Valuation Effects, Exchange Rates, and Risk Sharing in Emerging Market Economies

José De Gregorio
Universidad de Chile

Benjamín Peña
Universidad de Chile

May 3, 2023

Abstract

We examine the issue of valuation effects in emerging market economies (EMEs), particularly the impact of exchange rate variations on their external wealth. Taking Chile as a case study, we first show that price and exchange rate-induced valuation changes have led to divergent trends between the accumulated current account and the NIIP, which improved markedly between 2019 and 2021 despite extreme social unrest and the Covid crisis. The positive valuation effects are explained by (i) the depreciation of the Chilean peso and (ii) the deficient performance of Chilean firms relative to foreign firms. We interpret these valuation effects in light of the recent literature on the role of the US as a global insurer and show that this also holds for a sample of 20 EMEs. In particular, the correlation between the value of the currency and the NIIP is negative, and the magnitude of the effect of exchange rate changes depends, among other things, on the size of countries' external positions. We show that this negative correlation is due to EMEs having been able to improve their currency mismatches markedly in the early 2000s while countries were opening financially. Our results regarding the exchange rate run counter to the conventional wisdom regarding the effect of currency depreciation in EMEs and suggest that emerging economies are not left out of possible wealth transfers from a global insurer in the international financial system.

JEL: F30, F40.

Keywords: Exchange rates, financial integration, net international investment position, original sin, risk sharing.

1. Introduction

The impact of valuation effects on countries' net international investment position (NIIP) has become a relevant issue in international finance. The work of Lane and Milesi-Ferretti (2001, 2007) impulsed an already active body of work that has shown that valuation changes are relevant to understand countries' external positions (Tille, 2003; Gourinchas, 2008; Lane and Milesi-Ferretti, 2009; Obstfeld, 2012) and as a mechanism for external adjustment (Obstfeld, 2004; Gourinchas and Rey, 2007b, 2014; Ghironi, Lee, and Rebucci, 2015). This research has been further spurred forward by the fact that valuation effects have become more relevant as countries' gross external positions continue to grow.

In this paper, we examine the issue of valuation effects for EMEs, focusing on the impact of exchange rate variations on their external position. This is relevant given the importance in the international finance literature of the effect of exchange rate depreciations in EMEs. Although valuation effects may be induced by movements in either the prices of assets and liabilities or movements in exchange rates, given that countries' external positions are not denominated in a single currency, exchange rate-induced valuation effects have been the focus of the largest body of research. In a seminal contribution, Gourinchas and Rey (2007a) note that exchange rates adjust the current account via the standard trade channel and through valuation effects, given that the US is short in dollars. That is, while the rest of the world invests majorly in dollar-denominated assets, the US invests in foreign currency. This implies that a depreciation of the US dollar induces a capital loss for foreigners and a capital gain for US investors. Hence, a depreciation of the US dollar improves other countries' net foreign asset position both through the traditional narrowing of the current account deficit as well as through valuation changes.

The conventional wisdom is the reverse for emerging markets economies (EMEs). The most standard case is the original sin (Eichengreen, Hausmann, and Panizza, 2003), by which EMEs borrow in US dollars (USD). Hence, a depreciation of their currencies against the USD increases the debt burden. Then, a depreciation may contribute to external adjustment through the trade channel but worsen things through a negative wealth effect. Moreover, it can undermine financial stability. More generally, severe enough currency mismatches have the same effect. If EMEs' liabilities are denominated in foreign currency, a dollar appreciation can deteriorate their external position.

Furthermore, the analysis of EMEs and valuation effects is relevant given that a relatively new strand of the literature on international finance has emphasized the role of the US as an insurance provider during crises. Papers that have focused on building

models that explain this specific dynamic include Kekre and Lenel (2021), Gourinchas and Rey (2022), and Devereux, Engel, and Wu (2023), while Maggiori (2017) develops a model that explains the role of insurance provider of the country at the center of the international financial system in a more general setting. In hard economic times, investors flee to the reserve currency and safe assets to protect themselves. This leads to an appreciation of the US dollar and an increase in the valuation of safe assets, leading to wealth transfers from the US to the rest of the world. These transfers occur because the US is short in dollars and long in foreign currency. An example of these wealth transfers is presented by Gourinchas, Rey, and Truempler (2012), who document large wealth transfers from the US to the rest of the world during the 2008 financial crisis due to a significant dollar appreciation and an increase in the value of safe assets.

The mechanisms through which the US (more generally, the country with the reserve currency) acts as an insurer to the rest of the world rest on the assumption that economies benefit from a dollar depreciation through their external assets. While this may be fairly obvious for advanced economies, the discussion regarding the original sin and the issue of currency mismatches in the external balance sheets of EMEs implies that this may be different for emerging economies. Thus, an interesting question that has emerged from the previous literature is whether or not EMEs may benefit from risk sharing in the international monetary system in the same way as advanced economies.

We begin by analyzing the case of Chile. The advantage of taking Chile as a case study is that it is an emerging economy with a relatively high degree of financial integration with detailed data regarding its external position. We begin by documenting general trends in the Chilean external position between 2008 and 2021. We highlight that valuation effects have become the most relevant explanatory factor for Chile's net foreign asset fluctuations, which mirrors a similar evolution documented for developed economies (see Gourinchas and Rey, 2014). In particular, between 2019 to 2021, there was a sharp improvement in Chile's net international investment position despite persistent current account deficits due to positive valuation effects offsetting these deficits.

Following these findings, we analyze the causes behind these trends. We separately analyze price and exchange rate-induced valuation effects. First, we associate significant price-induced valuation changes with a lackluster performance by Chilean firms, as measured by their stock market valuation, compared to foreign firms, particularly US firms. This is consistent with the evidence presented by Atkeson, Heathcote, and Perri (2022), who find that a US-specific increase in equity prices has been the cause behind large wealth transfers from the US to the rest of the world since 2007. We also find that exchange

rate-induced valuation effects explain a significant level difference between the cumulative current account balance and Chile's net foreign asset position and show that currency depreciations are primarily associated with positive valuation changes. This suggests that Chile's currency mismatch and the issue of the original sin are not severe enough to lead to losses in external wealth due to depreciations against foreign currency, contrary to what traditionally might have been expected for an emerging market economy.

Findings regarding exchange rate-induced valuation effects are compatible with wealth transfers from the US in its role as a global insurer, given the dollar appreciation and the stock market plunge caused by the pandemic. Wealth transfers due to other price changes in assets and liabilities, such as those documented for the case of Chile, are consistent with the role of the US as a global insurer as long as optimal portfolio choices lead to risk sharing considerations in the composition of external assets (Atkeson, Heathcote, and Perri, 2022). Then, and to the extent that valuation changes due to firm performance differentials can be rationalized within this framework, Chile's positive valuation changes since 2019, particularly in 2020 and 2021, are consistent with the risk-sharing view of the international monetary system outlined by papers in this literature.

We then extend the analysis to a group of 20 EMEs over the last 20 years and show, through panel regressions, that the case of Chile holds more generally. That is, the NIIP is negatively correlated with the value of the currency for this larger group of EMEs as well, and they have also benefitted from the US increase in equity prices to varying degrees. This implies that EMEs, in general, benefit from risk sharing in the international monetary system, with the caveat that the magnitude of the wealth transfers due to the previous mechanisms depends on the size of each country's gross positions in the relevant accounts. The last result regarding exchange rates is relevant not only in its implications for risk sharing but also because it casts doubts on the relevance of the original sin at an aggregate level, despite it still being relevant on the fiscal front (see Eichengreen, Hausmann, and Panizza, 2022). Therefore, our results suggest that the conventional wisdom regarding EMEs and depreciations no longer holds as generally as before.

To conduct the previous analysis, we use the newest version of the External Wealth of Nations dataset (Lane and Milesi-Ferretti, 2001, 2007, 2018) as well as data on the currency compositions of several countries from Bénétrix et al. (2019) to identify whether our group of emerging economies had exposures to the USD which were consistent with risk sharing with the US. Then, to test if the performance of US stocks has any explanatory power over emerging economies' valuation effects, as was the case for Chile, we follow Lane and Shambaugh (2010) and Hale and Juvenal (2023) to separately identify exchange rate

and price-induced valuation changes and then analyze price-induced valuation effects as a fraction of GDP.

We first compute each country's net financial weight against the dollar, as defined by Lane and Shambaugh (2010). This measures the response of net foreign assets against changes in the bilateral nominal exchange rate and therefore allows us to analyze whether or not emerging economies win or lose from a depreciation when it comes to their external assets[1]. We find that for most emerging economies, the net financial weight against the dollar has improved gradually until settling at a positive level. In particular, they improved approximately until 2008, after which they plateaued. At a positive level, a depreciation of the domestic currency improves the NIIP. This implies that most emerging economies in the sample benefit from bilateral depreciations against the dollar, consistent with risk-sharing wealth transfers from the US following a flight to safety to the reserve currency during a crisis. The evolution in the response of EMEs' NIIP to depreciations against the dollar is also consistent with a slowdown in financial integration following the 2008 financial crisis, described by Lane and Milesi-Ferretti (2018). That is, the process of increased financial integration coincided with the improvement in currency mismatches and, thus, in net financial weights against the dollar. We also analyze the net financial weights against the dollar for the debt and non-debt components of assets and liabilities separately and find that the improvement in the total net financial weights is explained mainly through improvements in the net financial weight for the debt component. In contrast, for most emerging markets, the net financial weight for non-debt assets and liabilities has remained relatively stable at positive levels.

After analyzing countries' responses to exchange rate variations, we analyze price-induced valuation effects. We proceed in two steps, following Hale and Juvenal (2023). We first compute exchange rate-induced valuation effects following the methodology outlined in Lane and Shambaugh (2010). This involves the calculation of net financial weights for several currencies and then computing their combined effect in each period. Second, having calculated exchange rate-induced valuation effects, we compute price-induced valuation changes as the difference between total valuation effects and our measure of exchange rate-induced valuation changes, where the former is defined as the difference between the change in the NIIP and the current account balance. We find that local and US

1. The net financial weight against the dollar calculates the impact of a depreciation of the dollar on the NIIP by subtracting from the share of US dollar-denominated assets in total assets plus liabilities minus the share of US dollar-denominated liabilities in total assets plus liabilities. Thus, a positive (negative) sign implies that a country benefits (loses) from a domestic currency depreciation against the USD. For more discussion and evidence, see section 4.

stock market variations have the expected impact on price-induced valuation changes. The estimated effect of US stock market variations is more strongly positive in the latter years in the sample due to rising gross positions across EMEs. For some countries, US stock market variations are associated only with minor price-induced valuation changes, while they can strongly affect others. This heterogeneity is due to price-induced valuation changes being dependent on the size of portfolio equity assets as a fraction of GDP. This implies that richer economies, which tend to have a more significant degree of financial integration, are in a better position to benefit from external wealth transfers, particularly from the US, due to differences in firm performance. Thus, they can also better benefit from the risk-sharing aspects of external wealth in this respect.

