

Partisan Technocratic Cycles:

Online Appendix

# A Appendix

Table A.1: Variable Definitions and Sources

Variable	Definition and Measurement	Source(s)
Mainstream Economic Advisors	Professional educational training of central bank presidents and finance ministers, coded from 0 to 1. If one or both of the two key ministers has an advanced graduate degree in mainstream economics, the value is 1. Otherwise, the variable is 0. The classification of mainstream economic institutions is corroborated by an in-country survey of local economists.	Index of Economic Advisors 2016
Mainstream p	Coded as 1 if one/both advisors have either graduate economics training, or previous work experience with international financial institutions, global finance, or international business. Otherwise, the variable is 0.	Index of Economic Advisors 2016
Primary Fiscal Balance	Government revenues - expenditures Net of interest payments (+/- percent of GDP)	Comision Economica para America Latina y El Caribe (CEPAL).
Left Partisanship	Party orientation with respect to economic policy, coded from 0 to 1. Parties that are defined as communist, socialist, social democratic, or left-wing take a value of 1. Otherwise, the variable is 0.	World Bank's 2010 Database of Political Institutions.
Output Gap	Measure of the output gap, calculated as the log difference between real GDP and its country trend.	Country specific trend calculated using the Hodrick-Prescott filter on real GDP change.
Global Growth	Global real GDP growth (annual percentage change).	Calculated from WDI.
Trade Openness	Total exports plus total imports (percentage of GDP).	Calculated from WDI.
Terms of Trade	Export value index / import value index (2000=100).	Calculated from WDI.
Regional Fiscal Balances	Average regional primary fiscal balance.	Calculated from CEPAL.
Exchange Rate	4-point scale from fixed to floating currency regimes.	IMF exchange rate classification.
Foreign Reserves	Total reserves (percentage of total external debt).	World Development Indicators (WDI)
Financial Depth	Broad money (M2) as a percentage of GDP.	World Bank's World Development Indicators (WDI).
External Public Debt	Total public external debt as a percentage of GDP.	Global Development Finance Database.
Inflation	Change in log CPI (annual percentage change)	World Development Indicators (WDI)
Unemployment	Change in unemployment (percentage of labor force).	CEPAL.
Income	The log of GNI per capita, constant US(2000)	Calculated from WDI.
Interest Rates	Deposit interest rate (percent per annum).	International Financial Statistics (IFS).
Central Bank Independence	Measures autonomy of central banks as written into countries' laws and legal systems. Updates Cukierman, Webb, and Neyapti (1992) Index.	Polillo, S. and Guillen, M. (2005). Globalization Pressures and the State: The Global Spread of Central Bank Independence. <i>American Journal of Sociology</i> .
Age of Democracy	The total years a country has experienced uninterrupted democracy	Calculated from Polity IV Index
IMF Participation (Vreeland, 2003)	Participation in IMF programs: Dummy variable coded 1 for country-years when there was a conditioned IMF agreement in force, 0 otherwise.	Vreeland, James Raymond (2003). <i>The IMF and Economic Development</i> . Cambridge University Press.
IMF Participation (Dreher, 2006)	IMF Participation: Dummy variable coded 1 for country-years when there was IMF standby or EFF agreement for at least five months, 0 otherwise.	Dreher, Axel (2006). IMF and Economic Growth: The Effects of Programs, Loans, and Compliance with Conditionality, <i>World Development</i> 34(5).
Regional Diffusion	Average regional share of mainstream economic advisors with advanced graduate training from U.S. and European universities as a percentage of total economic advisors.	Index of Economic Advisors 2016.
Heterodox Stabilization Program	Binary variable measuring if a country has a heterodox stabilization program: 1 for those years when a country has such a program, and 0 otherwise.	Vegh, Carlos (1992). "Stopping High Inflation. <i>IMF Staff Papers</i> 39(3); Kiguel, Miguel, and Liviatan, Nissan (1992). "Business Cycle with Exchange Rate Stabilizations." <i>World Bank Economic Review</i> 6(2).

