
Forthcoming, Canadian Journal of Political Science

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Abstract: Why did most central banks continue to purchase dollar reserves during the 2000s even though they suffered mounting financial losses as a result of this policy? This paper argues that domestic political considerations determine whether policymakers accumulate or dump the reserve currency. We hypothesize that central bank independence discourages support for the dollar because independent central banks reduce the political clout of exporters and increase the salience of financial performance. This argument is tested using data on countries’ holdings of US Treasury securities between 2000 and 2008. The statistical results indicate that countries with independent central banks were more likely to sell and less likely to purchase US Treasuries. Our findings suggest that a complete understanding of the international dollar standard requires greater attention to domestic politics, and how political institutions influence the balance of power between competing interest groups.

Résumé: Pourquoi est-ce que la plupart des banques centrales ont continué à acheter des réserves de dollars au cours des années 2000, même quand ils souffraient des pertes financières en raison de cette politique? Cet article soutient que des considérations de politiques nationale déterminent si les responsables des politiques décident d'accumuler ou de vider leurs monnaie de réserve. Nous émettons l'hypothèse que l'indépendance de la banque centrale décourage le soutien pour le dollar, car les banques centrales indépendantes réduisent la puissance politique des exportateurs et augmentent l'importance de la performance financière. Cet argument est testé en utilisant des données sur la quantité de titres du Trésor américain possédée par pays entre 2000 et 2008. Les résultats statistiques démontrent que les pays avec des banques centrales indépendantes étaient plus susceptibles de vendre et moins susceptibles d'acheter des obligations du Trésor américain. Nos résultats suggèrent qu'une compréhension complète de l'étalon dollar international exige une plus grande attention à la politique nationale, et comment les institutions politiques influencent l'équilibre du pouvoir entre les groupes d'intérêts concurrents.
The US dollar is an international currency that is used outside of American borders for a variety of purposes. One of the most important international roles of the dollar is as a “reserve currency”, which refers to the fact that central banks hold dollars as assets. Foreign central banks have favoured the dollar throughout the postwar era, and this preference has hardly changed over the past decade. In fact, foreign central banks rapidly accumulated dollar reserves during the 2000s. As Figure 1 shows, central banks held nearly 900 billion dollars in reserve in 1998, but they held over 2.7 trillion a decade later. Although central banks’ holdings of Euros and other currencies also grew rapidly during this decade, the dollar’s share of reserves remained dominant at 64% of total reserves in 2008—a slight decline from its 2001 peak of 72% but above its 59% share of reserves in 1995. In short, the dollar remains the pre-eminent reserve currency.

While reserve currency status may seem esoteric, its importance to world politics can hardly be overstated. Issuing the reserve currency benefits the United States in numerous ways. Reserve currency status enables Americans to borrow from abroad without being subject to exchange rate risks, and provides American financial institutions with comparative advantages in global capital markets (Chinn and Frankel, 2005; Cohen, 1998; Helleiner and Malkin, Forthcoming). Reserve currency status also helps the US project military power abroad—an “exorbitant privilege” resented by opponents of American foreign policy (Kirshner, 2009). The rapid growth of dollar reserves during the past decade also had more pernicious effects: dollar accumulation contributed to America’s excessively loose monetary conditions, which was, in turn, a major cause of the 2008 global financial crisis (Eichengreen, 2011; Roubini and Mihm, 2010). As a
result, efforts to reform the international reserve system have intensified in the wake of the global financial crisis, and the debate over global reserve reform is likely to remain contentious for the foreseeable future (Helleiner, 2010).

This article investigates some of the political underpinnings of the international dollar standard. There are many reasons why the dollar remains the key reserve currency today. Previous scholarship has identified numerous factors that affect the sustainability of reserve currencies, including path dependency (Frankel, 1995; Helleiner, 2009); international institutions (Eichengreen, 2007); the policies and institutions of the reserve currency country (Helleiner and Malkin, Forthcoming; Walter, 2006; Henning, 2006); and those of the rival-currency countries (Cohen, 2009; Katada, 2008; McNamara, 2008).

This paper does not attempt to provide a comprehensive account of why the dollar survived the past decade as the top currency. We seek instead to sharpen our understanding of one aspect of this larger issue: the factors that encourage “follower states” (Pauly, 2006) to support the reserve currency. In order for the dollar to remain the key currency, foreign central banks must support the dollar by continuing to hold dollar reserves. The specific objective of this article is to improve our understanding of why many countries accumulated dollar reserves during the 2000-2008 period. A focused study of the determinants of reserve currency accumulation sheds much-needed light on this important, and relatively neglected, element of the international dollar standard.

Foreign central banks’ rapid accumulation of dollar reserves throughout the 2000-2008 period is puzzling. According to Ronald McKinnon (2009), “[e]conomists have failed rather dismally to construct convincing theoretical models of…the seemingly endless willingness by the rest of the world to acquire dollar assets right through the US
financial crisis of 2007-08.” One prominent theory posits that states acquire the reserve currency in order to promote exports (Dooley et al, 2003). However, this theory cannot explain why monetary policymakers were insensitive to the large costs associated with dollar accumulation in this period. The constant depreciation of the dollar, from 0.86 dollars/euro in the fall of 2000 to 1.58 dollars/euro in August 2008, imposed mounting financial losses on central banks that maintained large stockpiles of dollars. This led a second group of scholars to predict—wrongly—that these financial losses would become intolerable, and foreign central banks would dump the dollar, ending the dollar’s status as the world’s dominant reserve currency (Roubini and Setser, 2005; Eichengreen, 2007).

Export growth and financial performance are undoubtedly important considerations that influence foreign reserve policy. While the existing literature is valuable for bringing scholars’ attention to these factors, extant theories wrongly assume that all states have similar preferences, and these theories also fail to explain why policymakers would prioritize one of these objectives over the other. These shortcomings reflect the fact that previous theories of foreign reserve policy pay insufficient attention to domestic politics. We contribute to this literature by demonstrating that states’ preferences and foreign reserve policies vary in response to their distinct domestic political situations.

The article shows that domestic political theories help make sense of why governments continued to purchase massive volumes of American Treasury securities between 2000 and 2008. Our main argument is that domestic political institutions determine policymakers’ priorities and therefore whether they support or undermine the dollar standard. We highlight the importance of one feature of the domestic political system, the degree of central bank independence. Central bank independence increases
the political clout of the central bank and financial sector—two groups that opposed large-scale dollar accumulation. Central bank independence also weakens the power of the export sector, who was the primary beneficiary of dollar accumulation policies. We hypothesize that countries with independent central banks were less likely to accumulate dollars than those with politically-dependent central banks in this period. Instead, independent central banks tended to diversify into other types of reserves or avoid reserve accumulation altogether.