This paper contributes to the related literature in several ways. First, we provide renewed empirical evidence of how EMEs' external positions are affected by exchange rate changes and document the fact that most EMEs now benefit from currency depreciations through their external wealth. This is important given the long-standing idea that EMEs face losses in their external wealth when currency depreciations against the USD occur. Despite other papers highlighting that EMEs are now able to borrow abroad in their own currency (Bertaut, Bruno, and Shin, 2021; Hofmann, Patel, and Wu, 2022), their analysis focuses on sovereign debt and not on the consequences of this regarding countries' external wealth. Second, in carrying out the previous analysis, we provide evidence regarding the evolution of foreign currency exposures in EMEs. Third, we provide a link between valuation effects in emerging economies and the idea of risk sharing in the international financial system by producing results suggesting that emerging economies benefit from wealth transfers from the country with the reserve currency during crises. In particular, our results show that EMEs would benefit from the dynamics that would ensue during a crisis, namely an appreciation of the dollar. In doing this, we examine the counterpart for EMEs of papers such as Maggiori (2017), Kekre and Lenel (2021), Gourinchas and Rey (2022), and Devereux, Engel, and Wu (2023), and show that emerging economies are not left out of the previous arrangements.

The paper is structured as follows. Section 2 presents the evidence for Chile. In section 3, we analyze valuation effects for the case of Chile and relate them to the recent surge in the literature regarding the US as an insurance provider. Section 4 extends the analysis to a sample of EMEs, analyzing the response of their external assets to valuation changes, while section 5 analyzes the importance of price-induced valuation effects. Section 6 concludes.

2. Chile's External Position Between 2008 and 2021

Chile is interesting as a case study of an emerging economy, given its relatively high degree of financial development and the detailed data available regarding its external position. We start our analysis with the following identity that should roughly hold between changes in a country's net international investment position, or its net foreign assets, and its current account:

$$\Delta \text{NIIP}_t = \text{CA}_t + \text{VE}_t \tag{1}$$

where NIIP_t is measured at the end of period t, and VE stands for valuation effects. Then, the previous identity states that the change in a country's net foreign assets in a given period can be decomposed into the current account balance in t and valuation changes between the beginning and the end of the period. Valuation changes reflect changes in the values of assets and liabilities, and they are further split into price-induced valuation changes, such as changes in a stock's price, and exchange rate-induced valuation changes, which arise given that a country's foreign assets and liabilities are not be denominated in a single currency.

From (1), in the absence of valuation effects the change in a country's external position should reflect its current account. Thus, following standard procedures, we can compute a hypothetical net international investment position by fixing a country's external position at some initial period and making the change in each period reflect only its current account. The following identity gives the hypothetical NIIP in any given period:

$$\text{Hypothetical NIIP}_t = \text{NIIP}_0 + \sum_{t=1}^{T} \text{CA}_t, \tag{2}$$

so that it is simply equal to the NIIP in the first period plus the accumulated current account since the first period under consideration. In what follows, we will refer to this as the cumulative current account. Differences between the NIIP and the cumulative CA are given by accumulated valuation effects, while differences in the change of each measure are given by the implied valuation effects in each period. Figure 1 plots both measures as a fraction of GDP in a quarterly frequency using data from the Central Bank of Chile.

There are several points worth noting. First, there is a discrepancy between changes in the NIIP and the value of the CA in most years, as seen by the different paths of the actual Chilean external position and its accumulated current account. This discrepancy, however, has become more apparent between 2019 and 2021, where there has been a

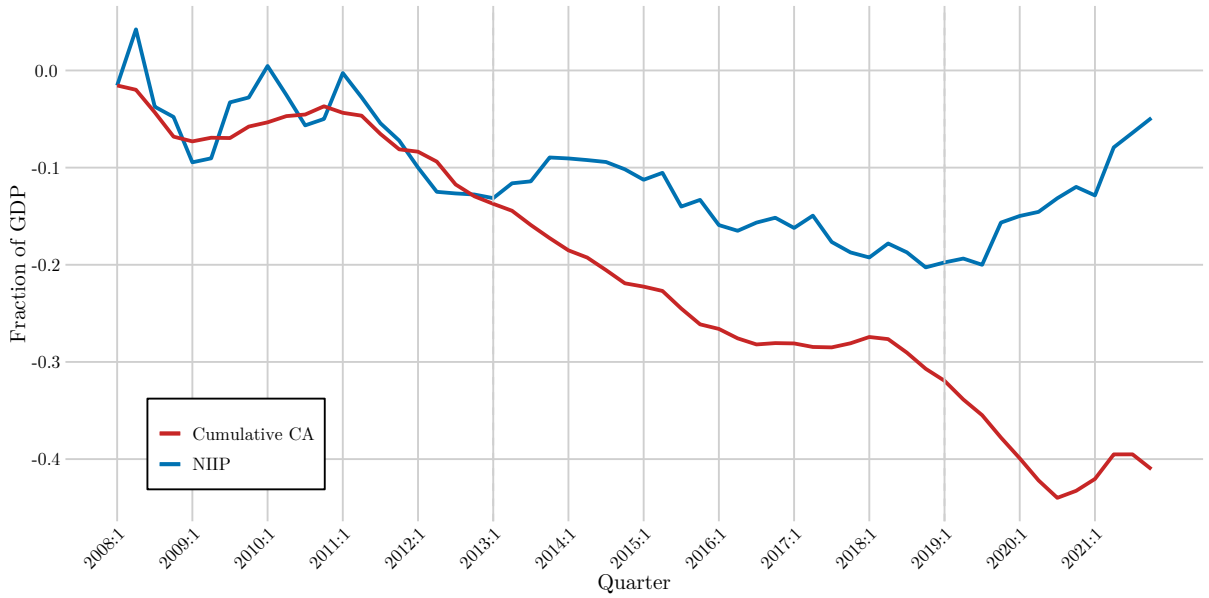


Figure 1. Chilean NIIP vs. Cumulative CA - 2008 to 2021

Notes: This figure plots the Chilean net international investment position against its cumulative current account.

Source: Balance of Payments data from the Central Bank of Chile.

marked improvement in the NIIP despite current account deficits in all but a few quarters near the end of the sample. Differences in the evolution of both measures imply substantial valuation effects as a fraction of GDP. Second, we can identify three distinct periods by examining the relationship between the NIIP and the cumulative current account. From the first quarter of 2008 until the last quarter of 2012, changes in the NIIP reflected the value of the current account quite closely. In 2013 there was a jump in the value of the NIIP over the cumulative current account, which implies positive valuation effects. This leads to a level difference between the two lines in Figure 1. Moreover, between 2014 and 2018, the trajectory of the NIIP followed a similar one to the accumulated current account, which implies that net valuation effects were not significant. Finally, since 2019 there has been a large discrepancy between the paths of the NIIP and the accumulated current account. While the country ran persistent current account deficits, positive valuation effects more than offset these deficits and improved the NIIP. This reflects the importance of valuation effects in explaining the evolution of Chile's external position since then.

A caveat to the previous analysis is that the difference between the change in a country's external position and its current account (or its financial account transactions) is not necessarily given entirely by valuation effects. This is due to "other adjustments" made

to asset and liability positions and the fact that we are ignoring the capital account and, therefore, possible discrepancies between the current and financial accounts. The other adjustments account can be quite relevant, especially given the difficulty in measuring certain positions in assets or liabilities, leading to subsequent corrections that fall into this item[2]. As shown by Lane and Milesi-Ferretti (2009) and Gourinchas and Rey (2014) for the case of the US, the allocation of this account is especially relevant for measuring the return of assets and liabilities. However, this is not the case in this instance. Figure A1 shows that, with a few exceptions, the other adjustments account is small relative to GDP. Hence, valuation effects are the main explanatory factor behind the trends in Figure 1.

One immediate cause behind the increased importance of valuation effects is that, as was the case for advanced economies, Chile's gross positions have grown as a fraction of GDP. This is important because the magnitude of valuation effects in any country and their impact on a country's external position depends partly on the size of its gross positions. If we denote by v^A and v^L the valuation effects on assets and liabilities, respectively, we have that the change in the NIIP is given by:

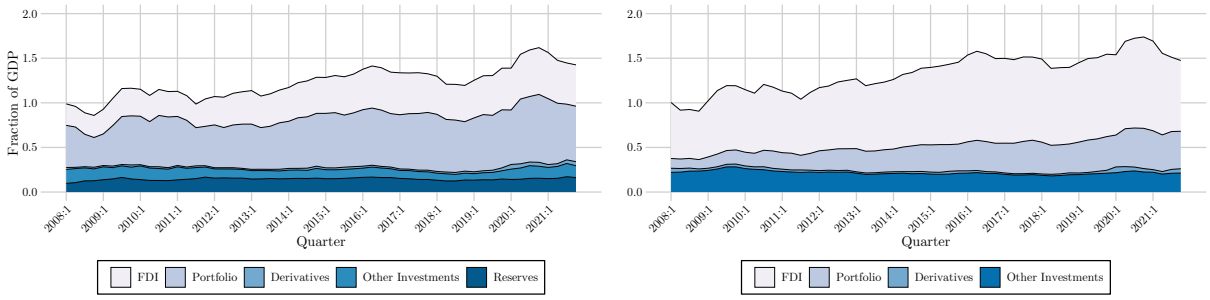
$$\Delta \text{NIIP}_{t+1} = v_t^A A_t - v_t^L L_t + CA_t. \tag{3}$$

If valuation effects have opposite signs, the larger the levels of A and L, the larger the impact of valuation changes on the NIIP.

Although the tendency for external positions to rise worldwide has been documented before by Gourinchas and Rey (2014), we document this fact for the case of Chile in Figure 2, which shows the growth in gross positions as a fraction of GDP between 2008 and 2021 and that the bulk of this growth is explained by larger gross positions in FDI and portfolio investment, both for assets and liabilities. Another way to measure financial integration is the sum of assets and liabilities as a percentage of GDP, which increased from 200% to 290% between the first quarter of 2008 and the last quarter of 2021. This is a small degree of integration when compared to the average for some advanced economies,[3] which, as documented by Lane and Milesi-Ferretti (2007), had already reached similar levels of financial integration in 2004 and which reached more than double the level of financial integration as that of Chile in 2020. However, the increased share of equity and FDI and the larger gross positions amplify the effects of valuation changes on Chile's

2. For example, the other adjustments item includes changes in the classification of assets as well as adjustments made due to methodological changes.

3. Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.



a) Assets b) Liabilities

Figure 2. Chilean Gross Positions - 2008 to 2021

Notes: This figure decomposes Chilean external assets and liabilities as a fraction of GDP. Assets are decomposed into foreign direct investment, portfolio assets, derivatives, other investments, and reserve assets. Liabilities are decomposed into foreign direct investment, portfolio liabilities, derivatives, and other investments.

Source: Balance of Payments data from the Central Bank of Chile.

external position.

Overall, and with the exception of valuation changes in 2013, the Chilean external position from 2008 up until 2019 primarily reflected the country's current account position. Since 2019, there has been a considerable divergence between Chilean net foreign assets and its cumulative current account due to the increased importance of valuation effects, which can be explained partly due to the amplification of these valuation changes through a higher degree of financial integration.