Table A.2: Summary Statistics (16 Latin American Countries)

	mean	sd	min	max
Mainstream	0.60	0.49	0	1
Fiscal Balance	0.01	3.61	-28	9
Left Partisanship	0.25	0.43	0	1
Output Gap	0.95	1.89	-15	13
Global Growth	3.55	1.72	-2	7
Trade Openness	42.86	23.96	9	146
Terms of Trade	1.18	0.50	0	7
Regional Fiscal Balance (avg)	-0.25	1.35	-4	2
Exchange Rate	2.33	1.22	1	4
Foreign Reserves	28.79	30.86	1	435
Financial Depth	32.32	16.35	7	111
External Public Debt	40.88	60.99	0	830
Inflation (log)	2.83	1.25	-0	10
Unemployment	8.87	3.81	2	21
Income	7.77	0.64	6	9
Interest Rates	2.79	1.36	0	12
Central Bank Independence	0.50	0.19	0	1
Age of Democracy	12.23	18.45	0	92
IMF Program	0.34	0.47	0	1
Exec. Constraints	4.68	2.06	0	7
Regional Diffusion	0.55	0.29	0	1

Average inflation and income are converted to their natural logarithm.

## A.1 Macroeconomic Model Discussion

The literature on the political economy of macroeconomic policymaking provides a theoretical structure for economic policy choices. In these models, government preferences are captured through loss functions. The Barro-Gordon loss-function is one of the most commonly employed theoretical models. It shows politicians' relative sensitivity to unemployment and inflation. Their utility varies directly with employment (or growth), yet indirectly with inflation.<sup>1</sup>

$$L = a(U_t - kU_{t^n})^2 + b(\pi_t)^2$$

where  $U_t$  = employment rate;  $U_{t^n}$  = natural rate of unemployment;  $\pi_t$  = inflation rate;  $a$  = relative weight of unemployment in the loss function ( $a > 0$ );  $b$  = relative weight of inflation term in loss function ( $b > 0$ );  $k$  = extent of distortions (e.g. unemployment compensation and income taxation) that make  $U_{t^n}$  exceed the efficient or socially optimal rate ( $0 < k < 1$ ).

This loss function shows how policymakers value full employment and price stability. More specifically, the ratio of its parameters  $a$  and  $b$  captures the benefit of employment (and growth) relative to the cost of higher inflation. In other words, these parameters indicate policymakers' level of inflation aversion. A government favoring a Keynesian view is likely to assign a low weight to inflation relative to unemployment in its loss function. By contrast, a government favoring a monetarist approach is more likely to assign a higher weight to inflation relative to unemployment in their loss functions.

Building from the intuition of these models, I expect that countries' crisis histories will influence domestic politicians' sensitivity to inflation and unemployment.

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<sup>1</sup>The functional form of these loss functions varies across the literature, but their main intuition is that policymakers and voters dislike inflation and unemployment, but support economic growth. For a more detailed description of loss functions and macroeconomic policymaking, see Barro and Gordon (1983) and Scheve (2004).

## A.2 Control Variable Discussion

In the regression analysis, I use a slightly different set of controls for the fiscal policy and growth/inflation regressions, as we expect different factors to be important for different outcomes.

When employing mainstream economic advisors as the dependent variable, there are several control variables that are unique to these regressions. I control for the type of exchange rate regime,<sup>2</sup> based on the assumption that governments are more likely to appoint mainstream economists under flexible exchange rate regimes (*Exchange rate*) to help anchor inflation expectations and enhance government credibility with international investors. Assuming that larger, more complex financial sectors lead to greater demand for financial stability, and hence, inflation-checking mainstream ministers, I also include a proxy for the size of the financial sector (*Financial depth*) or outstanding banking sector liabilities: M2 as a percentage of GDP. I also control for several other important economic factors, including a country's level of foreign reserves (*Foreign reserves*), per-capita income (*Income*), and interest rates (*Interest rates*). To measure the influence of alternative ideational factors on ministerial appointments, I include control variables for regional diffusion (*Regional diffusion*) and heterodox stabilization programs (*Heterodox programs*). Recall that no lagged independent variables are used in these mainstream advisor regressions based on the assumption that ministerial appointments reflect contemporaneous economic and political factors.

There are also many control variables that are common to both regression models. First, I control for the global growth (*Global growth*), given that the sample includes many small open economies. Because many Latin American countries are dependent on primary commodity exports, I also include a country's terms of trade position (*Terms of trade*) in the regressions to account for international commodity volatility. I also control for economic openness, employing a measure of imports plus exports as a percentage of GDP (*Trade*). In general, I expect global fluctuations in growth, trade, and commodities to show relative fast dynamics, influencing ministerial appointments and domestic budget balances primarily in the current year.

To account for the possibility that contemporaneous economic conditions outside of the output gap are influencing the appointment of economic ministers, I control for inflation and unemployment in all of the regression models. I also include a measure of overall external indebtedness (*External*

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<sup>2</sup>For a review of the politics of exchange rate literature, see Steinberg & Shih 2012 and McDowell & Liao 2015.

*public debt*) to account for debt-related changes in ministerial appointments or fiscal policy stances.

