Reconsidering the Relationship between CBI and FIX

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Reconsidering the Relationship between CBI and FIX[†] [‡]

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Abstract: This research note reconsiders the question of whether central bank independence (CBI) and fixed exchange rates (FIX) function as substitutes or complements. We argue that these monetary institutions have neither served as substitutes nor performed as complements for either inflation control or exchange rate stability. In terms of their substitutability, our statistical evidence shows that while CBI has been used for inflation control, FIX has been more directed towards exchange rate stability using updated datasets with these monetary institutions measured both on a de jure and de facto basis with nearly global country/year coverage from 1970 to 2020. In terms of their complementarity, our results also demonstrate that CBI was not more effective at reducing inflation when paired with greater FIX and FIX was not more effective at promoting exchange rate stability when paired with greater CBI. If anything, both are less effective when paired with the other monetary institution. These results suggest a "third generation" framework for studying CBI and FIX together with a focus on macroeconomic objectives beyond just domestic price stability.

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An important puzzle in the research program on monetary institutions concerns the relationship between central bank independence (CBI) and fixed exchange rates (FIX). In establishing a new research program to study these two monetary institutions *together*, Bernhard, Broz, and Clark (2002, 694) focused on whether CBI and FIX serve as "institutional substitutes (where the presence of one negates the need for another) or complements (where each reinforces the effect of the other)". This question was central to their "second-generation" framework, replacing a "first-generation" framework that studied each monetary institution in isolation (e.g., Giavazzi and Giovannini 1989, Cukierman 1992, Lohmann 1998). However, the second-generation framework began by considering these two monetary institutions "as a response to the same economic problem": namely, "fighting inflation" (Bernhard, Broz, and Clark 2002, 694).

But even for this single macroeconomic objective, the question about whether CBI and FIX are substitutes or complements has not yet been systematically answered. Indeed, political scientists have developed important arguments treating CBI and FIX as substitutes (e.g., Broz 2002) but also as complements (e.g. Bodea 2010a) for inflation control.[1] Of course, CBI and FIX could be both substitutes *and* complements, but we have little evidence about how these monetary institutions perform either when directly compared with each other (to consider their substitutability) or when

[1] Broz (2002) makes a substitutability argument, proposing that less democratic regimes choose FIX as the more transparent monetary institution to fight inflation and that CBI as the less transparent monetary institution is only effective at fighting inflation in more democratic, or transparent, regimes. Conversely, Bodea (2010a) makes a complementarity argument to explain their joint choice in certain countries: both monetary institutions are imperfect but in different ways; thus, adopting both CBI and FIX should be even more effective in reducing inflation than adopting only one.

combined with each other (to consider their complementarity).[2] Indeed, this is true not only for inflation control, but also for other macroeconomic objectives, including exchange rate stability.[3]

This research note addresses an old but still important research question, offering a new answer to the puzzle concerning the relationship between CBI and FIX. We propose that these two monetary institutions do not serve as substitutes, or as alternatives to address the same macroeconomic problem. Instead, they tend to be directed towards different objectives: namely, CBI towards inflation control and FIX towards exchange rate stability. But importantly, these two policy objectives are sometimes in tension with each other (Simmons 1996). This potential tension between using monetary policy for inflation control or exchange rate stability represents one manifestation of the Mundell-Fleming tradeoff given international capital mobility (Fleming 1962, Mundell 1968): monetary policy as a single policy instrument can be directed towards either an internal policy goal, including domestic price stability, or an external policy goal, such as exchange rate stability, but not towards both at the same time.

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[2] While there is a relatively large literature on CBI effectiveness in terms of fighting inflation, much of it does not even control for the exchange rate regime (e.g. Cukierman, Webb, and Neyapti 1992; Keefer and Stasavage 2003). And when CBI scholars do control for FIX (e.g., Bodea and Hicks 2015, Garriga and Rodriguez 2020, 2023, Aklin and Kern 2021), it has not been done in a manner allowing for a direct comparison between monetary institutions (e.g., standardized measures for CBI and FIX).

[3] In the literature on FIX effectiveness, scholars have focused more on dependent variables related to external currency stability (e.g., Frieden 2002, Reinhart and Rogoff 2004, Levy-Yeyati and Sturzenegger 2005, Steinberg and Walter 2013). For this dependent variable, Bearce (2008) considered the interaction of CBI and FIX, but his analysis only included a set of developed countries. And there is not much empirical research concerning the relationship between FIX and inflation. One exception is Guisinger and Singer's (2010) analysis of de jure and de facto FIX, showing that neither can be individually associated with lower inflation.

Since CBI and FIX as different monetary institutions potentially constrain the same policy instrument, they should also not be expected to function as complements if/when directed towards different macroeconomic objectives. Stated differently, CBI should not be more effective at reducing inflation when paired with FIX, and FIX should not be more effective at promoting exchange rate stability when paired with CBI.

These arguments are tested using updated/extended datasets measuring CBI and FIX both on a *de jure* and *de facto* basis[4] with nearly global country/year coverage from 1970 to 2020 (i.e., the post-Bretton Woods era). We first consider their substitutability, regressing inflation and exchange rate stability, in sequence, on standardized measures of these monetary institutions to directly compare their relationships with these two macroeconomic indicators. Assuming that both monetary institutions could be effective to achieve either lower inflation (or greater currency stability) if properly constructed, their correlation with these policy objectives should be based largely on the extent to which governments *target* the monetary institution towards the specific macroeconomic objective. We find that CBI is significantly correlated with lower inflation, while FIX is not. Likewise, FIX is significantly correlated with exchange rate stability, while CBI is not.

We then consider their performance as complements by adding a CBI*FIX interaction variable into the inflation and exchange rate stability models. We find no evidence to support their performance as complements. CBI is not associated with even lower inflation when paired with FIX. Likewise, FIX is not associated with more exchange rate stability when paired with CBI. If anything,

[4] De jure institutions refer to the formal commitments made by governments (e.g., legal central bank independence and stated exchange rate regimes). De facto institutions refer to the actual behavior by governments (e.g., the turnover of central bank governors and whether the exchange rate remains fixed).

the relationship between each monetary institution and its primary macroeconomic objective tends to weaken as the other monetary institution becomes more present.

The remainder of this research note is divided into three sections. The first presents our arguments, leading to four testable hypotheses. The second tests these hypotheses. Finally, the third section briefly discusses what this new evidence means for the political science research program on monetary institutions. Namely, it suggests a "third generation" framework for studying CBI and FIX together with a focus on macroeconomic objectives beyond just domestic price stability.