3. Price and Exchange Rate Induced Valuation Effects

One question that we still need to address regarding Chile's external position is whether these valuation effects come from price variations in its assets and liabilities or exchange rate variations. To begin to analyze the relevance of price versus exchange rate variations in influencing Chile's external position, in Figure 3 we show the evolution of cumulative price and exchange rate induced valuation changes[4]. There are several apparent facts. First, cumulative valuation effects due to price variations were negative until 2019. At that point, there was a clear shift in its trend, leading to them catching up to cumulative

4. We plot cumulative transactions rather than the cumulative CA, as we have done in previous sections. Cumulative transactions differ slightly from the cumulative current account due to the capital account and the errors and omissions account, which might result in slight differences with Figure 1. However, given that the capital account and the errors and omissions item are relatively small as a fraction of GDP, the current account is very close to financial account transactions in each quarter.

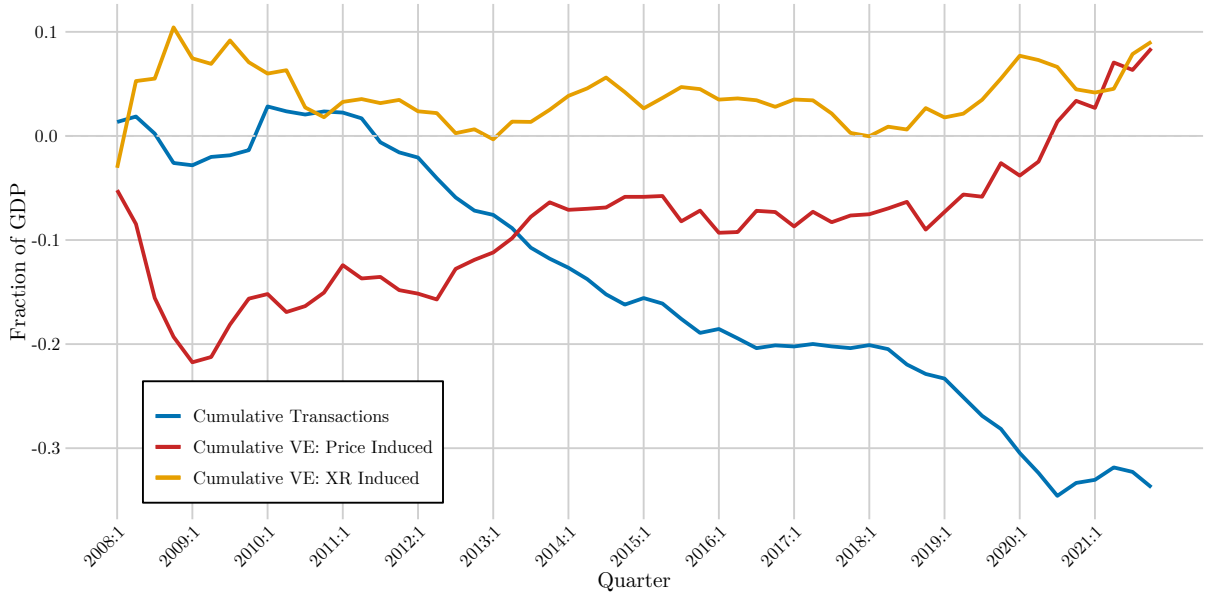


Figure 3. Cumulative Transactions and Valuation Changes

Notes: This figure plots Chilean cumulative transactions, cumulative price-induced valuation effects, and cumulative exchange rate-induced valuation effects.

Source: Balance of Payments data from the Central Bank of Chile.

exchange rate-induced valuation changes. This points to substantial positive valuation effects due to price effects since at least 2020, to which we already alluded in the previous section. Second, cumulative valuation effects due to exchange rate variations are more stable than their price counterpart. However, they have accounted for a significant part of the level difference between Chile's actual external position and its cumulative current accounts at various points.

Price variations are caused by differences in firm performance across countries. For instance, the under-performance of Chilean companies relative to their foreign counterparts would lead to wealth transfers from the rest of the world to Chile, given that Chile holds stocks in foreign companies under its assets and that a large part of its liabilities is composed of foreign stakes in national firms. Therefore, we can further explore the trends in Figure 3 by looking for a shift in the performance of Chilean firms relative to foreign firms. To do this, we use stock market indexes as proxies for nationwide firm performance. Specifically, we use the IPSA[5] index as a proxy for Chilean firm performance. Given that we are interested in firm performance relative to other countries, particularly the US, we

5. *Índice de Precio Selectivo de Acciones*, which measures the valuation of the largest and most liquid Chilean firms in the Chilean stock market.

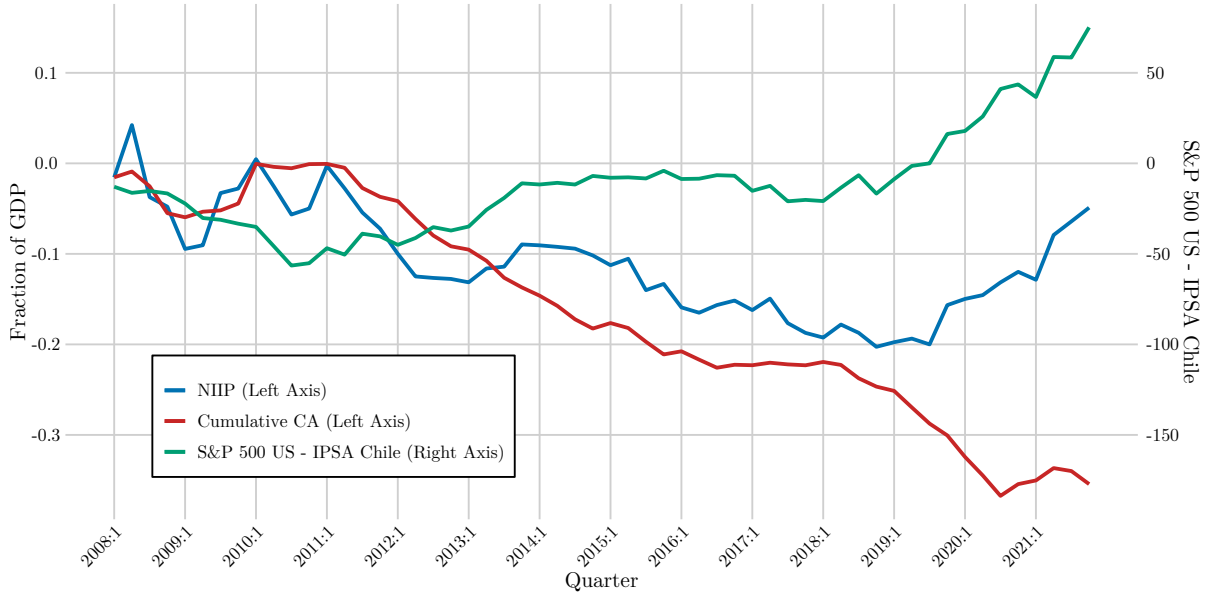


Figure 4. Chile: NIIP vs. Stock Market Performance

Notes: This figure compares the evolution of the Chilean net international investment position and cumulative current accounts with the difference in stock market valuation when measuring stock market performance in Chile with the IPSA (*Índice de Precio Selectivo de Acciones*) and with the S&P 500 index for the US.

Source: Balance of Payments data from the Central Bank of Chile. Stock market index data from Bloomberg.

also use the S&P 500 index as a proxy for US firm performance. As a rough measure of differences in performance, we normalize both indexes to 100 in the first quarter of 2019 and then take the difference so that subsequent differences between the indexes reflect differences in their return.

Figure 4 plots the result along with Chilean net foreign assets and its cumulative current account. It shows that the evolution of the NIIP does seem to track differences in stock market performance, particularly after 2019. It is also evident that the difference in stock market performance between Chile and the US is substantial. For example, according to our chosen measure of stock market performance, a dollar invested at the beginning of 2019 in Chilean stock would have ended at a level of approximately 82 cents at the end of 2021, while one invested in US stocks would have ended at a level of 1 dollar and 70 cents. These results are consistent with the evidence presented by Atkeson, Heathcote, and Perri (2022), who show that the US has transferred significant amounts of wealth to the rest of the world since 2007 through negative valuation changes and that US-specific increases in equity prices explain these valuation changes. These valuation effects only

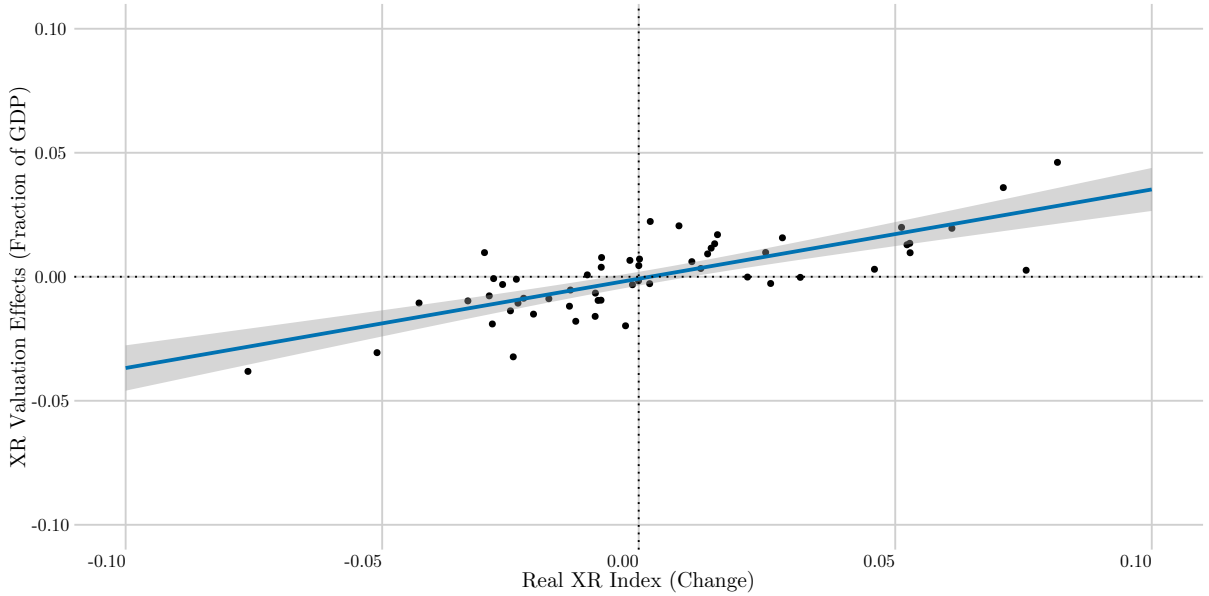


Figure 5. Valuation Effects and the real exchange rate

Notes: This figure plots exchange rate-induced valuation changes against the evolution of a real exchange rate index for the case of Chile. The blue line corresponds to the regression fit resulting from running a regression of exchange rate-induced valuation effects as a fraction of GDP against the change in the real exchange rate index.

Source: Balance of Payments and exchange rate data from the Central Bank of Chile.

became truly significant for the Chilean external position when Chilean stock market indexes deteriorated sharply after 2019.