We find strong support for our argument using time-series—cross-sectional data on changes in national holdings of dollar assets between 2000 and 2008. The main finding is that central bank independence was associated with decreases in dollar holdings during the 2000-2008 period. Independent central banks were also more likely to reduce the dollar’s share of reserves and they were less likely to acquire large volumes of foreign reserves. The alternative theories find less support in the data. Our findings indicate that politically-dependent central banks have helped sustain the dollar’s reserve currency position. These results suggest that a complete understanding of why the dollar remains the key reserve currency requires consideration of how domestic political factors influence countries’ willingness to support the international dollar standard.

**Previous Explanations of Dollar Policy**

The steady depreciation of the dollar between 2000 and 2008, in conjunction with the emergence of the Euro as a potential rival currency, ignited a contentious debate about whether central banks would continue supporting the dollar. This section spells out the theoretical logic and testable implications of two popular theories of the international
dollar standard, and then explains why the lack of attention to domestic politics is a common weakness of these two theories.ii

**Export-led development**

The first argument about the sustainability of the dollar-based international monetary system came from Dooley, Folkerts-Landau and Garber (2003). Dooley and colleagues emphasize that the desire to promote exports encourages policymakers to accumulate dollar assets. They argue that there is “an important group of economies that manage their currencies vis-à-vis the dollar to support export-driven growth” (Dooley and Garber, 2005: 147). According to this argument, monetary authorities purchase dollar reserves for mercantilist reasons: dollar purchases prevent their exchange rates from appreciating against the dollar, which helps export and import-competing industries (Dooley et al 2003; McKinnon 2001, 237). If export-led growth is an important reason why states accumulate dollars, countries that maintain large trade surpluses with the US should be the most enthusiastic purchasers of dollars. Since a large trade surplus-to-GDP ratio indicates that a country relies upon exports for growth, this theory would expect a positive association between trade surpluses and dollar purchases.

**Collective action problems**

More pessimistic accounts, such as Eichengreen (2007) and Roubini and Setser (2005), stress that supporting a depreciating reserve currency is costly financially. Central banks that hold onto a depreciating reserve currency suffer financial losses; exchange rate depreciation means that the reserve currency purchases fewer units of foreign currency
Borrowing from Olson (1965), these analysts suggest that the international dollar standard is a public good that will be under-provided due to collective action problems (Eichengreen, 2007; Roubini and Setser, 2005; Grimes, 2009: 141; Oye, 1985: 180). The dollar’s position is unsustainable because individual states have private incentives to sell depreciating key currencies to avoid financial losses.

The collective action theory expects that most states will succumb to these pressures to sell the dollar, and that this incentive to dump the dollar should be greatest for central banks that hold small quantities of dollar reserves (Roubini and Setser, 2005: 35-6; Eichengreen, 2007: 66; Frankel, 1995: 11). Most countries cannot impact the dollar’s international value because they simply do not hold enough reserves to have market power. For example, the reserve policy of a central bank that holds only 1% of all dollars has negligible international ramifications. In Eichengreen’s (2007: 36) words, states’ “incentive to shift out of dollars to avoid capital losses…will be especially tempting…and it can avoid driving the dollar down”. According to the logic of collective action, the burden for sustaining the dollar’s reserve currency status falls upon the largest holders of dollars. Unlike smaller holders, a central bank that holds, for example, 50% of all dollars can influence the dollar value. For this reason, it is widely believed that the central banks that hold the largest stockpiles of dollar reserves are least likely to sell dollar reserves; their sales would depreciate the dollar, which would produce financial losses on their remaining holdings and increase global financial instability (Roubini and Setser, 2005; Willett, 1980; Helleiner, 2010: 6). In sum, if the international dollar standard suffers from collective action problems, we will observe smaller holders selling
dollars while the few major holders, who are able to buoy the price of the depreciating dollar with individual action, should be the ones buying or holding dollars.

*Limitations of Previous Theories*

The mercantilist and collective action theories help illuminate the major costs and benefits associated with the international dollar standard. Their insights that a state’s existing trade or financial position may influence its foreign reserve policy are also valuable. These theories, however, treat the state as if it were a unitary actor (Schwartz 2009, 37). As a result, these theories ignore the fact that the costs and benefits of dollar policies are unevenly distributed across different groups within an economy. These distributional effects are likely to be as important for foreign reserve policies as for other aspects of currency policy (Frieden, 1991; Helleiner and Malkin, Forthcoming). Previous theories also fail to consider how preferences regarding exports and financial losses are aggregated into state policy. iv In other words, these theories do not explain why or how policymakers come to prioritize one goal rather than another. Greater attention to domestic politics is warranted to redress these oversights. The next section of the paper develops a theory of foreign reserve policy that focuses on the important roles of interest group preferences and domestic political institutions.

*The Domestic Politics of Dollar Policies: The Effect of Central Bank Independence*

This section develops a domestic political theory of foreign reserve policy. Our objective is to explain how domestic politics encouraged many countries to increase their holdings of dollar reserves during the 2000-2008 period when the dollar was depreciating. The
decision to accumulate dollar reserves reflects preferences about both the *quantity* and *composition* of foreign reserves. In addition to dollar accumulation, two other foreign reserve policy options were available during this period. One strategy, pursued by countries such as the United Kingdom, was to maintain low stockpiles of foreign reserves. A second option was to diversify foreign reserve holdings away from the dollar; Russia, for example, started to slowly move in this direction after 2004 (Johnson, 2008). We argue that some domestic groups prefer these latter two policies, but many countries chose instead to build up their dollar reserves because national political institutions empowered the interest groups that benefited from dollar accumulation. Domestic politics therefore helps explain why many countries adopted dollar accumulation policies, as well as which countries were most supportive of the international dollar standard.

The argument is developed in two steps. Our argument begins by examining interest group preferences for or against the international dollar standard. Purchasing dollars is the preferred policy of export-oriented industries. The central bank and commercial banks prefer policies of reserve diversification and low reserve holdings over a policy of dollar accumulation in the context of dollar depreciation. In the second step of the argument, we explain how institutions determine the relative clout of these opposing groups. We focus on one institutional feature, the degree of central bank independence. Central bank independence empowers the central bank and financial sector and weakens the political power of exporters. This leads us to expect that countries with independent central banks were less likely to buy and more likely to sell US Treasury bonds during 2000-2008 than countries with politically-dependent central banks.
Interest Group Preferences

Although export competitiveness is a significant benefit of hoarding dollar reserves (Dooley et al., 2003), this benefit is not evenly distributed across social groups within a country. When the central bank purchases dollar reserves, it strengthens the value of the dollar relative to the home-currency. A weak domestic-currency primarily benefits two types of industries: export-oriented industries, whose products become cheaper on world markets; and import-competing industries, who gain because foreign goods become more expensive to domestic consumers (Frieden, 1991). Firms that export to the US economy benefit from government purchases of Treasury securities because dollar accumulation weakens the national currency, and therefore increases the competitiveness of locally-produced goods in the American market.