Some other control variables are exclusive to the fiscal policy regressions. When employing national fiscal balances as the dependent variable, there are several standard control variables that are unique to such regressions. I employ a measure of the unemployment rate (*Unemployment*) – lagged by one year – to control for a country’s position in its economic cycle. By comparison, inflation is not lagged to account for a potential Olivera-Tanzi effect, where high inflation contemporaneously erodes tax receipts, and hence, budgetary accounts in developing countries. In addition, I use a measure of constraints on executive power (*Executive constraints*) based on the assumption that budgetary cycles are less common when presidents confront greater checks and balances. I also control for regional fiscal balances (*Regional fiscal balance*), with the expectation that countries (with relatively open economies) choose fiscal policies in part based on those adopted by regional peers.

Finally, to account for institutional factors that may affect ministerial appointments and budget balances, I add several controls including measures of IMF participation (*IMF*),<sup>3</sup> legal central bank autonomy (*Central bank independence*),<sup>4</sup> and the age of the democratic regime (*Age of Democracy*). For example, Bodea and Higashijima (2016) find that legal central bank independence deters fiscal deficits in democracies. However, the central bank autonomy measure is not included in the results because publicly available measures assign numerical values to countries that do not vary much over time (i.e. many of them cover decades), making it indistinguishable from the country dummies already incorporated in the model.

### **A.3 Coding Rules for the Index of Economic Advisors**

In order to test whether the region’s economic shocks lead to changes in the policy orientation of economic advisers, I collected data regarding the academic and professional background of economic policymakers in Latin America. In this cross-sectional, time series data, there are 1896 observations. Each observation compiles information regarding the economic and financial government officials for 16 countries in Latin America throughout the 1960-2011 period. Coded according to academic training and professional background, the observations can be used to determine whether economic

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<sup>3</sup> The IMF dummy is coded 1 for the country-years when there was a conditioned IMF agreement in force, 0 otherwise. I use two different measures of IMF participation from Vreeland (2003) and Dreher (2006).

<sup>4</sup> Polillo and Guillén (2005) update of the Cukierman, Webb, and Neyapti (1992) index.

crises led to ideational changes (mainstream vs. heterodox) in the professional composition of presidential cabinets, and if so, how such ministerial appointments governed fiscally.

The data collected comes from a variety of sources, including, but not limited to, official ministries and central bank websites, news articles, *International Year Book* and *Statesmen's Who's Who* (1965-2009) attendees list of annual IDB and IMF/WB meetings, official government documents (“gacetas oficiales”), and official CVs. Secondary information was also collected from local newspapers and publications.

Originally, data was collected for every single minister and central bank president available, regardless of whether a given year had more than one finance minister and/or central bank governor. For the final dataset, however, only one finance minister and one central bank president were included, based on which individual held the position for the most days in that given year.<sup>5</sup>

#### **Variables included in database:**

*COUNTRY*: 16 countries in the region were included in the dataset. These are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Peru, Uruguay and Venezuela.

*ECON MIN*: Name of the minister of finance who held the position for the most amount of days in the given year.<sup>6</sup>

*CBGOV*: Name of the central bank governor who held the position for the most amount of days in the given year.

*EDUC*: Highest educational degree achieved by minister or central bank governor. This information includes not only the degree type (BA, MA, MBA, PhD and others), but also the subject area of the degree, academic institution, and location.

*EDUC CODE*: The extent of professional academic training in economics is expected to have an impact on an individual's approach to fiscal policy. Carter and Irons (1991), Babb (2001),

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<sup>5</sup>The complete dataset is available upon request.

<sup>6</sup>While most countries have only one ministry assigned to fiscal policy, some have a variety of ministries involved in economic and financial planning, making it difficult to discern whether the government institution of interest should be the Ministry of Finance, the Ministry of Economy, or the Ministry of Economic Development, among others. For more information regarding the selection of ministry, including a table listing each Ministry per country, please refer to the end of this document.

Additionally, on some occasions (e.g. Argentina 2001/2002) there were more than 1 ministers of finance in a given year. The higher turnover often occurred at instances of financial crises, and consequently, the individual who held the seat for the longest amount of time during any given year was selected.

