exposure to the international economy as well as the importance of EU membership. To a lesser extent, they also show that the number of veto players has a small effect on the probability of change.

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\(^{53}\) Regressions were also run on subsamples of both developed and developing countries. The results are somewhat interesting. The interaction between leftist governments and change in GDI is significant and negative in developing countries, but not in developed ones. The interaction between leftist governments and change in openness is significant and positive for developed, but not developing countries.

\(^{54}\) Tomz, Wittenberg, and King 2001.
At the largest positive change in FDI in non-EU countries, the probability of change by a leftist government is negligible. As change in FDI decreases, the probability of reform increases, reaching 35 percent at the largest negative change in FDI when a leftist government is composed of a single veto player exists and 29 percent when composed of multiple veto players.

The requirements of the Maastricht Treaty force EU countries that want to join the EMU to increase the independence of their central bank to a certain level (among other requirements). So it is not surprising that the probability of reform in EU countries is much higher than in non-EU countries. Nonetheless, changes in FDI remain important for leftist governments. At the largest increases in FDI, the probability of reform is minimal. As change in FDI decreases, the probability of reform increases so that at the average change in FDI, the probability of reform is 14% in leftist governments with a single veto player and 11% in leftist governments with multiple veto players. At the minimum change in FDI, the probability of change is greater than 60% in either single or multiple veto player systems. The results for both EU and non-EU countries are presented graphically in Figure 1, which shows the probability of reform in multiple veto player systems controlled by leftist governments at different changes in FDI and in Figure 2, which does the same for single veto player systems.

Change in openness. The conditional probabilities of change in openness also support the argument. As expected, as openness increases, the probability that leftist governments will give the bank more independence increases. Again, the likelihood of reform is always greater when a single veto player exists than when multiple veto players exist, though the differences are not terribly large, never exceeding 5 percent. The EU again has a very large effect on the
probability of reform. At the maximum increase in openness, the probability of reform in EU countries exceeds 80 percent in either single or multiple veto player systems.

[Insert Table 5 about here]

Even in non-EU countries, the probability that a leftist government will increase the independence of the central bank exceeds 50 percent at the maximum increase in openness. The very large difference in the probability of reform between change in openness at the 95th percentile and at the minimum change in openness reflects the fact that the maximum change in openness is so much larger than change at the 95th percentile (a difference of 42%).

CONCLUSION

More independent central banks can provide economic policy with greater credibility. Since central bankers are not elected, and since they tend to be more concerned about inflation than the public, they have little incentive to generate surprise inflation in order to spur economic growth. Promises by central bankers who are autonomous from the government that they will keep inflation low are more likely to be believed by domestic and international investors, which will be very beneficial for leftist governments in the current age of globalization. International investors are concerned that traditional leftist policies such as higher government spending or higher taxes on businesses will contribute to higher inflation which will erode profits. In this paper, I suggested that simply looking for convergence in the tools of economic policy is not enough—leftist governments also have an incentive to tie their own hands through institutional mechanisms that show a commitment to neoliberal policies. In conformity with my argument, it was found that leftist governments are more likely to increase the independence of their central bank as globalization increases. Larger declines in FDI increase the probability that a leftist government will reform the bank, as do larger increases in openness.
The results here help explicate a finding by Garrett.\textsuperscript{55} He found that leftist governments could continue to pursue expansionary economic policies despite the growing importance of international considerations, as long as they were willing to pay the price in terms of higher interest rates. But higher interest rates may not be necessary as the credibility provided by an independent central bank will help lower interest rates, as shown by the decline in rates in Britain after Labour reformed the Bank of England in 1997.\textsuperscript{56} This suggests that, by relinquishing control over monetary policy, leftist parties may be able to lower interest rates without giving up their ability to pursue a looser fiscal policy. Bearce offers evidence in support of this suggestion. He argues that as economic internationalization increases, leftist and conservative governments have chosen a different mix of economic policy.\textsuperscript{57} Leftist governments, he suggests, prefer to use tight monetary policy to fight inflation and a loose fiscal policy to expand the economy. To the extent his is true, an independent central bank would offer two types of benefits: not only would leftist governments be giving up control over a policy tool that they would not use much for economic growth, they would receive a credibility boost from international markets.