To analyze valuation changes due to exchange rate variations, we look at the evolution of the real exchange rate index and compare it to exchange rate-induced valuation changes reported by the Central Bank of Chile. If a large part of Chilean liabilities is denominated in foreign currency, a depreciation would have a negative effect on its net foreign asset position, given that it would make the payment of these liabilities more expensive. This is the rationale behind the conventional wisdom regarding EMEs, depreciations, and their external wealth. However, if its liabilities are in domestic currency or only a small part is denominated in foreign currency, we expect depreciations to have positive effects, given that its assets are now more valuable. Figure 5 plots exchange rate-induced valuation changes as documented by the Central Bank of Chile against the change in the real exchange rate index.[6] The figure shows a positive relationship between the real exchange rate and exchange rate-induced valuation changes. This suggests that Chile's liabilities are

6. We removed an outlier corresponding to the first quarter of 2008, which led to a larger positive relation. The regression result is reported in Table B1.

primarily denominated in domestic currency. That is, an appreciation of Chile's currency against the rest of the world tends to lead to negative valuation changes. The correlation between these two variables is highly significant and equal to 0.36. Table B1 shows the results for regressions run against this and other exchange rates and shows that we always find a positive and highly significant correlation.

The recent literature on the role of the US as an insurance provider in the international monetary system, which includes papers such as those by Maggiori (2017), Kekre and Lenel (2021), Gourinchas and Rey (2022), and Devereux, Engel, and Wu (2023), provides one possible explanation for the previous patterns. In hard economic times, investors flee to the reserve currency to protect themselves, which leads to an appreciation of the US dollar and wealth transfers from the US to the rest of the world. An increase in the value of safe assets coupled with the US balance sheet composition being long in risky assets and short in safe assets (Gourinchas and Rey, 2007a), further leads to price-induced wealth transfers favoring the rest of the world. Hence, the "exorbitant privilege" of the US may be interpreted as an insurance premium that the rest of the world pays for this insurance during crises. Evidence of these types of wealth transfers from the US to the rest of the world during the 2008 financial crisis is presented by Gourinchas, Rey, and Truempler (2012).

Given that the pandemic led to a similar flight to safety and hence to an appreciation of the US dollar and a higher valuation of safe assets, this is a natural candidate for explaining the observed valuation effects in Chile. This is consistent with the sharp drop in US net foreign assets coinciding with a modest current account deficit in 2020. Although the evidence for Chile is more consistent with price-induced valuation changes in the equity component of the balance sheet rather than with price changes in US safe assets, these explanations are complementary. For instance, Atkeson, Heathcote, and Perri (2022) point to the possibility of extending their model so that the transfers from the US to the rest of the world that they study are consistent with risk sharing considerations in the composition of the external assets portfolio. Intuitively, any optimal portfolio choice under uncertainty would result in wealth transfers during bad times, which implies that the previous evidence is consistent with the insurance view.

4. Risk Sharing in EMEs

The evidence for Chile is not necessarily representative of EMEs as a whole. Indeed, Chile is a country with a relatively high degree of financial integration among EMEs, and it also

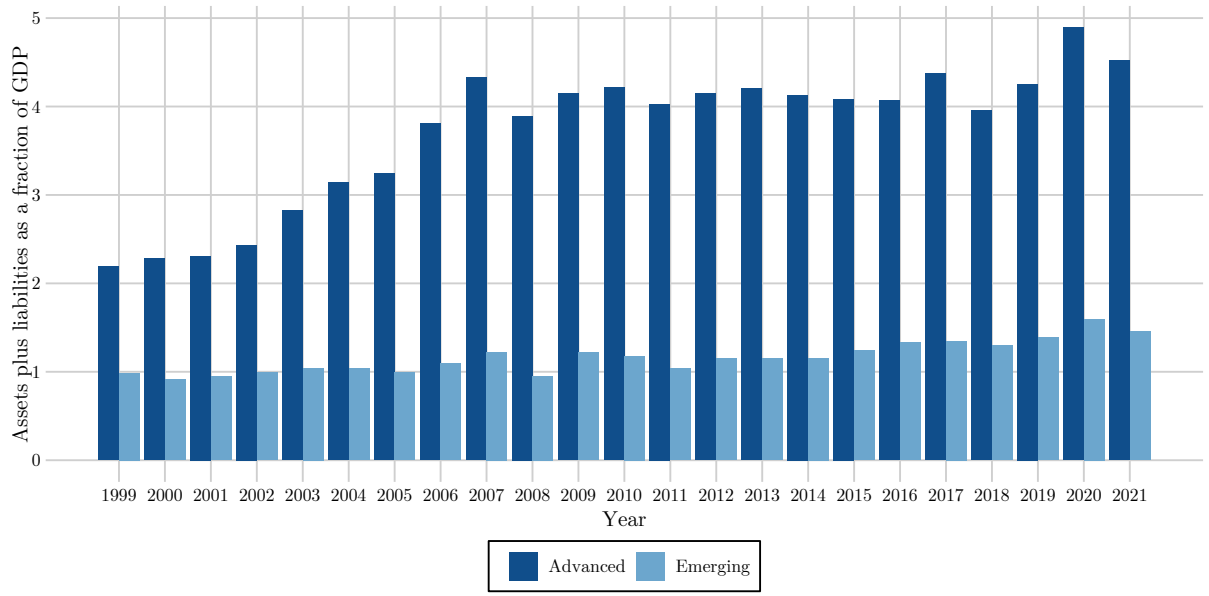


Figure 6. Financial Integration in Advanced and Emerging Economies

Notes: This figure plots assets and liabilities as a fraction of GDP for 20 emerging economies.

Source: External Wealth of Nations dataset (Lane and Milesi-Ferretti, 2001, 2007, 2018).

has a long tradition of a robust financial system.[7] However, emerging countries generally tend to have extremely low levels of financial integration compared to developed economies. Figure 6 illustrates this fact by plotting assets plus liabilities as a fraction of total GPD for advanced and emerging economies separately, as in Lane and Milesi-Ferretti (2018).

To test the possibility of risk-sharing between EMEs and the US more broadly, we use an unbalanced panel of emerging economies to test the different mechanisms through which economies may benefit from risk-sharing. Given that wealth transfers from the US to EMEs would occur through (i) exchange rate-induced valuation changes (ii) price-induced valuation changes favoring emerging economies, in what follows we analyze whether or not EMEs benefit in their external wealth from depreciations of their currency against the USD and whether or not US equity prices have an impact on their net foreign assets.

We conduct the previous analysis for 20 countries using yearly data between 1999 and 2021. We use the External Wealth of Nations dataset for data on countries' GDP, net international investment positions, current account balances, and end-of-year domestic currency to USD exchange rate data. Currency composition data of assets and liabilities come from a dataset built by Bénétrix et al. (2019). It includes currency composition data

7. Despite Chile having a high level of financial integration among emerging markets, it is still too low compared to advanced economies (De Gregorio et al., 2018).

for assets, debt assets, liabilities, and debt liabilities between 1990 and 2017 for a large group of countries, including all countries in our sample. For years after 2017, we use data on the 2017 currency composition. Data on the bilateral exchange rate between the USD and other currencies comes from Bloomberg. Finally, we use stock market indexes for each country measured in the domestic currency as a proxy for domestic firm performance and the S&P 500 index as a proxy for US firm performance, also coming from Bloomberg. Appendix C provides a more detailed description of the data.

We first run regressions of total valuation changes as a share of GDP against the percent change in the bilateral exchange rate measured as units of domestic currency of country i per USD ($\%\Delta E_{iUSD,t}$), the change in the local stock market index ($\%\Delta \text{SM}_t^{\text{Local}}$), and the change in the US stock market index ($\%\Delta \text{SM}_t^{\text{US}}$). We interact the previous regressors with the sum of assets and liabilities ($\text{IFI}_{t-1} \equiv A_{t-1} + L_{t-1}$, as in Lane and Shambaugh, 2010), portfolio equity liabilities (L_{t-1}^{Equity}), and portfolio equity assets (A_{t-1}^{Equity}), respectively. Each of these three variables is measured as a fraction of GDP. We compute total valuation effects by taking the difference between the change in each country's net foreign assets between t and $t-1$ and its current account balance in t. Since we use end-of-year data, stock variables are measured on $t-1$. Results for these regressions are shown in Table 1. Regressions in columns (2) and (4) include country fixed effects.

The regressions without interaction effects (1 and 2) show that a currency depreciation of 10% induces an improvement in the NIIP by about 1.5 percentage points of GDP. In contrast, an increase of 10% in the local stock market measured in local currency deteriorates the NIIP by about one percentage point of GDP. Results are similar when we add interaction effects, but we observe that the degree of financial integration is essential in determining the strength of risk sharing, given that only the interaction effect of the exchange rate is statistically significant. Using the mean value for assets plus liabilities over GDP, we find that a 10% depreciation is associated with an improvement in the NIIP as a fraction of GDP of about 2 percentage points. In all these regressions, stock market performance alone does not affect the valuation changes, but only when interacted with the relevant scale variable. The interaction terms of each measure of firm performance have the expected sign. A better performance for local firms implies negative valuation changes since this increases the value of a country's liabilities. In contrast, an increase in US stock market performance is associated with positive valuation effects. The magnitude of the effects is relatively small since equity assets and liabilities are relatively small with respect to GDP (Table D1).

In the previous regressions, we do not separately analyze exchange rate and price-

Table 1. Total Valuation Effects

	$\text{VAL}_t/\text{GDP}_{t-1}$			
	(1)	(2)	(3)	(4)
$\%\Delta E_{iUSD,t}$	0.153^{***}	0.143^{***}	-0.025	-0.013
	(0.036)	(0.040)	(0.047)	(0.041)
$\text{IFI}_{t-1}/\text{GDP}_{t-1}$			-0.005	0.014^{***}
			(0.007)	(0.004)
$\%\Delta\text{SM}_t^{\text{Local}}$	-0.087^{***}	-0.096^{***}	-0.027	-0.031
	(0.018)	(0.019)	(0.018)	(0.019)
$L_{t-1}^{\text{Equity}}/\text{GDP}_{t-1}$			0.0003	0.035
			(0.080)	(0.077)
$\%\Delta\text{SM}_t^{\text{US}}$	0.007	0.011	0.002	-0.001
	(0.019)	(0.019)	(0.016)	(0.016)
$A_{t-1}^{\text{Equity}}/\text{GDP}_{t-1}$			0.060	-0.162^{*}
			(0.060)	(0.084)
$\%\Delta E_{iUSD,t} \times \text{IFI}_{t-1}/\text{GDP}_{t-1}$			0.141^{***}	0.125^{***}
			(0.041)	(0.033)
$\%\Delta\text{SM}_t^{\text{Local}} \times L_{t-1}^{\text{Equity}}/\text{GDP}_{t-1}$			-0.892^{***}	-0.893^{***}
			(0.158)	(0.166)
$\%\Delta\text{SM}_t^{\text{US}} \times A_{t-1}^{\text{Equity}}/\text{GDP}_{t-1}$			0.519^{**}	0.599^{***}
			(0.231)	(0.225)
Constant	-0.003		-0.003	
	(0.006)		(0.010)	
Country FE	No	Yes	No	Yes
Observations	437	437	437	437
R^2	0.320	0.349	0.446	0.479
Adjusted R^2	0.315	0.314	0.435	0.444
Note:				*p<0.1; **p<0.05; ***p<0.01

Notes: This table presents results from running regressions of valuation changes as a fraction of GDP against several variables. $\%\Delta E_{iUSD,t}$ denotes the change in the bilateral exchange rate, defined so that a positive change indicates a depreciation. IFI_t is defined as the sum of assets and liabilities at time t, while A_t^{Equity} and L_t^{Equity} denote portfolio equity assets and liabilities, respectively, at time t. $\%\Delta\text{SM}_t^{\text{US}}$ indicates the change in the S&P 500 index between $t-1$ and t, while $\%\Delta\text{SM}_t^{\text{Local}}$ does the same for each local stock market index.

induced valuation changes or whether these effects have become stronger in the latter part of the sample. A potential issue is that the estimated effects are muddled by the fact that we are mixing both valuation effects. Therefore, in the remainder of this section we compute each country's financial exposure to the US dollar following the methodology outlined by Lane and Shambaugh (2010). In particular, we compute each country's net financial weight against the US dollar, which measures the response of net foreign assets against changes in the bilateral nominal exchange rate. A positive net financial weight against the dollar implies that countries benefit from a depreciation against the USD through their external assets. Specifically, if EMEs have a positive net financial weight against the dollar, they benefit from depreciations against the USD and, therefore, from wealth transfers from a global insurer that would result during crises.