1. The Arguments

In this section, we make arguments about CBI and FIX neither serving as substitutes, nor performing as complements. We first consider them as substitutes for inflation control and exchange rate stability. After arguing that these monetary institutions are not being primarily used as alternatives to achieve the same macroeconomic objective, we discuss why they should not perform as complements for either inflation control or exchange rate stability.

Service as Substitutes

Our argument starts with central bank independence, which is simply a measure of the monetary authority's bureaucratic autonomy. If more insulated from outside political pressure, the central bank should be better able to resist demands for a monetary policy that deviates from the goal of domestic price stability. But this logic, of course, assumes that central bankers are conservative, or have preferences for low inflation and a tight monetary policy to achieve this macroeconomic outcome. Operational measures of CBI typically do not include this actor's preferences, but many scholars have noted that "central bankers have a tendency to put a high priority on domestic price stability. This may be due to a statutory or constitutional mandate, to their ties to the financial community, or to a

process of 'socialization' that takes place once they become central bankers" (Simmons 1996, 409). Consistent with this understanding, various measures of CBI demonstrate a significant negative association with inflation, showing that this monetary institution has been effectively targeted toward inflation control despite variation in central banker preferences (e.g., Adoph 2013).

But can a similar demonstration be made for FIX, indicating its use as substitute to achieve the same macroeconomic objective? Before considering the empirical evidence, it is important to state that we do not question that FIX (like CBI) *could* be an effective institution for controlling inflation if constructed to achieve this macroeconomic objective. In describing how a fixed exchange rate could be successfully targeted towards this policy goal, political scientists describe FIX as tying "domestic economic policy to that of a less inflation-prone country" (Bodea 2010a, 415) or the delegation of "monetary policy to a foreign central bank" (Bernhard, Broz and Clark 2002, 695). While true, this description is incomplete: if the government maintains its own currency (i.e., does not engage in monetary union, including "dollarization"), then the national currency must be pegged to some foreign currency *at a level* that forces the central bank to hold a tight monetary policy to maintain the fixed exchange rate. Stated differently, the national currency unit must be fixed at a high level, to a non-depreciating external currency. It is not enough for the external currency simply to be associated with a low inflation economy; the domestic currency must also be pegged at a level requiring a tight monetary policy to reduce inflation and maintain domestic price stability.

Indeed, if the national currency is pegged at an undervalued level to some external currency (even if that anchor is associated with a low inflation economy), then FIX might even be expected to increase (not decrease) inflation at the same time it promotes exports, economic growth, and fuller employment (e.g., Frenkel and Ros 2006; Berg, Ostry, and Zettelmeyer 2012). For example, China's decision to fix its yuan to the U.S. dollar cannot be understood as an effort to control domestic prices (e.g., Steinberg and Shih 2012; Steinberg 2016); if anything, the deliberately undervalued yuan tended

to increase inflation in China (e.g., Frankel 2005, Cline and Kim 2010). Instead, China's FIX is better understood as a monetary institution supporting its strategy of export-led growth.

China's undervalued FIX is not atypical as Rodrik (2008) demonstrated that undervalued fixed exchange rates are common elsewhere in Asia and in Africa. Indeed, more recent analysis suggests that fixing at an undervalued rate, or a so-called "fear of appreciation," has become "*the prevailing pattern* in recent years among countries with an active exchange rate policy" (Levy-Yeyati, Sturzenegger, and Guzman 2013, 237, *emphasis added*). In short, exchange rates are frequently pegged at levels that would not be expected to reduce inflation. Consistent with this understanding, when Guisinger and Singer's (2010) considered the relationship between inflation and FIX measured both on a de jure and on a de facto basis, their results show that neither measure can be individually associated with lower inflation. (although there may be some inflation reduction when both are present).

On this basis, we offer our first hypothesis: *CBI is strongly associated with inflation reduction, while FIX is not* (H1). Again, we wish to highlight that this compound hypothesis does not argue that FIX could not be effective at reducing inflation.[5] Instead, it proposes that governments are not consistently directing it towards this macroeconomic objective following the logic that an association between a monetary institution and a particular macroeconomic outcome should be stronger when 1) the monetary institution could be effective towards that outcome, *and* 2) governments target the monetary institution towards this specific objective. We believe that the first condition is true for both monetary institutions, but the second is truer for CBI than FIX when considering inflation reduction.

However, when considering exchange rate stability, we propose that the second condition should be truer for FIX than CBI, leading to our second compound hypothesis: *FIX is strongly associated with exchange rate stability, while CBI is not* (H2). Perhaps a strong relationship between exchange rate

[5] Similarly, this does not discard that the public may perceive them as substitutes for inflation control (e.g., Walter 2008; Aklin, Arias, and Gray 2022).

stability and FIX is expected, but a weak relationship between exchange rate stability and CBI may be surprising if one thinks of domestic price stability and exchange rate stability as more or less the same policy objective (i.e., the national currency will be stable whenever domestic prices are also stable and vice-versa). If this were true, then CBI should also be strongly associated with exchange rate stability based on the evidence that CBI is strongly associated with domestic price stability.

However, as we discuss in more detail below, domestic price stability and external currency stability are not identical macroeconomic outcomes. Indeed, a key stylized fact that New Keynesian monetary models seek to explain is why one can observe exchange rate volatility next to domestic price stability (e.g., Corsetti, Dedola, and Leduc 2008). In fact, achieving both macroeconomic objectives should be difficult when using only the monetary policy instrument. As expressed by the Mundell-Fleming framework: given even partially mobile capital, which has been the case for most countries since the early 1970s (e.g., Frieden 1991, Clark and Hallerberg 2000), governments must choose between domestic monetary policy autonomy, defined as using the monetary policy instrument for some desired internal policy goal, and external currency stability. Stated differently, the single monetary policy instrument can be targeted towards only one macroeconomic objective at any one time: either an internal objective, including domestic price stability, or an external objective, such as exchange rate stability. Thus, if CBI often produces a monetary policy consistent with domestic price stability (per H1), then this same monetary policy may be inconsistent with achieving greater exchange rate stability (per H2).

Performance as Complements

Having argued that CBI and FIX tend to be directed toward achieving different macroeconomic objectives, we also propose that CBI and FIX should *not* perform as complements for either inflation control or exchange rate stability. Stated differently, CBI should *not* be more effective at reducing

inflation when combined with FIX. Likewise, FIX should *not* be more effective at promoting exchange rate stability when combined with CBI.

