No. 2026-9 BANK OF KOREA

BOK Issue Note

April 17, 2026

Structural Change in Korea's External Sector and Its Implications on the Exchange Rates

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①Traditionally, a current account surplus has been understood to reflect enhanced competitiveness of domestic goods and expanded net exports, accompanied by a falling real exchange rate (KRW appreciation). However, since 2023 Q2, Korea has experienced a prolonged episode in which a widening current account surplus has coincided with a rising real exchange rate (KRW depreciation).

②Since the Global Financial Crisis, the composition of Korea's overseas assets has tilted toward private-sector portfolio investment, and away from public-sector reserve assets. This shift has occurred alongside rising savings and slowing domestic investment associated with demographic aging. Since the current account simultaneously reflects the outcome of net exports and net capital outflows, this structural change in external asset accumulation suggests that the factors driving fluctuations in the current account and the real exchange rate may have changed.

③To empirically examine this possibility, we distinguish between "*goods shock*" (which generate a current account surplus alongside KRW appreciation) and "*financial shock*" (which generate a current account surplus alongside KRW depreciation) and assess the relative importance of each type across subperiods. We find that the overall frequency of financial shocks is similar before and after Korea's transition to net external creditor status, but that positive financial shocks — those associated with capital outflows and KRW depreciation — have become more frequent. Compared with major advanced economies with deeper FX markets, currency depreciation following financial shocks is relatively larger in Korea.

④We use a structural model (a two-country New Keynesian open economy model) to provide a structural interpretation of the empirical findings and to quantify the effects of each shock. Positive financial shock is further decomposed into an increase in residents' demand for dollar assets (corresponding to a decrease in non-residents' demand for KRW assets) and an expansion of savings demand. The results indicate that the influence of goods shocks, which drove KRW appreciation through around 2014, has weakened in recent years, while the influence of dollar asset demand and savings demand — driven by demographic aging and weak domestic investment — has strengthened. The recent pattern of current account surplus coinciding with KRW depreciation can be attributed to these structural shifts.

⑤These findings suggest that the adjustment mechanism between the current account and the real exchange rate is changing as Korea transitions toward a stage of private-sector-led overseas asset management. They also imply that the importance of resident capital flows for the external sector and the exchange rate has grown relative to the past, underscoring the need to account for resident capital flows in policies aimed at maintaining FX market stability.

⑥During this structural transition, if resident demand for overseas assets expands rapidly in the short term, or if volatility in non-resident capital flows increases due to changes in external conditions, FX market sensitivity may rise and supply-demand imbalances may intensify, amplifying exchange rate volatility. This points to the need for policy responses to address short-term supply-demand imbalances alongside medium- to long-term policies aimed at deepening the FX market.

■ We would like to express our sincere appreciation to Kyoungsoo Yoon, Jae Hyun Yoo, Yong O Kwon, for their comments and suggestions. Any errors in this paper are solely the responsibility of the authors.

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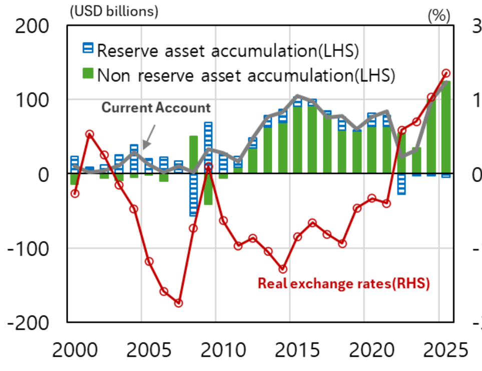
I. Background

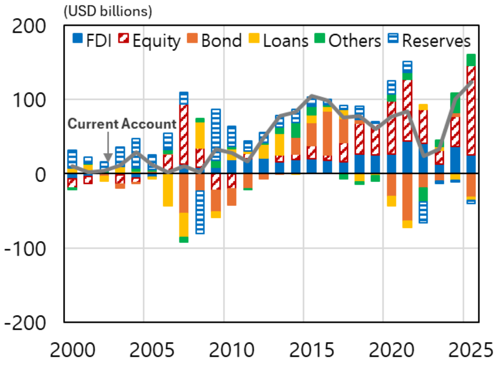
1. Since 2023 Q2, Korea's current account surplus has widened while the real exchange rate has risen (KRW depreciation). This diverges from the historical pattern in which current account surpluses were accompanied by a declining real exchange rate (KRW appreciation). As shown in <Figure 1>, setting aside short-term spikes around major global financial events such as the Dot-com bubble (2001) and the Global Financial Crisis (2008), the broad trend had been for the USD/KRW real exchange rate to fall (appreciate) as the current account surplus widened. Up to around 2015, a widening current account surplus was clearly associated with a declining real exchange rate, but thereafter a large and stable surplus coexisted with a steadily rising real exchange rate. Most recently (since 2023 Q2), the real exchange rate has been accelerating even as the surplus expands sharply.

2. Since the Global Financial Crisis, Korea's external assets have undergone a structural shift away from reserve accumulation toward overseas investment by the private sector, centered on portfolio investment. This reflects the sustained current account surplus feeding into private-sector accumulation of foreign assets.[1] <Figure 1> shows how the external assets built up through current account surpluses have been allocated between reserves and other assets. Before the crisis, much of the surplus flowed into central bank reserve accumulation; afterwards, the tendency to accumulate assets in forms other than reserves strengthened. Looking at the breakdown (<Figure 2>), while direct investment abroad continued, capital outflows through portfolio investment in equities and bonds expanded significantly from the mid-2010s. In this process, the primary actor accumulating external assets shifted from the public sector to the private sector.

<Figure 1> Current Account and Real Exchange Rate



<Figure 2> Current Account and Financial Account by Component



Note: 1) Based on annual balance of payments data for the current account and financial account by component; the real exchange rate is the annual log-difference of (nominal USD/KRW × US CPI ÷ domestic CPI), normalized to 1999 as the base year.
2) A rise in the real exchange rate indicates KRW depreciation against the USD; a decline indicates appreciation.
Source: Bank of Korea

3. This shift in the composition and primary actor of external asset accumulation suggests that the factors driving fluctuations in the current account and the real exchange rate

[1] The balance of payments satisfies the following identity: current account + financial account + capital account + errors and omissions = 0. Since the capital account is small in most countries and errors and omissions are not the subject of analysis, omitting these two terms allows the current account to be approximated as the negative of the financial account.

have changed. As private-sector-led external asset accumulation has expanded, capital flows through the financial account have had a greater effect on both the real exchange rate and the current account, and the relationship between the two variables may have changed accordingly.

4. This change in the relationship between the current account and the real exchange rate can be explained using two distinct shocks. "Goods shocks," such as improved competitiveness of domestic goods and the resulting expansion of net exports, raise relative demand for domestic goods, inducing relative price adjustment, and are likely to generate a current account surplus alongside real exchange rate appreciation simultaneously (Armington 1967; Krugman 1987). By contrast, "financial shocks," such as an increased private-sector preference for foreign assets, cause capital outflows and real exchange rate depreciation, which in turn can produce a current account surplus through relative price adjustment and reduced domestic absorption (Kouri, 1976, 1983; Blanchard et al., 2005; Itskhoki and Mukhin, 2025).

5. This logic implies that the recent simultaneous occurrence of residents' expanded overseas securities investment, exchange rate appreciation, and current account surplus can be understood as a process in which increased resident demand for foreign assets pushes up the exchange rate, which then adjusts the current account. This suggests that recent fluctuations in the current account and real exchange rate may be driven primarily by "financial shocks" (where capital flows through the financial account move the current account and real exchange rate) rather than "goods shocks."

6. Against this backdrop, this paper analyzes the recent phenomenon of KRW depreciation accompanying a current account surplus, focusing on how structural changes in Korea's external sector have altered the drivers of current account and real exchange rate fluctuations. To this end, we first examine the characteristics of Korea's current account trend and structural changes in the accumulation and composition of external assets through cross-country comparison. We then use sign restrictions to classify shocks that generate "current account surplus–real exchange rate decline (KRW appreciation)" co-movement as "goods shocks" and those generating "current account surplus–real exchange rate rise (KRW depreciation)" co-movement as "financial shocks," and examine which type of shock has been more dominant across different periods. We also investigate whether the impact of these shocks on the exchange rate varies with foreign exchange (FX) market depth. Finally, we use a structural model to decompose real exchange rate fluctuations by shock type, quantifying the main drivers of the prolonged recent KRW depreciation and deriving policy implications.

II. Structural Changes in Korea's External Sector

1. The Current Account from a Saving–Investment Perspective

7. Under the national income identity in an open economy, GDP (Y) equals the sum of consumption (C), investment (I), government spending (G) and net exports (NX) so the current account (approximated by net exports) always equals net saving, defined as gross saving minus gross investment. Specifically, private saving (S_p) by households and firms is defined as GDP (Y) minus consumption (C) and taxes (T), while government saving (S_G) is taxes (T) minus government spending (G):

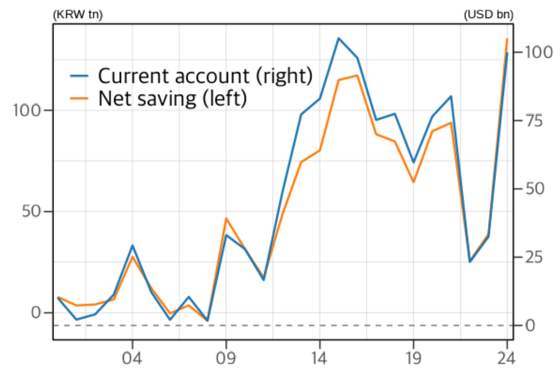
$$\text{Private Saving: } S_p = Y - C - T \qquad \text{Government Saving: } S_G = T - G$$

Substituting into the national income identity $(Y \equiv C + I + G + NX)$, net exports equal net saving — gross saving (private plus government) minus investment. By this identity, the current account can be interpreted simultaneously as net export expansion in the goods market and as the outcome of economic agents' saving and investment decisions.[2]

$$\mathrm{CA} \approx \mathrm{NX} \equiv \underbrace{(\mathrm{S_p} + \mathrm{S_G})}_{=\mathrm{S}\,:\,Gross\ saving} - I$$

8. In practice, Korea's current account closely tracks net saving, i.e. gross saving minus gross investment (gross capital formation), as shown in <Figure 3>. Korea has sustained a current account surplus since 2000, driven mainly by the goods balance, and recorded a record surplus of $123 billion in 2025 (<Figure 4>). The goods balance surplus is the primary source; despite a services deficit, the goods surplus comfortably offsets it, sustaining an overall current account surplus.

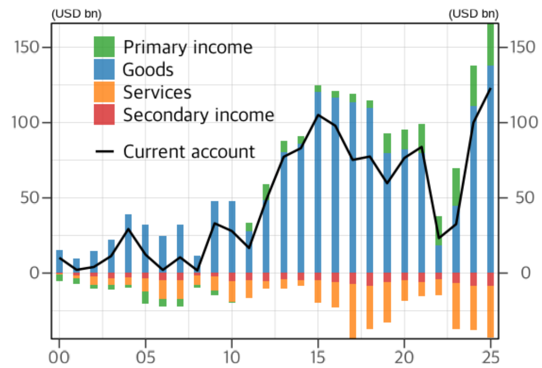
<Figure 3>
Current Account and Net Saving



Note: 1) Period: 2000–2024.

Source: Bank of Korea

<Figure 4>
Current Account by Component



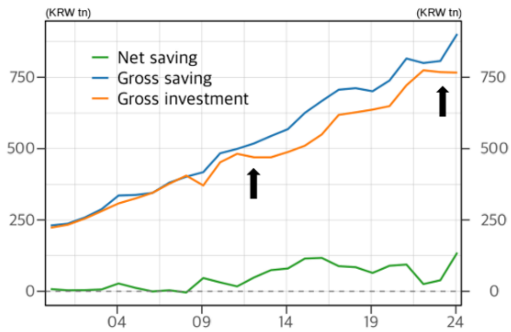
Note: 1) Period: 2000–2025.

Source: Bank of Korea

2 This approach is known as the "Intertemporal approach to the current account" (Rogoff and Obstfeld, 1995).

9. Korea's net saving increased sharply around 2012 and again around 2023, with the private sector (households and firms) leading both episodes. As <Figure 5> shows, while gross saving has trended upward steadily since 2000, gross investment growth slowed around 2012 and again around 2023.[3] <Figure 6> shows that around these periods, household and corporate consumption and investment contracted sharply, transforming households and firms from net investors to net savers. In particular, households became large net savers from 2020: household net saving accounted for 69.4% (KRW 266 trillion) of total net saving (KRW 383 trillion) during 2020–2024.