The net financial weight corresponding to the US dollar for each country i in the sample is defined as follows:

$$w^F_{iUSDt} = w^A_{iUSDt} s^A_{it} - w^L_{iUSDt} s^L_{it} \tag{4}$$

where w^A_{iUSDt} and w^L_{iUSDt} are the shares of assets and liabilities denominated in US dollars and $s^A_{it} = \frac{A_{it}}{A_{it}+L_{it}}$ and $s^L_{it} = \frac{L_{it}}{A_{it}+L_{it}}$. The value of w^F_{iUSDt} indicates the impact of a movement in the bilateral exchange rate between country i and the US on the value of its net foreign assets, where the exchange rate is defined so that a depreciation implies a positive change. For example, a value of w^F_{iUSDt} of 0.2 means that a 10% depreciation in period t will lead to an increase of 2 percentage points in the value of country i's net foreign assets.

Figure 7 shows the evolution of this measure for the EMEs in our sample, which we split into four groups by region: Latin America, Africa, Europe, and Asia. In general, there is an upward trend in w^F_{iUSDt}, with the exception of a few countries in each region. As of 2021, out of twenty countries sixteen have close to zero (Brazil and Tunisia) or positive net weights. Egypt, Pakistan, Turkey, and Sri Lanka are the only countries with negative financial weights. All Latin American countries show an increasing trend in their net financial weights until 2008. This improvement in conditions of risk sharing coincided with a period of increasing financial integration. As this process stalled, the financial weights stabilized, most at positive levels. A similar but less pronounced pattern is observed for Asian and European countries. Two Asian countries, Pakistan and Sri Lanka, have experienced a steady deterioration in their financial weights against the dollar after 2008. There is more heterogeneity in our group of African countries, shown in the second panel. For instance, Tunisia and South Africa have maintained relatively stable exposures to the USD over time, which improved slightly until approximately 2009 and then deteriorated

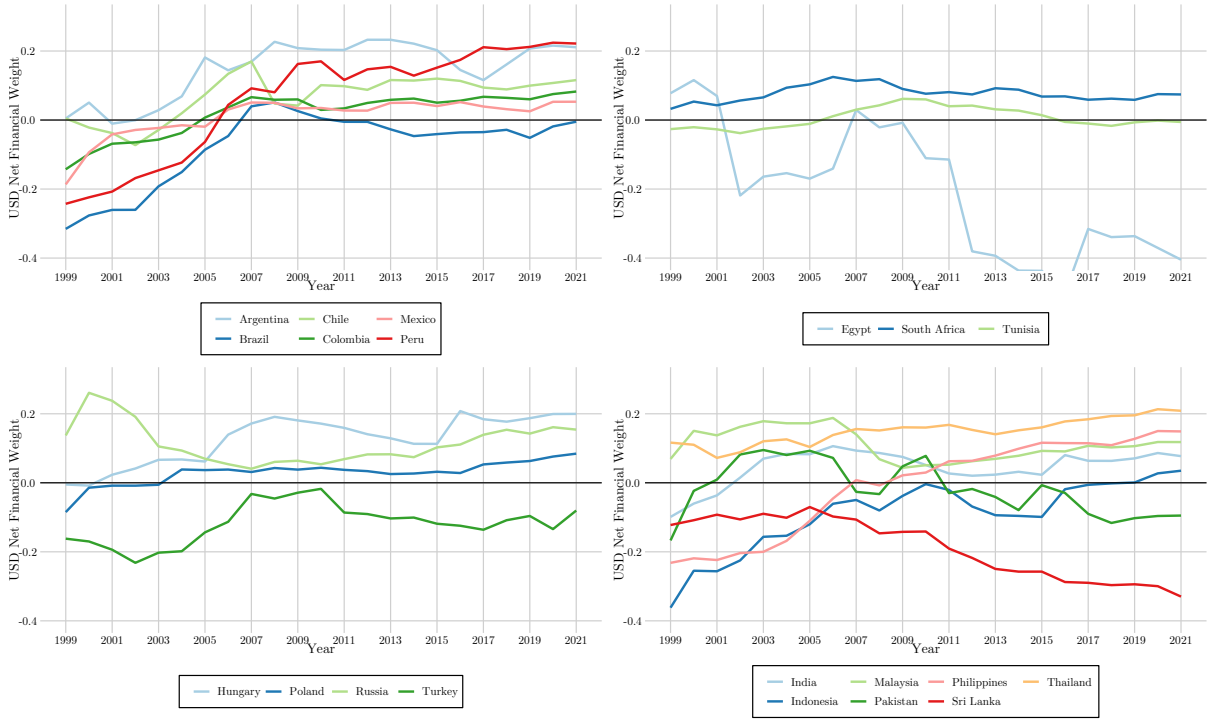


Figure 7. USD Net Financial Weights

Notes: This figure plots the evolution of the net financial weight for the US dollar for total assets and liabilities as defined by Lane and Shambaugh (2010) for 20 emerging economies. Data comes from the updated External Wealth of Nations database (Lane and Milesi-Ferretti, 2018) and a dataset on the currency composition of a large group of countries (Bénétrix et al., 2019).

slightly. Egypt, on the other hand, reached a peak negative exposure to the USD in 2016 of slightly less than -0.5.

The picture that emerges from Figure 7 is that most emerging countries currently have positive exposures to the US dollar. The measure used to capture this exposure trended upward until approximately 2008. Since then, with a few exceptions, net financial weights for the US dollar have plateaued. Chile, Hungary, Peru, and the Philippines have the highest net financial weights in the sample, with levels of about 0.2. This implies that most emerging economies benefit from a dollar depreciation and would benefit from the dynamics that might take place during a crisis regarding the reserve currency. This is in line with some of the evidence presented by Hale and Juvenal (2023), who attribute positive exchange rate-induced valuation changes during 2020 to most emerging economies while their currencies were depreciating against the USD. Results are also consistent with Table 1 and what we noted for the Chilean case in the previous sections.

To see the previous break in the dynamics regarding the exchange rate across countries,

in Table 2 we repeat regressions (3) and (4) from Table 1 within two subperiods, the first going from 1999 to 2007 and the second from 2008 to 2021. The estimated coefficient for a currency depreciation relative to the US dollar is only statistically significant in the latter part of the sample, further validating our analysis of Figure 7. Moreover, the value of the coefficients in regressions (3) and (4) in Table 2 are very similar to those of Table 1. The first subperiod was a period of financial integration, during which countries were able to reach currency exposures that allowed them to benefit from currency depreciations against the dollar during the second subperiod.

The fact that most countries in the sample have a positive exposure to the dollar is also important regarding the discussion of the "original sin" in emerging market economies, which concerns the inability of countries to borrow abroad in their own currencies, as popularized by Eichengreen, Hausmann, and Panizza (2003). In recent work, Eichengreen, Hausmann, and Panizza (2022) provide renewed evidence for this phenomenon. In their view, when countries have to borrow in foreign currency, a depreciation of the local currency, which generally happens during periods of economic difficulties, leads to their liabilities becoming more expensive than their assets, with a consequent decline in the NIIP making their economies even more vulnerable. Our evidence points in the other direction: a currency depreciation relative to the USD improves the NIIP for most emerging economies. However, this does not contradict the fact that emerging market economies may still have problems in issuing sovereign debt in their local currency or that the original sin is relevant for issues such as the sustainability of sovereign debt. It would be more of a local distributional problem, where the private sector wins with a currency depreciation while the public sector loses. However, at an aggregate level, our results suggest that the original sin in sovereign debt does not necessarily lead to a currency depreciation being detrimental to a country's external position.

We can further examine the evolution of emerging economies' net dollar exposure by looking separately at their dollar exposure for the debt and non-debt components of their external balance sheet. The data on currency exposures contains data on debt assets and liabilities as well as their currency composition, which we use to compute the net financial weights for the US dollar for each country in the sample[8] in the same way as we did in (4), with the difference that the shares of assets and liabilities in US dollars now refers to the share of debt and non-debt assets and liabilities in US dollars and that the weight of

8. In the Bénétrix et al. (2019) dataset debt assets include portfolio debt, FDI debt, and other investments and reserve assets, while debt liabilities include portfolio debt, FDI debt, and other investments. We use this information rather than the data on debt assets and liabilities in the External Wealth of Nations dataset since the latter does not include FDI debt.

Table 2. Total Valuation Effects - Split Sample

	$\text{VAL}_t/\text{GDP}_{t-1}$			
	1999 - 2007		*2008-2021*	
	(1)	(2)	(3)	(4)
$\%\Delta E_{iUSD,t}$	−0.106	−0.118	0.022	0.012
	(0.089)	(0.126)	(0.073)	(0.070)
$\text{IFI}_{t-1}/\text{GDP}_{t-1}$	−0.001	0.013	−0.006	−0.010
	(0.015)	(0.016)	(0.008)	(0.011)
$\%\Delta\text{SM}_t^{Local}$	−0.023	−0.031*	−0.027*	−0.029*
	(0.015)	(0.017)	(0.016)	(0.016)
$L_{t-1}^{\text{Equity}}/\text{GDP}_{t-1}$	−0.170	−0.126	0.049	0.065
	(0.128)	(0.137)	(0.066)	(0.061)
$\%\Delta\text{SM}_t^{US}$	−0.054***	−0.054***	0.006	0.005
	(0.018)	(0.020)	(0.021)	(0.022)
$A_{t-1}^{\text{Equity}}/\text{GDP}_{t-1}$	0.223***	0.147	0.004	−0.022
	(0.038)	(0.094)	(0.051)	(0.065)
$\%\Delta E_{iUSD,t} \times \text{IFI}_{t-1}/\text{GDP}_{t-1}$	0.164	0.176	0.151***	0.148***
	(0.104)	(0.129)	(0.058)	(0.054)
$\%\Delta\text{SM}_t^{Local} \times L_{t-1}^{Equity}/\text{GDP}_{t-1}$	−0.767***	−0.647***	−0.805***	−0.857***
	(0.239)	(0.237)	(0.168)	(0.166)
$\%\Delta\text{SM}_t^{US} \times A_{t-1}^{Equity}/\text{GDP}_{t-1}$	1.081**	0.982*	0.553**	0.633**
	(0.506)	(0.555)	(0.276)	(0.253)
Constant	−0.004		−0.008	
	(0.017)		(0.009)	
Country FE	No	Yes	No	Yes
Observations	158	158	279	279
R^2	0.363	0.346	0.519	0.524
Adjusted R^2	0.324	0.272	0.503	0.485
Note:				*p<0.1; **p<0.05; ***p<0.01

Notes: This table presents results from running regressions of valuation changes as a fraction of GDP against several variables for two separate periods. $\%\Delta E_{iUSD,t}$ denotes the percent change in the bilateral exchange rate, defined so that a positive change indicates a depreciation. IFI_t is defined as the sum of assets and liabilities at time t, while A_t^{Equity} and L_t^{Equity} denote portfolio equity assets and liabilities, respectively, at time t. $\%\Delta\text{SM}_t^{\text{US}}$ indicates the percent change in the S&P 500 index between $t-1$ and t, while $\%\Delta\text{SM}_t^{\text{Local}}$ does the same for each local stock market index.

