

# Economic Interdependence and Regional Monetary Policy Convergence\*

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## Abstract

Does increased economic dependence on an issuer of an international currency impact domestic monetary policy? I argue that as a country becomes more dependent on a foreign country for its domestic economic well-being, there are increased costs from diverging in monetary policy. This is especially the case for those economically dependent on a country that issues an international currency, that is, a currency used outside its national borders. Convergence in monetary policy decreases the transaction costs for firms that transact in the international currency; divergence in monetary policy, likewise, increases those transaction costs. Economic dependence, consequently, begets monetary policy convergence. I test this theory of monetary policy convergence using bilateral, time-series cross-sectional data between 33 countries and five international currency issuers — China, Euro Area, Japan, United Kingdom, and United States — from 2000 to 2019. I find strong support that economic interdependence in the manufacturing sector leads to convergence in monetary policy (overnight interest rates) and monetary outcomes (exchange rates and inflation). Importantly, China is the only international currency bloc that exhibits convergence in monetary policy with deeper economic dependence; in fact, the US currency bloc consistently exhibits divergent monetary policies as economic dependence with the US increases. These findings point to the emergence of a Renminbi bloc, which I suggest is an outcome of China's strategy to promote the use of the yuan outside of China, in particular through bilateral swap agreements.

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# 1 Introduction

Interest in the relationship between economic interdependence and international politics has revived in recent years. After Russia’s invasion of Ukraine in February 2022, Western allies isolated Russia from the global financial system through a series of debilitating sanctions. Despite its dedollarization campaign since 2014 to shield its economy from US sanctions, Russia lost access to nearly half of its \$640 billion in foreign reserves, hamstringing its ability to control its currency’s value. In response, the Russian government recently announced the potential purchase of \$70 billion in yuan and other “friendly” currencies to stabilize the ruble.<sup>1</sup> This increased dependence on the yuan follows a two-decades long increase in Russia’s economic interdependence with China, a trend that prevails across the region.

China’s deliberate strategy since the early 2000s to increase use of its currency outside of China (Liao and McDowell, 2015) has heralded a never-ending debate among international monetary system scholars about the future of the US dollar as the world’s most favored international currency.<sup>2</sup> While the international political economy scholarship on this question tends to agree that the US dollar’s global hegemony is not at risk (see, e.g., Kirshner, 1997; Kirshner et al., 2003; Helleiner and Kirshner, 2009; Cohen, 2015, 2018*a,b*),<sup>3</sup> China’s internationalization strategy likely alters the balance of currency power in the international monetary system. In this paper I seek to explain the relationship between international currencies and monetary policy making, and how China’s strategy to promote the use of the Renminbi outside of China has led to a defacto “Renminbi bloc” in East and Southeast Asia.

I argue that increased economic dependence on a country that issues an international currency — that is, a currency used outside its national borders (Cohen, 2015; Eichengreen, Mehl, and Chitu, 2017) — constrains the monetary policy choices of the economically-

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<sup>1</sup>See Bloomberg News, September 1, 2022: <https://www.bloomberg.com/news/articles/2022-09-01/russia-mulls-buying-70-billion-in-yuan-friendly-currencies>.

<sup>2</sup>See, e.g., the May 5, 2022 piece at [project-syndicate.org](https://project-syndicate.org) entitled “Is the US Dollar’s Global Hegemony at Risk?”

<sup>3</sup>If still not convinced of the US dollar’s global dominance, tweet the following and wait for a response: “The dollar is no longer the dominant reserve currency. @mcopelov.”

dependent country. I focus herein on asymmetric interdependence, that is, the dependence of one country *without* an international currency on another country *with* an international currency for an increasing share of their total economy. As a primary measure of economic dependence, I use the share of foreign value added from an international currency country in the exports and final demand of non-international currency countries; in other words, how much of a country's GDP is dependent on an issuer of an international currency. This increased dependence on a country that issues an international currency constrains the monetary policy choices of the economically-dependent country: policy deviations from the international currency's central bank become costly for the domestic economy, *ceteris paribus*. As more countries increase their economic dependence on a country with an international currency, systematic monetary convergence (via interest rates, exchange rates, and prices) with the issuer of the international currency should occur. On the other hand, as countries decrease their economic dependence on an issuer of an international currency, monetary divergence should ensue.

I test this theory of monetary policy convergence using bilateral, time-series cross-sectional data between 33 countries and five international currency issuers — China, Euro Area, Japan, United Kingdom, and United States — from 2000 to 2019; the unit of analysis is the annual dyad between country  $j$  and international currency country  $i$ . I measure economic dependence as the share of foreign value added from country  $i$  in country  $j$ 's exports and final demand. Monetary convergence is simply the absolute value of country  $i$ 's overnight lending rate minus country  $j$ 's overnight lending rate; as robustness checks I also include exchange rate convergence and inflation convergence as outcome variables. The results for the full sample of countries only hold for economic dependence in the manufacturing sector. When sub-sampling by international currency country  $i$ , the results only support the theory's predictions in the case of China: increased economic dependence on China leads to bilateral convergence of monetary policy with the People's Bank of China. As with the full sample, the results are strongest for the manufacturing sector; economic dependence on the Chinese

service sector is correlated with monetary divergence. These results for China are consistent for interest rate convergence, exchange rate convergence, and inflation convergence. For the remaining international currency countries — Euro Area, Japan, UK, USA — the results are more mixed. For the Euro Area and UK, the relationship between a country’s economic dependence on these currency blocs and monetary convergence is not statistically different from zero. In the case of Japan and the US, the results consistently suggest monetary divergence as economic dependence on these countries increases. I include several robustness checks — including a hierarchical model, additional control variables, and lagged measures of interdependence — and find consistent results.

This paper contributes to the existing literature on economic interdependence and monetary politics in two ways. First, I revisit the important work of [Mosley \(2003\)](#) and [Bearce \(2009\)](#) who demonstrate a *lack* of convergence of macroeconomic policy amongst advanced industrial democracies in the post-Bretton Woods period. These states largely maintained their social democratic welfare states and independent monetary policies. I revisit this literature with new evidence of economic interdependence increasing considerably in the first decade of the 21<sup>st</sup> century, and, importantly, has continued to increase in many emerging market and developing economies. Importantly, I find similar results to [Bearce \(2009\)](#) when I use the entire sample of countries: monetary policy divergence. However, when I allow for variation between regional trading blocs, I find definitive evidence of convergence in the Chinese trading bloc.

Second, I contribute to the literature on currency politics, in particular, the scholarship that addresses why more export-dependent countries have not engaged in competitive monetary policy in the post-Bretton Woods financial system ([Walter, 2013](#); [Steinberg, 2015](#); [Quinn, Sattler, and Weymouth, 2019](#); [Weldzius, 2021](#)). With strong evidence that a competitive exchange rate leads to sustained export surges ([Freund and Pierola, 2012](#)) and without codified rules dictating how countries may (or should) externally adjust to domestic economic conditions, it is puzzling why more countries have not run a depreciated exchange

rate. Explanations for these exchange rate choices in the international political economy (IPE) literature vary from a demand-side argument on the vulnerability of voters to exchange rate changes (Walter, 2013; Frieden, 2014) to a combination of demand-side interests and supply-side institutional arrangements (Steinberg, 2015; Quinn, Sattler, and Weymouth, 2019). But there is also strong evidence that central bank independence (CBI) has increased over the last two decades, making these institutions less susceptible to political influence (Bodea and Hicks, 2015; Garriga, 2016).

In this paper, I build upon the earlier IPE work on monetary politics, considering how increased CBI may constrain the influence of domestic interests. My simple, supply-side model of monetary politics explains the reversal of competitive monetary policy observed over the last decade in East and Southeast Asia (Collins and Gagnon, 2019; Weldzius, 2021) as a function of increased economic dependence on China. This is consistent with recent evidence of an emerging “Renminbi bloc” in East Asia (Subramanian and Kessler, 2013). The findings in this paper suggest that many of the currency manipulators of the previous two decades — e.g., South Korea, Thailand, and Vietnam — have moderated their competitive monetary policies as their economic dependence on China has increased. However, the theory of economic interdependence I lay out in this paper does not explain the results for the US bloc, where increased dependence begets monetary divergence; I hope that further analysis of currency usage (through invoicing and foreign transactions) will uncover why there is more convergence with the yuan and less with the dollar.