To explain these propositions, we return to the Mundell-Fleming framework, positing that governments must choose between domestic monetary autonomy and exchange rate stability given even partial international capital mobility (any movement in capital across national borders puts at least some pressure on the exchange rate of national currencies). Thus far, the political science literature has tended to identify domestic monetary autonomy more with economic expansion (e.g., McNamara 1998, Clark and Hallerberg 2000). But if one accepts the interest parity condition as a valid way to represent the tradeoff between a fixed exchange rate and domestic monetary autonomy (e.g., Rose 1996, Shambaugh 2004),[6] then it becomes apparent that domestic monetary autonomy has often been associated with inflation control at least in the post-Bretton Woods era.

The "uncovered" interest parity condition can be written as $\Delta e = i - i^*$, where Δe is the change in the *e*xchange rate, i is the country's nominal interest rate, and i^* is the external, or world, interest rate. Given international capital mobility, this equation implies that to reduce exchange rate variability ($\Delta e \rightarrow 0$), the domestic interest rate must stay close to the external interest rate ($i \approx i^*$). If we think of the external interest rate as being determined by some weighted average of the interest rates in the largest and most developed economies (e.g., the United States, Japan, and the European Union), then i^* should be relatively low at least on a nominal basis, reflecting their relative capital abundance. Indeed, the evidence suggests that the "world" interest rate has been low for most of the post-Bretton Woods era (King and Low 2014) consistent with the "global saving glut" (Bernanke 2005), thus leaving

[6] While interest parity may poorly predict exchange rate movements in the short run (e.g., days and weeks), it fares much better over the longer term (e.g., Alexius 2001, Chinn and Meredith 2004), consistent with the time frame in our analysis (country/year observations over multiple years).

most countries holding positive interest rate differentials, or i > i* (Bearce 2007). Consequently, moving *i* towards *i** to reduce exchange rate variability often requires being able to lower the nominal interest rate, *holding inflation and country risk constant*.[7]

If/when a lower nominal interest is required for greater exchange rate stability, a commitment to inflation control via CBI may complicate the expected positive relationship between FIX and exchange rate stability. Likewise, if/when a tighter monetary policy (i.e., a higher nominal interest) is required for inflation control, a commitment to exchange rate stability via FIX may complicate the expected negative relationship between CBI and inflation. On this basis, we offer two related hypotheses about the non-complementarity of these monetary institutions with regards to their primary macroeconomic target: *CBI is not associated with greater inflation reduction given more FIX* (H3), and *FIX is not associated with greater exchange rate stability given more CBI* (H4). These predictions accord with Gali and Monacelli's (2005, 727) New Keynesian analysis pointing to "the presence of a trade-off between the stabilization of… the nominal exchange rate… and the stabilization of domestic inflation." Rules/institutions that stabilize the inflation rate (e.g., CBI) entail "a substantially larger volatility of the nominal exchange rate" than those that stabilize the exchange rate (e.g. FIX), and vice-versa.

[7] As a demonstration of this monetary policy tension, we regress the logged value of the country/year's nominal *Interest Rate*, the basic instrument of monetary policy (Leertouwer and Maier 2002), on the logged value of *Inflation* and the index of *Exchange Rate Stability* in Table A2 (in the Appendix). In every model, *Inflation* has a significant positive coefficient, consistent with the understanding that when the national economy experiences rising prices, the monetary authority raises the nominal interest rate. However, *Exchange Rate Stability* consistently has a significant negative coefficient, fitting with the basic logic of the interest parity condition when the external interest rate is low on a nominal basis. Thus, the monetary policy that accords with exchange rate stability is a lower nominal interest rate when controlling for *Inflation* and country-specific risk (through country fixed effects).

2. The Evidence

In this section, we test the four hypotheses introduced above. The first sub-section describes our variables and model specification. In the second, we test the two substitution hypotheses: H1 and H2. And in the third sub-section, we test the two complementarity hypotheses: H3 and H4.

Model Specification

As dependent variables, we consider in sequence the macroeconomic objectives of inflation control and exchange rate stability, using the country/year unit of analysis. We measure *Inflation* as the logged value of the consumer price index using data from the World Bank.[8] We measure *Exchange Rate Stability* using the updated index created by Aizenman, Chinn, and Ito (2013), which is purely a measure of currency variability including no information about the monetary policy/institutions associated with it.

On the right-hand side of these models, we begin with *de jure* measures for both CBI and FIX given the standard definition of monetary institutions as the formal structures governing the use of the monetary policy instrument. To measure *CBI (de jure)*, we rely on an extended version of Garriga's (2016) dataset, which expands both cross-sectionally and temporally the measure of legal independence introduced by Cukierman, Webb, and Neyapti (1992). This variable is continuous with larger values indicating greater legal independence. To measure *FIX (de jure)*, we use the four-value

[8] Since the inflation data include some negative values with no logged value, we first take the absolute value of the consumer price index, adding 1 since the natural log of zero is also undefined and the natural log of 1 is 0. We then restore the appropriate sign based on its unlogged value.

ordinal scale from the International Monetary Fund in their Annual Report on Exchange Arrangements and Exchange Restrictions with larger values indicating more fixity.[9]

Given the gap between these formal institutions and how governments behave in terms of their official commitments (e.g., Bearce 2014, Gavin and Manger 2023), we also consider relationships using *de facto* measures of CBI and FIX. To measure *CBI (de facto)*, we calculate the turnover rate associated with the central bank over a five-year period, which is then inverted so that it can be expected to have the same sign as its de jure partner. Using updated data from Dreher, Sturm, and de Haan (2008), this *inverted* turnover rate considers not only irregular turnover, but also regular turnover since the government could create a functionally less independent central bank by more regularly appointing members with preferences closer to their own, which is why a longer tenure is generally associated with a more independent central bank (Cukierman, Webb and Neyapti 1992, 363). To measure *FIX (de facto*), we utilize the expanded version of Reinhart and Rogoff's dataset (Ilzetzki, Reinhart, and Rogoff 2019). To make this de facto measure more consistent with its de jure equivalent, we focus on their coarse classification with four possible values (like the IMF data) with larger values indicating greater fixity.[10]

In the analysis below, we use standardized versions of these variables because they offer a more efficient way to directly compare their relationships with a macroeconomic indicator, which is

[9] These data are available at: https://www.elibrary-areaer.imf.org/Pages/Home.aspx.