On the other hand, central bankers oppose the accumulation of a depreciating reserve currency for at least two reasons. The first is capital loss. As noted earlier, financial losses were probably the most significant economic cost associated with holding dollar reserves in the 2000s (Roubini and Setser, 2005; Eichengreen, 2007). However, capital losses are also not felt equally by all. The consequences of capital losses fall, first and foremost, upon the central bank. Central banks should have opposed holding onto dollars in this period because they were the ones whose balance-sheets were most directly exposed to capital losses. Foreign reserves, such as US Treasury securities, are an asset on central banks’ balance-sheets. When the dollar depreciated, the domestic-currency value of dollar-denominated assets fell, and the central bank’s financial position worsened. Central banks should therefore have favoured diversifying their reserve
Portfolios away from the dollar and into other currencies, such as the Euro, during this period of dollar depreciation.

Central banks also oppose dollar accumulation for a second reason: purchasing large quantities of foreign reserves increases inflation. When the central bank purchases foreign reserves, the total amount of currency in the economy grows, which increases the risk of inflation. Governments often sterilize reserve purchases (i.e. sell domestic bonds) to avoid increases in the domestic money supply, but sterilization becomes increasingly difficult with large-scale interventions, and large foreign exchange accumulations typically generate problems of excess liquidity and increased inflationary pressure (Pineau et al, 2006; Roubini and Setser, 2005). Since price stability is an important objective of central bankers (Simmons, 1996; McNamara, 2002), they prefer to avoid policies, such as reserve accumulation, that increase inflation. In sum, concerns over inflation caused central bankers to prefer small over large reserve holdings, while concerns over financial returns led them to prefer diversified reserve holdings over concentrated dollar holdings during the 2000-2008 period of dollar depreciation.

Commercial bankers dislike dollar accumulation policies for similar reasons. First, the financial sector is a staunch opponent of domestic inflation, and therefore opposes policies like reserve accumulation that increase the supply of money in the economy (Broz, 2002; Posen, 1995; Schwartz, 2009; Henning, 1994). To avoid the inflationary effects of reserve accumulation, some central banks aggressively tighten monetary policies, by hiking interest rates and required reserve ratios; the second reason why commercial banks oppose reserve accumulation is that these restrictive domestic monetary policies that follow from reserve accumulation reduce commercial banks’
profitability (Copelovitch and Singer, 2008; Standard Chartered, 2008; Woolley, 1986: 72). Third, commercial banks also reap low rates of return and can suffer foreign exchange losses when they hold US Treasuries and/or sterilization bonds (Standard Chartered, 2008). Commercial banks oppose the large-scale accumulation of dollar reserves. Their interests are better served by alternative policies, such as maintaining small reserve stockpiles or reserve diversification.

To summarize, we expect exporters to support and bankers to oppose the accumulation of dollar reserves. The debate over the international dollar standard in China featured exactly this division between the exporting and banking sectors. Export-oriented firms lobbied China’s leaders to keep the exchange rate fixed and undervalued against the dollar—a policy that required massive purchases of dollar reserves (Steinberg and Shih, Forthcoming). The People’s Bank of China (PBoC), China’s central bank, advocated for a more flexible and appreciated exchange rate, which would limit the need to accumulate reserves, and for a reduction in the dollar’s role in the international monetary system (Bowles and Wang, 2008; Wright, 2009). Capital loss was one of the central bank’s main concerns: “Dollar depreciation is a big negative for the PBoC, at least as far as its balance sheet is concerned”, and they experienced a $20 billion capital loss in 2006 alone (Standard Chartered, 2007). The PBoC and the commercial banking sector also opposed the accumulation of dollar reserves because it exacerbated inflationary pressure (Liew and Wu, 2007; Wright, 2009), and forced the central bank to increase the required reserve ratio, which reduced the commercial banks’ profits (Standard Chartered, 2008). The Chinese case supports our argument that export-oriented
firms push for dollar accumulation while the central bank and commercial banks prefer a smaller and more diversified reserve portfolio.

**Institutions**

A central bank’s policies towards the US dollar should depend upon the political importance of export-oriented industries, which benefit from dollar purchases, relative to the banking community, who is hurt by dollar accumulation. National political institutions can determine the degree to which policymakers favour certain groups over others (Lake, 2009). Our goal in this section is to explain why one institution—an independent central bank—influences foreign reserve policy. Central bank independence (CBI) is defined as the “freedom of monetary policymakers from direct political or governmental influence in the conduct of policy” (Walsh, 2005). CBI influences reserve policy for three reasons: it increases the weight that monetary policymakers place upon their own institutional interests; it enhances the clout of commercial banks; and reduces policymakers’ concern with tradable industries. Consequently, countries with independent central banks should be less supportive of the US dollar than countries with politically-dependent central banks.

CBI makes it easier for the central bank to pursue its own independent preferences and objectives (Bearce, 2008). Central bankers typically prioritize low inflation and the performance of the financial sector, and are relatively unconcerned with the competitiveness of tradable industries (Henning, 1994: 65; Baines, 2001). Moreover, as the previous section noted, holding large volumes of dollars worsens the central bank’s own balance-sheet. Since large-scale dollar accumulation threatens the central bank’s
institutional objectives and hurts its own financial position, CBI should reduce central banks’ propensity to accumulate large stockpiles of dollar reserves. The more independent the central bank, the lower the likelihood that the central bank accumulates a depreciating reserve currency.

CBI also increases the political influence of the financial sector. In addition to having their own bureaucratic interests, central banks also represent the financial sector, and seek to promote this sector’s interests (Woolley, 1986 Simmons, 1996; Henning, 1994; Goodman, 1991; Schwartz, 2009: 10). According to Henning (1994: 31), “central banks are typically more responsive to policy advocacy by banks and senior bank executives than from other sectors of the economy” because the banking community is the natural client of the central bank. For example, bankers have stronger influence upon the US Federal Reserve than other industries due to their representation on the Board of Governors; formal contact with district Reserve Banks; and extensive personal ties with central bank officials (Woolley, 1986). Independent central banks have a greater ability to adopt policies that benefit their constituents in the financial sector than central banks that lack political independence. Commercial banks’ opposition to dollar accumulation is the second reason why such a policy becomes less likely as the central bank’s independence increases.