In the next section, I briefly overview the scholarship on economic interdependence and outline a simple supply-side model of economic dependence and regional monetary convergence. I then explain in more detail in Section 3 the data utilized in the empirical analysis, as well as the rationale for each model specification. In Section 4 I present the empirical results and discuss next steps and conclude Section 5.

## 2 Interdependence & Monetary Policy Post-Bretton Woods

How do states act when they are interdependent? The international relations scholarship on this subject of interdependence ranges from treatments of interdependence and power (Keohane and Nye Jr, 1973), conflict (Mansfield and Pollins, 2009; Copeland, 2014), and peace (Barbieri, 1996), to the weaponization of interdependence (Farrell and Newman, 2019), and the interdependence of shared beliefs amongst policymakers (McNamara, 1999). Most closely related to this paper is the role of financial interdependence in a world of open capital markets.

When the Bretton Woods financial order broke down in 1973 (Gowa, 1983), the conventional wisdom pointed to a convergence in macroeconomic policy between countries as global capital flows increased, especially amongst advanced industrial democracies (Scharpf, 1991; Garrett and Lange, 1991). The evidence, however, did not support this narrative that uninhibited capital flows were synonymous with the unwinding of the social democratic welfare state (Mosley, 2003) or would lead to a convergence of monetary policy (Bearce, 2009). Since the publication of this important work, the global trading system shifted towards a more integrated network of global value chains, where firms fragmented parts of the production process across multiple countries (Baldwin, 2018). There are also examples of successful monetary unions, in particular the Euro Area (Peritz et al., 2022), which suggests that monetary integration between economically interdependent countries is feasible (see, e.g., Kenen and Meade, 2007). Given the transformation in production and successful cases of monetary integration, I propose revisiting the debate on monetary convergence (cf. Bearce, 2009).

### 2.1 A Simple Model of Monetary Convergence

How does economic interdependence constrain the monetary policy choices of national governments? And, if interdependence constrains domestic monetary policy choices, has it produced monetary policy convergence between trading partners? In this section, I outline

a simple model of economic interdependence and monetary policy convergence.

I argue that as a country’s economy becomes more dependent on a country with an international currency, the dependent country will find it more costly to diverge in its monetary policy from the international currency country. Recall that an international currency is used as a medium of exchange, unit of account, and store of value in both the private market and for official public policy (Cohen, 2015; Eichengreen, Mehl, and Chitu, 2017). The US dollar remains the dominant currency in the third role — almost 60% of central bank reserve currency composition is in US dollars (USD); only about 3% of foreign reserves are in Chinese renminbi (RMB) (Arslanalp, Eichengreen, and Simpson-Bell, 2022). Clearly, China is not a threat to US dominance in the global monetary system, at least in terms of its reserve currency status. However, China’s rapid export-oriented growth over the last two decades has catapulted the country to top spot as the world’s largest exporting country as well as the number one trade partner of over 75 countries; this increased dependence on China has also increased settlements in RMB, with just 25% of Chinese cross-border transactions being settled in RMB in 2015 (Eichengreen, Mehl, and Chitu, 2017) to over 47% of all settlements in 2020.<sup>4</sup> While China continues to increase its economic interdependence with its trade partners, the issuers of the major global currencies — US, Euro Area, Japan, and UK — have recently decreased their interdependence with major trading partners through state-funded re-shoring efforts (Vaughn and Weldzius, 2022).

To better understand this relationship between interdependence and monetary policy, let’s consider a simplified three-country case in an open economy: country A is an issuer of an international currency and buys goods from countries B and C, country B is increasing its economic dependence on country A, and country C is not economically dependent on country A or country B. Here, by economically dependent, I mean that country A provides a significant amount of value added for country B’s output.<sup>5</sup> This is distinctly different

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<sup>4</sup>Most recent data come from the English-version of the State Council of the People’s Republic of China webpage: [http://english.www.gov.cn/archive/statistics/202108/23/content\\_WS6122d5ebc6d0df57f98defda.html](http://english.www.gov.cn/archive/statistics/202108/23/content_WS6122d5ebc6d0df57f98defda.html).

<sup>5</sup>The term “significant” means that country A is one of the top-5 providers of value added for country B’s

from traditional definition of economic dependence, which focus on trade in final goods. In the latter case, country B would be considered economically dependent on country A if country A was the largest importer of country B's final goods. In this model, Country B may decide to increase its dependence on country A for any number of reasons — e.g., a bilateral economic agreement (FTA or BIT), an increase in foreign investment from country A, or perhaps decreased dependence on a third country due to a conflict. Importantly, I take the decision to increase economic dependence as exogenous to the model and simply consider what happens as this dependence increases. Later I return to this decision to explore how China's internationalization strategy can explain monetary policy convergence in East and Southeast Asia.

A more developed and formalized model may consider how the international currency country A sets its monetary policy. For ease of interpretation, I assume that country A's choice in monetary policy is exogenous to the model; at this stage, my focus will be on the monetary policy decisions of countries B and C.

The central banks of country B and country C have three choices in their next monetary policy meeting: (1) follow the monetary policy of international currency country A, (2) diverge from country A's monetary policy, or (3) follow their own monetary strategy. Importantly, it is difficult to distinguish choice 3 from the other two: choosing a particular monetary strategy, e.g., inflation targeting, may have the appearance of following country A if the economies of country C and A are intertwined, or have the appearance of diverging from country A if their economies are not intertwined. Therefore, I only consider the decision between choices 1 and 2. For country B, which is economically dependent on country B — e.g., it is intertwined in global value chain trade, foreign direct investment, and/or its dependent on the country B's credit market — the Pareto optimal policy choice of its central bank is to shadow the policy choice of the country A's central bank. Should country B's central bank choose to diverge from country A's monetary policy, it will pay a penalty

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economy. In the empirical tests of this theory, significant simply means an increasing share of value added; the variable is a continuous measure.



via more expensive inputs and increased foreign debt servicing costs. Importantly, exporters from country B will not receive a competitive boost to their exports from monetary policy divergence because of their dependence on foreign value added.

If the dependent central bank diverges from the currency power, this leads to country B's worst outcome. Due to the dependence on country A for inputs in production, inward FDI, and/or foreign credit, a divergence in monetary policy — i.e., a lowering of its interest rate/depreciation of its exchange rate relative to country A — will leave country B's economy worse off. The cost of inputs will increase, FDI will lose value, and the foreign-denominated debt will be costlier to service. Should the country B's central bank instead choose to follow the leader,<sup>6</sup> this will be the best outcome for the country as it maintains a stable economic relationship between the two countries.

Empirical evidence supports the model's assumption that increased dependence on foreign value added decreases the benefits of monetary divergence. For example, [Amiti, Itskhoki, and Konings \(2014\)](#) show that exporting firms with high import intensity tend to have more incomplete pass-through of the exchange rate to prices than firms that are not dependent on imported inputs. Thus, if country B diverges in monetary policy from country A, firms in country B will either have to (a) absorb the costs of more expensive inputs if country B's central bank depreciates the exchange rate by lowering the interest rate, or (b) absorb the costs of more expensive exports if country B's central bank appreciates the exchange rate by raising the interest rate. Due to the increased costs and decreased benefits for country B that arise by diverging from the monetary policy of country A, this simple model of monetary politics predicts a convergence in monetary policy with global currency countries, conditional on increased economic interdependence.

Importantly, this model assumes that if country B lowers interest rates, it will depreciate its exchange rate. However, it is not clear to whom the exchange rate depreciates? For example, if country A also lowers its interest rate at the same time, then there is no relative

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<sup>6</sup>I first heard this phrase used in the context of exchange rate policy and global value chains from Mark Manger at the 2021 annual APSA conference.

depreciation between the two countries, all else equal. In fact, this should signal monetary policy convergence as country B is “following the leader.” In my empirical analysis I am able to determine convergence vs. divergence in monetary policy based on the distance between the countries’ exchange rate policies.