\textsuperscript{55} Garrett 1995.
\textsuperscript{56} Walsh 1997; Spiegel 1998
\textsuperscript{57} Bearce 2002.
### TABLE 1—List Of Countries In The Sample And Central Bank Independence (Cukierman, Webb and Neyapti index)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year(s) of Reform</th>
<th>CBI in 1973</th>
<th>CBI in 1998</th>
<th>Change (1973-98)</th>
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<tbody>
<tr>
<td>Argentina</td>
<td>1975, 1992</td>
<td>0.48</td>
<td>0.77</td>
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</tr>
<tr>
<td>Australia</td>
<td>n/a</td>
<td>0.36</td>
<td>0.36</td>
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</tr>
<tr>
<td>Austria</td>
<td>1984</td>
<td>0.65</td>
<td>0.61</td>
<td>-0.04</td>
</tr>
<tr>
<td>Belgium</td>
<td>1993</td>
<td>0.19</td>
<td>0.70</td>
<td>0.51</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1977, 1995</td>
<td>0.31</td>
<td>0.70</td>
<td>0.39</td>
</tr>
<tr>
<td>Botswana</td>
<td>1975</td>
<td>*</td>
<td>0.39</td>
<td>0.39</td>
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<tr>
<td>Brazil</td>
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<td>0.20</td>
<td>0.20</td>
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</tr>
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<td>Canada</td>
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<td>0.48</td>
<td>0.48</td>
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<tr>
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<td>0.73</td>
<td>0.47</td>
</tr>
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<td>1993</td>
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<td>0.57</td>
<td>0.28</td>
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<td>0.48</td>
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<td>0.85</td>
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<td>0.70</td>
<td>0.27</td>
</tr>
<tr>
<td>Iceland</td>
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<td>0.31</td>
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<td>India</td>
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<td>0.13</td>
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<tr>
<td>Mexico</td>
<td>1985, 1994</td>
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<td>0.56</td>
<td>0.22</td>
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<td>Netherlands</td>
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</tr>
<tr>
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<td>1990</td>
<td>0.22</td>
<td>0.34</td>
<td>0.12</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>1992</td>
<td>0.51</td>
<td>0.75</td>
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<td>Norway</td>
<td>1985</td>
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<td>0.17</td>
<td>-0.01</td>
</tr>
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<td>Panama</td>
<td>1975</td>
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<td>0.16</td>
<td>-0.08</td>
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<td>Peru</td>
<td>1993</td>
<td>0.43</td>
<td>0.83</td>
<td>0.40</td>
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<tr>
<td>Philippines</td>
<td>1993</td>
<td>0.43</td>
<td>0.67</td>
<td>0.24</td>
</tr>
<tr>
<td>Portugal</td>
<td>1975, 1995, 1998</td>
<td>0.56</td>
<td>0.83</td>
<td>0.27</td>
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<tr>
<td>Singapore</td>
<td>n/a</td>
<td>0.27</td>
<td>0.27</td>
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<tr>
<td>South Africa</td>
<td>1990</td>
<td>0.27</td>
<td>0.33</td>
<td>0.06</td>
</tr>
<tr>
<td>Spain</td>
<td>1980, 1994</td>
<td>0.09</td>
<td>0.92</td>
<td>0.83</td>
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<td>1998</td>
<td>0.33</td>
<td>0.75</td>
<td>0.42</td>
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<td>Switzerland</td>
<td>1979</td>
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<td>0.54</td>
<td>0.05</td>
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<td>0.24</td>
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<td>Turkey</td>
<td>n/a</td>
<td>0.46</td>
<td>0.46</td>
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</tr>
<tr>
<td>United Kingdom</td>
<td>1997</td>
<td>0.29</td>
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<td>0.08</td>
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<td>Uruguay</td>
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<td>0.51</td>
<td>0.27</td>
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<td>Venezuela</td>
<td>1975, 1987, 1993</td>
<td>0.31</td>
<td>0.68</td>
<td>0.37</td>
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<tr>
<td>Zimbabwe</td>
<td>1983</td>
<td>0.27</td>
<td>0.22</td>
<td>-0.05</td>
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</table>