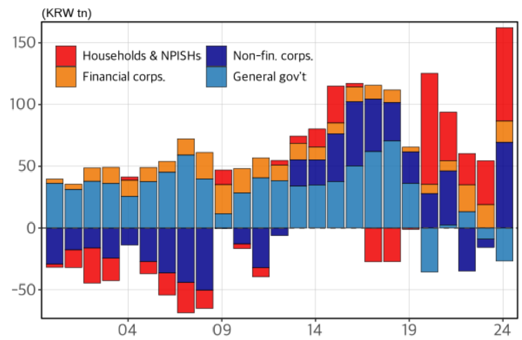
<Figure 5> Saving and Investment



Note: 1) Black arrows mark periods when the growth in gross investment slowed (after 2012 and after 2023).
2) Period: 2000–2024.

Source: Bank of Korea

<Figure 6> Net Saving by Sector



Note: 1) NPISH stands for Non-profit Institutions Serving Households
2) Period: 2000–2024.

Source: Bank of Korea

10. This combination of rising saving and slowing investment is also visible in the household net saving rate and the gross domestic investment rate, and by identity is reflected as a widening current account surplus. Before 2010, the current account and the household net saving rate fluctuated without a clear trend, but from 2010 both trended upward (<Figure 7>).[4] The current account (as a share of GDP) widened from an average of 1.5% in 2000–2010 to 4.3% in 2011–2025, while the household net saving rate rose from 2.4% to 6.1% over the same periods. Meanwhile, the gross domestic investment rate did not show as clear a trend as the household saving rate, but turned sharply lower from 2023 after rising through 2015 (<Figure 8>). This implies that growth in domestic demand (consumption and investment) has been relatively contained relative to income growth, and by identity this is reflected as a current account surplus.

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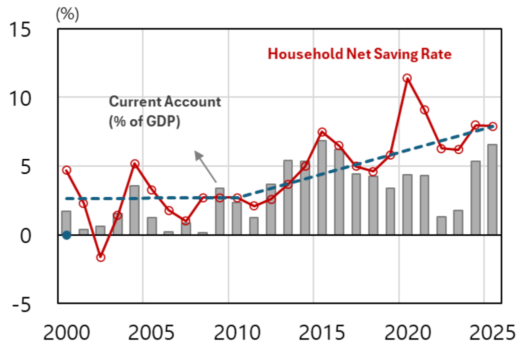
[3] This can be explained by the investment hysteresis that occurred following the 2008 Global Financial Crisis. For details, see Lee, Yoo, and Baek (2025).

[4] The household saving rate fluctuated around 2% during 2000–2010, remaining broadly stable, but entered a trending recovery phase after 2010. This appears to be related to structural factors including the expansion of precautionary saving for asset accumulation, demographic changes from aging, and the continuation of a low-growth phase alongside rising life expectancy. For details, see "Background and Implications of the Rise in the Household Saving Rate" (Economic Outlook Report, November 2025).

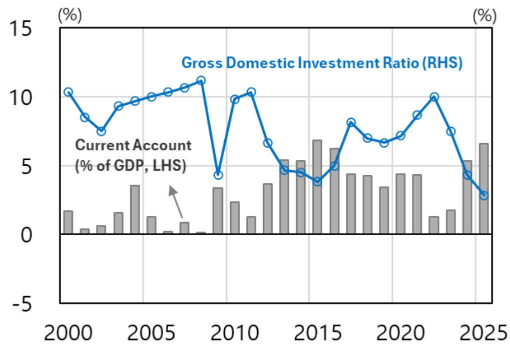
<Figure 7> Current Account and Household Net Saving Rate



Note: The current account is expressed as a share of annual GDP in U.S. dollars, with the 2025 value calculated using 2024 GDP as the denominator. The household net saving rate is based on annual data, and the blue dashed lines represent linear trend lines of the household net saving rate for the periods 2000–2010 and 2011–2025, respectively.

Source: Bank of Korea, FRED

<Figure 8> Current Account and Gross Domestic Investment Rate



Note: The current account is expressed as a share of annual GDP in U.S. dollars, with the 2025 value calculated using 2024 GDP as the denominator. The domestic investment rate is based on annual data and is defined as the ratio of gross capital formation—comprising gross fixed capital formation and changes in inventories—to gross national disposable income.

Source: Bank of Korea, FRED

11. In an open economy with free capital flows such as Korea, domestic saving is allocated not only to domestic investment but also to overseas investment, so gross saving equals the sum of domestic and foreign investment. From this perspective, the current account equals the change in the net foreign asset (NFA) position.[5] Indeed, as Korea's cumulative current account surpluses have built up, its net foreign assets have grown, and Korea transitioned from a net external debtor to a net external creditor in 2014 Q3.

$$CA_t = S_t - I_t$$

$$= (\underbrace{B_t^* - (1+r^*)B_{t-1}^*}_{\text{Overseas investment}} + \underbrace{K_t - (1+\delta)K_{t-1}}_{\text{Domestic Investment}(=I_t)}) - I_t$$

$$= B_t^* - (1+r^*)B_{t-1}^*$$

2. Changes in Korea's External Sector

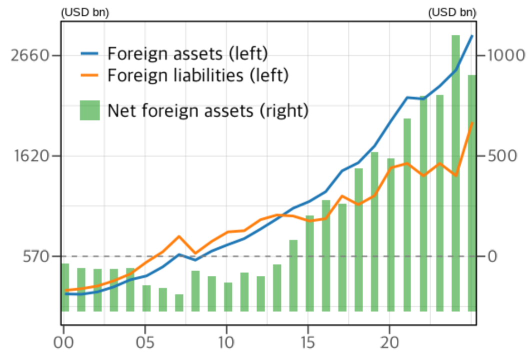
12. Since becoming a net external creditor, Korea's net foreign assets have continued to grow, and a structural shift in the composition of external assets is observed.[6] As of end-2025, Korea's gross external assets stood at $2,875.2 billion, of which net foreign assets (gross assets minus gross liabilities) were $904.2 billion (<Figure 9>). As <Figure 10> shows, following the rapid build-up of reserves after the 1997 Asian Financial Crisis, the share of reserves in total external assets peaked at 61.0% in early 2003, after which the share of private-sector assets grew rapidly. By 2025, reserves account for only 14.9% of total external assets,

[5] The change in net foreign assets ($B_t^* - B_{t-1}^*$) additionally incorporates valuation effects from asset price movements.

[6] Korea's external liability composition also resembles that of advanced economies. However, unlike external assets, no notable structural shift in the composition of external liabilities is observed (see <Box 2: Cross-Country Comparison of Korea's External Liability Composition>).

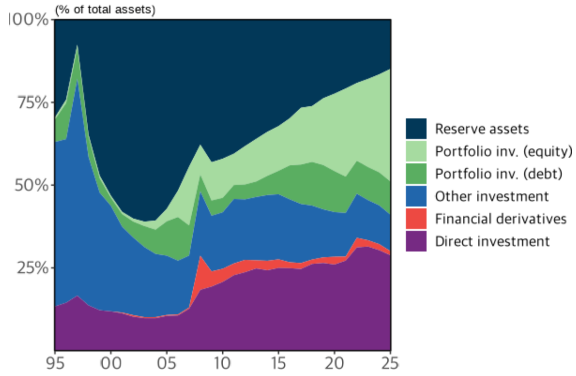
while portfolio investment accounts for 44.1% (equities 34.0%, bonds 10.1%). In particular, the equity share of portfolio investment has expanded sharply while the shares of direct investment and other investment have declined relatively.

<Figure 9> Net Foreign Assets



Note: 1) Period: 2000–2025.
Source: Bank of Korea

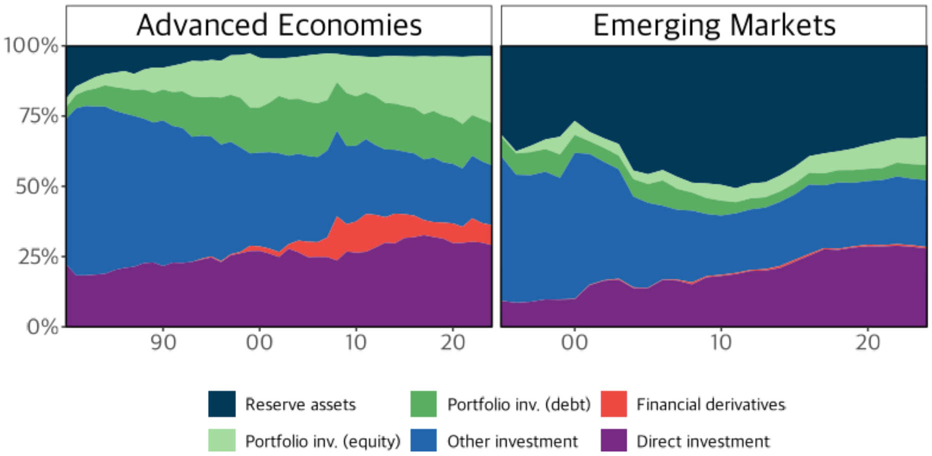
<Figure 10> External Assets by Component



Note: 1) Period: 1995–2025.
Source: Bank of Korea

13. As a result of this structural shift, the composition of Korea's external assets now more closely resembles that of advanced economies than emerging economies. While emerging economies still have a high share of public-sector assets, advanced economies are characterized by a high share of private-sector portfolio investment. Comparing external asset compositions (as of 2024), a large difference is found in portfolio investment (<Figure 11>). Advanced economies have 38.7% of external assets in portfolio investment (equities 23.7%, bonds 15.0%), while emerging economies have only 15.6% (equities 10.2%, bonds 5.4%). Korea's high share of private portfolio investment in total external assets is therefore a feature more characteristic of advanced economies than emerging markets.

<Figure 11> External Asset Composition by Component for Advanced and Emerging Market and Developing Economies

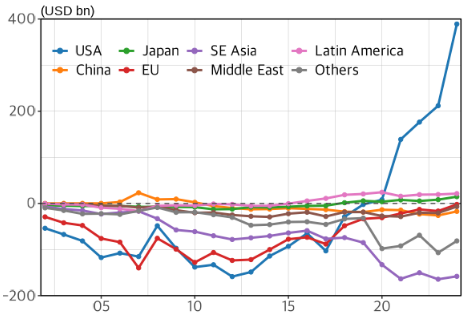


Note: 1) Share of total external assets (%) for 35 advanced economies (including Korea) and 28 emerging market and developing economies.
2) Period: 1980–2024 (advanced economies), 1995–2024 (emerging market and developing economies).

Source: IMF

14. Breaking down Korea's portfolio investment assets by destination country, the share going to the United States is notably high. Since 2020 this concentration in the United States (US) has intensified sharply: net portfolio investment flows into the US (outflows of domestic securities investment to the US minus inflows of US-origin investment into Korea) rose steeply, driven mainly by equities, reaching $400 billion in 2024. <Figure 13> compares Korea's share of total portfolio investment directed to the US against peer groups of advanced economies, emerging market and developing economies, G20 countries, and OECD countries. Korea invests 63.4% of its total external portfolio investment and 67.7% of its external equity investment in the US (red dot in Figure 13), far above the averages for advanced economies (25.3% total, 29.5% equities in 2024) and emerging economies (36.8% total, 34.3% equities in 2024).

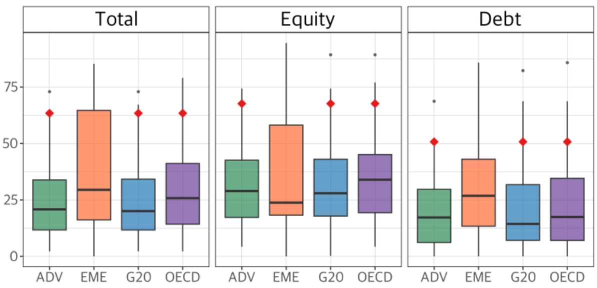
<Figure 12> Net Portfolio Investment by Destination



Note: 1) Net investment amount by destination, defined as assets minus liabilities of portfolio investment to each destination.
2) Period: 2000–2024.