For country C, a country that is not economically dependent on country A, its domestic central bank has the same two choices, albeit different payoffs for each choice. Should the central bank choose to diverge from the global currency country’s monetary policy, this provides the best payoff as the competitive monetary policy may increase the country’s exports, but also protect import-competing sectors. If the country chooses to follow the leader, this could have two competing outcomes: (1) lead to a more stable economy if the currency power has relatively low inflation; however, (2) this could also be the worst outcome for the country if the global currency country’s economy is not very stable and the country is in direct competition with the currency power in export markets.

In all of these scenarios, I assume that capital markets are open. This creates some tension in the model; because the model predicts monetary convergence but not a loss of monetary autonomy, there is a clear violation of the well-known Mundell-Fleming trilemma of international finance. In short, it states that policymakers can only choose two out of three following macroeconomic conditions: international capital mobility, external currency stability, and/or monetary policy autonomy. However, as ([Jeanne and Rose, 2002](#), p. 537) find, “it is possible to reduce the volatility of the exchange rate without any sacrifice in terms of monetary autonomy.” Thus, I am not arguing for a breakdown of the trilemma, but rather that there is a shift towards external currency stability (with the international currency) conditional on economic interdependence.

This simple model provides my main testable hypothesis: **[H1]** The greater a country’s economic dependence with an issuer of an international currency, the more its monetary policy will converge with the international currency country. In the section I test this hypothesis using time-series cross-sectional data between 2000 and 2019, just before the global

pandemic as well as Russia’s invasion of Ukraine.

### 3 Measuring Interdependence and Monetary Convergence

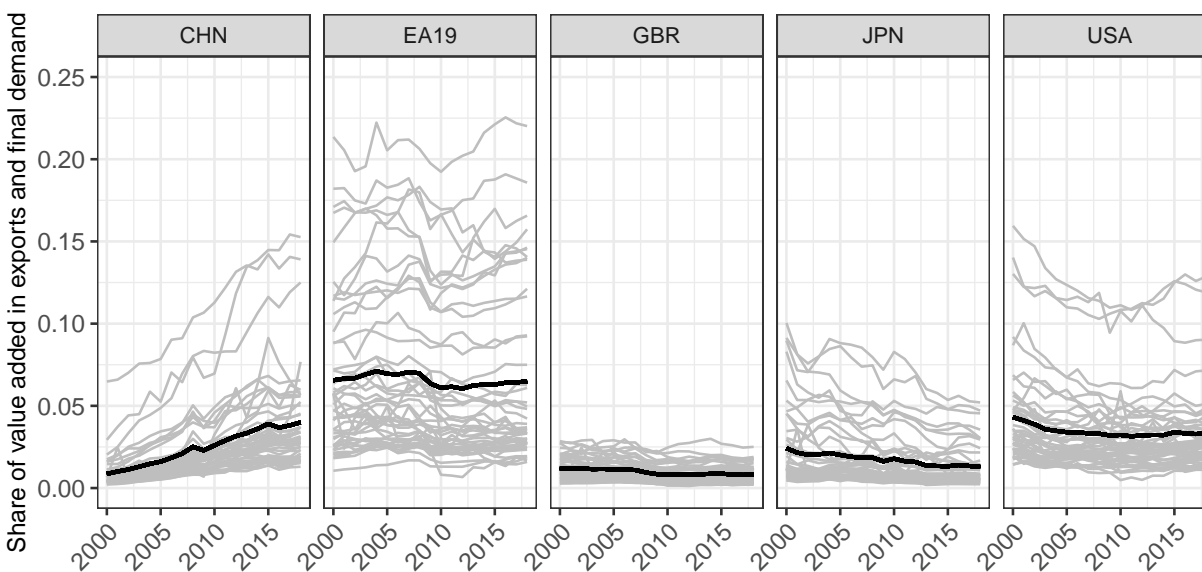
The 2020-2022 global pandemic exposed myriad vulnerabilities in the just-in-time global production system. This fragmentation of the production process across national borders was a decades long process that took off in the 1990s and peaked just before the 2008 global financial crisis. However, the expansion of global supply chain trade has continued to increase in parts of the world, in particular, in East and Southeast Asia. These global supply chains are not only important for the export-oriented sectors of the economy, but also sectors producing for the domestic economy.

In order to take into account a country’s dependence of both their export-economy and domestic-economy on an issuer of an international currency, I measure economic dependence as the bilateral share of foreign value added from an international currency country in a dependent-country’s gross exports and final demand. In other words, how much country B relies on value added from international currency country A in its economic output. This data originates from the OECD Trade in Value Added (TiVA) database, which uses country-level input-output matrices to calculate the bilateral value added trade for 66 countries, 45 industrial sectors, and covering the years 1995-2018. In order to account for the Euro Area in my analyses, I calculate an aggregate measure for all Euro Area member countries, dropping the number of available countries to 48 — note, the number of available countries for the analysis will drop to 33 when merging the interdependence measure with the measures of monetary policy. Finally, I consider that economic dependence in the manufacturing sector may differ from economic dependence in the service sector; I thus calculate bilateral dependence measures for each of these sectors as well.

Figure 1 illustrates the increased interdependence with China of many countries in the data, as well as the declining or stagnant interdependence with the other international currency countries. Each plot includes country X’s bilateral dependence on the international

currency country (light grey) as well as the mean for all countries (black).

Figure 1: Economic dependence with global currency countries, 2000–2018



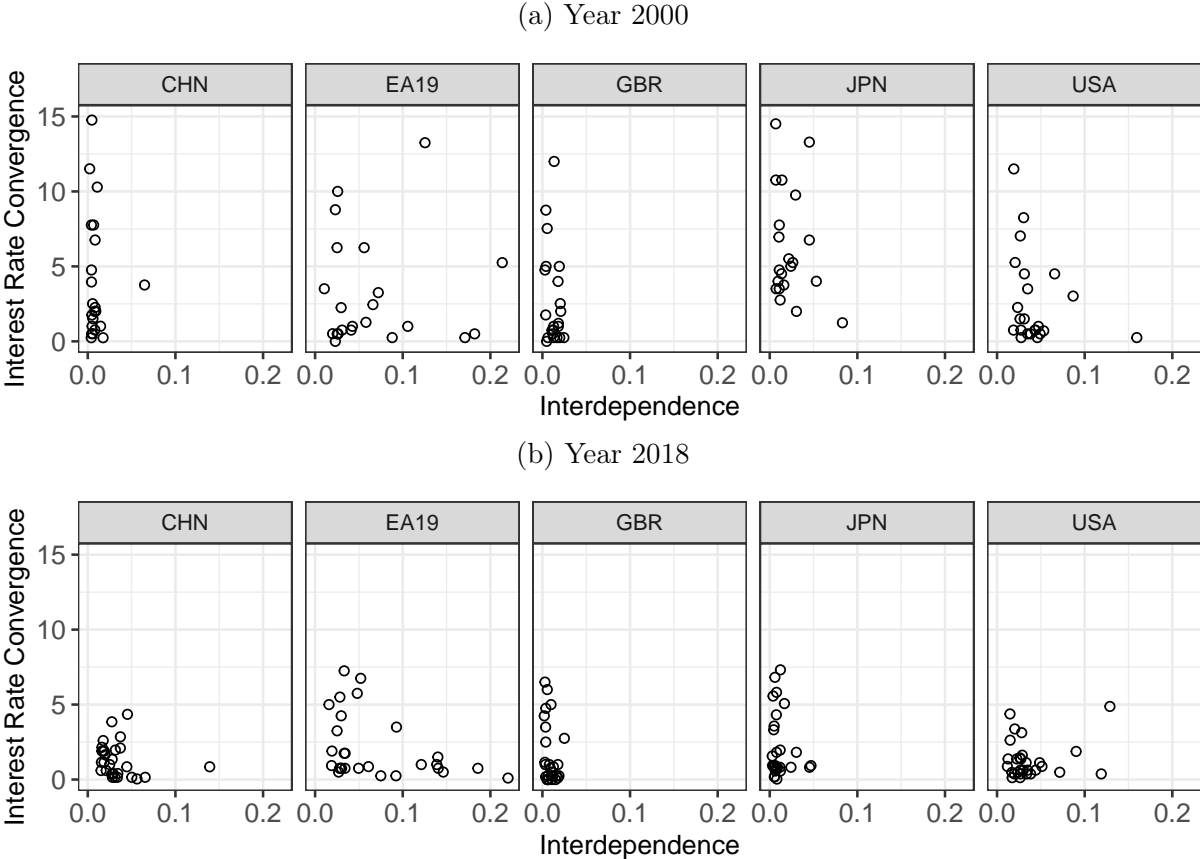
*Notes:* Each light-grey line represents a single country's dependence on the particular global currency country, measured as the share of the global currency country's value added in the individual country's exports and final demand. The darker line represents the average of all countries in the global currency trading bloc. Notice the clear increase in dependence on China over the time period. Country abbreviations are CHN - China, EA19 - Euro Area, GBR - United Kingdom, JPN - Japan, USA - United States.