CBI also reduces the political influence of the keenest supporter of dollar accumulation—the export sector. Tradable firms should be able to pressure central bankers to purchase dollar reserves when central banks lack independence. However, central bankers are able to resist lobbying for competitive exchange rates when they are independent (Frankel, 1995: 13; Henning, 1994; Baines, 2001). Political independence
insulates central bankers from societal pressures from, among other groups, tradable industries (Baines, 2001). In addition, politicians that favour exporters’ interests—namely, legislators from export-oriented districts, and cabinet officials from the commerce, industry, and trade ministries—are unable to control the actions of an independent central bank. Several previous studies find support this intuition. Henning (1994, esp. 332-4) finds that Germany’s independent central bank was able to ignore exporter interests while Japan’s central bank, which lacked independence, was responsive to lobbying from export industries. Using cross-national data from the post-Bretton Woods era, Baines (2001) finds that foreign exchange intervention becomes less extensive as the central bank’s independence increases. Similarly, Simmons (1994) finds that CBI reduced the probability of competitive devaluation during the interwar period. CBI reduces the political influence of exporters, which reduces policymakers’ incentive to follow this group’s preferred policy of dollar accumulation.

The Chinese experience is also consistent with our argument that politically-dependent central banks are more likely to accumulate dollar reserves than independent central banks. China’s central bank lacks legal independence: the President can remove the central bank governor at any time, and China’s cabinet must approve all changes to interest rate and exchange rate policy. This lack of independence helps account for why the PBoC purchased more US Treasuries than any other central bank in this period. Had the PBoC been highly independent, it would have been able to ignore the pressures from exporters and their allies in the Ministry of Commerce and Politburo, and it would have been able to implement their own preferred policy of reserve diversification. In sum, we
expect that central banks that lacked political independence were the strongest supporters of the international dollar standard in the 2000s.

[Insert Figure 2 here]

Figure 2 presents a graphical illustration of the posited causal mechanisms that link CBI and dollar policies. In the first step of the causal chain, CBI increases the influence of the central bank and commercial banks relative to tradable industries. As a result, central bankers become more concerned with financial performance and price stability, and less concerned with external competitiveness. Next, the increased salience of price stability relative to export competitiveness encourages central bankers to reduce their holdings of foreign reserves. At the same time, stronger opposition to financial losses encourages independent central bankers to diversify away from dollars. The end result is a reduction in dollar reserves in countries with independent central banks.

Our main hypothesis is thus the following: independent central banks should be more likely to sell and less likely to purchase dollar reserves than politically-dependent central banks. The theory also implies two additional testable hypotheses. First, CBI should be associated with smaller purchases and larger sales of total foreign reserves. Second, CBI should also be associated with larger reductions in the dollar’s share of central bank reserves. The next section of the paper describes the data that we will use to test these hypotheses while the following section presents the findings.

**Data Sources**

*Dependent Variables*
The US Treasury Department’s surveys of foreign holdings of US securities serve as the main data source. The Treasury Department datasets are based upon surveys that estimate foreign holdings of US Treasury securities—the most widely held foreign reserve asset, and a major source of financing for US fiscal deficits (Dooley et al, 2004: 2; Rodrik, 2006; Pineau et al, 2006; Schwartz, 2009). These constitute the best datasets available for our purpose because they are the only publicly available data that measure foreign holdings of American assets on a national basis. Our data cover the period between 2000 and 2008. Our analyses start in the year 2000 because this is the first period with available data. Data after August 2008, when the global financial crisis intensified and the dollar stopped depreciating, are intentionally excluded because a depreciating key currency is an important scope condition for our argument. This data enables us to examine which factors were associated with purchases and sales of Treasury securities during the period where the dollar was constantly depreciating against its potential rival, the Euro.

We use two different datasets assembled by the Treasury Department. The main dataset that we use provides data on foreign holdings of US securities at an annual frequency between 2002 and 2008 for over 200 countries. The Treasury Department also provides monthly data starting in March 2000 for the thirty-two countries with the largest holdings of Treasuries. This monthly dataset is useful because it provides high-frequency data for the most important countries, but has the important limitation that selection into the sample is not random, but based on one of our variables, holding size. This second dataset provides a useful robustness check, but we focus on the first dataset to avoid any potential selection problems.
Despite the important advantages of the Treasury data, it is important to acknowledge one limitation of these variables: the Treasury Department’s measure of national holdings includes both official/government and non-official/private-sector holdings. Since our theory focuses on state, rather than private, behaviour, we are using a measure of total national holdings as a proxy for the central bank’s holdings. Importantly, official institutions hold the majority (64%) of US securities.\textsuperscript{xii} The three independent variables of interest are expected to influence government policy. By contrast, these political variables are less likely to influence the actions of private bondholders. As a result, this data limitation will likely introduce only random measurement errors. We take seriously Sobol’s (1998: 6) warning of the need for caution when drawing conclusions based on these data. Nevertheless, considerable insights can still be gained from analyzing this data.

Five different dependent variables are constructed from these sources. The first and main dependent variable measures the percentage change in dollar holdings since the last period: 
\[
\% \Delta US \text{ TREASURIES}_{it} = \frac{US \text{ TREASURIES}_{it} - US \text{ TREASURIES}_{it-1}}{US \text{ TREASURIES}_{it-1}}.
\]
For the monthly dataset, \(US \text{ TREASURIES}_{it}\) refers to the level of Treasury holdings in that month, whereas for the annual dataset this refers to the level of holdings for all Treasury securities in June of that year—the month where the survey is implemented.

Two dichotomous dependent variables were also created. \textit{LARGE TREASURY SALE} is set to one when sales of Treasuries exceed 10\% (\(\% \Delta US \text{ TREASURIES} < -0.1\)) in that period and is zero otherwise; \textit{LARGE TREASURY PURCHASE} equals one when purchases exceed 10\% of the existing stock (\(\% \Delta US \text{ TREASURIES} > 0.1\)). These variables allow us to distinguish large-scale shifts from smaller, more incremental policy changes, which is important
because rapid changes should be much more destabilizing. Separating large purchases from large sales also enables us to assess whether the causes of large dollar purchases and big dollar sell-offs are similar or distinct.