Source: Bank of Korea

<Figure 13> Cross-Country Comparison of Portfolio Investment Share in the US (%)



Note: 1) The horizontal axis represents ADV (advanced economies), EME (emerging market and developing economies), G20, and OECD from left to right; Korea is marked with a red dot.
2) Each box plot shows the quantiles of the distribution.
3) Period: 2024.

Source: Bank of Korea, IMF

15. In sum, Korea's external sector has experienced three structural changes: (i) the transition to net external creditor status, (ii) the expanded role of the private sector in external asset accumulation, and (iii) the intensified concentration of external assets in US assets. These changes signal that, as capital flows increasingly dominate the external sector, the role of domestic residents, especially the private sector, has become more important. Consequently, in the supply and demand dynamics of the FX market, the influence of non-residents has weakened relatively, while capital flows by residents, particularly the domestic private sector, play a more important role.

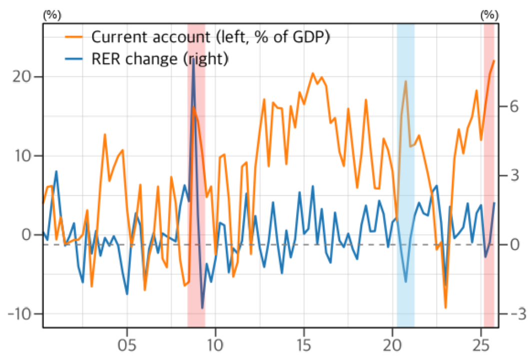
III. Relationship between the Current Account and the Exchange Rate

1. Distinguishing Financial Shocks from Goods shocks

16. In light of the structural changes in Korea's external sector described above, we examine whether the relationship between the current account and the real exchange rate has changed. Prior literature shows that the relationship between the two variables varies depending on the underlying exogenous shock. [7] Goods shocks, such as improved competitiveness of domestic goods and the resulting expansion of net exports, raise the relative demand for domestic goods and induce relative price adjustment, making currency appreciation likely (Armington 1967; Krugman 1987). By contrast, financial shocks, such as the private sector's increased preference for foreign assets, cause capital outflows and currency depreciation, which can also expand the current account surplus (Kouri, 1976, 1983; Itskhoki and Mukhin, 2025).

17. Building on this, we classify the exogenous shocks that shape the relationship between the current account and the real exchange rate into goods shocks and financial shocks (see <Table 1>). Financial shocks induce simultaneous net capital outflows and real exchange rate rise (KRW weakening), generating a positive relationship between the two variables. By contrast, goods shocks, arising, for example, from increased foreign demand for Korean exports, expand net exports and put downward pressure on the real exchange rate (KRW appreciation), creating a negative relationship between the two variables.

<Figure 14> Current Account and Real Exchange Rate Change



Note: 1) Red (blue) shading indicates representative periods when the current account and real exchange rate moved up (down) together.
2) Period: 2000 Q1 – 2025 Q4.
Source: Bank of Korea

<Table 1> Relationship between Current Account and Real Exchange Rate by Shock Type

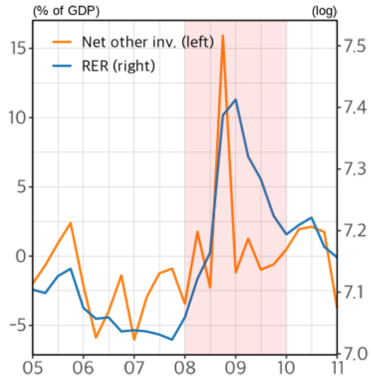
	Current Account Surplus	Real Exchange Rate	Correlation
Financial Shock	Widen	Rise (KRW Depreciation)	+
Goods Shock	Widen	Fall (KRW Appreciation)	−

18. Representative episodes in which each shock was prominent for Korea's external sector include 2008 (financial shock), 2025 (financial shock), and 2020 (goods shock). During the 2008 Global Financial Crisis, sharp capital outflows occurred across emerging economies, and Korea also saw net outflows expand, centered on bank borrowing (other investment in the financial account), causing a large USD/KRW exchange rate rise (<Figure

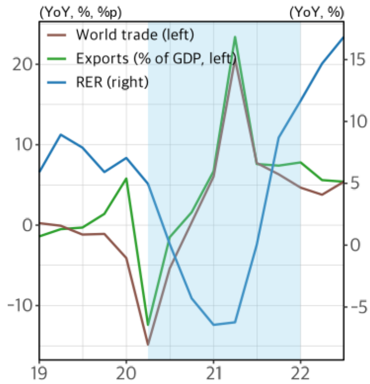
[7] Lee and Chinn (2006), Boer, Lee, and Sun (2025), among others.

15-1>). In 2020, by contrast, global trade conditions improved following the end of COVID-19 pandemic, Korea's exports rose sharply, and the real exchange rate declined simultaneously (<Figure 15-2>). In the second half of 2025, a surge in domestic residents' overseas securities investment expanded capital outflows, driving the real exchange rate higher (<Figure 15-3>). In sum, 2020 can be interpreted as a period dominated by a goods shock (current account surplus with real exchange rate decline and net export expansion), while 2008 and 2025 were periods dominated by financial shocks (real exchange rate rise and current account surplus alongside expanding capital outflows).

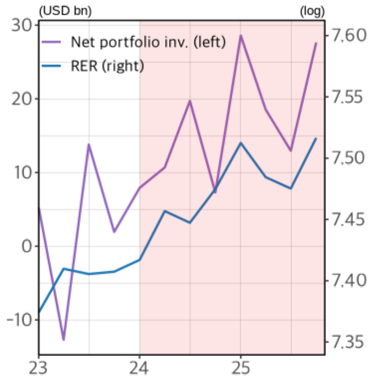
<Figure 15-1> 2008



<Figure 15-2> 2020[1)]



<Figure 15-3> 2025



Note: 1) World trade volume index is the one based on merchandise import volume (seasonally adjusted).
Source: Bank of Korea, CBP

2. Effect of Financial Shocks on the Real Exchange Rate

19. Motivated by these observations, this paper identifies financial and goods shocks to Korea's current account and real exchange rate using sign restrictions. Specifically, we specify a bivariate VAR model for the log of the quarterly real USD/KRW exchange rate and the current account as a ratio of GDP $y_t = (\Delta q_t, ca_t)'$:

$$y_t = \sum_{i=1}^{p} C_i y_{t-i} + \nu_t$$

Following the methodology of Shapiro (2024), we use the signs of the residuals (ν_t) to classify shocks: periods in which the two residuals share the same sign are classified as financial shocks, and periods in which they have opposite signs as goods shocks.

<Table 2> Shock Classification by Residual Sign

Classification		Sign determination	
Financial shock	$\nu_t^{ca}\nu_t^{\Delta q} > 0$	Positive	$\nu_t^{\Delta q} > 0$
		Negative	$\nu_t^{\Delta q} < 0$
Goods shock	$\nu_t^{ca}\nu_t^{\Delta q} < 0$	Positive	$\nu_t^{ca} > 0$
		Negative	$\nu_t^{ca} < 0$

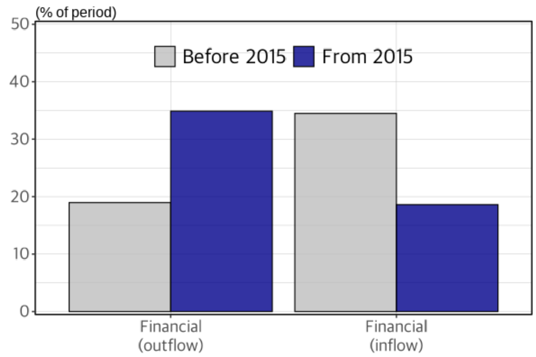
A positive (negative) financial shock ($\varepsilon_t^{\Delta q}$) induces capital outflows (inflows) and a real exchange rate rise (fall). A positive (negative) goods shock (ε_t^{ca}) induces an increase in exports (imports) and a real exchange rate fall (rise).

20. The results show that financial shocks were identified as the dominant driver of the current account and capital flows more frequently than goods shocks over the full sample period, and the importance of positive financial shocks (capital outflow shocks) has grown especially since 2015. Over the full sample, financial shocks occurred 55.6% of the time and goods shocks 44.4%. Since 2015 in particular, the frequency of positive financial shocks (real exchange rate rise from capital outflows) increased (21.4% to 34.9%, +13.5%p), while the frequency of negative financial shocks (exchange rate decline from capital inflows) fell (35.7% to 18.6%, −17.1%p) (<Figure 17>). This implies that since Korea became a net creditor, financial shocks have increasingly put depreciation pressure rather than appreciation pressure on the KRW.

<Figure 16> Classification of Financial and Goods shocks

Note: 1) The horizontal axis shows the residual of the real exchange rate change ($v_t^{\Delta q}$) and the vertical axis shows the residual of the current account (v_t^{ca}); units are one standard deviation.
2) Period: 2000 Q1–2025 Q3.

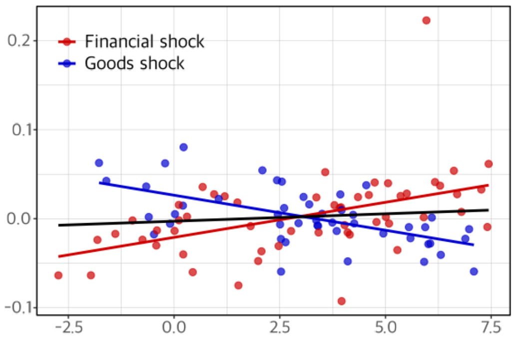
<Figure 17> Frequency of Financial Shocks (Before and After 2015)



Note: 1) Frequency of shocks during the period (%).

21. Based on the identified shocks, we find a strong positive relationship between the current account and the real exchange rate during periods of financial shocks, that is, current account surpluses from capital outflows and KRW depreciation occur simultaneously. Over the full sample, there is a weak and statistically insignificant positive contemporaneous relationship between the current account and real exchange rate changes (black regression line in <Figure 18>), but separating financial and goods shocks reveals significant relationships. During financial shock periods there is a positive relationship (red line in <Figure 18>), and during goods shock periods a negative relationship (blue line in <Figure 18>). Specifically, during a positive financial shock, a 1%p increase in the current account-to-GDP ratio is associated with a 0.65%p rise in the real USD/KRW exchange rate (<Table 3>), which can be interpreted as the exchange rate response to expanded net capital outflows from the financial shock.

<Figure 18> Current Account (x-axis) and Real Exchange Rate Changes (y-axis)



Note: 1) Horizontal axis: current account (% of GDP); vertical axis: log-difference of real exchange rate (quarter-on-quarter).
2) Blue line: regression line for periods of goods shocks; Red line: for periods of financial shocks; Black line: for the full sample.
3) Period: 2000 Q1 – 2025 Q3.

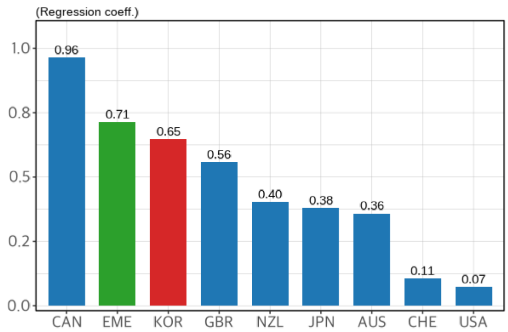
<Table 3> Regression Results

Dependent variable / Explanatory variable	Δq_t	
	(1)	(2)
Δq_{t-1}	0.26*** (0.09)	0.28*** (0.09)
ca_{t-1}	-0.66*** (0.20)	-0.60*** (0.18)
ca_t	0.56*** (0.19)	0.13 (0.21)
$ca_t \times I_{t,\text{Financial}>0}$	-	**0.65***** (0.17)
Observations	101	101
Adjusted R^2	0.14	0.24

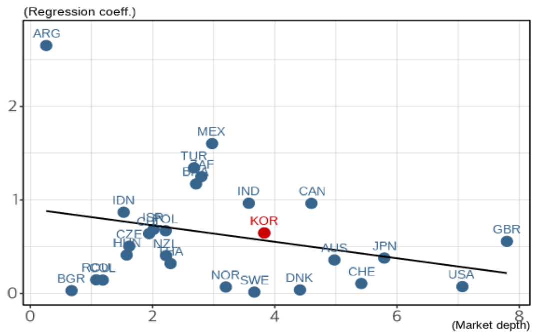
Note: 1) A constant term is included in the regression but omitted from the table.
2) $I_{t,\text{Financial}>0}$ is a dummy variable equal to 1 if a financial shock occurs in period *t*, and 0 otherwise.
3) Standard errors in parentheses; ***, **, * indicate statistical significance at the 99%, 95%, and 90% levels, respectively.
4) Period: 2000 Q1 – 2025 Q3.

