mathematics

Article

Navigating Uncharted Waters: The Transformation of the Bank of Korea's Monetary Policy in Response to Global Economic Uncertainty

Yugang He [1,*] and Zhuoqi Teng [2]

[1] Department of Chinese Trade and Commerce, Sejong University, Seoul 05006, Republic of Korea
[2] College of Business Administration, Henan Finance University, Zhengzhou 451464, China
* Correspondence: 1293647581@jbnu.ac.kr

Abstract: The evolving global economic landscape necessitates adaptive monetary policies, especially for economies like South Korea that are deeply integrated with global markets. This research explores the strategic recalibrations of the Bank of Korea's monetary policy amid fluctuations in global economic uncertainty. Utilizing a sophisticated microeconomic theoretical framework, this study employs Bayesian estimation techniques and impulse response analysis to dissect the dynamic effects of these global shocks on South Korea's macroeconomic stability and policy direction. Our findings reveal that the Bank of Korea has adeptly navigated through turbulent economic conditions induced by external shocks through well-coordinated policy adaptations. These adaptations, which include both traditional and innovative monetary tools, have been crucial in stabilizing the financial environment and promoting economic growth. By detailing the tailored application of the Taylor rule within the Korean context and strategic foreign exchange interventions by the central bank, this study contributes significantly to the broader discourse on the efficacy of monetary policy in open economies and offers insights on integrating advanced analytical methods into economic policy analysis.

Keywords: adaptive monetary policies; global economic shocks; Bayesian estimation techniques; impulse response analysis; Bank of Korea

MSC: 62A01; 91B55; 91B70; 37M10

Citation: He, Y.; Teng, Z. Navigating Uncharted Waters: The Transformation of the Bank of Korea's Monetary Policy in Response to Global Economic Uncertainty. *Mathematics* **2024**, *12*, 1657. https://doi.org/10.3390/math12111657

Academic Editor: Davide Valenti

Received: 17 April 2024
Revised: 14 May 2024
Accepted: 23 May 2024
Published: 25 May 2024

1. Introduction

As the global economic landscape undergoes rapid and significant changes, the repercussions of international demand and supply shocks on national monetary policies pose intricate challenges, especially for economies with high export dependence, such as South Korea. Unlike many other countries, South Korea's economy is distinctively integrated into the global trade system, marked by its high export-to-GDP ratio, which stood at approximately 43% in 2022, significantly above the global average. This structural characteristic renders the economy highly sensitive to global economic fluctuations. Furthermore, the Korean financial markets' reaction to these shocks is notably pronounced due to the country's heavy reliance on specific sectors like semiconductors and automotives, which are highly susceptible to international demand variations. Recent data illustrate that shifts in global technology demand, for example, have led to swift and sizable impacts on South Korea's export volumes and economic stability. Additionally, the Korean economy's swift post-2008 financial crisis recovery and its dynamic policy responses offer rich insights into the efficacy of monetary tools under stress. These unique macro- and microeconomic dynamics of South Korea provide a compelling context for examining the adaptive monetary strategies employed by the Bank of Korea, thereby allowing for a nuanced understanding of the broader implications of such policies in similarly structured open economies.

Recent research, including studies by Agénor et al. [1], Kim et al. [2], and Oskolkov [3], highlights the heightened sensitivity of small, open economies to external fluctuations, emphasizing the need for adaptive monetary frameworks to maintain economic stability. This sensitivity is further complicated by the effects of price stickiness on monetary transmission mechanisms as discussed by Pasten et al. [4], Miranda-Agrippino and Ricco [5], and Holm et al. [6], which are pivotal for understanding the delayed responses to such shocks. Our paper builds on this foundation, exploring the transformation of the Bank of Korea's monetary policy as it navigates global economic disturbances while promoting domestic economic resilience and growth. By incorporating both qualitative and quantitative methods, this research offers a comprehensive analysis of the closed interplay between international economic trends and domestic policy adjustments in South Korea—a context distinct in its heavy dependence on technology and automotive exports, not previously detailed in studies of other export-driven economies like Singapore and Sweden. Our findings not only address a gap in the empirical literature on the effectiveness of policy adaptations but also provide critical insights into the long-term outcomes of these policies on South Korea's economic stability. Furthermore, by comparing these dynamics with those in similarly structured economies, this study enriches the broader discourse on economic policy in the face of international uncertainties, offering valuable lessons for policymakers worldwide.