**AVERAGE**  

0.36  0.53

*Botswana’s central bank was created in 1975.*
<table>
<thead>
<tr>
<th>Variable</th>
<th>Direction</th>
<th>Measurement</th>
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<tr>
<td>Veto players</td>
<td>Negative</td>
<td>The number of partisan veto players</td>
</tr>
<tr>
<td>Left dummy</td>
<td>Negative</td>
<td>Leftist government</td>
</tr>
<tr>
<td>Right dummy</td>
<td>Positive</td>
<td>Conservative governments</td>
</tr>
<tr>
<td>Exposure to the international economy</td>
<td>Negative</td>
<td>Measured as: (a) the change in FDI as a percentage of GDP</td>
</tr>
<tr>
<td></td>
<td>Positive</td>
<td>(b) change in openness</td>
</tr>
<tr>
<td>Exposure*Left</td>
<td>Negative</td>
<td>Interaction between (a) change in FDI and the left dummy</td>
</tr>
<tr>
<td></td>
<td>Positive</td>
<td>(b) change in openness and the left dummy</td>
</tr>
<tr>
<td>Exposure*Right</td>
<td>None</td>
<td>Interaction between (a) change in FDI and the right dummy</td>
</tr>
<tr>
<td></td>
<td>None</td>
<td>(b) change in openness and the right dummy</td>
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Table 3: XTGEE Results, Change in CWN index