22. Applying the same shock identification for a cross-country comparison, we find that the real exchange rate response to financial outflow shocks is somewhat larger for Korea than that of major advanced economies, and this cross-country difference is related to FX market depth. Korea's regression coefficient (0.65) is lower than the EME average (0.71) but higher than major advanced economies such as the US (0.07) and Japan (0.38) (<Figure 19>). This suggests that Korea's currency tends to depreciate more for a given financial shock than peer countries. This cross-country difference can be explained by differences in FX market depth. The scatter plot in <Figure 20> shows the regression coefficient (y-axis) against FX market depth (x-axis) across countries, where depth is defined as the log of average daily FX market turnover during the sample period. A clear negative correlation between the two variables is apparent, indicating that deeper FX markets are associated with more muted exchange rate responses to financial shocks.

<Figure 19> Cross-Country Comparison of Regression Coefficients



<Figure 20> Scatter Plot of FX Market Depth and Regression Coefficients



Note: 1) The horizontal axis lists from left to right: Canada (CAN), EME average (EME), Korea (KOR), UK (GBR), New Zealand (NZL), Japan (JPN), Australia (AUS), Switzerland (CHE), US (USA); the vertical axis shows the country-specific regression coefficient on $ca_t \times I_{t,\text{Financial}>0}$.
2) The horizontal axis shows the log of average FX market turnover during the sample period; the vertical axis shows the country-specific regression coefficient.
3) Period: 2000 Q1–2025 Q3.

Source: Bank of Korea, FRED, BIS Triennial Survey

IV. Decomposition of Real Exchange Rate Fluctuations Using a Structural Model

1. Model Overview: Deriving the Theoretical Relationship between the Real Exchange Rate and the Current Account

23. This section uses a two-country New Keynesian open economy model based on Itskhoki and Mukhin (2025) to analyze in detail the structural mechanism linking the current account and the real exchange rate examined in the previous section. The model is a standard open economy model with capital and intermediate goods, incorporating price and wage rigidities and pricing-to-market, and assumes home bias in consumption and exogenous demand shocks for imported goods.[8] Itskhoki and Mukhin (2025) introduce a dollar asset demand shock into this standard two-country New Keynesian open economy framework, explicitly incorporating financial factors that cause capital outflows and exchange rate depreciation (home currency weakening). This paper adds an exogenous shock (ϵ^{β}) to the domestic household's time discount factor, a saving demand shock, to explicitly account for the structural shift in which Korea's rising household saving rate has been accompanied by current account expansion.

24. Using this model, we disaggregate the financial and goods shocks from the empirical analysis and examine the effect of each shock on the current account and real exchange rate. The financial shock is decomposed into a dollar asset demand shock (ψ) and a saving demand shock (ϵ^{β}), while the goods shock corresponds to a relative taste shock for imported goods (ξ).[9] A positive dollar asset demand shock means that domestic household demand for dollar-denominated assets increases more than foreign household demand for won-denominated assets.[10] A positive saving demand shock increases households' utility weight on future consumption relative to current consumption, reducing current consumption and raising saving. Finally, a positive goods shock corresponds to a negative relative taste shock for imported goods: foreign household demand for Korean exports exceeds domestic household demand for foreign imports, boosting net exports.

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[8] In the model, monetary policy is conducted according to a standard Taylor rule targeting inflation. For convenience, the Home country refers to Korea and the Foreign country refers to the United States; Home variables are written without asterisks (*) and Foreign variables with an asterisk (*). Upper-case letters denote level variables and lower-case letters their log transformations. Each country uses nominal units denominated in its own currency.

[9] The model also incorporates additional structural shocks such as the relative monetary shock and the relative productivity shock, but these are not the main focus of this paper. Briefly, an expansionary monetary shock (interest rate cut) operates in a similar direction to a positive productivity shock, raising domestic output. As output rises, the relative price of domestic goods falls to clear the market, causing the real exchange rate to depreciate and net exports to expand, thereby improving the current account.

[10] This encompasses both the case where domestic households increase their preference for dollar-denominated assets and the case where foreign households decrease their preference for domestic-currency-denominated assets. This shock is realized in the form of net capital outflow, inducing the country to accumulate additional foreign assets or repay existing external liabilities. For net debtor countries, this shock manifests as a sudden stop in external financing; for net creditor countries, it appears as an expansion of residents' overseas investment.

<Table 4> Summary of Structural Shock

Classification	Variable	
Financial shock	Dollar asset demand shock (ψ)	Saving demand shock (ϵ^{β})
Goods shock	Relative taste shock for imported good ($\tilde{\xi}$)	
Other shocks	Relative monetary shock ($\tilde{m}$), Relative productivity shock ($\tilde{a}$)	

Note: 1) A positive (+) goods shock corresponds to a negative (−) relative taste shock for imported goods.

25. In equilibrium, the current account and real exchange rate are characterized by the following three log-linearized equilibrium conditions: ①complete risk sharing condition, ②NFA accumulation equation, and ③goods and labor market clearing condition. Equation ① below is derived from the Euler conditions of households in both countries and represents complete risk sharing,[11] with the left-hand side comprising the change in the bilateral consumption gap ($\Delta c_{t+1} - \Delta c^*_{t+1}$) and the change in the real exchange rate (Δq_{t+1}). The real exchange rate is defined as the foreign price level in home-currency terms (P_t) relative to the domestic price level ($S_t P^*_t$); a rise (fall) in the real exchange rate means the relative price of domestic goods has fallen (risen) relative to foreign goods, i.e., home currency depreciation (appreciation). In equation ②, the left-hand side is by definition net exports (as a share of GDP), nx_t, which equals the current account (ca_t, as a share of GDP),[12] influenced by the relative taste shock for imported goods ($\hat{\xi}_t$) on the right-hand side. Equation ③ reflects goods and labor market clearing: the bilateral consumption gap on the left is determined by the productivity gap ($a_t - a^*_t$) and the real exchange rate on the right.

① Complete risk sharing: $E_t[\sigma(\Delta c_{t+1} - \Delta c^*_{t+1}) - \Delta q_{t+1}] = \widehat{\psi}_t + \epsilon^{\beta}_t$

② NFA accumulation: $\beta b^*_{t+1} - b^*_t = \gamma\left(\hat{\theta} q_t - (c_t - c^*_t) - (1-\gamma)\tilde{\xi}_t\right)$, where $\hat{\theta} > 0$

③ Goods and labor market clearing: $c_t - c^*_t = \kappa_a \tilde{a}_t - \gamma \kappa_q q_t$, where $\kappa_a, \kappa_q > 0$

---

[11] Under complete risk sharing, the consumption gap is proportional to the real exchange rate, with the coefficient determined by the intertemporal elasticity of substitution (IES), i.e., $1/\sigma$. Complete risk sharing means that the marginal utility of consumption for households in both countries, adjusted for the relative price level, is equalized. In other words, the marginal utilities converted at the bilateral real exchange rate are equal, so consumption is determined by global aggregate resources rather than each country's individual income. Therefore, when the real exchange rate rises (home currency depreciates) and the relative price of domestic goods falls, relative consumption rises. However, contrary to this theoretical prediction, the real exchange rate and the bilateral consumption gap often exhibit weak or negative correlations empirically. This discrepancy is known as the Backus–Smith Puzzle. Existing studies propose as key explanations: imperfect international financial markets (Kehoe and Perri, 2002), price rigidities and pricing-to-market (Chari, Kehoe and McGrattan, 2002; Engel, 1999), home bias in goods (Corsetti, Dedola and Leduc, 2008), and risk premium or asset preference shocks (Kollmann, 1995; Benigno and Thoenissen, 2008).

[12] The current account is approximated by net exports excluding interest income and transfers; the approximation holds when valuation effects from asset price changes are not considered.

The first term on the right-hand side of equation ①, $\widehat{\psi_t}$, is the UIP wedge (uncovered interest parity wedge). When this wedge is positive, it implies that the expected return on unhedged domestic-currency-denominated assets held by foreign households is positive; symmetrically, the expected return on unhedged dollar-denominated assets held by domestic households is negative. From the domestic households' perspective this reflects a preference for dollar assets; from the foreign household's perspective it means compensation is required for the risk or inconvenience of holding won-denominated assets. The UIP wedge ($\widehat{\psi_t}$) is expressed as a linear function of the dollar asset demand shock (ψ_t) and the country's NFA position (b^*_{t+1}):

$$\widehat{\psi_t} = \omega\psi_t - \chi b^*_{t+1} \tag{1}$$

Thus, a positive domestic demand shock for dollar assets (a negative foreign demand shock for domestic currency assets) widens the UIP wedge, putting upward pressure on the exchange rate. However, the magnitude of the exchange rate impact from an identical dollar asset demand shock can differ depending on the depth of the FX and financial markets and the demand conditions for that currency. The parameter ω captures this difference.[13] Moreover, a larger NFA position attenuates the shock to the exchange rate.

26. Combining the three equilibrium conditions[14] allows the real exchange rate to be expressed as a linear combination of financial and goods shocks (equation ⓐ), and combining the goods-and-labor market clearing condition with the NFA accumulation equation yields the relationship between the current account and the real exchange rate (equation ⓑ)

ⓐ Real exchange rate:

$$q_t = -\phi_b b^*_t + \underbrace{\phi_\psi \psi_t + \phi_\beta \epsilon^\beta_t}_{\text{Financial shock}} + \phi_a \tilde{a}_t + \underbrace{\phi_\xi \tilde{\xi}_t}_{\text{Goods shock}}, \quad \text{where } \phi_b, \phi_\psi, \phi_\beta, \phi_{\tilde{a}}, \phi_{\tilde{\xi}} > 0$$

ⓑ Relationship between current account and real exchange rate:

$$ca_t = \gamma\left[\left(\hat{\theta} + \gamma\kappa_q\right)q_t - \kappa_a \tilde{a}_t - (1-\gamma)\tilde{\xi}_t\right]$$

---

[13] This paper treats the shock to the UIP wedge from increased dollar asset preference as exogenously given, but it can be endogenized by assuming imperfect substitutability between domestic and foreign assets. When assets are not perfect substitutes, currency-specific asset demand deviates, potentially generating an endogenous risk premium in equilibrium. For example, if residents expand their preference for dollar assets, financial intermediaries must hold additional domestic-currency-denominated assets in the intermediation process; if regulatory or capital constraints limit intermediaries' capacity to absorb risk on domestic assets, additional compensation is required to hold them. As a result, excess returns (a risk premium) can arise on domestic assets, causing the UIP wedge to rise and the exchange rate to face upward pressure (Adrian and Shin, 2010; Gabaix and Maggiori, 2015).

[14] This can be derived by combining the three equilibrium conditions, iterating forward in time, and imposing a no-Ponzi condition. For the detailed derivation, see <Box 4: Derivation of the Equilibrium Real Exchange Rate Equation>.

2. Effects of Financial and Goods shocks on the Current Account and Real Exchange Rate

27. This section examines how the financial shocks (the dollar asset demand shock (ψ) and the saving demand shock (ϵ^{β})) and the goods shock (the relative taste shock for imported goods ($\tilde{\xi}$)) affect the real exchange rate and the current account, and analyzes how the equilibrium relationship between the two variables changes depending on the type of shock. To this end, we first examine the static effects of each shock through the derived equilibrium equations (ⓐ, ⓑ), and then the dynamic effects through impulse response function analysis.

28. Equation ⓐ shows that the real exchange rate is determined by the lagged NFA position and the financial and goods shocks occurring in the current period. A larger NFA position (b_t^*) is associated with a lower real exchange rate (home currency appreciation), with additional influences from current structural shocks. Specifically, positive dollar asset demand shocks (ψ) and saving demand shocks (ϵ^{β}) raise the real exchange rate, and a positive relative taste shock for imported goods ($\tilde{\xi}$), a decrease in relative preference for Korean goods, also raises the real exchange rate.