How does this variation in dependence impact monetary policy? In order to answer this question I need to capture monetary convergence (or divergence) with each of these global currency countries. Following the work of [Bearce \(2009\)](#), I use the bilateral difference in the interest rates between a country and each global currency country (from the BIS database). Because I am concerned with how similar (or different) these rates become over time, I take the absolute value of this difference. In [Figure 2](#), I plot the interest rate convergence data as a function of interdependence with the global currency country. The top panel illustrates the relationship by global currency country in the year 2000, while the bottom panel does the same for the year 2018, the beginning and end of my data — note, the monetary policy data ends in 2020, which allows me to also run models with one and two-year lagged dependent variables through 2019 and 2020, respectively. Notably, there is interest rate convergence within each global currency bloc over the time period; the relationship between increased

interdependence and interest rate convergence is most evident in the China and Euro Area currency blocs.

A second, alternative measure of monetary convergence is to measure the distance between exchange rates and inflation rates. I include all of these measures in my empirical analysis, finding consistent results across all three.

Figure 2: Economic Interdependence and Monetary Convergence, 2000 and 2017



*Notes:* Interest rate convergence is simply the absolute value of  $country_i - country_{gc}$ , where  $country_{gc}$  is each of the five global currency countries: CHN - China, EA19 - Euro Area, GBR - United Kingdom, JPN - Japan, USA - United States. Interdependence is the bilateral share of value added from  $country_{gc}$  in  $country_i$ 's exports and final demand.

In order to isolate economic interdependence as a main predictor of monetary policy convergence, I also include a number of potentially confounding variables that may also impact monetary policy. First, foreign direct investment (FDI) proxies for a domestic economy's dependence on other states. A higher inflow of FDI (as a percentage of GDP) should correlate with monetary convergence as domestic interests dependent on FDI prefer exchange

rate stability, all else equal ([Broz and Frieden, 2001](#)). On the other hand, a higher outflow of FDI (as a percentage of GDP) should correlate with monetary divergence; if, as I assumed earlier, monetary divergence provides a more competitive exchange rate, this increases the relative value of foreign assets. Importantly, these variables measure *total* FDI, not bilateral FDI with the international currency country; thus, these results should be read with caution.

Second, I include a measure of central bank independence (CBI) as a more politically influenced central bank is more likely to engage in competitive monetary policy, which I assume is more likely to deviate from the monetary policy of an international currency holder. Thus, I predict higher CBI will be correlated with monetary convergence. The CBI data come from [Romelli \(2022\)](#), which includes more years and countries than the standard measures of CBI used in the political science literature (in particular, [Bodea and Hicks, 2015](#); [Garriga, 2016](#)).

Finally, a central bank needs the resources to be able to affect monetary policy, thus I also include a measure of their foreign exchange reserves. A new database from the International Monetary Fund on bilateral currency swap agreements also provides data on the amount of a central bank's foreign exchange (FX) reserves in months of imports ([Perks et al., 2021](#)). It is not clear what impact a higher amount of foreign exchange in its coffers would mean for monetary convergence; thus I predict a null effect. Despite this, I include the variable in the analysis as it should control for any countries that do not have the means to converge with an international currency country due to limited FX reserves — e.g., when a country is facing a balance of payments crisis.

In robustness checks, I also include other control variables but their impact is negligible, thus they are not reported in my results. These variables include the political ideology of the executive and the amount of external debt as a share of GDP.

## 4 Evidence of Monetary Policy Convergence

Does increased economic interdependence with an issuer of an international currency lead to monetary policy convergence? As I highlighted at the beginning of this paper, I am interested in testing a supply-side model of monetary policy-making. Thus, in testing this question, I use bilateral convergence of the primary central bank policy tool, the overnight interest, as the main outcome variable. I also consider two other measures of monetary policy — bilateral exchange rate convergence and inflation convergence — using the same equation as for interest rate convergence. I estimate a linear model of the form:

$$|(ir_{it} - ir_{jt})| = \alpha_j + \alpha_t + \beta_1 \text{Interdependence}_{ijt} + \beta' \mathbf{X} + \epsilon, \quad (1)$$

where  $i$  denotes an international currency country,  $j$  denotes the other 28 countries in the data, and  $t$  is the year, 2000–2018. The main coefficient of interest  $\beta_1$  measures the relationship between interdependence — the total foreign value added from international currency country  $i$  in the partner country  $j$ 's exports and final demand — and monetary convergence. All control variables are included in vector  $\mathbf{X}$  and the linear model includes both country and year fixed effects. In all empirical models, a positive coefficient suggests monetary convergence; a negative coefficient suggests monetary divergence.

### 4.1 Baseline results: interdependence vs. monetary convergence

As a baseline, I regress the monetary policy convergence variables on interdependence. As these results are similar to when I include the potentially confounding variables, I relegated the table to the Appendix (see Table 6) and only show results from the full model.

Table 1 illustrates little impact of interdependence on monetary policy convergence — each column shows a different measure of monetary policy. Starting with interest rate convergence, column 1 highlights that higher FDI inflows is correlated with interest rate convergence, FDI outflows with divergence (although, not statistically significant), higher independence of the

central bank with convergence, and more FX reserves with convergence. These confounding variables mostly hold in columns 2 (central bank convergence) and 3 (inflation convergence). Importantly, interdependence is positively signed in two columns and not significant in two columns. These results do not suggest that interdependence begets monetary convergence.

Table 1: Relationship between economic interdependence and monetary convergence.

	<i>Dependent variable:</i>		
	interest rate	exchange rate	inflation
Interdependence	0.038 (0.037)	0.015* (0.008)	-0.045 (0.072)
FDI inflows (% of GDP)	0.273** (0.128)	0.009 (0.029)	1.643*** (0.248)
FDI outflows (% of GDP)	-0.048 (0.125)	-0.026 (0.028)	-1.376*** (0.242)
Central bank independence	-0.783*** (0.089)	-0.122*** (0.020)	-0.579*** (0.172)
FX reserves in months of imports	-0.162*** (0.031)	0.013* (0.007)	-0.200*** (0.059)
Observations	2,683	2,683	2,683
R <sup>2</sup>	0.058	0.018	0.029
Adjusted R <sup>2</sup>	-0.0005	-0.043	-0.031

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variables (column titles) are the absolute value of the distance between the monetary variable of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, and the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote monetary convergence.

Furthermore, the Adjusted R<sup>2</sup> suggests that the model has little predictive value. In robustness checks (available in the Appendix), I consider that central banks may not respond to changes in economic interdependence immediately. Using a lagged independent variable I find that interdependence actually leads to monetary divergence, supporting the findings from [Bearce \(2009\)](#).



Table 2: Relationship between economic interdependence (in the manufacturing and service sectors) and monetary convergence.