We also constructed two additional dependent variables that allow us to distinguish between two different ways that countries may change their dollar holdings: changes in total foreign reserves and changes in the dollar’s share of reserves. The first variable, \(\% \Delta \text{TOTAL RESERVES}\), is the percentage change in all foreign reserves held in the central bank since the previous year.\(^{xii}\) The second variable measures changes in the dollar’s share of total foreign exchange reserves. To construct this variable, we first created a measure of the \(\text{TOTAL US ASSETS}\), calculated as the combined holdings of US Treasury, agency, and corporate debt, and US equities. Next, we divide the stock of US assets by the stock of total foreign exchange reserves in the central bank to generate a measure of the dollar’s share of foreign reserves. We then define \(\% \Delta \text{US SHARE RESERVES}\) as the percentage change in this variable from the previous period. Positive values of \(\% \Delta \text{US SHARE RESERVES}\) indicate that dollar holdings have grown relative to total central bank reserves over the past year, while negative values indicate a reduction in the dollar’s share of reserve assets—in other words, diversification away from the dollar.\(^{xiii}\)

**Independent Variables**

Cukierman et al.’s (1992) measure of legal \(\text{CBI}\) is used to assess the effect of independent central banks. They measure CBI by coding sixteen characteristics of the central bank’s statute. This variable ranges from a minimum of zero to a maximum of one, with higher values indicating greater independence. This legal index of CBI is useful because it
captures the “balance of authority between the central bank and the executive and legislative branches of government” (Cukierman et al, 1992: 353), which is precisely the aspect of CBI that is of theoretical interest. Cukierman’s index was selected because it is the “most widely used measure” of legal CBI, and it has several advantages over the other measures, including a larger sample size and clearer, more reliable, coding rules (Polillo and Guillén, 2005: 1781; Posen, 1995: 263). We use Polillo and Guillén’s (2005) updated version of this variable, which provides data up to 2000, the year where our analysis begins. The observation for the year 2000 is used for all years. Our theory leads us to expect negative coefficients for this variable.

To test the collective action theory, we use a linear functional form that is similar to basic growth models (Barro and Sala-i-Martin, 1998): $DY = \alpha + Y\beta + e$, where $Y$ is the level of US Treasury holdings and $DY$ is the growth in US Treasury holding. We use the log of Treasury holdings from the previous period ($LOG\ US\ TREASURIES$) as a proxy for holding size. The logarithmic transformation is used because $US\ TREASURIES$ has a highly skewed distribution. The collective action hypothesis expects a positive relationship between the initial level of holding and marginal changes in holding.

The (lagged) trade balance with the US divided by GDP ($TRADE\ BALANCE/GDP$) is the principal measure that we use to test the hypothesis that export-led development encourages acquisitions of dollars. This measure is appropriate because it captures an economy’s dependence on net exports to the US. A positive association between this variable and Treasury purchases is expected. Trade data are obtained from the foreign trade division of the US Census bureau, and GDP data are from the World Development Indicators (WDI).
The equations include several control variables that potentially influence reserve policy. Many economists believe that countries with more open capital markets face a greater risk of financial crisis, and they will purchase more reserves for precautionary purposes (Rodrik, 2006; Aizenman and Lee, 2007; Pineau et al, 2006). We include a measure of the degree of capital account openness (CAPITAL OPENNESS), from Chinn and Ito (2006), to test whether this variable increases Treasury holdings. Since countries’ level of development and economic size may, through a variety of channels, influence foreign exchange policies, we include the log of real GDP (LOG GDP) and GDP per capita (GDP PER CAPITA), which are taken from WDI. These three variables are available on an annualized basis. These variables are lagged one year, but a two-year lag is used for 2008 because 2006 is the most recent year of data available. The (lagged) level and month-to-month change in Euro-dollar exchange rate (EXCHANGE RATE and ∆ EXCHANGE RATE) are included because central banks’ willingness to hold dollars should change over time as the dollar loses value.

**Empirical Results**

*Estimating the determinants of changes in dollar holdings*

The statistical results presented in this section demonstrate that the degree of CBI influenced states’ propensity to buy US Treasury securities during the 2002-08 period. The first model in Table 1 uses 6 annual observations of 70 countries to assess the determinants of reserve policy using the most basic indicator of dollar purchases and sales, %∆ US TREASURIES. The model is estimated using feasible generalized least-squares (FGLS), with corrections for first-order autoregression and heteroskedasticity.
The negative and statistically significant coefficient on $CBI$ in the first model indicates that countries with independent central banks are less likely to purchase Treasury bonds than those with politically-dependent central banks. CBI is also substantively important: an increase in CBI from 0.29, China’s level, to the most independent central bank in the sample (0.92) is associated with a 31% decrease in monthly Treasury purchases. $^{xix}$ $LOG\ US\ TREASURIES$ is statistically significant, but surprisingly, it is negatively signed, not positive. This finding contradicts the collective action hypothesis: larger holders are less likely, not more likely, to acquire Treasury assets than smaller holders. The significant positive coefficient for $LOG\ GDP$ indicates that larger economies were more likely to purchase dollars. The change in the Dollar-Euro exchange rate also matters, with depreciation actually promoting purchases of Treasury securities. The other variables in the model, including the trade balance, are not statistically significant.

To assess these findings’ robustness, we added a number of additional variables that may affect reserve policy to this model. $^{xx}$ First, we included liquid liabilities per GDP, a measure of the size of the financial sector (Beck et al, 2010), to address the fact that the central bank’s share of holdings may be smaller in countries with large financial sectors (Sobol, 2004: 4). Next, we added a binary measure of whether the country has a fixed or flexible exchange rate regime (Ilzetzki, Reinhart and Rogoff, 2008) to the models because countries with fixed exchange rate regimes may have a greater need to purchase reserves. Third, we added a binary variable indicating whether a country experienced a currency crisis between 1997, the year where the Asian crisis began, and
the prior year (Laevan and Valencia, 2008). This was done to test the hypothesis that countries that have experienced recent currency crises should purchase more reserves due to their greater need to reduce the risk of future crises (Aizenman and Lee, 2007). A binary variable indicating the existence of a currency crisis in the current year was also included to check if countries that suffered from speculative attacks were forced to sell more US Treasuries. Fifth, we controlled for the dollar price of gold, an indicator of economic confidence, because global economic volatility may affect the demand for dollars. Sixth, we added a binary indicator of trade openness (Wacziarg and Welch, 2008) to assess whether countries that shelter domestic industries from international competition are more or less likely to acquire dollar reserves. Seventh, we added a measure of geopolitical affinity with the US, proxied by the frequency that a country votes with the US in the United Nations General Assembly (Gartzke, 2006); this variable tests the hypothesis that America’s geopolitical allies are more willing than its geopolitical adversaries to support the dollar standard (Kirshner, 2009). Finally, we tested whether democracies are more supportive of the international dollar standard by adding Polity’s democracy index. None of these seven variables are statistically significant, and none changed the sign or statistical significance of CBI, holding size, or trade surplus.