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<tr>
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<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
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<tbody>
<tr>
<td>Constant</td>
<td>0.674**</td>
<td>0.228</td>
<td>0.208</td>
<td>0.702**</td>
<td>0.221</td>
<td>0.220</td>
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<tr>
<td></td>
<td>(0.308)</td>
<td>(0.439)</td>
<td>(0.443)</td>
<td>(0.311)</td>
<td>(0.429)</td>
<td>(0.430)</td>
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<tr>
<td>Leftist government</td>
<td>-0.170</td>
<td>-0.054</td>
<td>-0.018</td>
<td>-0.252</td>
<td>-0.089</td>
<td>-0.012</td>
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<td></td>
<td>(0.400)</td>
<td>(0.404)</td>
<td>(0.413)</td>
<td>(0.396)</td>
<td>(0.398)</td>
<td>(0.408)</td>
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<td>Conservative government</td>
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<td>-0.272</td>
<td>-0.269</td>
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<tr>
<td></td>
<td>(0.318)</td>
<td>(0.307)</td>
<td>(0.308)</td>
<td>(0.319)</td>
<td>(0.300)</td>
<td>(0.302)</td>
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<td>Number of veto players</td>
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<td>0.021</td>
<td>0.062</td>
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<td></td>
<td>(0.212)</td>
<td>(0.220)</td>
<td>(0.220)</td>
<td>(0.205)</td>
<td>(0.214)</td>
<td>(0.213)</td>
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<tr>
<td>Change in FDI_{t-1}</td>
<td>-0.112**</td>
<td>-0.016</td>
<td>-0.151</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td></td>
<td>(0.319)</td>
<td>(0.050)</td>
<td>(0.125)</td>
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<tr>
<td>Leftist government*Change in FDI_{t-1}</td>
<td>-0.854***</td>
<td>-0.962***</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
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<td>(0.317)</td>
<td>(0.317)</td>
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<td>Right government*Change in FDI_{t-1}</td>
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<td>—</td>
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<td>—</td>
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<td></td>
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<td>0.012</td>
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<td>(0.013)</td>
<td>(0.014)</td>
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<tr>
<td>Leftist government*Change in openness_{t-1}</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.051*</td>
<td>0.077*</td>
<td>—</td>
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<tr>
<td></td>
<td></td>
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<td>(0.030)</td>
<td>(0.042)</td>
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<tr>
<td>Right government*Change in openness_{t-1}</td>
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<td>-0.005</td>
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<td>EU</td>
<td>3.014***</td>
<td>3.259***</td>
<td>3.285***</td>
<td>3.035***</td>
<td>3.286***</td>
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<td></td>
<td>(0.887)</td>
<td>(0.867)</td>
<td>(0.876)</td>
<td>(0.898)</td>
<td>(0.875)</td>
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<td>Log of inflation_{t-1}</td>
<td>—</td>
<td>0.155**</td>
<td>0.155**</td>
<td>—</td>
<td>0.145**</td>
<td>0.144**</td>
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<tr>
<td></td>
<td>(0.077)</td>
<td>(0.078)</td>
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<tr>
<td>Change in GDP_{t-1}</td>
<td>—</td>
<td>-0.028</td>
<td>-0.028</td>
<td>—</td>
<td>-0.026</td>
<td>-0.028</td>
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<tr>
<td></td>
<td>(0.035)</td>
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<td>(0.034)</td>
<td>(0.034)</td>
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<td>1148</td>
<td>1240</td>
<td>1184</td>
<td>1184</td>
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<tr>
<td>Wald Chi^2</td>
<td>20.97***</td>
<td>24.68***</td>
<td>22.91***</td>
<td>15.05**</td>
<td>24.83***</td>
<td>24.69***</td>
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(Standard errors in parentheses)
* Significant at .10  ** Significant at .05  *** Significant at .01
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<th>(5)</th>
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<td></td>
<td>(0.425)</td>
<td>(0.800)</td>
<td>(0.444)</td>
<td>(0.398)</td>
<td>(0.778)</td>
<td>(0.401)</td>
</tr>
<tr>
<td>Leftist government</td>
<td>0.145</td>
<td>0.273</td>
<td>0.487</td>
<td>0.178</td>
<td>0.420</td>
<td>0.275</td>
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<td></td>
<td>(0.506)</td>
<td>(0.562)</td>
<td>(0.517)</td>
<td>(0.470)</td>
<td>(0.537)</td>
<td>(0.486)</td>
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<tr>
<td>Conservative government</td>
<td>-0.152</td>
<td>-0.007</td>
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<td>0.049</td>
<td>-0.221</td>
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<td></td>
<td>(0.485)</td>
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<td>(0.513)</td>
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<td>Number of veto players</td>
<td>-0.443</td>
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<td>-0.209</td>
<td>-0.270</td>
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<td></td>
<td>(0.399)</td>
<td>(0.490)</td>
<td>(0.395)</td>
<td>(0.470)</td>
<td>(0.392)</td>
<td>(0.371)</td>
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<tr>
<td>Change in FDI_t-1</td>
<td>-0.102***</td>
<td>-0.067</td>
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<td>—</td>
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<tr>
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<td>(0.026)</td>
<td>(0.046)</td>
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<td>—</td>
<td>—</td>
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<tr>
<td>Leftist government*Change in FDI_t-1</td>
<td>-0.715**</td>
<td>-0.746**</td>
<td>—</td>
<td>—</td>
<td>—</td>
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</tr>
<tr>
<td></td>
<td>(0.295)</td>
<td>(0.306)</td>
<td>—</td>
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<td>—</td>
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<tr>
<td>Right government* Change in FDI</td>
<td>—</td>
<td>—</td>
<td>-0.050</td>
<td>(0.107)</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Change in openness_t-1</td>
<td>—</td>
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<td>—</td>
<td>-0.008</td>
<td>-0.009</td>
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<tr>
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<td>—</td>
<td>(0.019)</td>
<td>0.024</td>
<td>(0.014)</td>
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<tr>
<td>Leftist government*Change in openness_t-1</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.052**</td>
<td>0.089**</td>
<td>—</td>
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<td>—</td>
<td>—</td>
<td>(0.024)</td>
<td>(0.037)</td>
<td>—</td>
</tr>
<tr>
<td>Right government* Change in openness</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>-0.011</td>
</tr>
<tr>
<td>EU</td>
<td>1.697***</td>
<td>1.901***</td>
<td>1.703***</td>
<td>1.631***</td>
<td>1.757***</td>
<td>1.619***</td>
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<td></td>
<td>(0.324)</td>
<td>(0.350)</td>
<td>(0.332)</td>
<td>(0.320)</td>
<td>(0.351)</td>
<td>(0.322)</td>
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<tr>
<td>Log of inflation_t-1</td>
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<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.068</td>
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<td>—</td>
<td>—</td>
<td>(0.134)</td>
<td>(0.138)</td>
</tr>
<tr>
<td>Change in GDP_t-1 in constant US dollars</td>
<td>—</td>
<td>-0.011</td>
<td>—</td>
<td>-0.023</td>
<td>—</td>
<td>—</td>
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<td></td>
<td>—</td>
<td>(0.058)</td>
<td>—</td>
<td>(0.058)</td>
<td>(0.058)</td>
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<td>1185</td>
<td>1241</td>
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<tr>
<td>Log Likelihood</td>
<td>-127.666</td>
<td>-122.778</td>
<td>-130.232</td>
<td>-140.629</td>
<td>-130.586</td>
<td>-141.048</td>
</tr>
<tr>
<td>Pseudo R²</td>
<td>0.089</td>
<td>0.093</td>
<td>0.070</td>
<td>0.054</td>
<td>0.067</td>
<td>0.051</td>
</tr>
</tbody>
</table>