	<i>Dependent variable:</i>		
	interest rate	exchange rate	inflation
Interdependence (mfg.)	-0.238*** (0.079)	-0.072*** (0.018)	-0.786*** (0.153)
Interdependence (svc.)	0.330*** (0.091)	0.101*** (0.020)	0.863*** (0.175)
FDI inflows (% of GDP)	0.239* (0.128)	-0.0002 (0.029)	1.550*** (0.248)
FDI outflows (% of GDP)	-0.012 (0.125)	-0.016 (0.028)	-1.274*** (0.241)
Central bank independence	-0.780*** (0.089)	-0.121*** (0.020)	-0.576*** (0.172)
FX reserves in months of imports	-0.166*** (0.031)	0.011* (0.007)	-0.213*** (0.059)
Observations	2,683	2,683	2,683
R <sup>2</sup>	0.062	0.027	0.039
Adjusted R <sup>2</sup>	0.004	-0.034	-0.021

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variables (column titles) are the absolute value of the distance between the monetary variable of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, and the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote monetary convergence.

The final baseline model considers the effect of interdependence in the manufacturing sector and service sector separately. Table 2 illustrates that increased interdependence in the manufacturing sector is strongly correlated with monetary convergence, whereas increased interdependence in the service sector is strongly correlated with monetary divergence. The results from Tables 1 and 2 hold when interdependence is lagged one year (see Tables 9 and 10 in the Appendix).

## 4.2 Monetary convergence, by currency bloc

I now isolate each currency bloc as a sub-sample and run the same analyses as in the previous section. I sub-sample by each currency bloc in order to see if there are substantial differences between the dominant international currency (US dollar), the rising competitor international currency (Chinese renminbi), and the others (Euro Area, Japan, UK).

In Table 3, we see that interdependence only leads to interest rate convergence in the case of the Chinese currency bloc (see column 1). In the case of Japan and the United States, increased interdependence leads to interest rate divergence, a clear rejection of my hypothesis. What explains these competing results? Table 4 provides some answers.

Table 3: Interest Rate Convergence. Relationship between economic interdependence and interest rate convergence, including potential confounding variables. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: interest rate convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence	-0.245*** (0.053)	0.059 (0.199)	0.916*** (0.086)	0.014 (0.124)	0.452** (0.181)
FDI inflows (% of GDP)	0.038 (0.331)	0.137 (0.271)	0.379 (0.272)	0.107 (0.307)	0.296 (0.309)
FDI outflows (% of GDP)	0.405 (0.301)	0.028 (0.246)	-0.068 (0.245)	-0.157 (0.280)	-0.105 (0.281)
Central bank independence	-0.238 (0.213)	-0.356** (0.171)	-0.365** (0.171)	-0.745*** (0.191)	-0.294 (0.196)
FX reserves in months of imports	0.101 (0.079)	-0.045 (0.060)	-0.084 (0.063)	-0.115* (0.068)	-0.196*** (0.068)
Observations	500	519	500	500	519
R <sup>2</sup>	0.063	0.014	0.289	0.044	0.045
Adjusted R <sup>2</sup>	-0.004	-0.055	0.238	-0.023	-0.022

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, interest rate convergence, is the absolute value of the distance between the interest rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote interest rate convergence. Each column represents a sub-sample, where the bilateral measure of interest rate convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between interest rates, or interest rate convergence.

When I separate interdependence by sector (see Table 4), the results show that increased interdependence in the manufacturing sector leads to interest rate convergence in the Chinese sub-sample only. Moreover, none of the other international currencies exhibit a statistically

significant relationship. Only in the case of service sector interdependence do we see a divergent relationship, in the cases of China and Japan.

Table 4: Interest Rate Convergence (by sector). Relationship between economic interdependence (in the manufacturing and service sectors) and interest rate convergence, including potential confounding variables. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: interest rate convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence (mfg.)	-0.537*** (0.164)	0.156 (0.260)	0.200 (0.170)	0.203 (0.200)	0.329 (0.249)
Interdependence (svc.)	0.395* (0.202)	-0.013 (0.227)	0.724*** (0.161)	-0.165 (0.198)	0.155 (0.235)
FDI inflows (% of GDP)	-0.068 (0.332)	0.141 (0.272)	0.380 (0.273)	0.132 (0.308)	0.302 (0.309)
FDI outflows (% of GDP)	0.520* (0.304)	0.023 (0.247)	-0.050 (0.246)	-0.167 (0.280)	-0.131 (0.282)
Central bank independence	-0.276 (0.211)	-0.344** (0.172)	-0.273 (0.174)	-0.715*** (0.193)	-0.282 (0.199)
FX reserves in months of imports	0.121 (0.079)	-0.041 (0.060)	-0.074 (0.063)	-0.085 (0.075)	-0.186*** (0.069)
Observations	500	519	500	500	519
R <sup>2</sup>	0.072	0.015	0.287	0.046	0.045
Adjusted R <sup>2</sup>	0.004	-0.056	0.235	-0.023	-0.024

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, interest rate convergence, is the absolute value of the distance between the interest rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote interest rate convergence. Each column represents a sub-sample, where the bilateral measure of interest rate convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between interest rates, or interest rate convergence.

Is this statistically significant relationship between interdependence, especially in the manufacturing industry, and interest rate convergence dependent on the outcome variable? Is it stable to the inclusion of a lagged interdependence measure? In short, the answer to both of these questions is yes. In the Appendix, I show that increased interdependence (across all

sectors and in the manufacturing sector only) leads to both exchange rate convergence *and* inflation convergence for the Chinese sub-sample (see Tables 13, 14, 17, and 18) as well as with a lagged independent variable (see Tables 15, 16, 19, and 20).

What explains why China is the only country that exhibits monetary convergence as it increases its economic interdependence with its trading partners? One argument is that China has been actively promoting the use of the renminbi in settling foreign transactions since the early 2000s. Its main tool for promoting the use of its currency is through bilateral swap agreements with its largest trading partners. In 2007, China only had a few of these arrangements in existence; by 2019, it had signed 74 such agreements (Perks et al., 2021). Using a dummy variable for the existence of a bilateral swap agreement between China and the countries in the dataset for each available year, I rerun the empirical models substituting the BSA dummy variable for the measure of interdependence. I choose to substitute rather than include the BSA dummy as another variable in the model because the BSA dummy is a strong predictor of interdependence. Using the same baseline model as before, but regressing interdependence with China on the BSA dummy variable, the coefficient on BSA is 0.65 and statistically significant at the 0.1% level ( $N = 500$ ,  $R^2 = 0.11$ , Adjusted  $R^2 = 0.05$ ). This suggests that substituting is more suitable than including as another covariate along with interdependence.

In Table 5 I outline the results from this analysis. Column 1 suggests that having a bilateral swap agreement with China increases the likelihood of interest rate convergence; this coefficient is significant at the 1% level. The results for exchange rate convergence and inflation convergence are mixed. For the former, the existence of a bilateral swap agreement decreases the likelihood of exchange rate convergence (0.1% significance), although the magnitude of this effect is quite low. For the latter, a swap agreement increases the likelihood of inflation convergence, although the relationship is not statistically different from zero. These results hold when the BSA dummy variable is lagged one year. Together, this analysis provides suggestive evidence that China's strategy to promote use of the renminbi

has had an effect on monetary convergence; however, the findings are not as strong as with the measure of economic interdependence and thus more work is needed to untangle the causal story.

Table 5: Relationship between Chinese bilateral swap agreements and monetary convergence.

	<i>Dependent variable:</i>		
	interest rate	exchange rate	inflation
Bilateral swap agreement	-0.214** (0.098)	0.004*** (0.002)	-0.047 (0.190)
FDI inflows (% of GDP)	0.005 (0.337)	-0.003 (0.005)	1.581** (0.652)
FDI outflows (% of GDP)	0.395 (0.307)	0.003 (0.005)	-1.199** (0.594)
Central bank independence	-0.013 (0.075)	-0.002** (0.001)	-0.232 (0.145)
FX reserves in months of imports	-0.374* (0.215)	-0.011*** (0.003)	-0.822** (0.415)
Observations	500	500	500
R <sup>2</sup>	0.029	0.044	0.030
Adjusted R <sup>2</sup>	-0.040	-0.026	-0.040

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variables (column titles) are the absolute value of the distance between the monetary variable of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, and the US. All dependent and independent variables logged. Bilateral swap agreement = 1 in the year that China has a BSA in place with the country; otherwise 0. Negative coefficient values denote monetary convergence.