Montecinos and Markoff (2010) have emphasized that the formal training of economists leads them to share a similar set of beliefs, often different from those of non-economists. This paper shares this perspective, but argues that technocrats' approach to policymaking (i.e. whether they prioritize austerity or stimulus) is conditional on the nature of past crises (inflation vs. unemployment shock). However, unlike the earlier literature, it does not solely filter according to whether technocrats were trained at a Western institution, given that many Latin American universities, such as Pontificia Universidad Católica de Chile, Universidad Torcuato Di Tella in Argentina, or the Fundação Getúlio Vargas in Brazil, would embody a similar approach to economics as developed country institutions. The variable is coded as 0 if neither the finance minister nor the central bank governor have advanced training in economics/finance; and 1 if either or both the finance minister and central bank governor have advanced training in finance and/or economics.<sup>7</sup>

PREVIOUS POST: The individual's previous career position prior to being appointed minister of finance or central bank governor. On occasion, the most recent post prior to the appointment was not available, in which case an earlier post is used as proxy. The information includes prior position and institution.

PREVIOUS POST CODE: While some individuals may not have had formal academic training in economics, business, or finance, experience in the private sector – or at international financial institutions – are often considered to provide economic officials with a comparable level of training. For robustness, we expanded the definition of a technocrat to include previous career experience. We assume that officials hailing from the private sector or international financial institutions were appointed to their posts in light of their applied experience in business, finance, or global markets. For example, William Handal, the former minister of finance of El Salvador, had worked in finance, planning, and control for TACA Airlines for 31 years. Similarly, during Brazil's turbulent hyperinflationary years, Fernão Carlos Botelho Bracher, a vice president at Banco Bradesco, the largest private bank in country, was selected for the post of central bank president because of his experience in financial markets. The variable is coded as a 1, if the previous post prior to appointment was in the private sector or at an international financial institution (i.e. the IMF, UN, or the World Bank). All other sectors (government, non-profit, etc) are coded as 0.

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<sup>7</sup>As this code attempts to capture academic training in economics and/or finance, I consider MBA, MA/PhD's in public policy and international affairs as further academic training in economics/finance.

### On the selection of the financial and economic planning ministry:

While all countries (excluding Panama) only have one central bank or monetary authority, some countries have a variety of ministries involved in economic and financial planning, making it difficult to discern whether the government institution of interest should be the Ministry of Finance, the Ministry of Economy, or the Ministry of Economic Development, among others. These countries include Bolivia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Nicaragua and Panama. In the case of the Central American countries, the decision of which ministry to use was based on the ministry participating in COSEFIN – the permanent forum for ministries of finance in Central America, Panama and the Dominican Republic. The ministries/secretariats used for each country can be found in the table below:

**Table A.3: List of Economic Ministries**

Country	Institution
Argentina	Ministerio de Economía y Finanzas Públicas (Formerly Hacienda)
Belize	Prime Minister is designed Minister of Finance
Bolivia	Ministerio de Economía y Finanzas Públicas (Formerly Hacienda and Finanzas Públicas)
Brazil	Ministerio da Fazenda
Chile	Ministerio de Hacienda
Colombia	Ministerio de Hacienda y Crédito Público
Costa Rica	Ministerio de Hacienda (Formerly Ministerio de Economía y Hacienda 1948-1966)
Dominican Republic	Ministerio de Hacienda (Formerly Secretaría de Finanzas 1966-2006)
Ecuador	Ministerio de Economía y Finanzas (Formerly Ministerio del Tesoro y Ministerio de Economía 1944-1963, Ministerio de Finanzas 1963-1985, Ministerio de Finanzas y Crédito Público 1985-2000)
El Salvador	Ministerio de Hacienda
Guatemala	Ministerio de Finanzas Públicas (Formerly Ministerio de Hacienda y Crédito Público 1945-1971)
Honduras	Secretaría de Finanzas (Formerly Secretaría de Economía y Hacienda 1954-1971; Secretaría de Hacienda y Crédito Público 1971-1996)
Mexico	Secretaría de Hacienda y Crédito Público
Nicaragua	Ministerio de Hacienda y Crédito Público
Panama	Ministerio de Economía y Finanzas (Formerly Hacienda y Tesoro 1998)
Paraguay	Ministerio de Hacienda
Peru	Ministerio de Economía y Finanzas (Formerly Hacienda 1969; Economía y Finanzas 1969-1980; Economía, Finanzas y Comercio 1980-1985)
Uruguay	Ministerio de Economía y Finanzas
Venezuela	Ministerio de Planificación y Finanzas (Formerly Hacienda 1894 – 1999, Finanzas 1999-2008, Economía y Finanzas 2008-2010)