(Standard errors are in parentheses)
* Significant at .10.
** Significant at .05.
*** Significant at .01.
### TABLE 5: Conditional effects of change in FDI in leftist governments
(Probability of central bank reform)

<table>
<thead>
<tr>
<th>Change in FDI</th>
<th>SVP</th>
<th>MVP</th>
<th>SVP</th>
<th>MVP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum increase</td>
<td>3.34%</td>
<td>0.28</td>
<td>0.23</td>
<td>1.87</td>
</tr>
<tr>
<td>95th percentile</td>
<td>1.32%</td>
<td>0.92</td>
<td>0.73</td>
<td>5.89</td>
</tr>
<tr>
<td>80th percentile</td>
<td>0.32%</td>
<td>1.85</td>
<td>1.45</td>
<td>11.26</td>
</tr>
<tr>
<td>Mean change</td>
<td>-0.04%</td>
<td>2.43</td>
<td>1.90</td>
<td>14.29</td>
</tr>
<tr>
<td>20th percentile</td>
<td>-0.44%</td>
<td>3.30</td>
<td>2.56</td>
<td>18.48</td>
</tr>
<tr>
<td>5th percentile</td>
<td>-1.45%</td>
<td>7.43</td>
<td>5.72</td>
<td>33.69</td>
</tr>
<tr>
<td>Minimum increase</td>
<td>-3.72%</td>
<td>34.78</td>
<td>29.39</td>
<td>71.99</td>
</tr>
</tbody>
</table>

### TABLE 6: Conditional effects of change in openness in leftist governments
(Probability of central bank reform)

<table>
<thead>
<tr>
<th>Change in Openness</th>
<th>SVP</th>
<th>MVP</th>
<th>SVP</th>
<th>MVP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum increase</td>
<td>50.72</td>
<td>58.19</td>
<td>54.65</td>
<td>83.30</td>
</tr>
<tr>
<td>95th percentile</td>
<td>8.66</td>
<td>5.56</td>
<td>4.55</td>
<td>24.90</td>
</tr>
<tr>
<td>80th percentile</td>
<td>4.33</td>
<td>3.96</td>
<td>3.26</td>
<td>18.99</td>
</tr>
<tr>
<td>Mean change</td>
<td>1.06</td>
<td>3.07</td>
<td>2.54</td>
<td>15.28</td>
</tr>
<tr>
<td>20th percentile</td>
<td>-2.12</td>
<td>2.41</td>
<td>2.00</td>
<td>12.28</td>
</tr>
<tr>
<td>5th percentile</td>
<td>-6.38</td>
<td>1.75</td>
<td>1.47</td>
<td>9.13</td>
</tr>
<tr>
<td>Minimum increase</td>
<td>-22.09</td>
<td>0.60</td>
<td>0.52</td>
<td>3.15</td>
</tr>
</tbody>
</table>
Figure 1: Probability of reform by leftist government with multiple veto players

Figure 2: Probability of reform by leftist government with a single veto player
Bibliography


APPENDIX 1—DATA SOURCES FOR THE VARIABLES

Central bank independence: Information on changes in central bank laws were acquired from three main sources: hard copy published versions, directly from the central bank, and from the central bank’s website.

Components of the Cukierman, Webb, and Neyapti index:

Chief Executive Officer (weight = .20)
(a) Term of office (6 categories)
(b) Who appoints CEO? (6 categories)
(c) Dismissal (7 categories)
(d) May CEO hold other offices in government (3 categories)

Policy Formation (weight = .15)
(a) Who formulates monetary policy? (4 categories)
(b) Resolution of conflict (6 categories)
(c) Role in government’s budgetary process (2 categories)

Objectives (weight = .15; 6 categories)

Limitations on lending to the government
Part 1 (weight = .40)
(a) Advances (weight = .15; 4 categories)
(b) Securitized lending (weight = .10; 4 categories)
(c) Terms of lending (weight = .10; 4 categories)
(d) Potential borrowers from bank (weight = .05; 4 categories)
Part 2 (weight = .10)
(e) Limits on central bank lending determined by? (weight = .025; 4 categories)
(f) Maturity of loans (weight = .025; 4 categories)
(g) Interest rates on loans must be? (weight = .025; 5 categories)
(h) Is central bank prohibited from buying or selling government securities in primary market? (weight = .025; 2 categories)

Independent variables
In what follows, I present the general sources I used for each independent variable. After discussing the independent variables, I list additional sources used by country. If a country is not listed, all of the data on independent variables were drawn from the general sources.