29. For the current account, positive dollar asset demand shocks (ψ) and saving demand shocks (ϵ^{β}) expand the current account, while the direction of the effect of the relative taste shock for imported goods ($\tilde{\xi}$) depends on parameter values. Specifically, the partial derivative of the current account (ca_t) with respect to $\tilde{\xi}_t$ (equation (2)) shows that the direction of this effect depends on the value of γ, the parameter capturing domestic goods preference (home bias).

$$\frac{\partial ca_t}{\partial \tilde{\xi}_t} = \gamma \left[\underbrace{\left(\hat{\theta} + \gamma \kappa_q\right) \frac{\partial q_t}{\partial \tilde{\xi}_t}}_{\text{Indirect effect}} - \underbrace{(1-\gamma)}_{\text{Direct effect}} \right] \underbrace{\leq 0}_{\text{for sufficiently small } \gamma} \tag{2}$$

When γ is small, home bias in goods is strong, weakening the substitution effect from relative price changes; accordingly, the net export improvement from real exchange rate depreciation (the first term on the right-hand side of equation (2)) is limited. Instead, the direct effect of increased import demand dominates, and overall net exports decrease.

30. Looking more closely at the transmission mechanisms of financial shocks, both financial shocks are associated with a current account surplus and real exchange rate depreciation, but the dollar asset demand shock operates mainly through asset markets while the saving demand shock operates mainly through goods markets. First, when the dollar asset demand shock (ψ) increases residents' preference for dollar assets, the UIP wedge widens, leading to home currency weakness. The currency weakening (higher real exchange rate) strengthens the price competitiveness of exports, increasing net exports. The saving demand shock (ϵ^{β}), by contrast, shifts households' intertemporal consumption choice, reducing current consumption and raising saving. This causes domestic demand to contract and generates excess supply of goods; the excess supply is cleared through lower relative prices of domestic goods and increased exports, causing the real exchange rate to rise and net exports to expand.

31. In sum, dollar asset demand shock and saving demand shock both raise the real exchange rate and expand the current account surplus, while the relative taste shock for imported goods raises the real exchange rate but reduces the current account. This demonstrates theoretically that the relationship between the real exchange rate and the current account can differ depending on the type of structural shock. The comprehensive results are summarized in <Table 5>, which consistently corresponds to the shock classification in the earlier empirical analysis.

<Table 5> Effects of Each Shock on the Real Exchange Rate and Current Account

		Real Exchange Rate	Current account
Positive financial shock	Dollar asset demand shock	$\phi_\psi > 0$	$\gamma(\hat{\theta} + \gamma\kappa_q)\, \phi_\psi > 0$
	Saving demand shock	$\phi_\beta > 0$	$\gamma(\hat{\theta} + \gamma\kappa_q)\, \phi_\beta > 0$
Positive relative taste shock for the foreign good [2)]		$\phi_\xi > 0$	$\gamma[(\hat{\theta} + \gamma\kappa_q)\phi_\xi - (1-\gamma)] < 0$ [2)]

Note: 1) A positive (+) relative taste shock for imported goods corresponds to a negative (−) goods shock in the empirical analysis.
2) Provided that the home-bias parameter (γ) is sufficiently small.

32. Impulse response function analysis confirms the financial and goods shock effects as discussed above.[15] Both the dollar asset demand shock (<Figure 21-1>) and the saving demand shock (<Figure 21-2>) are associated with real exchange rate depreciation and expansion of net exports and the current account, while the relative taste shock for imported goods (<Figure 21-3>) is associated with real exchange rate depreciation but contraction of net exports and the current account.

33. Compared with the dollar asset demand shock, the saving demand shock and the goods shock have more persistent effects on the real exchange rate. While the dollar asset demand shock immediately raises the exchange rate and then gradually fades, the saving demand shock and goods shock have smaller immediate impacts but are more persistent. This can be interpreted as reflecting the fact that the dollar asset demand shock affects the exchange rate immediately through financial markets, while the saving demand shock and goods shock affect the real exchange rate gradually through the adjustments in goods markets and the real sector.

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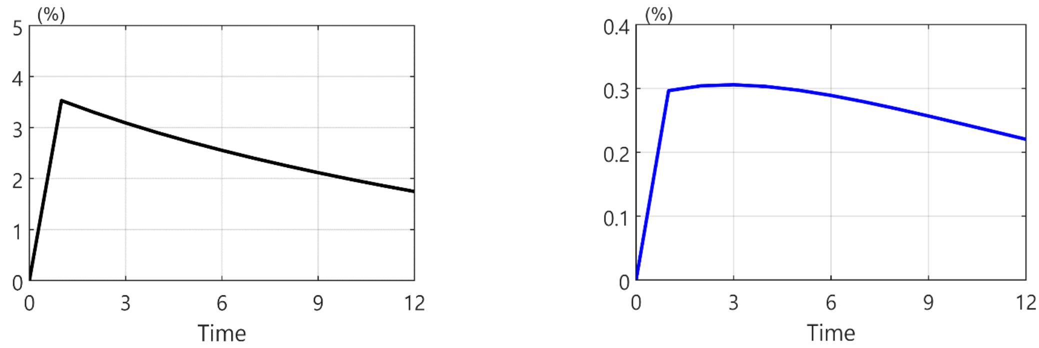
[15] The impulse response functions are derived from the calibrated model following the method described in <Box 5: Model Calibration and Structural Shock Estimation>.

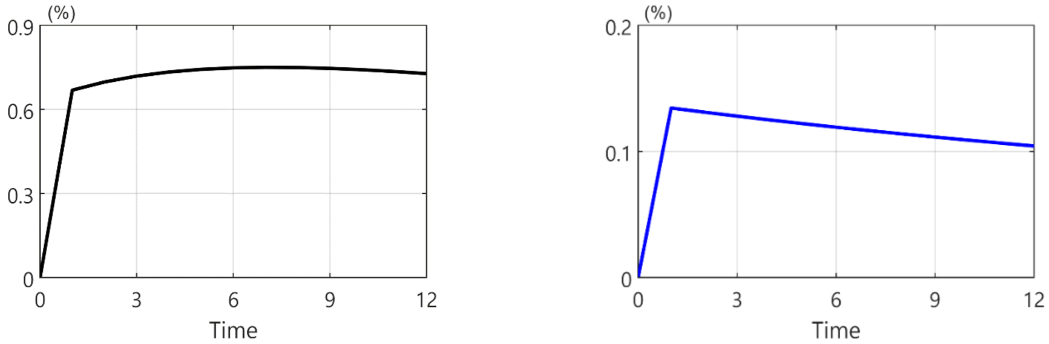
<Figure 21-1> Impulse Response Functions to the Dollar Asset Demand Shock(ψ)

(Real Exchange Rate) **(Current Account)**



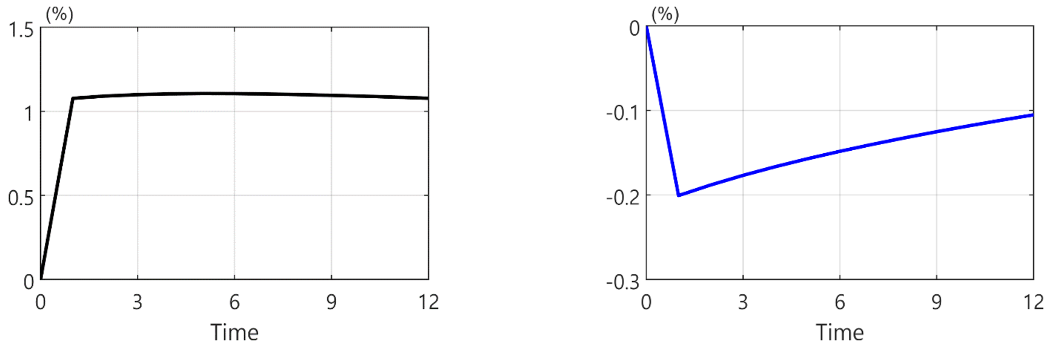
<Figure 21-2> Impulse Response Functions to the Saving Demand Shock(ϵ^{β})

(Real Exchange Rate) **(Current Account)**



<Figure 21-3> Impulse Response Functions to the Relative Taste Shock for Imported Goods $(\tilde{\xi})$

(Real Exchange Rate) **(Current Account)**



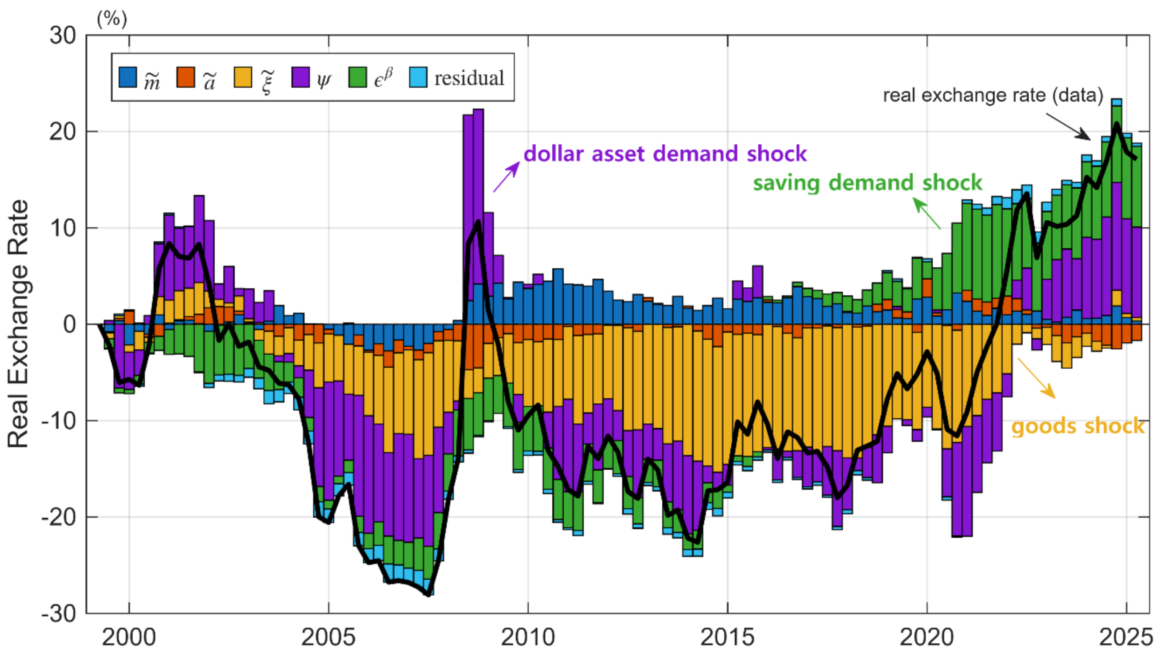
Note: Impulse response functions of the real exchange rate and the current account to a one-standard-deviation shock of each type.

3. Historical Decomposition of Real Exchange Rate

34. We next conduct a historical decomposition analysis[16] based on the calibrated model. Specifically, we decompose the drivers of Korea's real exchange rate fluctuations over the medium to long term into contributions from financial shocks (the dollar asset demand shock (ψ) and the saving demand shock (ϵ^{β})), the goods shock (relative taste shock for imported goods, $\tilde{\xi}$), the relative monetary shock ($\tilde{m}$), the relative productivity shock ($\tilde{a}$), and a residual (<Figure 22>).

35. The historical decomposition shows that of the 19% cumulative rise in Korea's USD/KRW real exchange rate since 2000, the dollar asset demand shock and the saving demand shock each contributed 9 percentage points, while the goods shock contributed 1 percentage point. Breaking the period down, of the 15% real exchange rate decline through 2014, goods shocks accounted for 13%; most of the appreciation during that period was driven by goods shocks. From 2015 through 2024 Q3, the real exchange rate rose 34%, with goods shocks (14%), dollar asset demand shocks (11%), and saving demand shocks (10%) all contributing to the depreciation.

<Figure 22> Historical Decomposition of Real Exchange Rate



Note: The solid black line represents the real exchange rate (log-difference of nominal USD/KRW × US CPI ÷ domestic CPI) cumulated from 1999 Q3, showing the level relative to the base period. The bar chart presents the decomposition obtained by estimating five structural shocks via the Kalman filter using five observables (log-difference of the real exchange rate, log-difference of the US–Korea price indices, log-difference of bilateral real consumption and real GDP, and Korea's net export share) based on the calibrated structural model, and cumulating the decomposed contributions over the period. $\tilde{m}$ denotes the bilateral monetary policy shock differential, $\tilde{a}$ the bilateral productivity (TFP) shock differential, $\tilde{\xi}$ the bilateral preference shock for imported goods, ψ the home households' relative dollar asset demand shock, ϵ^{β} the home households' saving demand shock, and residual denotes Kalman filter measurement error.