Drawing from the established research background mentioned above, our detailed examination substantially advances our comprehension of how the Bank of Korea strategically reacts to external economic disturbances. With a specific focus on modifications to interest rates and the management of foreign exchange activities, this research investigates the strategic recalibrations of the Bank of Korea's monetary policy in response to global economic uncertainties, particularly external demand and supply shocks. Utilizing a dynamic stochastic general equilibrium model, this study conducts a quantitative analysis of how these policy adjustments influence key macroeconomic indicators such as inflation, output, and exchange rates. Our findings reveal that the Bank of Korea's implementation of a modified Taylor rule, specifically adapted to manage the volatility from external shocks, has significantly stabilized inflation and supported economic growth. Furthermore, proactive foreign exchange interventions have been pivotal in safeguarding the economy against abrupt exchange rate fluctuations. These measures have effectively mitigated potential adverse impacts on export competitiveness and capital flow volatility, which is critical given South Korea's substantial reliance on trade. Moreover, by integrating the aspect of price stickiness into our analysis, we advance our understanding of monetary transmission mechanisms, showing that the response of consumption and investment to monetary policy adjustments is slower than anticipated. This underscores the need for nuanced policy instruments to effectively address the unique structural characteristics of the Korean economy. Overall, our study not only corroborates theoretical propositions about optimal monetary policy in open economies but also provides practical insights that are invaluable for policymakers in South Korea and other similar economies facing the challenges of global economic integration.

Building on the findings of our study, we identify four significant contributions that distinguish this research from the existing literature, emphasizing its novelty and its implications for both academic and practical realms. First, our research advances beyond existing models by integrating both supply and demand shocks within a dynamic stochastic general equilibrium framework. Unlike traditional approaches that often isolate these shocks, our model concurrently explores their interplay and reciprocal effects on macroeconomic stability. This provides a more comprehensive understanding of how such shocks impact small open economies like South Korea, refining insights provided by Ha [7], Lee and Park [8], and Shareef and Prabheesh [9]. Second, by employing Bayesian estimation techniques, this study not only validates the robustness of theoretical models with empirical data but also enhances the precision of parameter estimation. This methodological advancement allows for a more accurate depiction of the South Korean economy's response to policy changes and external shocks, building upon the foundational methods discussed by Ha et al. [10], Hao and Kong [11], and Vechsuruck [12]. Third, the real-time application of the modified Taylor rule in policy simulation within our dynamic stochastic general equilibrium model offers actionable insights for policymakers. The recommendations for foreign exchange interventions and interest rate adjustments in this study are based on empirical data and model predictions, providing a strategic toolkit for managing economic instability that aligns with practical applications suggested by Dominguez [13], Leni Anguyo et al. [14], and Rodríguez et al. [15]. Finally, this paper contributes to the literature on the efficacy of monetary policy in emerging markets by detailing how the Bank of Korea's adaptive strategies serve as benchmarks for other economies with similar structures. Our findings emphasize the importance of adaptive monetary policies in the face of global economic fluctuations, enriching the discussions initiated by Gereffi et al. [16], D'Orazio and Thole [17], and Zenchenko et al. [18].

The organization of this paper is outlined as follows: Section 2 offers an in-depth examination of existing research pertinent to our study. Section 3 details the development and structuring of our analytical model. Section 4 presents the data analysis and significant empirical findings from our research. Finally, Section 5 concludes the discussion by highlighting key outcomes, proposing policy implications, and identifying potential avenues for further scholarly exploration in this area.