Additional measures of dollar policy

The next models examine two different binary dependent variables that measure large purchases and sales, respectively. These models are estimated with random-effects logistic regression. Model 2 presents the results for LARGE TREASURY PURCHASE. The negative and statistically coefficient on CBI indicates that increasing the independence of
the central bank decreases the likelihood of large purchases of Treasuries. The model predicts that countries with the least independent central bank were 3.2 times more likely to make a large purchase of Treasuries than those with the most independent central bank. This model finds support for the mercantilist thesis: \( \frac{\text{TRADE BALANCE}}{\text{GDP}} \) is positive and statistically significant, which suggests that countries that practice export-led development are more likely to make large annual purchases of Treasury bonds. GDP per capita is the only other variable to obtain statistical significance, and we find that wealthier countries were less likely to rapidly build up Treasury bonds.

Next, we turn to the question of which factors encourage central banks to rapidly unwind their dollar holdings. Opposite to the previous models, negative signs imply behaviour that is more favourable to the dollar in this model, which uses \( \text{LARGE TREASURY SALE} \) as the dependent variable. Model 3 shows that a large annual decrease in dollar holdings becomes more likely as the central bank becomes more independent. Central bank independence appears to destabilize the reserve currency regime in many ways—one of which appears to be by encouraging rapid sales of dollar assets. Perhaps surprisingly, large holders and large exporters are not significantly less likely to dump the dollar than other countries.

The final models in Table 1 differentiate between two different ways that countries may reduce Treasury holdings: by reducing total foreign reserves or by reducing the dollar’s share of foreign reserves. The same set of independent variables are included as before, but our measure of holding size is now the (logged) total holdings of US assets, rather than holdings of US Treasuries alone, because the dependent variable includes a variety of US assets. The coefficient on \( \text{CBI} \) is negative and statistically
significant in model 4, where the dependent variable is $\% \Delta TOTAL RESERVES$. Thus, independent central banks purchased fewer international reserves than politically-dependent central banks in this period. The results also indicate that large holders of US assets and countries with open capital markets purchase fewer additional foreign reserves.

Model 5 uses $\% \Delta US SHARE RESERVES$ as the dependent variable in order to examine the determinants of reserve composition. CBI returns a negative and statistically significant coefficient. This indicates that CBI encouraged countries to diversify away from the dollar during this period. We also see that countries with large dollar stockpiles were more likely to reduce their share of dollars, providing additional evidence that the largest dollar holders did not staunchly defend the dollar standard in the 2000s.

**Monthly dataset**

As a final robustness check, Table 2 re-analyses the first three models using higher-frequency (monthly as opposed to annual) data on 28 large holders. Model 6 begins with the continuous measure of changes in Treasury holdings. This model includes corrections for first-order autoregression to address issues of temporal dependence, and panel-corrected standard errors to deal with potential problems of panel heteroskedasticity (Beck and Katz, 1995). The results are quite similar to those based on the annual sample. CBI and holding size continue to have a significant negative effect on changes in dollar holdings. The indicator of export-led growth is positive and statistically significantly in this model.

[Insert Table 2 around here]

Model 7 presents a random-effects logit model on the determinants of
LARGE TREASURY PURCHASE at a monthly frequency. As before, the coefficient on CBI is negative and statistically significant. One important difference from the annual dataset is that LOG US TREASURIES has a negative and statistically significant influence on LARGE PURCHASE in model 7. This indicates that countries that hold large quantities of Treasuries are less likely than those with smaller holdings to rapidly accumulate dollars in a single month.

Model 8 examines the determinants of large monthly sales of dollar purchases. CBI does not return a statistically significant coefficient in this case. Thus, while CBI promotes large annual sales, independent central bankers do not sell large volumes of Treasuries in a very short timespan. LOG US TREASURIES is the only variable that is statistically significant in model 8. The negative coefficient on this variable suggests that large holdings reduce the probability that a country will sell 10 per cent of their dollar holdings in one month. The fact that the larger holders avoid rapid dollar sales provides some support for collective action arguments.

Summary of the findings

Table 3 summarizes the findings. The statistical results strongly support our argument that domestic institutions, particularly the degree of central bank independence, influenced support for the dollar. Independent central banks were associated with general decreases in dollar assets, a low probability of major dollar acquisitions, and a high likelihood of large decreases in US Treasuries during a one-year period. We also found that CBI reduced both total foreign exchange reserves and the dollar’s share of those
reserves. Politically-dependent central banks were important supporters of the international dollar standard during the 2000s.

[Insert Table 3 around here]

The mercantilist theory receives partial support in the data. Countries with large trade surpluses vis-à-vis the US purchased more Treasuries, but the relationship is not robust. There is only weak evidence that countries that relied upon the US as a market for their exports helped sustain the dollar’s reserve currency position during the past decade.

The results provide a mixture of support and disconfirmation for the collective action theory. The finding that larger holders were unlikely to dump the dollar supports this argument. However, while free rider problems imply that the largest holders bear the burden of propping up the system, much of results suggests that the exact opposite is true: the smaller holders were the most likely to buy dollars, and to increase the dollar’s share of central bank reserves. These findings are contrary to the expectations of the collective action theory. Putting these findings together—large holders tend to avoid both big purchases and big sales of dollars but are associated with general decreases in dollar holdings—suggests that the largest holders are slowly moving away from the dollar. These key players seem to be attempting a delicate balancing act that involves cautiously selling dollars to reduce their vulnerability to capital loss without contributing further to this outcome. The largest holders played an important role preventing a rapid sell-off of dollars, but did not act as buyers of last resort. In fact, smaller holders, in their quest to amass more foreign reserves, helped sustain the dollar’s reserve currency status to a surprising degree.

Conclusion
Why did many central banks continue to purchase dollars during the past decade when the dollar was steadily depreciating? This article aimed to evaluate which factors encouraged countries to support the reserve currency during the 2000-08 period. We argued that theories of domestic politics help answer this question. In order to understand why countries chose to purchase dollars, it is imperative to examine the distributional effects of dollar purchases and to assess the ways in which domestic political institutions can empower proponents or opponents of the international dollar standard. The data provide strong support for the hypothesis that domestic political institutions influence whether countries buy or sell a depreciating reserve currency. The results show that countries with politically-dependent central banks were highly supportive of the international dollar standard in the 2000s. These findings suggest that greater attention to the ways in which domestic politics affects support for the reserve currency will improve our understanding of the sustainability of the international dollar standard.