[10] Following the advice of Reinhart and Rogoff (2004, 26), we drop the observations associated with "freely falling" since this category does not correspond to a deliberate policy choice consistent with an exchange rate regime. Our results are similar when using their fine classification, but the coarse scale requires fewer assumptions about what precise classifications are more fixed (ibid, 25). For example, a "[d]e facto crawling peg that is narrower than or equal to ±5%" is classified as more fixed than a "[n]oncrawling band that is narrower than or equal to ±2%" using the fine scale, but these two classifications receive the same value using the coarse scale.

especially important for H1 and H2. The standardized measures of *CBI* and *FIX* all have a mean value of 0 with a standard deviation of 1.0; their coefficients thus measure a one-standard deviation increase in the monetary institution.

These new and expanded datasets for our *CBI* and *FIX* variables provide coverage for both a broader set of countries and a longer time-period, thus allowing us to consider relationships from 1970 to 2020 with almost 5,000 country/year observations. This sample is at least twice as large as those used by most scholars in this research program, thereby reducing sample selection associated with missing data. This global sample is also important given our goal of *discerning the general relationships* concerning these monetary institutions. We recognize that there may be country or regional exceptions to the global relationships. For example, FIX may be used differently in Eastern Europe (e.g., Bodea 2010b, Bodea 2014) compared to East Asia (e.g., Rodrik 2008 and Steinberg 2016), but one cannot know if a particular country or region is typical or exceptional without first identifying the global pattern.

Of course, we cannot claim that *CBI* and *FIX*, however measured, are exogenously determined. But if our greatest endogeneity threat comes from confounding factors (i.e., variables that potentially cause both X and Y and whose omission would bias the estimated relationship between X and Y), then we can reduce this threat through our control specification. Our controls thus include a set of variables expected to influence both macroeconomic outcomes (Y) and the choice of monetary institutions (X), but that do not also explain how monetary institutions should influence these macroeconomic outcomes (i.e., they are not potential mediating factors).

These controls begin with a dichotomous measure for a *Regional* monetary arrangement using data from Garriga (2025) based on the understanding that a regional arrangement might influence both the macroeconomy through the absorption of common shocks and the subsequent adoption of monetary institutions. Since a country's level of development, both political and economic, may

influence its macroeconomy (e.g., Quinn and Woolley 2001) and its choice of monetary institutions (e.g., Broz 2002), we include a variable for *Democracy*, measured using the country/year's Polity score,[11] and a logged measure of GDP per capita (*GDPpc*). Given that the country/year's size and relative position within the global economy should affect its macroeconomy (e.g., prices and the demand for its currency) and its choice of monetary institutions (e.g., larger countries may find it easier to FIX), we further include its gross domestic product (*GDP*), measured in billions of constant U.S. dollars, and its *Population*, measured in millions of people. The country's openness to the global economy should also be expected to influence its macroeconomy (through external shocks) and its choice for monetary institutions (e.g., more open country/years may find it harder to give up domestic monetary autonomy), so we control for *Trade Openness*, measured as exports plus imports divided by GDP,[12] and *Capital Openness* using Aizenman, Chinn and Ito's (2013) index.[13] Descriptive statistics for these variables appear in Table A1 (in the Appendix).

Our control specification also includes a full set of country fixed effects to proxy time-invariant confounders (e.g., its history and geographic position). In a second specification, we add a lagged dependent variable, effectively modeling the change in Y, or ΔY, by controlling for Y's past

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[11] These data are available at: https://www.systemicpeace.org/polityproject.html.

[12] Unless otherwise noted, the data for the economic controls are available at: https://databank.worldbank.org/source/world-development-indicators.

[13] Given that even partial capital mobility is sufficient to produce a tradeoff between domestic monetary autonomy and international capital mobility (Clark 2002), we could instead treat capital mobility as an effective constant as done by Clark and Hallerberg (2000) following the logic in Frieden (1991). Our main results do not change significantly when *Capital Openness* is dropped from our control specification. We could also interact *Capital Openness* with *CBI* and *FIX*, but our hypotheses are not based on the speed of macroeconomic adjustment especially given the country/*year* unit of analysis.

level. This is important not only to address autocorrelation in the country time-series, but to reduce the endogeneity threat to a smaller set of factors that could explain the change in Y, but not the lagged level of Y (noting, by definition, that any factor explaining ΔY should also explain Y). Finally in a third specification, we add a set of year fixed effects to proxy any systemic confounders. We estimate our models through this set of fixed effects specifications, recognizing that some readers may have concerns about Nickell (1981) bias when the lagged dependent variable is added in the second and the interpretability of coefficients (e.g., Kropko and Kubinec 2020) when year fixed effects are included in the third. However, the results show robustness across all three models, and readers can choose their preferred specification.

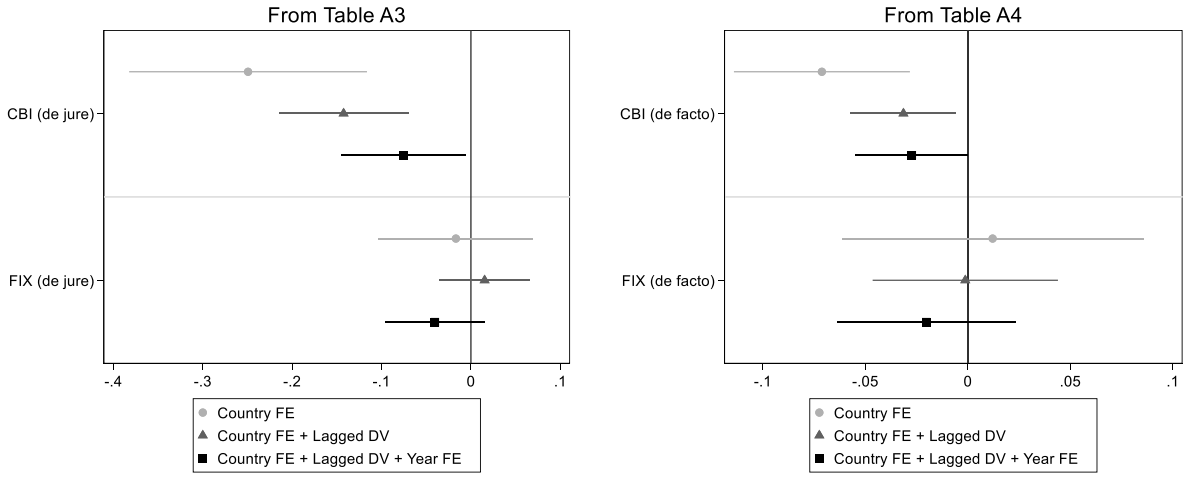
Testing the Substitution Hypotheses

Our first hypothesis - *CBI is strongly associated with inflation reduction, while FIX is not* - is tested by estimating the following equation: $Inflation = B_0 + B_1 CBI + B_2 FIX + B_X Controls + e$. As a compound hypothesis, H1 predicts a significant negative coefficient for *CBI* and an insignificant coefficient for *FIX*, although the latter may also be negatively signed. Table A3 (in the Appendix) presents our three fixed effects models using the de jure measures, and Table A4 does the same using the de facto measures. Figure 1 presents the *CBI* and *FIX* marginal effects from these *Inflation* models.