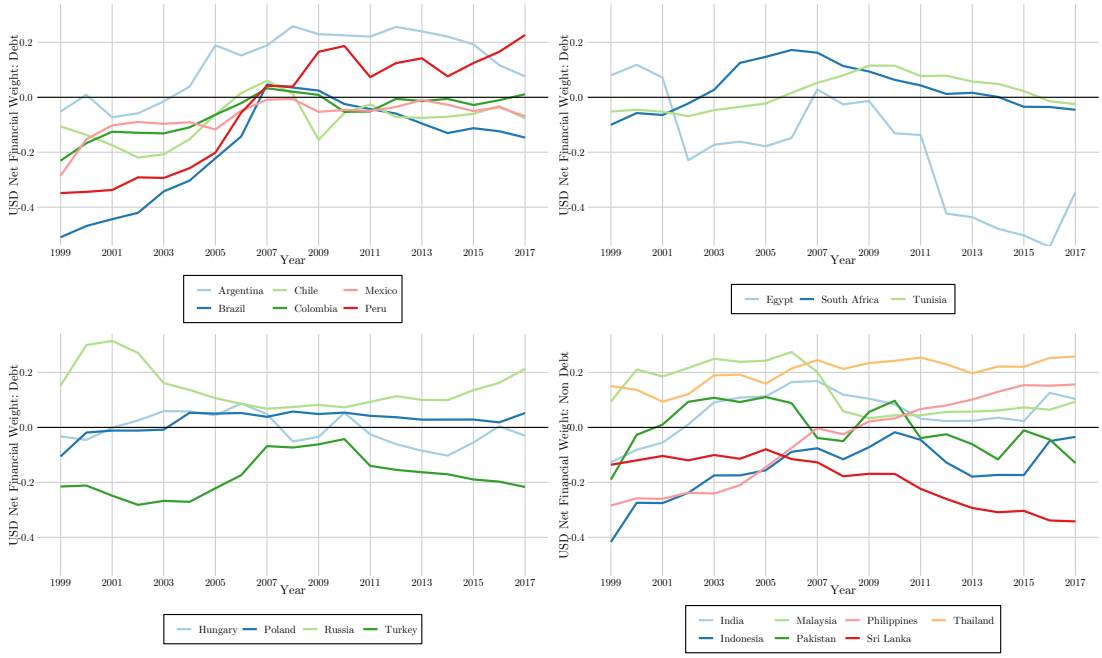


Figure 8. USD Net Financial Weights - Debt

Notes: This figure plots the evolution of the net financial weight for the US dollar for debt assets and liabilities as defined by Lane and Shambaugh (2010) for 20 emerging economies. Debt assets and liabilities include portfolio debt, foreign direct investment debt, and other investments. Debt assets also include reserve assets. Data comes from the updated External Wealth of Nations database (Lane and Milesi-Ferretti, 2018) and a dataset on the currency composition of a large group of countries (Bénétrix et al., 2019).

debt and non-debt assets and liabilities is taken out of the sum of debt assets and debt liabilities and non-debt assets and non-debt liabilities, respectively.

Results are shown in Figures 8 and 9. There are several interesting points. First, the net financial weight of the debt component of assets and liabilities tends to be negative in most years and for most countries. In contrast, the net financial weight of the non-debt component is positive for all countries and in all years in the sample. An essential explanation of the positive effect of a US dollar depreciation in the non-debt component is that portfolio and direct investment are held in local currency in all countries' liabilities. In contrast, assets are primarily held in US dollars. In addition, in the debt component there is more borrowing in foreign currency than in local currency.[9]

Second, the net financial weight for the US dollar in the case of debt also tends to be more volatile than the non-debt component, which for most countries has remained close

9. For currency mismatches to be relevant, both the borrowing currency and the currency in which the borrower gets its income are important. For example, from a financial stability point of view, whether the borrower is an exporter or a construction firm has different implications.

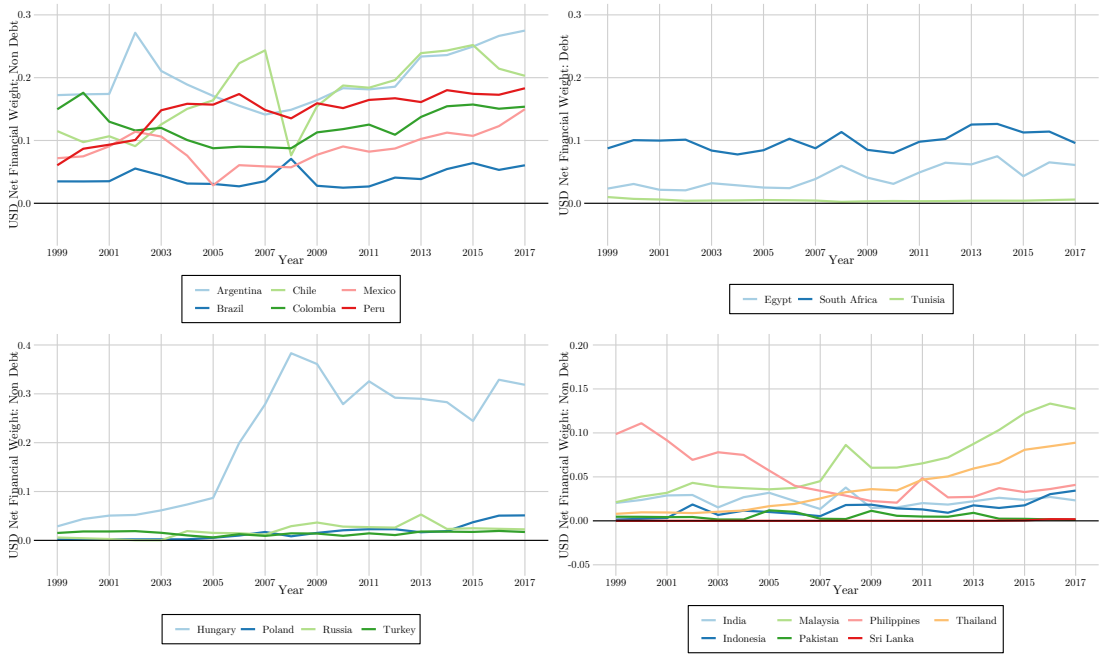


Figure 9. USD Net Financial Weights - Non-Debt

Notes: This figure plots the evolution of the net financial weight for the US dollar for non-debt assets and liabilities as defined by Lane and Shambaugh (2010) for 20 emerging economies. Debt assets and liabilities include portfolio debt, foreign direct investment debt, and other investments. Debt assets also include reserve assets. Data comes from the updated External Wealth of Nations database (Lane and Milesi-Ferretti, 2018) and a dataset on the currency composition of a large group of countries (Bénétrix et al., 2019).

to its initial level in the years included in the sample. This implies that most emerging markets benefit in their external positions from currency depreciations due to debt being, in some cases, the minor part of assets and liabilities and the currency composition of non-debt items in the NIIP offsetting the potential mismatch in debt. This is also related to the issue of the original sin since it suggests that the currency mismatch issue in debt was reduced significantly until 2008, particularly in Latin American countries, but that this evolution has since stopped. This plateau is compatible with the persistency of the original sin highlighted by Eichengreen, Hausmann, and Panizza (2022), with the caveat that total debt includes more components than just sovereign debt. Third, Figures 8 and 9 suggest that the evolution observed in the USD net financial weight in Figure 7 is explained mainly through movements in the financial exposure to the USD of the debt components of the balance sheet rather than the non-debt component, with some exceptions. The reason is that non-debt financial weights are (in general) stable. In contrast, most countries' USD financial weight for the debt component tended upwards until approximately 2008 and

then proceeded to stay at roughly the same values, which is the same evolution seen in the total net USD financial weight in Figure 7. Interestingly, and as was the case with Figure 7, this is also compatible with the slowdown in financial integration following the 2008 financial crisis described by Lane and Milesi-Ferretti (2018). Although EMEs' gross positions did not markedly improve in the pre-2008 period, as seen in Figure 6, it was likely easier for EMEs to improve their currency exposures during a period of financial buoyancy rather than during a slowdown in international financial integration. The fact that advanced economies significantly increased their gross positions in the pre-2008 period supports this conjecture.

5. Price Valuation Effects in EMEs

We now test if US equity prices impact EMEs' external assets. To do this, we run regressions of price-induced valuation changes against local and US stock market variations. This is a relevant question given the previously discussed US-specific increase in equity prices documented by Atkeson, Heathcote, and Perri (2022). We begin by identifying exchange rate-induced valuation changes following Lane and Shambaugh (2010). We then compute valuation changes due to price variations as the difference between total valuation changes, identified in any given period as the difference between the change in the NIIP and the current account balance, and our measure of currency-induced valuation effects, as in Hale and Juvenal (2023). Finally, we run regressions using this measure as a fraction of GDP as our dependent variable. Specifically, valuation changes due to exchange rate variations are computed as follows:

$$\text{VAL}_{i,t}^{XR} = \%\Delta I_{i,t}^{F} \text{IFI}_{i,t-1}$$

where, as before, IFI_{it} is the sum of assets and liabilities for country i in period t, while I_{it}^{F} is the aggregate net financial index for country i in period t and is defined as follows:

$$I_{i,t}^{F} = I_{i,t-1}^{F}(1 + \sum_{j} w_{ij,t-1}^{F} \%\Delta E_{ij,t})$$

This measures the sensitivity of country i's balance sheet to currency movements. It is composed of $w_{ij,t}^{F}$, the net financial weights for currency j in country i, and $\%\Delta E_{ij,t}$, which is the percentage change in the bilateral end-of-period nominal exchange rate between the currency of country i and currency j, defined so that an increase corresponds to a depreciation of the currency of country i. The net financial weights for each currency are computed in the same way as the net financial weight for the dollar was in the previous

section.