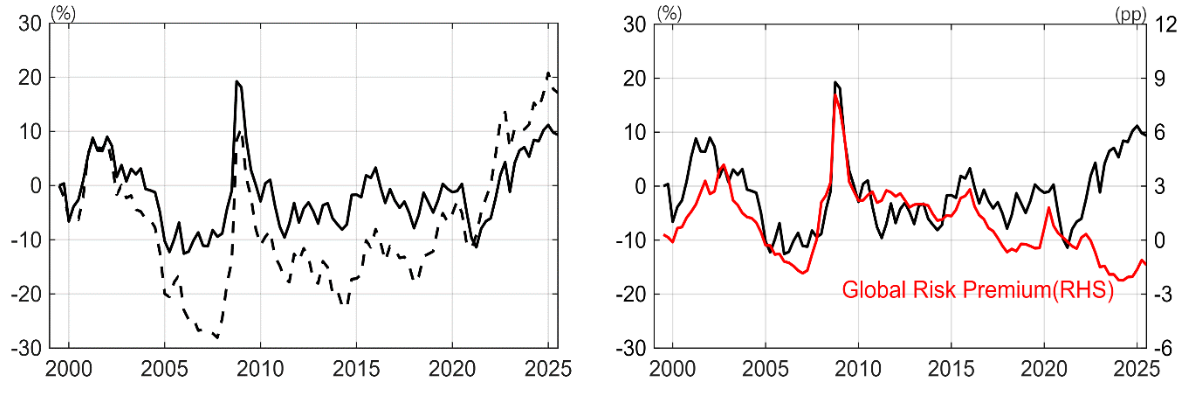
[16] A state-space representation of the calibrated model was constructed, and a Kalman filter was applied to estimate structural shocks, which were then used to decompose real exchange rate fluctuations. For the detailed methodology, see <Box 4: Model Calibration and Structural Shock Estimation>.

36. The variance decomposition shows that since 2000, over 80% of USD/KRW real exchange rate fluctuations are attributable to financial shocks (goods shocks account for 19%). Moreover, within financial shocks, the dollar asset demand shock accounts for the bulk rather than the saving demand shock. This implies that while the dollar asset demand shock and the goods shock have high explanatory power for short-term real exchange rate fluctuations, the saving demand shock has limited short-term explanatory power. This reflects the nature of the saving demand shock, which operates gradually and persistently through goods markets and the real sector rather than financial markets.

37. Looking more closely at individual shock contributions, episodes of sharp short-term exchange rate rises share a common pattern: the contribution of the dollar asset demand shock (purple bars in <Figure 22>) surges.[17] This implies that during episodes of rapid exchange rate appreciation, increased preference for dollar assets was the main driver.

38. In the past, an expansion in dollar asset preference was accompanied by a strengthening of global risk aversion, but since 2020 this co-movement has weakened. The left panel of <Figure 23> shows the real exchange rate (dotted black line) and the time series of the real exchange rate attributable to the dollar asset demand shock (solid black line); the right panel shows the global risk aversion index (solid red line) and the real exchange rate from the dollar asset shock (solid black line). Before 2020, the real exchange rate from the dollar asset demand shock and the global risk aversion index moved very closely together. Since 2020, however, even as the global risk aversion index has declined, the real exchange rate from the dollar asset demand shock has continued to rise, indicating a marked weakening of co-movement between the two series.

<Figure 23> Real Exchange Rate Movements Attributable to the Dollar Asset Demand Shock(ψ)[1)] and Global Risk Aversion Index[2)]



Note: 1) The dotted black line represents the real exchange rate (log-difference of nominal USD/KRW × US CPI ÷ domestic CPI) cumulated from 1999 Q3, showing the level relative to the base period; the solid black line shows the cumulated sum of real exchange rate movements attributable to the dollar asset demand shock estimated by the Kalman filter.
2) First principal component of five global risk aversion indices (Gilchrist–Zakrajšek spread, Moody's Aaa and Baa corporate bond spreads over the US policy rate and 10-year Treasury yield).

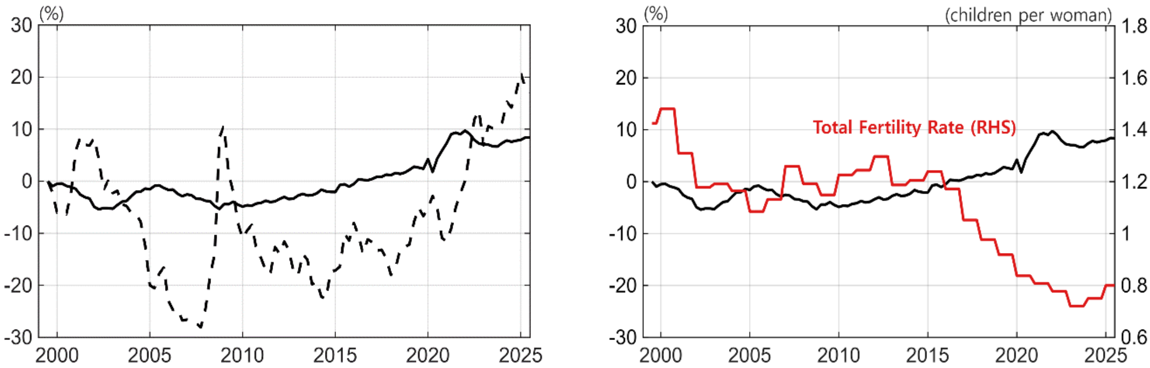
[17] The episodes identified in this paper's decomposition during which the contribution of the dollar asset demand shock expanded sharply coincide with the periods identified as USD/KRW appreciation phases in Kim and Kim (2025).

39. These results suggest that the recent expansion of the dollar asset demand shock is affecting the exchange rate not through foreign capital outflows driven by global risk aversion, but through domestic capital outflows, that is, domestic agents' accumulation of dollar assets. In the past, when global financial stress increased, the global risk aversion index (right panel of <Figure 23>) rose, weakening the preference for domestic currency assets, causing foreign capital inflows to slow or turn negative, and pushing up the exchange rate, a pattern that repeated. Recently, however, dollar asset preference shocks have expanded even when the global risk aversion index is stable or declining, generating upward pressure on the exchange rate. This change can also be interpreted as a consequence of the structural changes in the external sector discussed earlier.

40. The saving demand shock (green bars in <Figure 22> and solid black line in <Figure 24>) has limited explanatory power for short-term real exchange rate fluctuations but appears to have contributed to the trend appreciation of the real exchange rate since 2010. In the left panel of <Figure 24>, the real exchange rate attributable to the saving demand shock (solid black line) shows a trending rise since 2010, and appears to have contributed to additional level-up of the exchange rate since 2020. Specifically, from end-2011 to 2025 Q3, the saving demand shock is estimated to have raised the real exchange rate by approximately 12%.

41. This trajectory of the saving demand shock is consistent with the trending rise in the household net saving rate since 2011 (<Figure 7>). Over the same period, the total fertility rate has continued to fall (right panel of <Figure 24>), aging has proceeded rapidly, and demographic change alongside growing uncertainty about future income and retirement appears to have reinforced the propensity to save. The expansion of household saving constrains current consumption and slows investment, weakening domestic aggregate demand. Goods not consumed domestically are cleared through expanded net exports, during which process the real exchange rate faces upward pressure.

<Figure 24> Real Exchange Rate Movements Attributable to the Saving Demand Shock(ϵ^{β})[1] and Korea's Total Fertility Rate[2]



Note: 1) The dotted black line represents the real exchange rate (log-difference of nominal USD/KRW × US CPI ÷ domestic CPI) cumulated from 1999 Q3, showing the level relative to the base period; the solid black line shows the cumulated sum of real exchange rate movements attributable to the saving demand shock estimated by the Kalman filter.
2) The total fertility rate is the average number of children a woman aged 15–49 is expected to bear over her lifetime; the 2025 figure is preliminary.

42. The goods shock (yellow bars in <Figure 22>) was the major driver of KRW appreciation periods. The KRW appreciated for several years during the early-to-mid 2000s and again after the Global Financial Crisis, and during those periods the contribution of the goods shock was relatively large. Specifically, from end-2000 to end-2007 (just before the

Global Financial Crisis), the real exchange rate fell 26%, of which approximately 10%p is explained by the goods shock. From end-2009 to end-2015 (after the Global Financial Crisis), the real exchange rate fell by about 3%, and the contribution of the goods shock to this decline is estimated at about 8%p. The goods shock was the main driver of KRW appreciation through 2015, but thereafter it switched to a depreciation driver. Since 2015, appreciation pressure from changes in commodity demand gradually weakened, and for a period it acted as a depreciation driver, before contributing to appreciation again from 2025.

43. In sum, the simultaneous occurrence of widening current account surpluses and real exchange rate depreciation reflects a shift in the primary driver of real exchange rate fluctuations from goods shocks in the past to financial shocks recently. In the past, increased relative demand for traded goods was the main channel driving KRW appreciation, but recently the influence of capital flows through the capital account has expanded, producing the coexistence of current account surpluses and exchange rate depreciation.

44. Interpreting through the structural model the earlier empirical finding that Korea's exchange rate response to a capital outflow shock is larger than that of other advanced economies, this implies that the KRW tends to depreciate more for a given dollar asset demand shock than other currencies.

45. As confirmed by the empirical results, this difference appears to stem from dollar asset demand being relatively large relative to FX market depth in Korea's case. This is also consistent with the significant concentration of residents' portfolio investment in US assets. In the model, this characteristic is captured by the parameter ω in equation (1), which reflects differential exchange rate sensitivity to financial shocks. Meanwhile, the upward trend in Korea's NFA position, in light of the model's theoretical relationships, appears to have acted as a partial buffer against the upward exchange rate pressure from growing dollar asset demand. However, despite this mitigating factor, the relative shallowness of the FX market compared with the expansion of resident dollar asset demand has been the more dominant force, explaining the larger exchange rate rise.

V. Conclusion and Policy Implications

46. This paper analyzed structural changes in Korea's external sector and examined, through empirical and structural model analysis, how these changes have affected the relationship between the current account and the real exchange rate and exchange rate fluctuations. Before 2014, Korea's current account surpluses were generally accompanied by a declining real exchange rate (KRW appreciation). Since 2015, however, widening surpluses have increasingly been associated with a rising real exchange rate (KRW depreciation), suggesting a structural change in the relationship between the current account and the exchange rate. Our analysis indicates that this reflects Korea's structural transition, namely, the growing share of private-sector external assets means that the resident-driven capital outflow channel exerts an increasing influence on the exchange rate. The concentration of external assets in US assets appears to have further amplified this effect.

47. The recent rise in the USD/KRW exchange rate is analyzed as driven primarily by the expansion of the dollar asset demand shock and the saving demand shock. The dollar asset demand shock saw its contribution surge sharply during episodes of rapid short-term exchange rate rises, and this behavior continues recently. The saving demand shock in particular has contributed to the gradual trend appreciation of the real exchange rate since 2011, alongside the trending increase in the household saving rate. By contrast, the goods shock contributed to KRW appreciation during export boom periods of the 2000s and 2010s, but its influence has weakened markedly in recent years.

48. The KRW is found to be more sensitive to financial shocks than major advanced-economy currencies, and this appears to be related to Korea's relatively shallow FX market. Cross-country empirical results show that currencies of countries with shallower FX markets tend to be more sensitive to financial shocks.

49. These findings suggest that the recent trend of residents' external asset accumulation is a structural phenomenon reflecting fundamental condition changes such as Korea's rapid demographic aging. As concerns about this structural shift have grown, a sharp expansion in resident demand for foreign assets has been compounded by changes in global trade structure, concerns about weakening international competitiveness of key industries, and prolonged underperformance of the stock market.

50. Such rapid expansion in external asset accumulation can raise FX market sensitivity and deepen short-term supply–demand imbalances, amplifying volatility, while one-directional exchange rate expectations embedded in the high concentration of US assets can further amplify these effects.

51. In this context, policy responses to mitigate short-term supply–demand imbalances need to be pursued alongside policies to deepen the FX market. In this regard, the FX market structural reforms being pursued by the FX authority, and the expansion of the capital inflow base and investor diversification through MSCI index and WGBI index inclusion, are expected to strengthen FX market depth, thereby buffering exchange rate volatility from short-term supply–demand imbalances and reducing FX market sensitivity.