## 5 Discussion and Conclusion

In a previous paper ([Weldzius, 2021](#)), I argued that currency manipulation as a strategy for export-led growth had lost its luster as exporting countries became more dependent on foreign inputs for domestic production. Despite a few countries rejoining the currency manipulation club in 2020 — namely, Taiwan and Thailand ([Gagnon and Sarsenbayev, 2021](#)) — the trend towards less currency manipulation has continued since its peak in 2013. This article followed a long-line of IPE literature on currency politics. Much of this literature, as I argued in the introduction to this paper, uses a demand-side model of currency politics to explain monetary

policy outcomes. However, as central banks have become more independent and thus more isolated from political pressure, the upsides of this demand-side model become less clear. In order to sidestep this worry that central banks are less likely to mirror the attitudes of special interests in the domestic economy, I proposed a supply-side model in which central banks are influenced by the economic constraints that come with deeper economic interdependence. I tested this theory using data on interest rates, exchange rates, and inflation, and showed that increased interdependence between countries does not in fact lead to monetary convergence. However, interdependence in the manufacturing sector *does* support the hypothesis.

By sub-setting the sample by currency bloc, I provided evidence that monetary convergence (of interest rates, exchange rates, and inflation) only occurs in the Chinese bloc. I further suggested that this relationship most likely arose due to China's active strategy to promote use of the renminbi in settling foreign transactions. Using a new database on bilateral swap agreements, I provided evidence that countries with a Chinese currency swap agreement exhibited interest rate convergence (although the relationship does not hold for exchange rates or inflation).

Monetary convergence in the Chinese trading bloc is important for several reasons. Most importantly, it shows the emergence of a "Renminbi bloc" as suggested by [Subramanian and Kessler \(2013\)](#). The RMB is the most likely candidate to supplement the US dollar in the global economy; even if that passing of the torch is in the very distant future, an understanding of how this may come about is important for the study of currency politics and currency power ([Cohen, 2015](#)). In their volume on global currencies, [Eichengreen, Mehl, and Chitu \(2017, p. 181\)](#) layout a possible scenario for how the RMB becomes a dominant global currency:

Chinese policy makers could cautiously and deliberately implement, over an extended period, reforms that pave the way for a slow but sustained increase in the use of renminbi for cross-border transactions. There be then be no "big bang" like with dollar internationalization between 1914 and 1924. But neither will the process of currency internationalization go into reverse, as happened with the yen between 1984 and 1994.

Indeed, China has increased the use of the RMB in cross-border transactions in the last decade. It has accomplished this through increased interdependence, bilateral swap agreements with major trading partners, and foreign investment through the Belt and Road Initiative. It is in explaining the mechanism by which China has increased monetary convergence that I intend to explore further in subsequent versions of this paper.

This paper started as a litmus test for a more in-depth study of regional monetary convergence.<sup>7</sup> Based on the baseline results presented here, and the strong statistical relationship between economic interdependence and monetary convergence in the regional trading bloc of China, I propose a more in-depth analysis of central bank policy making using the same supply-side approach. I plan to show empirically that economically-dependent country's central banks "follow the leader" when it comes to monetary policy. To do this, I will analyze the interest rate policy of non-international currency central banks in the meeting that follows a change in their most interdependent international currency country's monetary policy.

Second, in order to tell a more compelling story of central bank convergence, I will conduct a network textual analysis of central bank minutes from the countries used in this analysis. My hardworking research assistants have collected the central bank minutes, statements, and policy reports for each of these banks following each meeting between 2000 and 2020. The analysis will take a deeper dive into how monetary spills-over from the global currency country's central bank to the other central banks whose economies are dependent on the global currency country. One way to see this is in the interest rate policy; a more direct way is to see this is in the policy discussions of central bank members. I plan to complete these next steps in October 2022. In preparing to finish the next steps of this project, I appreciate any and all feedback!

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<sup>7</sup>This was inspired by the work of [Mosley 2003](#) and [Bearce 2009](#). My priors were that increased interdependence between countries may constrain the domestic objectives of monetary authorities, in particular currency manipulation, and that there may be convergence on monetary policy at the regional level.

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# A Appendix

## A.1 Baseline results, no controls

Table 6: Relationship between economic interdependence and monetary convergence.

	<i>Dependent variable:</i>		
	interest rate	exchange rate	inflation
Interdependence	0.034 (0.038)	0.016* (0.008)	-0.031 (0.073)
Observations	2,683	2,683	2,683
R <sup>2</sup>	0.0003	0.001	0.0001
Adjusted R <sup>2</sup>	-0.060	-0.059	-0.060

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variables (column titles) are the absolute value of the distance between the monetary variable of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, and US. All variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote monetary convergence.

Table 7: Interest Rate Convergence, baseline. Relationship between economic interdependence and interest rate convergence. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: interest rate convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence	-0.238*** (0.048)	0.143 (0.196)	1.027*** (0.077)	0.139 (0.122)	0.523*** (0.178)
Observations	500	519	500	500	519
R <sup>2</sup>	0.050	0.001	0.273	0.003	0.017
Adjusted R <sup>2</sup>	-0.009	-0.060	0.229	-0.059	-0.043

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, interest rate convergence, is the absolute value of the distance between the interest rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote interest rate convergence. Each column represents a sub-sample, where the bilateral measure of interest rate convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between interest rates, or interest rate convergence.

## A.2 Full sample, lagged interdependence

Table 8: Relationship between economic interdependence (lagged one year) and monetary convergence (baseline model).

	<i>Dependent variable:</i>		
	interest rate	exchange rate	inflation
Interdependence $_{t-1}$	0.078** (0.037)	0.013 (0.009)	0.109 (0.076)
Observations	2,516	2,516	2,516
R <sup>2</sup>	0.002	0.001	0.001
Adjusted R <sup>2</sup>	-0.062	-0.063	-0.063

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variables (column titles) are the absolute value of the distance between the monetary variable of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, and the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand (lagged one year). Negative coefficient values denote monetary convergence.

Table 9: Relationship between economic interdependence ( $t - 1$ ) and monetary convergence, with controls.

	<i>Dependent variable:</i>		
	interest rate	exchange rate	inflation
Interdependence $_{t-1}$	0.084** (0.037)	0.013 (0.009)	0.103 (0.075)
FDI inflows (% of GDP)	0.297** (0.124)	-0.007 (0.029)	1.525*** (0.254)
FDI outflows (% of GDP)	-0.066 (0.120)	-0.010 (0.029)	-1.271*** (0.247)
Central bank independence	-0.500*** (0.094)	-0.122*** (0.022)	-0.407** (0.193)
FX reserves in months of imports	-0.146*** (0.030)	0.012* (0.007)	-0.133** (0.063)
Observations	2,516	2,516	2,516
R <sup>2</sup>	0.055	0.014	0.039
Adjusted R <sup>2</sup>	-0.007	-0.052	-0.025

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variables (column titles) are the absolute value of the distance between the monetary variable of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, and the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand (lagged one year). Negative coefficient values denote monetary convergence.

Table 10: Relationship between economic interdependence (in the manufacturing and service sectors, lagged one year) and monetary convergence, with controls.

	<i>Dependent variable:</i>		
	interest rate	exchange rate	inflation
Interdependence <sub>t-1</sub> (mfg)	-0.098 (0.077)	-0.065*** (0.018)	-0.434*** (0.157)
Interdependence <sub>t-1</sub> (svc)	0.230*** (0.087)	0.091*** (0.021)	0.619*** (0.179)
FDI inflows (% of GDP)	0.284** (0.123)	-0.013 (0.029)	1.491*** (0.254)
FDI outflows (% of GDP)	-0.053 (0.120)	-0.004 (0.028)	-1.233*** (0.247)
Central bank independence	-0.503*** (0.094)	-0.124*** (0.022)	-0.421** (0.193)
FX reserves in months of imports	-0.150*** (0.030)	0.011 (0.007)	-0.142** (0.062)
Observations	2,516	2,516	2,516
R <sup>2</sup>	0.044	0.023	0.026
Adjusted R <sup>2</sup>	-0.020	-0.042	-0.039

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variables (column titles) are the absolute value of the distance between the monetary variable of international currency country *i* and partner country *j*, where country *i* is China, the Euro Area, Japan, UK, and the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country *i* in the partner country *j*'s exports and final demand (lagged one year). Negative coefficient values denote monetary convergence.