**Table A.4: List of Mainstream Latin American Universities**

Country	University	Country	University
Argentina	Universidad Austral	El Salvador	Universidad Dr. José Matías Delgado
Argentina	Universidad del CEMA	El Salvador	Universidad Evangélica de El Salvador
Argentina	Universidad de Palermo	El Salvador	Universidad Francisco Gavidia
Argentina	Universidad del Salvador	El Salvador	Universidad Tecnológica de El Salvador
Argentina	Universidad de San Andres	Guatemala	Universidad del Istmo
Argentina	Universidad Torcuato Di Tella	Guatemala	Universidad de San Carlos de Guatemala (USAC)
Bolivia	Universidad Autónoma Gabriel René Moreno (UAGRI)	Guatemala	Universidad Galileo
Bolivia	Universidad Católica Boliviana San Pablo	Guatemala	Universidad Mariano Gálvez de Guatemala
Bolivia	Universidad Privada de Santa Cruz de la Sierra	Guatemala	Universidad Panamericana
Brazil	Fundação Getúlio Vargas – EAESP (Sao Paulo)	Guatemala	Universidad Rafael Landívar
Brazil	Fundação Getúlio Vargas – EPGE (Rio)	Guatemala	Universidad Rural
Brazil	Pontifical Catholic University of Rio de Janeiro	Honduras	Universidad Católica de Honduras
Brazil	Universidade de Brasília	Honduras	Universidad Global de Honduras (UNITEC)
Brazil	Universidade de São Paulo	Honduras	Universidad José Cecilio del Valle (UJCV)
Chile	Pontificia Universidad Católica de Chile	Honduras	Universidad Metropolitana de Honduras
Chile	Pontificia Universidad Católica de Valparaíso	Honduras	Universidad Tecnológica Centroamericana (UNITEC)
Chile	Universidad Adolfo Ibáñez	Honduras	Universidad Tecnológica de Honduras (UTH)
Chile	Universidad Austral de Chile	Mexico	El Colegio de México
Chile	Universidad de Chile	Mexico	Instituto Tecnológico Autónomo de México (ITAM)
Chile	Universidad de Concepción	Mexico	Tecnológico de Monterrey (ITESM)
Chile	Universidad Diego Portales	Mexico	Universidad Iberoamericana (UIA)
Chile	Universidad del Taka	Nicaragua	Universidad Católica Redemptoris Mater
Chile	Universidad Técnica Federico Santa María	Nicaragua	Universidad Thomas More Nicaragua
Colombia	Colegio Mayor de Nuestra Señora del Rosario	Peru	Universidad ESAN
Colombia	Pontificia Universidad Javeriana	Peru	Universidad de Lima
Colombia	Universidad de La Sabana	Peru	Universidad Privada del Norte
Colombia	Universidad de los Andes	Peru	Universidad San Ignacio de Loyola
Colombia	Universidad del Norte	Uruguay	Universidad Católica del Uruguay
Colombia	Universidad Industrial de Santander	Uruguay	Universidad de la Empresa - UDE - Uruguay
Costa Rica	INCAE Business School	Uruguay	Universidad de Montevideo
Costa Rica	Universidad Autónoma de Centro América	Uruguay	Universidad ORT Uruguay
Costa Rica	Universidad Católica de Costa Rica	Uruguay	Universidad de la República
Costa Rica	Universidades de Ciencias Empresariales - UCEM	Venezuela	Instituto de Estudios Superiores en Administración
Costa Rica	Universidad de Costa Rica	Venezuela	Universidad de Los Andes
Costa Rica	Universidad de Costa Rica	Venezuela	Universidad de los Andes Mérida
Costa Rica	Universidad Latinoamericana de Ciencia y Tecnología	Venezuela	Universidad de Carabobo
Costa Rica	Universidad para la Cooperación Internacional (UCI)	Venezuela	Universidad Católica Andrés Bello
Ecuador	Escuela Politécnica Nacional	Venezuela	Universidad Central de Venezuela
Ecuador	Escuela Superior Politécnica del Litoral	Venezuela	Universidad Centroccidental Lisandro Alvarado
Ecuador	Universidad San Francisco de Quito	Venezuela	Universidad de Oriente Venezuela
Ecuador	Universidad Técnica Particular de Loja	Venezuela	Universidad Simón Bolívar
El Salvador	Escuela Superior de Economía y Negocios (ESEN)	Venezuela	Universidad del Zulia
El Salvador	Universidad Católica de El Salvador		

Note: Coding is based survey of Latin American economists conducted during 2015-2016.

Universities are coded as mainstream, if their economics departments received an average ranking that was greater than 3 (along the 5-point scale ranging from fully heterodox=1; mainly heterodox=2; mixed=3; mainly orthodox=4; fully orthodox=5).

There are no local universities in Belize that are coded as mainstream; ministers tend to have foreign university credentials when they are mainstream.