The results are largely consistent across all three specifications and when using either de jure or de facto measures of *CBI* and *FIX*. In each of these six models, *CBI* is negatively signed and statistically significant, suggesting that this monetary institution can not only be an effective means to achieve greater domestic price stability, but that it has been directed towards this macroeconomic objective. However, *FIX*, while negatively signed in four of the six models, is not significantly associated with lower inflation in any of them. Again, it is important to state that these results do not imply that FIX could not be effective towards this end. Instead, these results are better read as

evidence that fixed exchange rates have not been primarily directed towards this specific macroeconomic objective.[14]

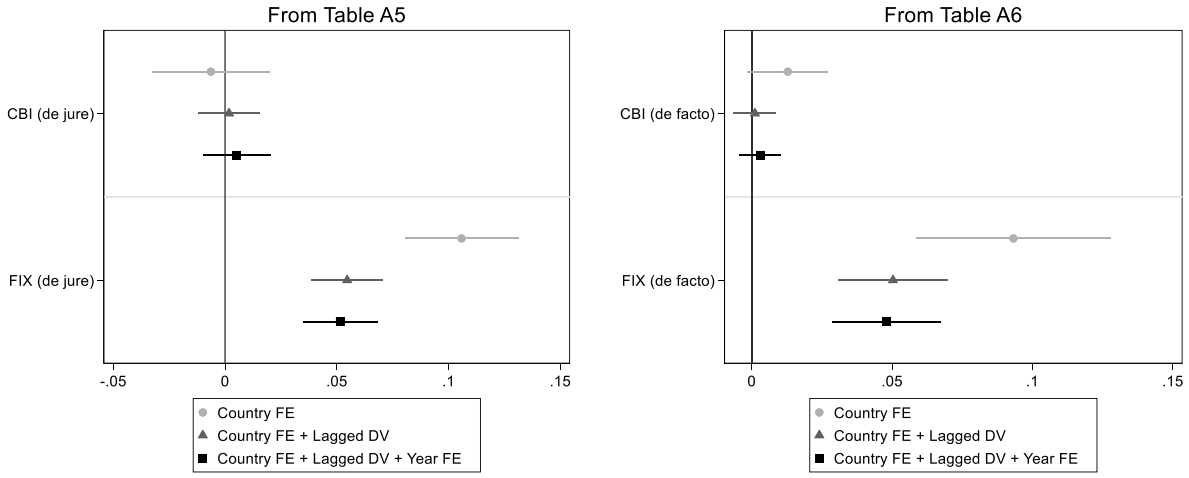
Figure 1: The Marginal Effects of *CBI* and *FIX* on *Inflation* from Tables A3 and A4.



Our second hypothesis proposes that FIX has instead been used more for external currency stability, unlike CBI. To test H2, we simply change the dependent variable to *Exchange Rate Stability* and estimate the same sequence of fixed effects models, presenting the results for the de jure measures in Table A5 (in the Appendix) and the de facto measures in Table A6. Figure 2 presents the *CBI* and *FIX* marginal effects from these *Exchange Rate Stability* models. Once again, the results are consistent across all three fixed effects specifications and robust using either de jure or de facto measures of these monetary institutions.

[14] A harder test for H1 requires that *CBI* and *FIX*, which tend to have the same negative sign, to be statistically different from each other. Our results pass this test in four of six models, failing to meet it once year fixed effects are added in the third specification. But even in this third specification, the only monetary institution showing a significant negative relationship with *Inflation* is *CBI* with a larger point estimate than *FIX*.

Figure 2: The Marginal Effects of *CBI* and *FIX* on *Exchange Rate Stability* from Tables A5 and A6.



In each of these six models, *FIX* is positively signed and statistically significant, consistent with the understanding that not only could this monetary institution be effective for external currency stability, but that it has been directed towards this policy goal. Although not hypothesized, our argument also implied that FIX should be associated with economic growth given that this has been the monetary institution more associated with economic expansion (e.g., export-led growth). In Table A7 (in the Appendix) using the de jure measures and Table A8 using the de facto measures, one can observe a significant positive relationship between *Growth* and *FIX*, which is not present between *Growth* and *CBI*.

Correspondingly, *CBI* is not significantly associated with *Exchange Rate Stability* in any model. Again, it is important to state that these results do not imply that CBI could not be effective towards this macroeconomic objective; indeed, certain central banks do operate with an exchange rate mandate (Garriga 2022), so this monetary institution has been constructed to achieve this macroeconomic objective. Instead, we read these results as evidence that 1) CBI has not been generally directed towards this macroeconomic objective and 2) achieving its primary objective (i.e., domestic price

stability) as shown in Figure 1 does not automatically translate into external currency stability as shown in Figure 2.

Testing the Complementarity Hypotheses

We test H3 (*CBI is not associated with greater inflation reduction given more FIX*) and H4 (*FIX is not associated with greater exchange rate stability given more CBI*) by adding a monetary institutions interaction variable to estimate the following equation: $DV = B_0 + B_1 CBI + B_2 FIX + B_3(CBI*FIX) + B_X Controls + e$. With the interaction term, Table 1 provides a structure for considering the combined marginal effect of these two monetary institutions in a variety of substantively meaningful combinations (Brambor, Clark and Golder 2006). Given our use of standardized measures for CBI and FIX, we consider their joint marginal effect at different combinations of three values for each: 1 standard deviation below their mean (=-1), at their mean (=0), and 1 standard deviation above their mean (=1). This structure effectively compares their combined marginal effect to the situation when both *CBI* and *FIX* takes on their mean value (i.e., *CBI*=0 and *FIX*=0) producing a marginal effect of 0.