Although this analysis focuses on past behaviour, our findings have important implications for debates on the future of the US dollar. Previous theories of the international dollar standard assume that all central banks hold similar preferences and adopt similar policies to one another. As a result, the alternative theories predict that the future will bring one of two extreme outcomes: continuity in the international dollar standard if central banks are steadfast supporters of the current regime (e.g. Dooley et al 2003) or rapid change in the international reserve regime if central banks are intolerant of financial losses (e.g. Roubini and Setser 2005). Our domestic politics approach points out that countries greatly vary in their willingness to support the dollar. We therefore expect that the future is likely to witness further divergence in dollar policies across countries;
some countries should continue to cling to the dollar standard while other countries will continue to reduce their reserve holdings and diversify into other currencies. If countries’ policies do in fact diverge, the reserve currency system is likely to experience gradual change and evolution, rather than either rapid change or complete continuity. While our theory does not enable us to predict the exact direction that the international monetary system will evolve towards, it does suggest that gradual change is the most probable outcome for the reserve currency system.

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Figure 1: Central Bank Reserves, 1995-2008

Central Bank Reserves (in Trillions of US Dollars)

Source: International Monetary Fund Currency Composition of Foreign Exchange Reserves (COFER) database
Figure 2: How Central Bank Independence Influences Reserve Currency Policy

Central Bank Independence

- Decrease political influence of export sector
- Increase political influence of central bank & commercial banks

- Weaker preference for competitive exchange rate
- Stronger preference for low inflation
- Stronger preference for positive financial returns

- Increase sales and decrease purchases of foreign reserves
- Decrease dollar's share of reserves

- Increase sales and decrease purchases of dollar reserves
**Table 1: The Determinants of Foreign Reserve Policy (Annual Data)**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Δ US Treasuries</td>
<td>Large Purchase</td>
<td>Large Sale</td>
<td>% Δ Total Reserves</td>
<td>% Δ US Share Reserves</td>
</tr>
<tr>
<td>Log US Treasuries</td>
<td>-0.325*** (0.051)</td>
<td>-0.047 (0.080)</td>
<td>0.050 (0.091)</td>
<td>-0.020** (0.008)</td>
<td>-0.250*** (0.053)</td>
</tr>
<tr>
<td>Log US Assets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade Balance/GDP</td>
<td>-14505.32 (796955.7)</td>
<td>3737886* (2242622)</td>
<td>1279728 (2480872)</td>
<td>-236987.6 (249063.7)</td>
<td>-483549.5 (809498.5)</td>
</tr>
<tr>
<td>CBI</td>
<td>-0.499*** (0.190)</td>
<td>-1.459** (0.572)</td>
<td>1.661*** (0.647)</td>
<td>-0.199*** (0.038)</td>
<td>-0.465* (0.249)</td>
</tr>
<tr>
<td>Capital Openness</td>
<td>-0.021 (0.062)</td>
<td>-0.040 (0.100)</td>
<td>-0.014 (0.114)</td>
<td>-0.020** (0.008)</td>
<td>0.016 (0.046)</td>
</tr>
<tr>
<td>Log GDP</td>
<td>0.324*** (0.062)</td>
<td>0.064 (0.124)</td>
<td>-0.190 (0.141)</td>
<td>0.014 (0.012)</td>
<td>0.253*** (0.071)</td>
</tr>
<tr>
<td>GDP Per Capita</td>
<td>-0.000006 (0.000005)</td>
<td>-0.000002* (0.000001)</td>
<td>-0.000009 (0.000001)</td>
<td>-0.000002 (0.000001)</td>
<td>0.000001 (-0.0000007)</td>
</tr>
<tr>
<td>Exchange Rate</td>
<td>-0.089 (0.210)</td>
<td>0.715 (0.848)</td>
<td>-1.744* (1.002)</td>
<td>-0.271 (0.223)</td>
<td>-2.430** (1.149)</td>
</tr>
<tr>
<td>ΔExchange Rate</td>
<td>0.533** (0.262)</td>
<td>0.842 (1.284)</td>
<td>-1.481 (1.416)</td>
<td>-0.151 (0.117)</td>
<td>-1.404** (0.579)</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.941*** (1.217)</td>
<td>-1.122 (2.873)</td>
<td>4.709 (3.267)</td>
<td>0.503 (0.372)</td>
<td>-0.947 (2.072)</td>
</tr>
</tbody>
</table>

n  | 70 | 76 | 76 | 78 | 78 |
T  | 6  | 6  | 6  | 4  | 4  |
N  | 381 | 387 | 387 | 310 | 310 |

**Note:** *p < .1  **p < .05  ***p < .01. Standard Errors are in Parentheses.
<table>
<thead>
<tr>
<th></th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Δ US Treasuries</td>
<td>Large Purchase</td>
<td>Large Sale</td>
</tr>
<tr>
<td>Log US Treasuries</td>
<td>-0.026***</td>
<td>-1.199***</td>
<td>-0.966***</td>
</tr>
<tr>
<td></td>
<td>(0.008)</td>
<td>(0.185)</td>
<td>(0.227)</td>
</tr>
<tr>
<td>Trade Balance/GDP</td>
<td>1554049*</td>
<td>35000000</td>
<td>-58000000</td>
</tr>
<tr>
<td></td>
<td>(832329.9)</td>
<td>(39000000)</td>
<td>(48000000)</td>
</tr>
<tr>
<td>CBI</td>
<td>-0.113***</td>
<td>-2.505***</td>
<td>-0.817</td>
</tr>
<tr>
<td></td>
<td>(0.033)</td>
<td>(0.828)</td>
<td>(1.015)</td>
</tr>
<tr>
<td>Capital Openness</td>
<td>0.001</td>
<td>0.308</td>
<td>0.121</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.198)</td>
<td>(0.291)</td>
</tr>
<tr>
<td>Log GDP</td>
<td>0.019***</td>
<td>0.373*</td>
<td>0.306</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.214)</td>
<td>(0.263)</td>
</tr>
<tr>
<td>GDP Per Capita</td>
<td>0.0000001</td>
<td>0.000005</td>
<td>0.00003</td>
</tr>
<tr>
<td></td>
<td>(0.0000009)</td>
<td>(0.00002)</td>
<td>(0.00003)</td>
</tr>
<tr>
<td>Exchange Rate</td>
<td>0.060***</td>
<td>1.502***</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td>(0.484)</td>
<td>(0.578)</td>
</tr>
<tr>
<td>ΔExchange Rate</td>
<td>-0.236*</td>
<td>-6.767**</td>
<td>0.173</td>
</tr>
<tr>
<td></td>
<td>(0.125)</td>
<td>(3.448)</td>
<td>(4.209)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.438***</td>
<td>-9.544*</td>
<td>-8.951</td>
</tr>
<tr>
<td></td>
<td>(0.133)</td>
<td>(5.588)</td>
<td>(6.866)</td>
</tr>
<tr>
<td>n</td>
<td>28</td>
<td>28</td>
<td>28</td>
</tr>
<tr>
<td>T</td>
<td>93</td>
<td>93</td>
<td>93</td>
</tr>
<tr>
<td>N</td>
<td>1762</td>
<td>1762</td>
<td>1762</td>
</tr>
</tbody>
</table>