Partisan veto players: Data on the composition of governments in developed countries (and Israel) was taken from Woldendorp, Keman, and Budge (1995). It was supplemented with information from The Political Handbook of the World and Henisz’s (1999) impressive database of legislative veto points in most countries since 1800. This database has the number of seats won by each party, as well as which party controls the executive power. It is available at the following website: http://www-management.wharton.upenn.edu/henisz/index.htm.

Information on the composition of governments in developing countries was drawn mainly from The Political Handbook of the World, various years. This publication has detailed about the composition of the different legislative houses as well as the parties that are in government. It was supplemented by Henisz (1999).

Party ideology. As mentioned in the text, three main sources were used to code the political ideology of parties in developed countries: Castles and Mair (1982), Laver and Hunt (1992), and Huber and Inglehart (1995). Huber and Inglehart also included eight of the developing countries studied here. These three works placed parties along numerical scales; unfortunately, the scales differ in each of the works: the scale in Castles and Mair ranges from 0 to 10, in Laver and Hunt from 1-20, and in Huber and Inglehart from 1-10. I then converted these scores to a left-right position. For both the Castles and Mair and the Huber and Inglehart scores, a party was considered leftist if its score was below 4.5 and conservative if above 5.5. For the Laver and Hunt scores, the cutoff points were 9 and 11.

Other sources used described the parties less precisely (e.g., as center-left, left, or communist). Coppedge (1997) classified Latin American parties from nine of the countries studied here as secular or Christian and left, center-left, center, center-right, right, or other. The other category is for parties that were not clearly definable; the most prominent examples are the various Peronist parties. The Encyclopedia Britannica’s Book of the Year (1966, 1978, 1986) classifies parties into 9 positions: fascist, extreme right, right, center-right, center, non-Marxist left,
social democratic, socialist, extreme left, and communist. Political Parties of the World (1980, 1996) and the Europa Yearbook (various years) describe major parties from most of the countries in this sample in a brief blurb. Sometimes, the volumes also describe the party as left or right.

Once all the parties were coded as left, right, or center, the position of each government was coded as leftist, center-left, center, center-right, or right, depending on the constellation of parties in government. Single veto player governments are coded as the ideology of the government party. For governments with multiple parties, those dominated by leftist (conservative) parties have been coded as leftist (rightist) or center-left (center-right). Governments composed of both leftist and conservative parties with about equal legislative strength are coded as center as are governments in which a center party is the largest party.

Economic variables: Economic growth, inflation, foreign direct investment, and international reserves were all drawn from two sources: International Financial Statistics and World Development Indicators. Openness was taken from the Penn World Tables and World Development Indicators.

Country specific sources. In some cases, information from the general sources was not readily available on partisanship or the number of veto players for specific countries. For these cases, I consulted specific scholarly works on individual countries. A list of these sources follows: Bolivia: Rouquié (1987); Gamarra and Malloy (1995); Brazil: Mainwaring (1995, 1999); Chile: Scully (1995); Costa Rica: Wilson (1999); Denmark: Gilljam and Oscarsson (1996); Taylor and Laver (1973); Pedersen, Damgaard, and Olsen (1971); Finland: Gilljam and Oscarsson (1996); Greece: Seferiades (1986); Honduras: McDonald and Ruhl (1989); Iceland: Hardarson and Kristinsson (1987); Gilljam and Oscarsson (1996); Israel: Luebbert (1986); Kenya: Gertzel (1970); Throup and Hornsby (1998); New Zealand: Mulgen (1997); Nicaragua: Booth and Richard (1997); Norway: Gilljam and Oscarsson (1996); Peru: Rouquié (1987); Masterson (1991); Cotler (1995); Mainwaring and Shugart (1997); Philippines: Wurfel (1988); Portugal: Bacalhau (1997); Singapore: Tan and Er (1997); Sweden: Gilljam and Oscarsson (1996); Thailand: Wyatt (1984); Turkey: Özbudun (1976, 2000); Uruguay: Rouquié (1987); Venezuela: Kelly (1977,1986); Rouquié (1987)