Table 1: The Marginal Effect of Monetary Institutions in Different Combinations

		FIX		
		=-1 low FIX	=0 mean FIX	=1 high FIX
CBI	=-1 low CBI	$-B_1-B_2+B_3$	$-B_1$	$-B_1+B_2-B_3$
	=0 mean CBI	$-B_2$	0	B_2
	=1 high CBI	$B_1-B_2-B_3$	B_1	$B_1+B_2+B_3$

Our results when testing H3 with the de jure measures for *CBI* and *FIX* are presented in Table A9 (in the Appendix), and they are consistent across all three fixed effects specifications. First, the

CBI (de jure) constitutive term is negatively signed and statistically. Second, the *FIX (de jure)* constitutive term is also negatively signed but not so statistically significant. But third, their interaction term is positively signed and statistically significant, which accords with the expectation that the inflation reduction associated with CBI does not expand (i.e., move in a negative direction) with greater FIX.

Table 2: Marginal Effects of *CBI (de jure)* and *FIX (de jure)* on *Inflation (logged)* from model 2 in Table A9.

		FIX		
		=-1 low FIX	=0 mean FIX	=1 high FIX
CBI	=-1 low CBI	0.16** (0.05)	0.14*** (0.04)	0.12*** (0.05)
	=0 mean CBI	-0.01 (0.03)	0	0.01 (0.03)
	=1 high CBI	-0.18*** (0.04)	-0.14*** (0.04)	-0.10* (0.05)

Table 2 presents the combined marginal effects for *CBI* and *FIX* using the results from the second model in Table A9.[15] Here, we continue to observe results consistent with H1. Moving down the column marked as "low FIX," we observe a marginal effect moving strongly in a negative direction that comes from greater CBI. But moving across the "low CBI" row, one does not observe the same decline in the marginal effect coming from greater FIX. And we also observe evidence consistent with H3. Starting with "high CBI," we even observe a weaker marginal effect associated with greater FIX (-0.18 → 0.10). This result certainly accords with the proposition that CBI and FIX have not

[15] Given potential concerns about the interpretability of marginal effects from models with two-way fixed effects (e.g., Kropko and Kubinec 2020), which is our third specification, we take the marginal effects from the second specification with country fixed effects and a lagged dependent variable. But similar patterns appear when using either the first or third specifications.

performed as complements in reducing inflation; indeed, it even weakly suggests that they may have served as negative complements.[16]

Table A10 (in the Appendix) presents the same set of models when considering the de facto measures for *CBI* and *FIX*, and similar results appear. As shown in Table 3, we observe strong inflation reduction associated greater CBI when there is "low FIX." But when there is "high CBI," the marginal effect of these monetary institutions moves towards 0 with greater FIX (-0.055→0.001). Thus, we continue to observe no evidence that FIX complements CBI in fighting inflation and weak evidence that they have performed as negative complements for this macroeconomic objective.

Table 3: Marginal Effects of *CBI (de facto)* and *FIX (de facto)* on *Inflation (logged)* from model 2 in Table A10.

		FIX		
		=-1 low FIX	=0 mean FIX	=1 high FIX
CBI	=-1 low CBI	0.052** (0.025)	0.027** (0.13)	0.002 (0.029)
	=0 mean CBI	-0.002 (0.022)	0	0.002 (0.022)
	=1 high CBI	-0.056** (0.027)	-0.027** (0.014)	0.001 (0.031)

We test H4, the proposition that FIX is not associated with greater exchange rate stability given more CBI, by switching the dependent variable to *Exchange Rate Stability* and estimating the same sequence of models. Table A11 (in the Appendix) presents the *Exchange Rate Stability* results when using the de jure measures with the interaction term added to the specification. The results are consistent across all three models: the *CBI (de jure)* constitutive term is insignificant, the *FIX (de jure)*

[16] While marginal effect of $B_2 + B_3$ is consistently positive in these *Inflation* models, this combination does not quite achieve statistical significance at conventional levels.

constitutive term is positively signed and statistically significant, but their interaction term is negatively signed and statistically significant.

Table 4: Marginal Effects of *CBI (de jure)* and *FIX (de jure)* on *Exchange Rate Stability* from model 2 in Table A11.

		FIX		
		=-1 low FIX	=0 mean FIX	=1 high FIX
CBI	=-1 low CBI	-0.07*** (0.01)	-0.000 (0.007)	0.07*** (0.01)
	=0 mean CBI	-0.06*** (0.01)	0	0.06*** (0.01)
	=1 high CBI	-0.04*** (0.01)	0.000 (0.007)	0.04*** (0.01)

Table 4 provides the joint marginal effect of these monetary institutions in different combinations. One can observe evidence consistent with H2 in the top row: given "low CBI," greater FIX is associated with significantly greater *Exchange Rate Stability*, while the same is not strongly true for the greater CBI in the "low FIX" column. And consistent with H4, the marginal effect of "high FIX" does not strengthen with more CBI as shown in the third column. If anything, FIX is weakly associated with less *Exchange Rate Stability* given greater CBI (0.07→0.04).

Table 5: Marginal Effects of *CBI (de facto)* and *FIX (de facto)* on *Exchange Rate Stability* from model 2 in Table A12.

		FIX		
		=-1 low FIX	=0 mean FIX	=1 high FIX
CBI	=-1 low CBI	-0.06*** (0.01)	-0.000 (0.004)	0.05*** (0.01)
	=0 mean CBI	-0.05*** (0.01)	0	0.05*** (0.01)
	=1 high CBI	-0.04*** (0.01)	0.000 (0.004)	0.05*** (0.01)

Finally, Table A12 (in the Appendix) presents the *Exchange Rate Stability* results for the de facto measures with their joint marginal effects provided in Table 5. Once again, we observe no evidence that CBI complements FIX to achieve greater exchange rate stability, consistent with H4.

3. Discussion

This research note reconsidered the question of whether CBI and FIX serve as substitutes or complements. We argued that these monetary institutions have neither served as substitutes nor performed as complements for either inflation control or exchange rate stability. In terms of their potential substitution, our statistical evidence shows that while CBI has been effectively used for inflation control, FIX has been more directed towards exchange rate stability. In terms of their complementarity, our results also demonstrate that CBI was not more effective at reducing inflation when paired with greater FIX, and FIX was not more effective at promoting exchange rate stability when paired with greater CBI. If anything, both monetary institutions were somewhat less effective towards their primary macroeconomic objective given more of the other monetary institution.