The currency composition dataset contains information on the share of each country's balance sheet denominated in USD, euros, pounds Sterling, Japanese Yen, Chinese Renminbi, the domestic currency, and "other currencies", which includes all other currencies not mentioned previously. We follow Hale and Juvenal (2023) and compute valuation changes using the dollar, the euro, the pound Sterling, and the Japanese Yen. This should not significantly affect results since these four currencies represent the bulk of foreign currency exposure. After obtaining an estimate of exchange rate-induced valuation changes for each country in the sample in this manner, we then estimate price-induced valuation changes as the difference between total valuation changes and exchange rate-induced valuation changes:

$$\text{VAL}_{i,t}^{\text{Price}} = \text{VAL}_{i,t} - \text{VAL}_{i,t}^{\text{XR}}$$

where $\text{VAL}_{i,t}$ are total valuation changes for country i in period t and are computed as the difference between the change in country i's net foreign assets between t and $t+1$ and its current account balance in t. The main drawbacks of this strategy are that we are using the current account balance as a proxy for financial transactions and thus abstracting from possible differences between both measures and that we are ignoring the other adjustments account of the balance of payments. This may affect our results if valuation effects are small and the "other adjustments" item is significant. However, this is likely a minor issue given that we expect the other adjustments item to be small relative to total valuation changes in each period, as in the case of Chile. After obtaining an estimate of price-induced valuation changes, we regress them as a fraction of GDP against local and US stock market valuation changes. As in the previous regressions, we interact these regressors with portfolio equity liabilities out of GDP and portfolio equity assets out of GDP, respectively, to control for the fact that the effect of price variations will be more significant with larger gross positions on the respective instrument. Finally, since the evidence presented in Atkeson, Heathcote, and Perri (2022) suggests that the increase in US equity prices and subsequent wealth transfers from the US to the rest of the world has happened since 2007, we conduct the previous regressions both for the whole sample and for years between 2008 and 2021.

Results are shown in Table 3. As in the case of total valuation changes, for the regressions using the entire sample period we see that the impact of stock market prices is only significant when interacted with gross asset and liability positions. Hence, the degree of financial integration matters. The interaction terms between stock market variations and portfolio equity assets and liabilities are significant and with the expected sign. For instance, a higher local stock market valuation is associated with negative price-induced

valuation changes. The effect of US stock market variations depends on the size of portfolio equity assets out of GDP, since the coefficient for US stock market variations is significant and negative. The estimated values imply positive effects of an increase in US stock market prices on price-induced valuation changes for some countries and adverse effects for others.

Table 3. Valuation Changes due to Price Variations

	$\text{VAL}_t^{Price}/\text{GDP}_{t-1}$			
	All Years		*2008-2021*	
	(1)	(2)	(3)	(4)
$\%\Delta\text{SM}_t^{Local}$	−0.027	−0.032	−0.055***	−0.059***
	(0.020)	(0.021)	(0.018)	(0.022)
$L_{t-1}^{\text{Equity}}/\text{GDP}_{t-1}$	−0.059	0.061	−0.012	−0.008
	(0.098)	(0.084)	(0.080)	(0.087)
$\%\Delta\text{SM}_t^{US}$	−0.053*	−0.050*	−0.031	−0.030
	(0.028)	(0.028)	(0.021)	(0.027)
$A_{t-1}^{\text{Equity}}/\text{GDP}_{t-1}$	0.007	−0.120	−0.043	−0.111*
	(0.074)	(0.092)	(0.068)	(0.067)
$\%\Delta\text{SM}_t^{Local} \times L_{t-1}^{\text{Equity}}/\text{GDP}_{t-1}$	−0.912***	−0.898***	−0.656***	−0.703***
	(0.154)	(0.163)	(0.166)	(0.168)
$\%\Delta\text{SM}_t^{US} \times A_{t-1}^{\text{Equity}}/\text{GDP}_{t-1}$	0.649***	0.743***	0.585*	0.728**
	(0.238)	(0.225)	(0.352)	(0.290)
Constant	0.010		0.010	
	(0.010)		(0.007)	
Country FE	No	Yes	No	Yes
Observations	437	437	279	279
R^2	0.212	0.238	0.208	0.250
Adjusted R^2	0.201	0.192	0.191	0.198
Note:				*p<0.1; **p<0.05; ***p<0.01

Notes: This table presents results from running regressions of price-induced valuation changes as a fraction of GDP against several variables. A_t stands for total assets at time t, while L_t does the same for liabilities, while A_t^{Equity} and L_t^{Equity} denote portfolio equity assets and liabilities, respectively, at time t. $\%\Delta\text{SM}_t^{\text{US}}$ indicates the percent change in the S&P 500 index between $t-1$ and t, while $\%\Delta\text{SM}_t^{\text{Local}}$ does the same for each local stock market index.

Results are similar for the regressions using only years between 2008 and 2021, implying that contrary to the exchange rate effects on the NIIP, there have not been significant changes to the response of the NIIP to relative stock market performance. The main difference is that the coefficient for changes in the US stock market is no longer statistically

significant. For the case of the local stock market, the coefficients of the single variable and the interacted one are significant. Even though we expect stock market variations to be more significant in the latter part of the sample for some countries, such as Chile, and we find that the effect is not significantly different, a possible explanation for these results is that the process of financial integration up until 2008 also allowed EMEs to diversify their external assets. This implies that, on average, countries' external assets will respond less to price changes solely in US firms. The magnitude of the effect of an increase in US stock market valuation on countries' price-induced valuation effects can be marginally small for some countries. For instance, Brazil's equity portfolio assets between 2015 and 2020 were, on average, 1.4% of GDP, which implies that a 10% increase in US stock market valuation is associated with positive price-induced valuation effects of less than 0.1% of GDP. For Chile, however, US stock market valuations can account for large valuation changes. Between 2015 and 2020, portfolio equity assets accounted, on average, for 45% of Chile's GDP, which means that during this period, a 10% increase in US stock market prices was associated with positive valuation effects of about 3% of GDP. If we couple this with the fact that the US stock market increased in value by 30%, 16%, and 27% in 2019, 2020, and 2021 alongside the fall in the Chilean stock market, the estimated values in Table 3 are consistent with the evolution of the Chilean external position in recent years illustrated in the previous sections.

Estimates in Table 3 suggest, then, that the US stock market has an impact on price-induced valuation effects, meaning that emerging economies have been receiving wealth transfers from the US due to the relatively worse performance of their firms relative to US ones. The magnitude of these wealth transfers, however, depends on the size of the portfolio assets of each country. Less developed economies with lower overall levels of financial integration are only marginally benefited by these wealth transfers compared to relatively wealthier economies with higher levels of financial integration. Since these are the same economies that tend to have negative net financial exposures to the USD, the analysis conducted here suggests that some EMEs do not benefit from risk sharing in the international financial system and having a reserve currency such as the USD, and points to an additional benefit of financial integration.

6. Concluding Remarks

In this paper, we examined the issue of valuation effects in emerging economies, focusing on the impact of bilateral exchange rate variations. We began by analyzing the case of

Chile. A period of intense social unrest, which started in October 2019 and brought about large depreciations and negative consequences on stock market returns, was followed by Covid with further negative impacts in both previous dimensions. However, between the third quarter of 2019 and the fourth quarter of 2021, the NIIP went from -20 to -5% of GDP, while the accumulated deficit in the current account was -6% of GDP during this same period. This implies that there were valuation changes amounting to approximately 21% of GDP due to a real depreciation of 17% and (partly) due to a stock market return differential of 75 percentage points with the US. The transfer from the rest of the world was significant and contributed to Chile's ability to navigate the turmoil with a robust financial system. Furthermore, these valuation effects are consistent with evidence regarding price-induced valuation changes (Atkeson, Heathcote, and Perri, 2022) and exchange rate-induced valuation changes during the pandemic in particular (Hale and Juvenal, 2023).

We interpreted these valuation changes in light of the view of the US as a global insurer in the international monetary system, which has been the focus of a relatively new strand of the literature (see Maggiori, 2017; Kekre and Lenel, 2021; Gourinchas and Rey, 2022; Devereux, Engel, and Wu, 2023). In hard economic times, investors flee to the reserve currency to protect themselves. This leads to an appreciation of the US dollar and wealth transfers from the US to the rest of the world, as long as currency mismatches in the recipient economies' balance sheets do not offset these wealth transfers through increases in the value of liabilities. Wealth transfers from the US to the rest of the world also occur through an increase in the price of safe assets. Wealth transfers due to other price changes in assets and liabilities are consistent with this view as long as optimal portfolio choices lead to risk sharing considerations in the composition of external assets (Atkeson, Heathcote, and Perri, 2022). The evolution of Chilean external assets regarding exchange rates and stock market performance is consistent with this risk sharing view of the international monetary system.

Given that international risk sharing acts through valuation effects, a relevant question raised by the previous literature and the literature on the original sin and currency mismatches in emerging economies is whether EMEs also benefit from a global insurer. We extended the analysis to a sample of 20 EMEs to analyze this question. We concluded that, on average, a depreciation of the US dollar generates positive valuation effects, contributing to external adjustment. We show that what has allowed for the previous dynamic is that leading up to 2008, EMEs corrected their currency mismatches significantly. This led to most of these countries' net financial weights (as defined by Lane and Shambaugh, 2010)

against the dollar settling at positive levels. This implies that EMEs' external wealth increases when their currency depreciates against the dollar. We also show evidence that suggests that there are relevant valuation effects due to the relative performance of firms in EMEs against US firms and that the relatively poor performance of local stock markets in comparison to the US has entailed wealth transfers from the US, consistent with the evidence presented by Atkeson, Heathcote, and Perri (2022). Thus, as was the case for Chile, EMEs benefit from risk sharing wealth transfers from the US due to currency depreciations and differences in firm performance.

These results are significant for various reasons. First, the results on the effects of exchange rate variations on EMEs' external wealth contradict the traditional view on exchange rate depreciations in EMEs. The conventional wisdom is that depreciations of exchange rates in EMEs are a symptom of problems. Despite their potential reallocation effects, currency mismatches in the corporate and public sectors were causes of concern and induced fear of floating. The original sin, by which countries cannot borrow abroad in their own currency, would make servicing debt more difficult when facing a real exchange rate depreciation as the purchasing power of domestic output declines (Eichengreen, Hausmann, and Panizza, 2003). This, coupled with currency mismatches in their external balance sheets in general, meant that currency depreciations were a source of volatility and turbulence in EMEs. However, on average, depreciations in EMEs contributed to improving their external wealth through valuation effects and the risk sharing mechanisms described previously. Therefore, in most EMEs currency mismatches and the issue of the original sin are no longer significant enough for depreciations to be detrimental to their external positions, despite their potentially detrimental effects in other dimensions (see Eichengreen, Hausmann, and Panizza, 2022; Bertaut, Bruno, and Shin, 2021; Hofmann, Patel, and Wu, 2022).

Second, in conducting the previous analysis we also presented evidence regarding the evolution of foreign currency exposures, which show that they markedly improved in until approximately 2008. This is consistent with the slowdown in global financial integration following the 2008 global financial crisis described in Lane and Milesi-Ferretti (2018). This evidence suggests that during the period of financial globalization prior to 2008 EMEs reduced their external vulnerability.

Finally, our results present the counterpart of the risk sharing mechanisms described by the recent literature on the role of the US as a global insurance provider (Maggiori, 2017; Kekre and Lenel, 2021; Gourinchas and Rey, 2022; Devereux, Engel, and Wu, 2023) for EMEs. Although it is fairly clear that advanced economies benefit from a dollar

appreciation due to a flight to safety through their external wealth, it is not apparent that EMEs, with lower degrees of financial integration and more problematic currency mismatches, would also benefit from these dynamics. Our results suggest that EMEs are not left out of the benefits of a global insurance provider.