**Note:** *p< .1  **p< .05  ***p< .01. Standard Errors are in Parentheses.
**Table 3: Summary of Theoretical Predictions and Statistical Findings**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Predicted Effect on Dollar Holdings</th>
<th>Statistical Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade Surplus</td>
<td>Positive</td>
<td>(1) Positive but weak association with dollar holdings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Undertake large purchases of US Treasuries</td>
</tr>
<tr>
<td>Large Dollar Holders</td>
<td>Positive</td>
<td>(1) Cautiously sell dollars</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Avoid large purchases of US Treasuries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) Avoid large sales of US Treasuries</td>
</tr>
<tr>
<td>Central Bank Independence</td>
<td>Negative</td>
<td>(1) Strong negative association with dollar holdings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Avoid large purchases of US Treasuries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) Undertake large sales of US Treasuries</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4) Avoid large purchases of foreign reserves</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(5) Reduce dollar’s share of foreign reserves</td>
</tr>
</tbody>
</table>
Acknowledgements: Previous versions of this paper were presented at the 2006 Midwest Political Science Association, 2007 International Studies Association, and 2009 International Political Economy Society annual conferences. We appreciate helpful comments from participants at those conferences, as well as from Mark Duckenfield, Thibaud Henin, Angela O’Mahony, Michael Pettis, and Michael Pisa, and the editor and anonymous reviewers of CJPS. We would like to thank Stephen Green at Standard Chartered for inspiring this paper with his excellent analysis of the Treasury data. The authors’ names are arranged in alphabetical order. Data and other replication materials for this article are available at blogs.uoregon.edu/davidsteinberg.

i Data in this paragraph are from the IMF’s COFER database.

ii This critique also applies to other explanations for why states purchase the reserve currency, such as their desire to prevent financial crises (Aizenman and Lee 2007). The empirical analysis addresses this theory and others in greater detail.

iii For example, if a central bank purchases ten million Euros worth of Treasury bonds, and the dollar subsequently depreciates ten percent against the Euro, the central bank’s assets fall in value by one million Euros.

iv We thank an anonymous reviewer for this suggestion.

v Our two-step approach follows the “open-economy politics” approach to international political economy (Lake, 2009).

vi Rapid interest rate hikes reduce bank profits because it increases banks’ borrowing costs, but does not increase revenues because banks are unable to increase their lending interest rates in the short-term (Copelovitch and Singer, 2008: 667; Woolley, 1984: 72). Increasing the required reserve ratio, the fraction of deposits that commercial banks must
hold in zero- or low-interest bearing reserves at the central bank, is equivalent to a tax on banks (Beim and Calomiris, 2001).

vii BIS and IMF data only provide global aggregates and do not break down data by country (Higgins and Klitgaard, 2004).

viii When this dataset was compiled, data were only available through December 2008. Including the final months of 2008 in the analysis does not alter the results.

ix The correlation between the dollar-Euro exchange rate and a linear time trend is above 0.9 in both datasets.

x The Treasury Department collects separate data for individual member-countries of the European Monetary Union. It is appropriate to treat the individual countries, not the EMU itself, as the unit of analysis because the national central banks held over eight and a half times as many foreign reserves as the ECB at the end of 2003 (Scheller, 2004), and the national central banks still manage currency risks on their own (see, for example, the Bank of Belgium’s website www.bnb.be/pub/FAQ.htm).

xi The Treasury Department provides data on the official share of holdings at the global level, but does not break this down by country.

xii Source: World Development Indicators database. These variables are only constructed for the annual dataset due to lack of monthly data on total foreign reserves.

xiii Since the measure of dollar holdings includes both official and non-official holdings, but the measure of central bank reserves refers only to official holdings, this does not provide an exact measure of the dollar’s share of reserves. However, this is a useful, even if imperfect, proxy for changes in the relative importance of dollars.
We also tried using Crowe and Meade’s (2008) measure of CBI for the end of 2003, and found that this variable has similar, but less robust, effects. It is statistically significant with the correct sign in 4 of the 7 models that the Polillo-Guillén variable produces statistically significant coefficients. The Polillo-Guillén data remain more appropriate than the Crowe-Meade data because the latter is measured during the middle of our sample period, rather than at the start; using Crowe and Meade’s variable substantially reduces the sample size since we must drop the first several years of data.

This variable has similar, but less statistically significant, effects without the log transformation, and the effects of the other variables are virtually unchanged.

Since 2006 is the latest year available in the WDI database, data from that year is used as the denominator for 2007 and 2008. We also examined alternative measures of export-led development, and they performed worse than the main variable. For example, exports to the US (not deflated by GDP) never returned a positive and statistically significant coefficient. Total exports as a share of GDP was statistically significant with the correct sign in three cases, statistically insignificant in four cases and significant in the wrong direction in one case. These variables did not affect the sign or significance of the other variables in the model.

The results do not change if we use the log of GDP per capita instead.

GLS is more appropriate than OLS with PCSE’s for time-series of this short length (Beck, 2001). Fixed effects are not included because we seek to assess whether institutions and other variables explain the striking cross-national differences in the accumulation of dollar reserves. Fixed effect models are poorly suited to this goal: they are simply unable to estimate coefficients for the variables that are time-invariant (e.g.
CBI), and fail to accurately estimate the effects of slow-changing variables, such as the trade surplus (see Plümper, Troeger, and Manow, 2005). The results are identical using a fixed effects vector decomposition model, which allows for the possibility of unspecified unit-specific effects by controlling for the portion of the unobserved unit effect that is unexplained by the slowly changing variables (Plümper and Troeger, 2007).

The results are nearly identical if China is excluded from the analysis.

These results are not presented for reasons of space, but are placed in an appendix that is available on the author’s website (blogs.uoregon.edu/davidsteinberg/)

We do not consider total reserves or the dollar’s share of reserves due to lack of monthly data on total foreign reserves.