This evidence concerning the relationship between these monetary institutions, potentially governing the same policy instrument while being directed towards different macroeconomic objectives, points toward a "third-generation" framework to study CBI and FIX *together* - much like Bernhard, Broz, and Clark's (2002) second-generation framework - but with consideration of policy goals beyond domestic price stability. In fact, these scholars previewed a third-generation framework, writing that "it may be the case that the time-inconsistency framework does not [completely] capture how political actors evaluate the benefits and costs of different monetary arrangements. The choice of these institutions *may have less to do with fighting inflation*" and more to do with other policy goals like

exchange rate stability and export-led growth, which are potentially in tension with inflation control when setting national monetary policy (ibid, 694 *emphasis added*).

Indeed, such third-generation framework suggests a possible political battle for control over monetary policy fought through these monetary institutions. For example, actors favoring domestic monetary autonomy (e.g., non-tradable producers) may lobby for more CBI to "lock in" greater domestic price stability, while actors favoring exchange rate stability (e.g., exporting firms) may push for FIX to guarantee their preferred macroeconomic objective. While there is much research matching interest groups to preferred macroeconomic outcomes (e.g., Frieden 2002, Bearce 2003, Bearce and Roosevelt 2023), we have little research matching interest groups to preferred monetary institutions.

Going further, we might also expect to observe each side taking actions to interfere with the operation of the other side's monetary institution following the argument introduced by Oatley (1997) and O'Mahony (2007).[17] For example, as the side favoring domestic price stability gains political power (captured by greater legal CBI), there might be less de facto FIX than one would expect given the level of de jure FIX. Similarly, the gap between de facto and de jure CBI might increase with greater FIX. As the side favoring exchange rate stability gains political power (captured by a more fixed exchange rate commitment), we might observe greater turnover within the central bank than expected by its de jure status as those favoring external currency stability appoint monetary authorities with preferences closer to their own. Given space constraints, we cannot develop and test these additional propositions within this research note, but they represent interesting next steps in the political science research program on monetary institutions following the results presented here.

[17] These scholars study the case where governments, under pressure from some interest group, make fixed exchange rate commitments to force an independent central bank to engage in a more expansionary monetary policy.

References

Adolph, Christopher. 2013. *Bankers, bureaucrats, and central bank politics: The myth of neutrality*. Cambridge University Press.

Aizenman, Joshua, Menzie David Chinn, and Hiro Ito. 2013. "The "impossible trinity" hypothesis in an era of global imbalances: Measurement and testing." *Review of International Economics* 21(3): 447-458.

Aklin, Michaël, and Andreas Kern. 2021. "The side effects of central bank independence." *American Journal of Political Science* 65 (4): 971-987.

Aklin, Michaël, Eric Arias, and Julia Gray. 2022. "Inflation Concerns and Mass Preferences Over Exchange-Rate Policy." *Economics & Politics* 34(1): 5–40.

Alexius, Annika. 2001. "Uncovered interest parity revisited." *Review of International Economics* 9 (3): 505-517.

Bearce, David H. 2014. "A political explanation for exchange-rate regime gaps." *The Journal of Politics* 76 (1): 58-72.

Bearce, David H. 2008. "Not complements, but substitutes: Fixed exchange rate commitments, central bank independence, and external currency stability." *International Studies Quarterly* 52 (4): 807-824.

Bearce, David H. 2007. *Monetary divergence: domestic policy autonomy in the post-Bretton Woods era*. University of Michigan Press.

Bearce, David H., and Megan Roosevelt. 2023. "The variation in firm lobbying by political regime: can it explain trade and currency policy differences?." *Political Science Research and Methods* 11 (1): 95-109.

Berg, Andrew, Jonathan D. Ostry, and Jeromin Zettelmeyer. 2012. "What makes growth sustained?" *Journal of Development Economics* 98 (2): 149-166.

Bernanke, Ben S. 2005. "The global saving glut and the U.S. current account deficit," Speech 77, Board of Governors of the Federal Reserve System.

Bernhard, William, J. Lawrence Broz, and William Roberts Clark. 2002. "The political economy of monetary institutions." *International Organization* 56 (4): 693-723.

Bodea, Cristina. 2010a. "Exchange rate regimes and independent central banks: a correlated choice of imperfectly credible institutions." *International Organization* 64 (3): 411-442.

Bodea, Cristina. 2010b. "The Political Economy of Fixed Exchange Rate Regimes: The Experience of Post-Communist Countries." *European Journal of Political Economy* 26(2): 248–64.

Bodea, Cristina. 2014. "Fixed exchange rates, independent central banks and price stability in postcommunist countries: Conservatism and credibility." *Economics & Politics* 26 (2): 185-211.

Bodea, Cristina, and Raymond Hicks. 2015. "Price Stability and Central Bank Independence: Discipline, Credibility, and Democratic Institutions." *International Organization* 69(1): 35–61.

Brambor, Thomas, William Roberts Clark, and Matt Golder. 2006. "Understanding interaction models: Improving empirical analyses." *Political analysis* 14 (1): 63-82.

Broz, J. Lawrence. 2002. "Political system transparency and monetary commitment regimes." *International Organization* 56 (4): 861-887.

Chinn, Menzie D., and Guy Meredith. 2004. "Monetary policy and long-horizon uncovered interest parity." *IMF Staff Papers* 51 (3): 409-430.

Clark, William Roberts. 2002. "Partisan and electoral motivations and the choice of monetary institutions under fully mobile capital." *International Organization* 56 (4): 725-749.

Clark, William Roberts, and Mark Hallerberg. 2000. "Mobile capital, domestic institutions, and electorally induced monetary and fiscal policy." *American Political Science Review* 94 (2): 323-46.

Cline, William R., and Jisun Kim. 2010. "Renminbi undervaluation, China's surplus, and the US trade deficit." Peterson Institute for International Economics Policy Brief 10-20 (August).

Corsetti, Giancarlo, Luca Dedola, and Sylvain Leduc. 2008. "High exchange-rate volatility and low pass-through." *Journal of Monetary Economics* 55 (6): 1113-1128.

Cukierman, Alex. 1992. *Central bank strategy, credibility, and independence: Theory and evidence*. MIT Press.