<Box 1> Data Used in the Empirical Analysis

The data and sources used in Section 2 (Structural Changes in Korea's External Sector) and Section 3 (Relationship between the Current Account and the Real Exchange Rate) of this paper are as follows.

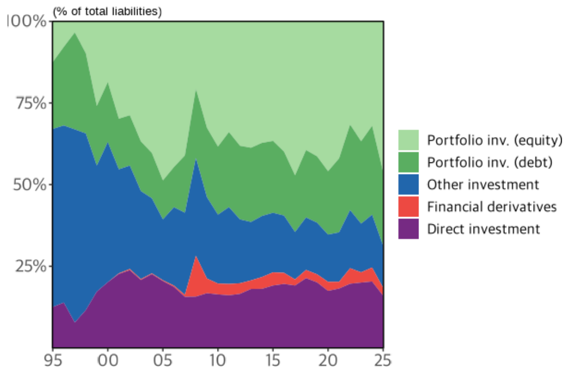
<Table B1-1> Data Sources and Usage

Source	Data	Notes
Bank of Korea	BOP, exchange rate, CPI, IIP, GDP (by expenditure component), saving and investment (by sector)	2000 Q1 – 2025 Q4 (2000 – 2024 for annual data)
IMF	Instrument-level breakdown of asset-side IIP by country	Advanced economies (emerging market and developing economies): 1980 (1995) – 2024
	Bilateral portfolio asset holdings by partner country and instrument	2024
	Current account, nominal GDP, exchange rate by country	2000 Q1 – 2025 Q3
CPB (World Trade Monitor)	World trade volume index (seasonally adjusted merchandise import volume)	2000 Jan – 2025 Nov (Quarterly averages are used)
BIS	Broad real effective exchange rate	2000 Q1 – 2025 Q3
	FX market turnover by country (net-gross basis)	Average over 2000–2025 (Triennial Survey)

<Box 2> Cross-Country Comparison of Korea's External Liability Composition

<Figure B2-1> and <Figure B2-2> and <Table B2-1> below show trends in, and the recent composition of, external liabilities by instrument for Korea, advanced economies, and emerging economies. Korea's external liability structure more closely resembles that of advanced economies than emerging economies, with portfolio investment (equities) accounting for the largest share — well above other components (advanced economies: 24.1%, emerging economies: 10.6%, Korea: 46.2%).

<Figure B2-1> Korea's External Liability Composition



Note : 1) Period: 1995 – 2025

Source : Bank of Korea

<Table B2-1> Cross-Country Comparison of External Liability Composition

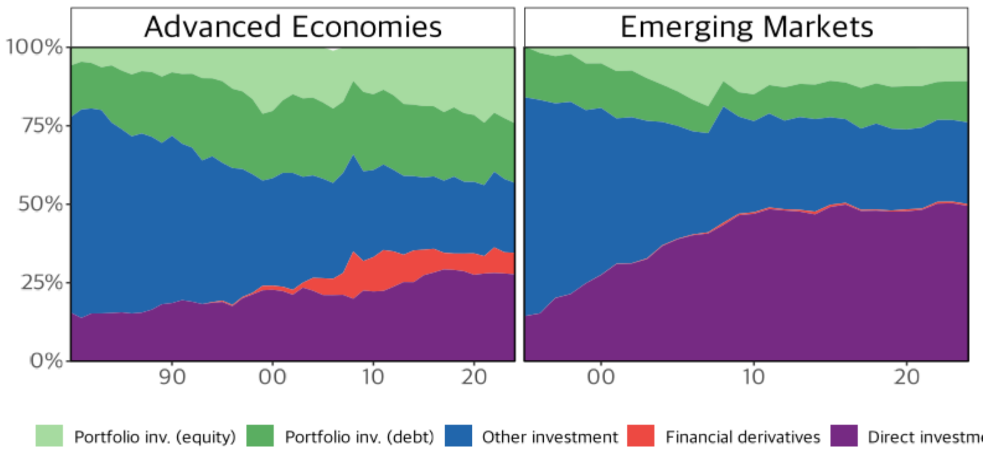
	Advanced	Emerging	Korea
Portfolio inv. (equity)	24.1%	10.6%	46.2%
Portfolio inv. (bonds)	19.0%	13.1%	22.6%
Other investment	22.3%	26.0%	12.9%
Financial derivatives	6.9%	0.6%	2.4%
Direct investment	27.7%	49.5%	16.0%

Note : 1) Korea figures are as of 2025; advanced and emerging economy figures are as of 2024.

Source : Bank of Korea, IMF

In particular, within the portfolio investment share of external liabilities in 2025, the equity share rose sharply (+14.2%p) relative to 2024, while the bond share declined (−4.8%p). The shares of other investment (−3.3%p) and direct investment (−3.7%p) also declined.

<Figure B2-2> Trends in External Liability Composition for Advanced Economies and Emerging Market and Developing Economies



Note : 1) As a share (%) of total external liabilities for 35 advanced economies (including Korea) and 28 emerging market and developing economies.
2) Period: 1980–2024 (advanced economies), 1995–2024 (emerging market and developing economies).

Source : IMF

<Box 3> Model Overview

1. Log-Linearized Equilibrium Conditions of the Model

* Conditions marked # hold symmetrically for the foreign economy and are not repeated separately

a. Price Setting (Phillips Curve)

(1) Home producer price #: $-\beta E_t p_{H,t+1} = -(1+\beta+\kappa_p)p_{H,t} + p_{H,t-1} + \kappa_p[(1-\alpha)mc_t + \alpha p_t]$

(2) Import price#: $-\beta E_t p_{F,t+1} = -(1+\beta+\kappa_p)p_{F,t} + \kappa_p(1-\alpha)e_t + p_{F,t-1} + \kappa_p[(1-\alpha)mc_t^* + \alpha p_t]$

(3) Consumer price index#: $p_t = (1-\gamma)p_{H,t} + \gamma p_{F,t}$

b. Firm Marginal Cost and Labor Market

(4) Real marginal cost#: $mc_t = (1-f_1-f_2)w_t - (f_1+f_2)p_t - f_2 r_{k,t} - a_t$

(5) Labor market equilibrium#: $mc_t - l_t + y_t = w_t$

(6) Wage#: $-\beta E_t w_{t+1} = -(1+\beta+\kappa_w)w_t + \kappa_w \sigma c_t + w_{t-1} + \kappa_w\left((1/\nu)l_t + p_t\right)$, $\kappa^w = \frac{(1-\beta\lambda_\omega)(1-\lambda_\omega)}{\lambda_\omega(1+\epsilon/\nu)}$

c. Goods Market Equilibrium

(7) Aggregate output#: $y_t = (1-\gamma)y_{H,t} + \gamma y_{H,t}^*$

(8) Home goods#: $y_{H,t} - (\theta - f_1)p_t - f_1 mc_t - f_1 y_t = -\theta p_{H,t} + (1-f_1)d\, c_t + (1-f_1)(1-d)i_t - \gamma\xi_t$

(9) Imported goods#: $y_{F,t} - (\theta - f_1)p_t - f_1 mc_t - f_1 y_t = -\theta p_{F,t} + (1-f_1)d\, c_t + (1-f_1)(1-d)i_t + (1-\gamma)\xi_t$

(10) Capital market#: $-p_t + \mathrm{mc}_t + y_t - \mathrm{r}_{\mathrm{k,t}} = k_t$

d. Household Euler Equation and Asset Market Equilibrium

(11) Consumption and saving (home): $\sigma E_t c_{t+1} + E_t p_{t+1} = \sigma c_t + p_t + r_t + \epsilon_t^\beta$

(12) Consumption and saving (foreign): $\sigma E_t c_{t+1}^* + E_t p_{t+1}^* = \sigma c_t^* + p_t^* + r_t^*$

(13) Investment#: $-\sigma E_t c_{t+1} + \beta\kappa\delta E_t i_{t+1} - \beta\kappa\delta E_t k_{t+1} + \beta\left(\frac{1}{\beta} - 1 + \delta\right)E_t rk,t+1 = -\sigma c_t + \kappa\delta i_t - \kappa\delta k_t$

(14) UIP Wedge: $E_t e_{t+1} - \chi E_t b_{t+1} = e_t + r_t - r_t^* - \psi_t$

(15) Capital accumulation#: $k_{t+1} = (1-\delta)k_t + \delta i_t$

(16) Net foreign asset accumulation#: $\beta E_t b_{t+1} = b_t + NX_t/GDP_t$

(17) Monetary policy rule#: $\mathrm{r_t} = \rho_\mathrm{r}\,\mathrm{r_{t-1}} + (1\text{-}\rho_\mathrm{r})\,\delta_{\mathrm{ph}}\,\pi_\mathrm{t} + \varepsilon_\mathrm{t}^{\mathrm{m}}$

e. Exogenous Shocks*

* There are 8 exogenous shocks in total: productivity shocks (a_t, a_t^*), import preference shocks (ξ_t, ξ_t^*), and monetary policy shocks $(\epsilon_t^m, \epsilon_t^{m,*})$, for both home and foreign economies, plus the home dollar asset preference shock (ψ_t) and the home household time discount factor shock (ϵ_t^β). The productivity, import preference, and monetary policy shocks enter as home-foreign differentials $(\tilde{a}_t, \tilde{\xi}_t, \tilde{\epsilon}_t^m)$.

(18) Productivity#: $a_t = \rho_a a_{t-1} + \epsilon_t^a$

(19) Import preference#: $\xi_t = \rho_\xi \xi_{t-1} + \epsilon_{\xi,t}$

(20) Monetary policy#: $\epsilon_t^m = \rho_m \epsilon_{t-1}^m + \nu_t^m$

(21) Time discount factor: $\epsilon_t^\beta = \rho_\beta \epsilon_{t-1}^\beta + \nu_t^\beta$

(22) Dollar asset preference(symmetric to domestic currency asset non-preference): $\psi_t = \rho_\psi \psi_{t-1} + \epsilon_{\psi,t}$

2. Model Parameter Calibration

Parameter	Description	Value
σ	Household risk aversion	2
ν	Labor supply elasticity	1
β	Household discount factor	0.99
θ	Elasticity of substitution between home and foreign goods	1.5
α	Exchange rate pass-through to home price index	0.4
γ, γ^*	Home bias in goods preferences for home and foreign households	0.035
f_1	Intermediate input share	0.5
f_2	Capital share	0.15
ε	Labor substitution elasticity	4
δ	Capital depreciation rate	0.02
κ	Capital adjustment cost parameter	7
λ^w	Wage Calvo parameter	0.85
λ_p	Price Calvo parameter	0.75
χ	UIP Wedge parameter	0.001
ρ_r	Interest rate smoothing coefficient (Taylor rule)	0.95
$\delta_{ph}, \ \delta_{p,F}$	Monetary policy inflation response coefficient	2.15
ρ_a	Productivity shock persistence	0.97
ρ_ξ	Import preference shock persistence	0.97
ρ_ψ	Dollar asset preference shock persistence	0.97
$\sigma_\xi/\sigma_a{}^\#$	Std. dev. of import preference shock relative to productivity shock	6
$\sigma_\psi/\sigma_a{}^\#$	Std. dev. of dollar asset preference shock relative to productivity shock	1.5
$\sigma_m/\sigma_a{}^\#$	Std. dev. of monetary policy shock relative to productivity shock	0.5
$\rho_{a.a^*}{}^\#$	Cross-country correlation of productivity shocks	0.4
$\sigma_z{}^\#$	Std. dev. of home household time discount factor shock	0.0025
$\rho_z{}^\#$	Persistence of home household time discount factor shock	0.999

Note: Parameters without # are taken from Itskhoki and Mukhin (2025); parameters marked # are set to reproduce the moments (correlations and relative volatilities) of key macroeconomic variables.

<Box 4> Derivation of the Equilibrium Real Exchange Rate Equation

The equilibrium real exchange rate equation (equation ⓐ) used in the main text is derived as follows. The dynamics of the real exchange rate are determined by the household Euler equation, the NFA budget constraint, and the goods and labor market clearing conditions. Throughout, the tilde notation denotes the relative difference between home and foreign variables; for example, $\Delta\widetilde{c_t} = \Delta c_t - \Delta c_t^*$.