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Appendix A. Quarterly Decomposition - Change in the Chilean Net International Investment Position

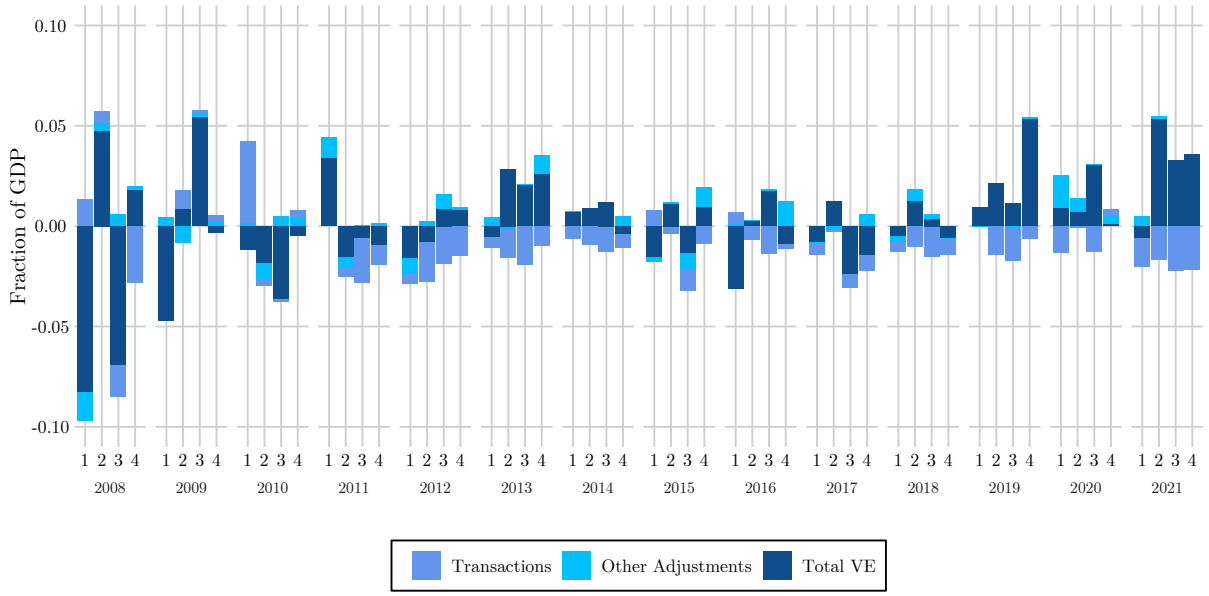

Figure A1. Decomposition - Δ NIIP for Chile

Notes: This figure decomposes the change in the Chilean net international investment position by quarter into transactions, other adjustments, and total valuation effects as a fraction of GDP.

Source: Balance of Payments data from the Central Bank of Chile.

Table A1. Δ NIIP, Chile - Quarterly Decomposition

Period	Initial NIIP	Transactions	VE: Price Variations	VE: XR Variations	Other Adjustments	Final NIIP
2013q1	-0.1280	-0.0060	0.0050	-0.0100	0.0040	-0.1310
2013q2	-0.1310	-0.0140	0.0120	0.0170	-0.0020	-0.1160
2013q3	-0.1160	-0.0190	0.0210	0.0000	0.0010	-0.1140
2013q4	-0.1140	-0.0100	0.0140	0.0110	0.0090	-0.0840
⋮						
2019q1	-0.2030	0.0000	0.0180	-0.0090	0.0000	-0.1980
2019q2	-0.1980	-0.0140	0.0180	0.0030	0.0000	-0.1940
2019q3	-0.1940	-0.0170	-0.0020	0.0130	0.0000	-0.2000
2019q4	-0.2000	-0.0060	0.0330	0.0190	0.0010	-0.1570
2020q1	-0.1570	-0.0130	-0.0110	0.0190	0.0160	-0.1500
2020q2	-0.1500	0.0000	0.0150	-0.0080	0.0070	-0.1460
2020q3	-0.1460	-0.0130	0.0380	-0.0080	0.0010	-0.1320
2020q4	-0.1320	0.0030	0.0210	-0.0200	0.0040	-0.1200
2021q1	-0.1200	-0.0150	-0.0050	-0.0010	0.0050	-0.1290
2021q2	-0.1290	-0.0180	0.0500	0.0080	0.0020	-0.0790
2021q3	-0.0790	-0.0240	-0.0030	0.0380	0.0000	-0.0640
2021q4	-0.0640	-0.0220	0.0230	0.0140	0.0000	-0.0490

Notes: Quantities are measured as a fraction of GDP. NIIP stands for net international investment position, VE stands for valuation effects, and XR stands for exchange rate.

Source: 2021 Balance of Payments report from the Central Bank of Chile.

Appendix B. Regression Results

Table B1. XR Valuation Effects vs. Exchange Rates

	XR Valuation Effects		
	(1)	(2)	(3)
Observed Dollar Index	0.184***		
	(0.030)		
Real XR Index		0.360***	
		(0.042)	
Real XR Index - Five Currencies			0.317***
			(0.039)
Constant	−0.002	−0.001	−0.001
	(0.002)	(0.001)	(0.001)
Observations	56	56	56
R^2	0.273	0.516	0.479
Adjusted R^2	0.260	0.507	0.469
Note:	*p<0.1; **p<0.05; ***p<0.01		

Notes: This table shows the results of running regressions of exchange rate (XR) induced valuation effects against the observed dollar index, the real XR index, and the real XR index for five major currencies for the case of Chile. Exchange rate-induced valuation effects are measured as a fraction of GDP. All data comes from the Central Bank of Chile.

Appendix C. Data Sources - Emerging Economies Panel

To choose the countries for the panel, we focused on emerging economies as defined in the IMF's October 2022 Fiscal Monitor. Within this list, we further eliminate countries with a population of less than 3 million. To run our intended regressions, in addition to the data available on the External Wealth of Nations dataset on their net international investment position, current account, GDP, and assets and liabilities, we require data on their currency composition and some measure of stock market performance. Then, to select the included countries, we start with a list of emerging economies included in the External Wealth of Nations dataset and discard those countries not included in the data on currency exposures by Bénétrix et al. (2019) as well as those with no reliable data on stock market performance. In the end, we included 20 emerging economies in the sample. Table C1 describes used stock market data for these countries.

Table C1. Sources: Stock Market Data

Country	Source
Argentina	MERVAL Index
Brazil	IBOV Index
Chile	IPSA Index
Colombia	IGBC Index
Egypt	HERMES Index
Hungary	BUX Index
India	NIFTY Index
Indonesia	JCI Index
Malaysia	FBMKLCI Index
Mexico	MEXBOL Index
Pakistan	KSE100 Index
Peru	IGBVL Index
Philippines	PCOMP Index
Poland	WIG20 Index
Russia	IMOEX Index
South Africa	TOP40 Index
Sri Lanka	CSEALL Index
Thailand	SET Index
Tunisia	TUSISE Index
Turkey	XU100 Index
United States	S&P 500 Index

The External Wealth on Nations dataset includes data on the end of period domestic currency to USD exchange rate. We use this data along with data on the USD to euro, USD to Japanese Yen, and USD to pound Sterling exchange rates to infer the exchange rate between the domestic currency of each country and each of the four currencies used in calculating valuation changes due to exchange rate variations.

Appendix D. Emerging Economies Descriptive Statistics

Table D1. Emerging Economies - Descriptive Statistics

	2000 - 2004			2005 - 2009			2010 - 2014			2015 - 2020		
Country	$L_t^{Equity}/\text{GDP}_t$	$A_t^{Equity}/\text{GDP}_t$	$\text{IFI}_t/\text{GDP}_t$	$L_t^{Equity}/\text{GDP}_t$	$A_t^{Equity}/\text{GDP}_t$	$\text{IFI}_t/\text{GDP}_t$	$L_t^{Equity}/\text{GDP}_t$	$A_t^{Equity}/\text{GDP}_t$	$\text{IFI}_t/\text{GDP}_t$	$L_t^{Equity}/\text{GDP}_t$	$A_t^{Equity}/\text{GDP}_t$	$\text{IFI}_t/\text{GDP}_t$
Argentina	0.01	0.06	1.87	0.02	0.07	1.57	0.01	0.04	0.93	0.02	0.05	0.98
Brazil	0.07	0.00	0.87	0.16	0.00	0.80	0.17	0.01	0.90	0.13	0.01	1.14
Chile	0.06	0.17	1.88	0.05	0.29	1.91	0.09	0.40	2.37	0.10	0.45	2.73
Colombia	0.01	0.01	0.84	0.03	0.01	0.85	0.05	0.02	0.91	0.04	0.06	1.50
Egypt	0.02	0.01	0.84	0.02	0.01	1.12	0.01	0.00	0.73	0.01	0.00	0.83
Hungary	0.09	0.00	1.61	0.15	0.03	3.67	0.09	0.06	5.78	0.10	0.05	5.09
India	0.04	0.00	0.44	0.16	0.00	0.64	0.15	0.00	0.70	0.17	0.00	0.74
Indonesia	0.05	0.00	1.13	0.06	0.00	0.76	0.10	0.00	0.78	0.10	0.01	0.95
Malaysia	0.16	0.02	1.69	0.23	0.04	1.96	0.24	0.10	2.42	0.21	0.17	2.48
Mexico	0.07	0.00	0.69	0.13	0.00	0.86	0.14	0.01	1.15	0.12	0.03	1.45
Pakistan	0.00	0.00	0.62	0.02	0.00	0.58	0.01	0.00	0.53	0.02	0.00	0.51
Peru	0.05	0.04	1.10	0.11	0.08	1.07	0.14	0.11	1.26	0.09	0.15	1.51
Philippines	0.04	0.01	1.28	0.09	0.01	1.17	0.13	0.01	1.12	0.17	0.01	1.17
Poland	0.03	0.00	0.86	0.06	0.01	1.15	0.06	0.02	1.50	0.08	0.04	1.56
Russia	0.08	0.00	1.60	0.15	0.00	1.33	0.11	0.00	1.29	0.09	0.01	1.42
South Africa	0.18	0.27	1.35	0.27	0.24	1.52	0.34	0.35	1.97	0.46	0.44	2.62
Sri Lanka	0.01	0.00	0.77	0.02	0.00	0.72	0.02	0.00	0.75	0.02	0.00	0.81
Thailand	0.11	0.00	1.33	0.16	0.01	1.32	0.20	0.02	1.66	0.23	0.04	1.92
Tunisia	0.03	0.01	1.33	0.03	0.01	1.44	0.04	0.01	1.55	0.05	0.01	1.71
Turkey	0.03	0.01	0.85	0.06	0.00	0.85	0.07	0.00	0.95	0.05	0.00	1.00
Median	0.05	0.01	1.12	0.08	0.01	1.14	0.10	0.01	1.14	0.09	0.02	1.44
Mean	0.06	0.03	1.15	0.10	0.04	1.26	0.11	0.06	1.46	0.11	0.08	1.61
Standard Deviation	0.05	0.07	0.43	0.08	0.08	0.69	0.08	0.11	1.15	0.10	0.13	1.03

Notes: This table provides the average for some relevant variables during consecutive five-year windows for our panel of emerging economies. All variables are defined as in the main text. Data comes from the External Wealth of Nations (Lane and Milesi-Ferretti, 2007) dataset and from the Bénétrix et al. (2019) dataset on currency compositions.