Cukierman, Alex, Steven B. Web, and Bilin Neyapti. 1992. "Measuring the independence of central banks and its effect on policy outcomes." *World Bank Economic Review* 6 (3): 353-398.

Dreher, Axel, Jan-Egbert Sturm, and Jakob de Haan. 2008. "Does High Inflation Cause Central Bankers to Lose Their Job? Evidence Based on A New Data Set." *European Journal of Political Economy* 24 (4): 778–787.

Fleming, Marcus. 1962. "Domestic Financial Policies under Fixed and under Floating Exchange Rates." *IMF Staff Papers* 9: 369–379.

Frankel, Jeffrey A. 2005. "On the renminbi: the choice between adjustment under a fixed exchange rate and adjustment under a flexible rate." *NBER Working Paper* 11274 (April).

Frenkel, Roberto, and Jaime Ros. 2006. "Unemployment and the real exchange rate in Latin America." *World Development* 34 (4): 631-646.

Frieden, Jeffry A. 2002. "Real sources of European currency policy: Sectoral interests and European monetary integration." *International Organization* 56 (4): 831-860.

Frieden, Jeffry A. 1991. "Invested Interests: the politics of national economic policies in a world of global finance." *International Organization* 45 (4): 425-451.

Gali, Jordi, and Tommaso Monacelli. 2005. "Monetary policy and exchange rate volatility in a small open economy." *Review of Economic Studies* 72 (3): 707-734.

Garriga, Ana Carolina. 2016. "Central bank independence in the world: A new data set." *International Interactions* 42 (5): 849-868.

Garriga, Ana Carolina. 2022. "Introducing a New Dataset on Central Bank Mandates." Paper presented at the ISA 2021 Annual Convention.

Garriga, Ana Carolina. 2025. ""Revisiting Central Bank Independence in the World: An Extended Dataset." *International Studies Quarterly*. 69 (2), June 2025, sqaf024.

Garriga, Ana Carolina, and Cesar M. Rodriguez. 2020. "More effective than we thought: Central bank independence and inflation in developing countries." *Economic Modelling* 85: 87-105.

Garriga, Ana Carolina, and Cesar M. Rodriguez. 2023. "Central Bank Independence and Inflation Volatility in Developing Countries." *Economic Analysis and Policy* 78: 1320–41

Gavin, Michael, and Mark Manger. 2023. "Populism and De Facto Central Bank Independence." *Comparative Political Studies* 56 (8): 1189-1223.

Giavazzi, Francesco, and Alberto Giovannini. 1989. *Limiting exchange rate flexibility: The European monetary system*. MIT Press.

Guisinger, Alexandra, and David Andrew Singer. 2010. "Exchange rate proclamations and inflation-fighting credibility." *International Organization* 64 (2): 313-337.

Ilzetzki, Ethan, Carmen M. Reinhart, and Kenneth S. Rogoff. 2019. "Exchange arrangements entering the twenty-first century: Which anchor will hold?" *Quarterly Journal of Economics* 134 (2): 599-646.

Keefer, Philip, and David Stasavage. 2003. "The limits of delegation: Veto players, central bank independence, and the credibility of monetary policy." *American Political Science Review* 97 (3): 407-423.

King, Mervyn, and David Low. 2014. "Measuring the 'world' real interest rate." *NBER Working Paper* 19887 (February).

Kropko, Jonathan, and Robert Kubinec. 2020. "Interpretation and identification of within-unit and cross-sectional variation in panel data models." *PLOS One* 15 (4).

Leertouwer, Erik, and Philipp Maier. 2002. "International and domestic constraints on political business cycles in OECD economies: A comment." *International Organization* 56 (1): 209-221.

Levy-Yeyati, Eduardo, and Federico Sturzenegger. 2005. "Classifying exchange rate regimes: Deeds vs. words." *European economic review* 49 (6): 1603-1635.

Levy-Yeyati, Eduardo, Federico Sturzenegger, and Pablo Alfredo Guzman. 2013. "Fear of appreciation." *Journal of Development Economics* (101): 233-247.

Lohmann, Susanne. 1998. "Federalism and Central Bank Independence: The Politics of German Monetary Policy, 1957–92." *World Politics* 50(3): 401–46.

McNamara, Kathleen R. 1998. *The currency of ideas: monetary politics in the European Union*. Cornell University Press.

Mundell, Robert A. 1968. *International Economics*. New York: Macmillan.

Nickell, Stephen. 1981. "Biases in dynamic models with fixed effects." *Econometrica* 49 (6): 1417-1426.

O'Mahony, Angela. 2007. "Escaping the ties that bind: Exchange rate choice under central bank independence." *Comparative Political Studies* 40 (7): 808-831.

Oatley, Thomas H. 1997. *Monetary politics: Exchange rate cooperation in the European Union*. University of Michigan Press.

Quinn, Dennis P., and John T. Woolley. 2001. "Democracy and national economic performance: the preference for stability." *American journal of political science* 45 (3): 634-657.

Reinhart, Carmen M., and Kenneth S. Rogoff. 2004. "The modern history of exchange rate arrangements: a reinterpretation." *Quarterly Journal of Economics* 119 (1): 1-48.

Rodrik, Dani. 2008. "The real exchange rate and economic growth." *Brookings papers on economic activity* 2008 (2): 365-412.

Rose, Andrew K. 1996. "Explaining exchange rate volatility: an empirical analysis of 'the holy trinity' of monetary independence, fixed exchange rates, and capital mobility." *Journal of International Money and Finance* 15 (6): 925-945.

Shambaugh, Jay C. 2004. "The effect of fixed exchange rates on monetary policy." *Quarterly Journal of Economics* 119 (1): 301-352.

Simmons, Beth A. 1996. "Rulers of the game: central bank independence during the interwar years." *International Organization* 50 (3): 407-443.

Steinberg, David A. 2016. "Developmental states and undervalued exchange rates in the developing world." *Review of International Political Economy* 23 (3): 418-449.

Steinberg, David A., and Victor C. Shih. 2012. "Interest group influence in authoritarian states: The political determinants of Chinese exchange rate policy." *Comparative Political Studies* 45 (11): 1405-1434.

Steinberg, David, and Stefanie Walter. 2013. "The Political Economy of Exchange Rates." H*andbook of Safeguarding Global Financial Stability: Political, Social, Cultural, and Economic Theories and Models* 2: 27–36.

Walter, Stefanie. 2008. "A New Approach for Determining Exchange-Rate Level Preferences." *International Organization* 62(3): 405–38.