### A.3 Interest rate convergence: sub samples, lagged

Table 11: Relationship between economic interdependence (lagged one year) and interest rate convergence, with controls. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: interest rate convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence $e_{t-1}$	-0.112** (0.054)	-0.144 (0.200)	0.744*** (0.085)	-0.137 (0.125)	0.423** (0.184)
FDI inflows (% of GDP)	-0.041 (0.305)	0.200 (0.245)	0.452* (0.250)	0.292 (0.279)	0.262 (0.284)
FDI outflows (% of GDP)	0.228 (0.296)	0.059 (0.238)	-0.179 (0.242)	-0.177 (0.270)	-0.043 (0.276)
Central bank independence	-0.366 (0.234)	-0.356* (0.187)	-0.356* (0.190)	-0.776*** (0.209)	-0.301 (0.218)
FX reserves in months of imports	0.021 (0.080)	-0.050 (0.060)	-0.135** (0.063)	-0.164** (0.069)	-0.190*** (0.069)
Observations	496	514	496	496	514
R <sup>2</sup>	0.026	0.030	0.233	0.052	0.047
Adjusted R <sup>2</sup>	-0.046	-0.041	0.176	-0.018	-0.023

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, interest rate convergence, is the absolute value of the distance between the interest rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables lagged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand (lagged one year). Negative coefficient values denote interest rate convergence. Each column represents a subsample, where the bilateral measure of interest rate convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between interest rates, or interest rate convergence.

Table 12: Relationship between economic interdependence (in the manufacturing and service sectors, lagged one year) and interest rate convergence. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: interest rate convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence <sub>t-1</sub> (mfg.)	-0.321** (0.163)	0.079 (0.261)	0.356** (0.170)	0.051 (0.198)	0.404* (0.237)
Interdependence <sub>t-1</sub> (svc.)	0.293 (0.202)	-0.078 (0.226)	0.427*** (0.160)	-0.137 (0.196)	0.056 (0.226)
FDI inflows (% of GDP)	-0.061 (0.305)	0.196 (0.246)	0.430* (0.250)	0.279 (0.279)	0.258 (0.284)
FDI outflows (% of GDP)	0.255 (0.297)	0.063 (0.239)	-0.160 (0.242)	-0.168 (0.271)	-0.047 (0.276)
Central bank independence	-0.409* (0.234)	-0.339* (0.189)	-0.297 (0.191)	-0.760*** (0.211)	-0.276 (0.221)
FX reserves in months of imports	0.017 (0.080)	-0.045 (0.061)	-0.122* (0.063)	-0.149** (0.074)	-0.176** (0.070)
Observations	496	514	496	496	514
R <sup>2</sup>	0.029	0.030	0.238	0.051	0.048
Adjusted R <sup>2</sup>	-0.044	-0.044	0.180	-0.022	-0.024

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, interest rate convergence, is the absolute value of the distance between the interest rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables lagged. Interdependence is measured as the total foreign value added from the international currency country  $i$  in the partner country  $j$ 's exports and final demand (lagged one year). Negative coefficient values denote interest rate convergence. Each column represents a sub-sample, where the bilateral measure of interest rate convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between interest rates, or interest rate convergence.

## A.4 Exchange rate convergence: sub samples

Table 13: Exchange Rate Convergence. Relationship between economic interdependence and exchange rate convergence. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: exchange rate convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence	-0.005*** (0.001)	-0.020 (0.039)	0.0003** (0.0001)	0.008 (0.024)	0.431*** (0.067)
FDI inflows (% of GDP)	-0.005 (0.005)	-0.041 (0.053)	-0.0001 (0.0004)	0.051 (0.059)	-0.078 (0.114)
FDI outflows (% of GDP)	0.005 (0.005)	-0.010 (0.048)	0.0001 (0.0004)	-0.053 (0.054)	-0.104 (0.104)
Central bank independence	-0.005 (0.003)	-0.096*** (0.033)	-0.001** (0.0003)	0.027 (0.037)	-0.305*** (0.072)
FX reserves in months of imports	0.001 (0.001)	-0.015 (0.012)	0.0001 (0.0001)	-0.011 (0.013)	0.089*** (0.025)
Observations	500	519	500	500	519
R <sup>2</sup>	0.109	0.025	0.023	0.004	0.161
Adjusted R <sup>2</sup>	0.046	-0.043	-0.047	-0.066	0.102

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, exchange rate convergence, is the absolute value of the distance between the exchange rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote exchange rate convergence. Each column represents a sub-sample, where the bilateral measure of exchange rate convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between exchange rates, or exchange rate convergence.



Table 14: Exchange Rate Convergence (by sector). Relationship between economic interdependence (in the manufacturing and service sectors) and exchange rate convergence. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: exchange rate convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence (mfg.)	-0.006** (0.003)	0.026 (0.051)	-0.001*** (0.0003)	-0.064* (0.038)	0.066 (0.090)
Interdependence (svc.)	0.001 (0.003)	-0.048 (0.044)	0.001*** (0.0002)	0.079** (0.038)	0.444*** (0.085)
FDI inflows (% of GDP)	-0.005 (0.005)	-0.036 (0.053)	-0.0001 (0.0004)	0.037 (0.059)	-0.074 (0.112)
FDI outflows (% of GDP)	0.005 (0.005)	-0.013 (0.048)	0.0002 (0.0004)	-0.045 (0.054)	-0.094 (0.102)
Central bank independence	-0.005 (0.003)	-0.096*** (0.033)	-0.0004 (0.0003)	0.019 (0.037)	-0.329*** (0.072)
FX reserves in months of imports	0.001 (0.001)	-0.013 (0.012)	0.0001 (0.0001)	-0.020 (0.014)	0.084*** (0.025)
Observations	500	519	500	500	519
R <sup>2</sup>	0.118	0.027	0.046	0.013	0.190
Adjusted R <sup>2</sup>	0.054	-0.043	-0.024	-0.059	0.132

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, exchange rate convergence, is the absolute value of the distance between the exchange rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote exchange rate convergence. Each column represents a sub-sample, where the bilateral measure of exchange rate convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between exchange rates, or exchange rate convergence.

## A.5 Exchange rate convergence: sub samples, lagged interdependence

Table 15: Relationship between economic interdependence (lagged one year) and exchange rate convergence. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: exchange rate convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence <sub>t-1</sub>	-0.005*** (0.001)	-0.030 (0.040)	0.0002 (0.0001)	0.017 (0.023)	0.506*** (0.063)
FDI inflows (% of GDP)	-0.008 (0.005)	-0.068 (0.054)	-0.0002 (0.0004)	0.064 (0.057)	-0.148 (0.107)
FDI outflows (% of GDP)	0.006 (0.004)	0.028 (0.048)	0.0002 (0.0004)	-0.059 (0.051)	-0.057 (0.097)
Central bank independence	-0.008** (0.003)	-0.080** (0.037)	-0.001*** (0.0003)	0.074* (0.039)	-0.208*** (0.074)
FX reserves in months of imports	0.001 (0.001)	-0.010 (0.012)	0.00004 (0.0001)	-0.014 (0.013)	0.087*** (0.024)
Observations	469	487	469	469	487
R <sup>2</sup>	0.132	0.017	0.027	0.013	0.195
Adjusted R <sup>2</sup>	0.066	-0.057	-0.046	-0.062	0.135

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, exchange rate convergence, is the absolute value of the distance between the exchange rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote exchange rate convergence (lagged one year). Each column represents a sub-sample, where the bilateral measure of exchange rate convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between exchange rates, or exchange rate convergence.