① Complete risk sharing: $E_t\sigma(\Delta\widetilde{c_{t+1}}) - \Delta q_{\{t+1\}]} = \widehat{\psi_t} + \epsilon_t^{\beta}$

② NFA accumulation: $\beta b_{t+1} - b_t = \gamma\big(\hat{\theta} q_t - \widetilde{c_t} - (1-\gamma)\widehat{\xi_t}\big)$

③ Goods and labor market clearing : $\widetilde{c_t} = \kappa_a \widetilde{a_t} - \gamma\kappa_q q_t$

ϵ_t^{β} is the domestic household's time preference (discount factor) shock and $\widehat{\xi_t}$ is the relative taste shock for imported goods. All exogenous shocks are assumed to follow AR(1) processes.

Substituting the market clearing condition ③ into Euler equation ① and iterating forward yields the following expression for the real exchange rate:

$$q_t = E_t q_\infty + \frac{1}{1+\gamma\sigma\kappa_q}\left(\frac{1}{1-\rho_\beta}\epsilon_t^{\beta} + \frac{1}{1-\rho}\widehat{\psi_t} + \sigma\kappa_a\widetilde{a_t}\right) \qquad \text{(a)}$$

$$\beta b_{t+1} - b_t = \gamma\left(\left(\lambda + \gamma\kappa_q\right)q_t - \kappa_a\widetilde{a_t} - (1-\gamma)\widehat{\xi_t}\right)$$

Substituting the market clearing condition ③ into the NFA evolution equation ②, taking expectations, discounting by β, and summing yields:

$$\textstyle\sum_{k=0}^{\infty}\beta^k(\beta E_t b_{t+k+1} - E_t b_{t+k}) = \gamma(\lambda+\gamma\kappa_q)\sum_{k=0}^{\infty}\beta^k E_t q_{t+k} - \gamma\kappa_a\sum_{k=0}^{\infty}\beta^k E_t\widetilde{a_{t+k}} - \gamma(1-\gamma)\sum_{k=0}^{\infty}\beta^k E_t\widehat{\xi_{t+k}} \qquad \text{(b)}$$

The left-hand side can be simplified using the no-Ponzi condition $\lim_{K\to\infty}\beta^{K+1}E_t b_{t+K+1} = 0$:

$$\textstyle\sum_{k=0}^{\infty}\beta^k(\beta E_t b_{t+k+1} - E_t b_{t+k}) = -b_t$$

Using this, equation (b) becomes:

$$\textstyle\sum_{k=0}^{\infty}\beta^k E_t q_{t+k} = -\frac{1}{\gamma(\lambda+\gamma\kappa_q)}b_t + \frac{\kappa_a}{(\lambda+\gamma\kappa_q)(1-\beta\rho)}\widetilde{a_t} + \frac{1-\gamma}{(\lambda+\gamma\kappa_q)(1-\beta\rho)}\widehat{\xi_t} \qquad \text{(b')}$$

Noting that taking expectations of equation (a), discounting by β, and summing yields the left-hand side of (b'), one can solve for $E_t q_\infty$ and substitute back into (a) to express the real exchange rate as a function of the predetermined state variable — foreign assets (b_t) — and exogenous shocks:

$$q_t = -\phi_b b_t + \phi_\psi\psi_t + \phi_\beta\epsilon_t^{\beta} + \phi_a\widetilde{a_t} + \phi_\xi\widetilde{\xi_t}$$

Each coefficient is a function of the structural parameters.

<Box 5> Model Calibration and Structural Shock Estimation

The model parameters are calibrated based on the prior literature. The baseline parameter values mainly follow the settings of Itskhoki and Mukhin (2025), with some key parameters adjusted to suit the purposes of this analysis. Specifically, the standard deviations of the relative taste shock for imported goods $(\tilde{\xi})$, the dollar asset demand shock (ψ), and the saving demand shock (ϵ^{β}) are set so that the model broadly replicates the relative volatilities and correlations of key macroeconomic variables — the real exchange rate, the bilateral consumption gap, and net exports.

Comparing the key moments generated by the data and the model (<Table B5-1>), the model is found to replicate the key data moments reasonably well overall.

Specifically, the model replicates the high co-movement between nominal and real exchange rate changes at a level very close to the data, and also coherently captures the negative correlation between real exchange rate changes and cross-country consumption gap changes. The negative correlation between output changes and net export changes is likewise reproduced similarly between model and data. In terms of relative volatility, the model broadly replicates the feature that real exchange rate volatility is relatively larger than nominal exchange rate volatility and net export volatility. The ratio of real exchange rate volatility to output volatility, however, is somewhat lower in the model than in the data.

A state-space representation of the calibrated model is constructed, and a Kalman filter is applied to estimate the structural shocks.

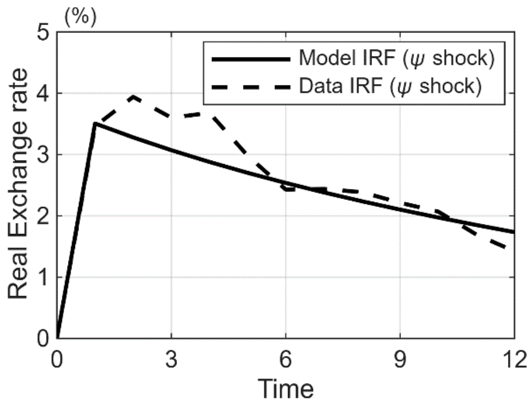
The impulse response functions for the real exchange rate to the dollar asset demand shock derived from the model and from the Kalman-filter-identified shock are qualitatively and quantitatively similar (<Figure B5-1>), demonstrating that the Kalman filter identifies shocks consistently with the model's theoretical structure.

<Table B5-1> Data–Model Moment Comparison

Moment	Model	Data
$corr(\Delta e, \Delta q)$	1.00	0.99
$corr(\Delta q, \Delta c - \Delta c^{*})$	-0.09	-0.08
$corr(\Delta y, \Delta NX)$	-0.09	-0.11
$\sigma(\Delta q)/\sigma(\Delta e)$	0.98	0.96
$\sigma(\Delta q)/\sigma(\Delta NX)$	1.64	1.56
$\sigma(\Delta q)/\sigma(\Delta y)$	2.70	3.93

Note: Model moments are based on 100,000-period simulations of the calibrated model; data moments are computed using data from 1999 Q1 to 2025 Q3. e is log nominal USD/KRW rate, q is log real USD/KRW rate, c and c^{*} are log real consumption for Korea and the US, nx is net exports relative to total trade (exports + imports), y is log real GDP of Korea.

<Figure B5-1> Data-Model Impulse Responses to ψ



Note: Model IRF is the impulse response function to the dollar asset demand shock derived from the model; Data IRF is an estimate of the actual real exchange rate response to the dollar asset demand shock identified by the Kalman filter. For comparison, the Model IRF is rescaled to match the standard deviation of the Kalman-filter-extracted shock.

Specifically, the structural shocks are estimated and used to decompose real exchange rate fluctuations by applying the Kalman filter as follows.

Expressing the model in state-space form, the observation equation and state transition equation are:

$$y_t = Hx_t + \eta_t$$

$$x_t = Ax_{t-1} + B\epsilon_t$$

Here y_t is the vector of observables (log-difference of the real exchange rate, Korea–US inflation differential, real GDP and real consumption growth differentials, Korea's net export share), and x_t is the vector of state variables defined in the model. ϵ_t is the vector of structural shocks, comprising — as specified in the model — the bilateral monetary policy shock differential $(\tilde{m})$, productivity shock differential $(\tilde{a})$, relative taste shock for imported goods $(\tilde{\xi})$, dollar asset demand shock (ψ), and saving demand shock (ϵ^{β}). η_t denotes measurement noise.

The Kalman filter is a procedure for estimating state variables at each point in time using observed data. Specifically, it computes the conditional expectation of the state variables at each period based on the information available up to that point. A Kalman smoother is then applied using all available sample observations to recover the time series of state variables. In this paper, the time series of model-defined state variables $(\widehat{x_t})$ is estimated through this filtering and smoothing process.

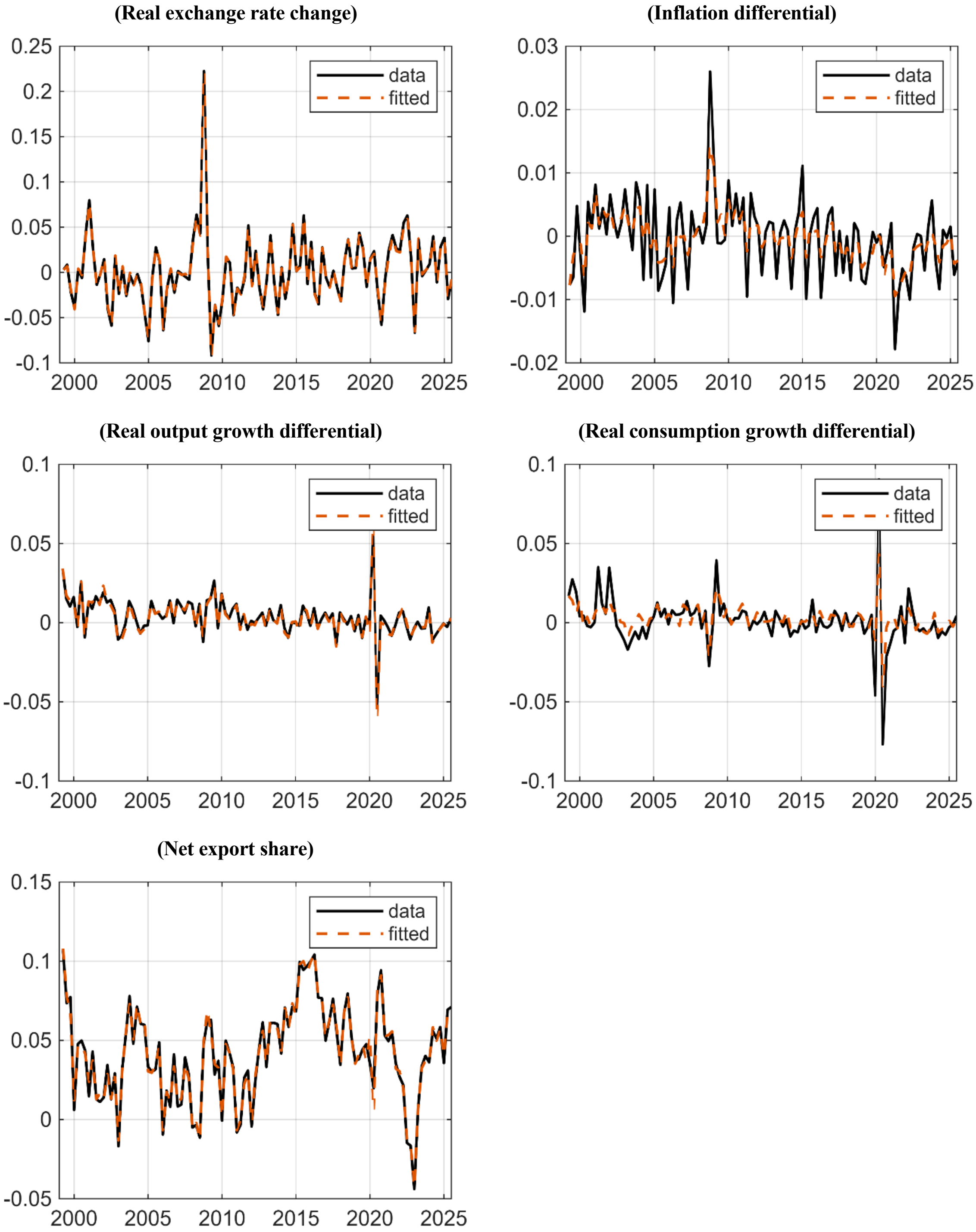
Using the estimated state variable time series, the structural shocks can be identified from the state transition equation:

$$\widehat{\epsilon_t} = B^{-1}(\widehat{x_t} - A\widehat{x_{t-1}})$$

When the structural shock vector ϵ_t consists of $j = 1, \dots J$ structural shocks, the estimated structural shock time series allows the log-difference of the real exchange rate(Δq_t) to be expressed as the sum of contributions from identified structural shocks and measurement error:

$$\Delta q_t = \sum_{j=1}^{J} \sum_{h=0}^{\infty} \Psi_{q,j}(h)\widehat{\epsilon_{J,t-h}} + \eta_t$$

<Figure B5-2> Comparison of Data and Model Fit



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