Table 16: Relationship between economic interdependence (in the manufacturing and service sectors, lagged one year) and exchange rate convergence; lagged independent variables. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: exchange rate convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence <sub>t-1</sub> (mfg.)	-0.006** (0.002)	0.019 (0.051)	-0.001** (0.0003)	-0.038 (0.037)	0.202** (0.083)
Interdependence <sub>t-1</sub> (svc.)	0.001 (0.003)	-0.049 (0.045)	0.001*** (0.0002)	0.057 (0.036)	0.392*** (0.080)
FDI inflows (% of GDP)	-0.009* (0.005)	-0.064 (0.054)	-0.0002 (0.0004)	0.059 (0.057)	-0.155 (0.105)
FDI outflows (% of GDP)	0.007 (0.004)	0.026 (0.048)	0.0003 (0.0004)	-0.057 (0.051)	-0.055 (0.095)
Central bank independence	-0.008** (0.003)	-0.078** (0.037)	-0.001*** (0.0003)	0.068* (0.039)	-0.223*** (0.074)
FX reserves in months of imports	0.001 (0.001)	-0.009 (0.012)	0.00004 (0.0001)	-0.021 (0.014)	0.089*** (0.024)
Observations	469	487	469	469	487
R <sup>2</sup>	0.141	0.019	0.039	0.018	0.224
Adjusted R <sup>2</sup>	0.073	-0.057	-0.036	-0.059	0.164

Notes: \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, exchange rate convergence, is the absolute value of the distance between the exchange rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote exchange rate convergence. Each column represents a sub-sample, where the bilateral measure of exchange rate convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between exchange rates, or exchange rate convergence.

## A.6 Inflation convergence: sub samples

Table 17: Inflation Convergence. Relationship between economic interdependence and price convergence. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: inflation convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence	-0.583*** (0.100)	0.107 (0.470)	1.476*** (0.152)	0.986*** (0.262)	1.117*** (0.369)
FDI inflows (% of GDP)	1.543** (0.628)	1.512** (0.639)	0.369 (0.482)	1.672*** (0.645)	1.899*** (0.630)
FDI outflows (% of GDP)	-1.091* (0.573)	-1.260** (0.581)	-0.406 (0.433)	-1.113* (0.588)	-1.289** (0.573)
Central bank independence	-0.311 (0.404)	-0.338 (0.403)	-0.405 (0.303)	0.227 (0.401)	0.538 (0.399)
FX reserves in months of imports	0.067 (0.149)	-0.038 (0.142)	0.187* (0.111)	-0.054 (0.144)	-0.160 (0.138)
Observations	500	519	500	500	519
R <sup>2</sup>	0.096	0.015	0.204	0.051	0.044
Adjusted R <sup>2</sup>	0.032	-0.054	0.147	-0.017	-0.023

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, inflation convergence, is the absolute value of the distance between the inflation rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote inflation convergence. Each column represents a sub-sample, where the bilateral measure of price convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between inflation rates, or price convergence.

Table 18: Inflation Convergence (by sector). Relationship between economic interdependence (in the manufacturing and service sectors) and price convergence. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: inflation convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence (mfg.)	-1.542*** (0.308)	-0.342 (0.614)	0.505* (0.302)	0.733* (0.422)	0.643 (0.507)
Interdependence (svc.)	1.266*** (0.380)	0.506 (0.535)	0.986*** (0.286)	0.240 (0.416)	0.650 (0.479)
FDI inflows (% of GDP)	1.225* (0.624)	1.454** (0.642)	0.388 (0.484)	1.738*** (0.650)	1.903*** (0.629)
FDI outflows (% of GDP)	-0.738 (0.572)	-1.225** (0.583)	-0.401 (0.437)	-1.156* (0.590)	-1.319** (0.573)
Central bank independence	-0.411 (0.398)	-0.340 (0.405)	-0.284 (0.309)	0.278 (0.407)	0.548 (0.406)
FX reserves in months of imports	0.133 (0.148)	-0.049 (0.142)	0.198* (0.112)	0.001 (0.158)	-0.147 (0.140)
Observations	500	519	500	500	519
R <sup>2</sup>	0.123	0.017	0.198	0.048	0.047
Adjusted R <sup>2</sup>	0.059	-0.055	0.139	-0.022	-0.022

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, inflation convergence, is the absolute value of the distance between the inflation rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added in the manufacturing sector (mfg.) and service sector (svc.) from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand. Negative coefficient values denote inflation convergence. Each column represents a sub-sample, where the bilateral measure of price convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between inflation rates, or price convergence.

## A.7 Inflation convergence: sub samples, lagged interdependence

Table 19: Inflation Convergence. Relationship between economic interdependence (lagged one year) and inflation convergence. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: inflation convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence <sub>t-1</sub>	-0.433*** (0.107)	1.165** (0.488)	1.570*** (0.154)	1.097*** (0.269)	1.326*** (0.385)
FDI inflows (% of GDP)	1.369** (0.665)	1.534** (0.658)	0.281 (0.492)	1.421** (0.659)	1.943*** (0.649)
FDI outflows (% of GDP)	-0.944 (0.601)	-1.219** (0.592)	-0.455 (0.440)	-0.961 (0.592)	-1.241** (0.586)
Central bank independence	-0.346 (0.461)	-0.114 (0.451)	-0.182 (0.337)	0.227 (0.446)	0.930** (0.449)
FX reserves in months of imports	0.076 (0.162)	0.018 (0.148)	0.129 (0.114)	-0.032 (0.149)	-0.098 (0.146)
Observations	469	487	469	469	487
R <sup>2</sup>	0.056	0.027	0.216	0.052	0.052
Adjusted R <sup>2</sup>	-0.016	-0.046	0.156	-0.020	-0.020

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, inflation convergence, is the absolute value of the distance between the inflation rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand (lagged one year). Negative coefficient values denote inflation convergence. Each column represents a sub-sample, where the bilateral measure of price convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between inflation rates, or price convergence.

Table 20: Inflation Convergence. Relationship between economic interdependence (in the manufacturing and service sectors, lagged one year) and inflation convergence; lagged independent variables. Column titles indicate the subsample of each international currency country, i.e., how economically interdependent country 1...31 is on the international currency country (China, Euro Area, Japan, UK, USA).

	Dependent variable: inflation convergence				
	<i>Columns sub-sampled by internationalized currency</i>				
	China	Euro Area	Japan	UK	USA
Interdependence <sub>t-1</sub> (mfg.)	-1.151*** (0.323)	0.827 (0.631)	0.553* (0.306)	1.031** (0.428)	1.162** (0.514)
Interdependence <sub>t-1</sub> (svc.)	0.941** (0.401)	0.628 (0.546)	1.039*** (0.289)	0.087 (0.418)	0.255 (0.493)
FDI inflows (% of GDP)	1.226* (0.661)	1.506** (0.660)	0.227 (0.494)	1.465** (0.661)	1.922*** (0.650)
FDI outflows (% of GDP)	-0.843 (0.597)	-1.195** (0.592)	-0.401 (0.442)	-0.976 (0.593)	-1.283** (0.586)
Central bank independence	-0.439 (0.457)	-0.073 (0.454)	-0.077 (0.341)	0.312 (0.451)	0.999** (0.458)
FX reserves in months of imports	0.097 (0.161)	0.026 (0.149)	0.148 (0.115)	0.060 (0.162)	-0.063 (0.147)
Observations	469	487	469	469	487
R <sup>2</sup>	0.073	0.031	0.214	0.052	0.053
Adjusted R <sup>2</sup>	0.001	-0.044	0.152	-0.022	-0.021

*Notes:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01. The outcome variable, inflation convergence, is the absolute value of the distance between the inflation rate of international currency country  $i$  and partner country  $j$ , where country  $i$  is China, the Euro Area, Japan, UK, or the US. All dependent and independent variables logged. Interdependence is measured as the total foreign value added in the manufacturing sector (mfg.) and service sector (svc.) from from the international currency country  $i$  in the partner country  $j$ 's exports and final demand (lagged one year). Negative coefficient values denote inflation convergence. Each column represents a sub-sample, where the bilateral measure of price convergence between the 31 individual countries in the sample and the international currency country is regressed on the interdependence of each of the countries on the country in the column title. The United States and Euro Area are not included as dependent countries/currency blocs in any of the models due to the dominance of the US dollar in trade for the former, and lack of control data for the latter. Column 1 suggests that increased economic dependence on China is correlated with decreased distance between inflation rates, or price convergence.