2. Literature Review

When exploring the nuanced impacts of external demand and investment price shocks within various interest rate policy frameworks, it becomes clear that these shocks have profound influences on economic indicators. This analysis is supported by a series of empirical and theoretical studies that reveal the complex nature of monetary policy responses. The research by Kim et al. [19] and Karmelavičius and Ramanauskas [20] highlights the importance of aggressive monetary easing in response to positive external demand shocks, which typically boost the export-led sectors of the economy, thereby enhancing output and employment. However, this is countered by the risk of overheating and inflation, as demonstrated by the findings of Chadha [21] and Jordà et al. [22]. If not managed with careful interest rate adjustments, inflationary pressures can erode real income gains, illustrating a policy tension detailed by Gomes et al. [23], Tng and Kwek [24], and Arias et al. [25]. Conversely, investment price shocks, especially those resulting from changes in the costs of key inputs, have a contractionary effect on economic output as capital costs rise and firms reduce production. This dynamic is captured in the models by Fernández-Villaverde et al. [26] and Howes [27] and further explored under different policy regimes by English et al. [28], Han and Wei [29], and Klingelhöfer and Sun [30], who note that the central bank's ability to buffer these shocks is often constrained by the prevailing interest rate policy framework. The work of Ghosh et al. [31], Yildirim and Ivrendi [32], and Viziniuc [33] further investigates how these shocks can lead to depreciative pressures on the currency, necessitating foreign exchange interventions. The effectiveness of interest rate policies in managing these shocks varies. Under a rigid framework, as suggested by Dou et al. [34], Agoba et al. [35], and Dokas et al. [36], central banks may struggle to adjust rates sufficiently to counteract inflation without stifling growth. Conversely, a more flexible policy regime, as studied by Boucekkine et al. [37] and Nyati et al. [38], allows for more dynamic adjustments, catering to both immediate economic needs and long-term stability goals. Integrating these insights, it becomes evident that the optimal policy response depends on the nature of the shock and the economic context. Benes et al. [39], Cesa-Bianchi and Rebucci [40], and Bernanke [41] underscore the benefits of a policy mix that includes both traditional interest rate adjustments and more innovative approaches like quantitative easing or targeted fiscal interventions to stabilize key economic indicators. This balanced approach helps mitigate the adverse effects of shocks while supporting sustainable economic growth. In summary, the interplay between external shocks and interest rate policies requires an understanding of both economic theory and empirical evidence, as the optimal responses are highly context-dependent. The referenced studies provide a comprehensive framework for analyzing these dynamics, suggesting that a flexible, responsive monetary policy framework is crucial for managing the diverse challenges posed by external economic shocks.

In varying exchange rate policy frameworks, the response of critical economic indicators to external demand and investment price shocks reveals a complex interplay of macroeconomic forces. A broad array of empirical studies underpins this analysis, illuminating these dynamics. The flexibility of exchange rate policies plays a crucial role in buffering the domestic economy against external volatility. According to Yoshino et al. [42], Ca'Zorzi et al. [43], and Jalali-Naini and Naderian [44], a flexible exchange rate can support export competitiveness by facilitating necessary currency adjustments during external demand shocks. Similarly, Fernando [45], Rodríguez et al. [46], and Shvets [47] find that proactive exchange rate interventions can prevent excessive currency appreciation and maintain export growth during periods of strong external demand. However, these interventions can lead to significant fluctuations in foreign exchange reserves, as observed by Viktorov and Abramov [48], Bitar [49], and Diluiso et al. [50], requiring careful management to mitigate destabilizing effects on the monetary balance. The impact of investment price shocks, particularly those affecting the cost of imported capital goods, illustrates the differing effectiveness of fixed versus flexible exchange rate regimes. Elahi et al. [51], Nasir et al. [52], and Valogo et al. [53] show that under a fixed exchange rate, the inability to adjust the nominal exchange rate exacerbates the inflationary impact of increased import prices, thereby straining economic output. Conversely, Nakatani [54] and De and Sun [55] argue that flexible rates allow for currency value adjustments that can help absorb such shocks, albeit at the potential cost of increased exchange rate volatility. The response of output and inflation to these shocks critically depends on the underlying exchange rate regime. A fixed exchange rate may stabilize inflation in the short term but at the cost of output growth, as suggested by Kaltenbrunner and Painceira [56], Ahmed et al. [57], and Olamide et al. [58]. On the other hand, a flexible exchange rate regime might permit more output growth during external shocks, as demonstrated by Ebeke and Fouejieu [59], Cabral et al. [60], and Keefe [61], but could lead to higher inflation volatility as currency values adjust to changing external conditions. The choice of exchange rate regime has a long-term impact on the stability of foreign exchange reserves and overall monetary stability. Deßerli and Fendoğlu [62], Corsetti et al. [63], and Carrière-Swallow et al. [64] highlight that flexible exchange rate regimes can adapt more dynamically to external shocks, facilitating more effective management of foreign reserves. However, Uz Akdogan [65], Yildirim [66], and Coulibaly [67] caution that this flexibility could also increase vulnerability to sudden stops and reversals of capital flows, potentially leading to financial instability. In synthesizing these perspectives, it becomes clear that no single exchange rate policy framework universally maximizes economic welfare under all conditions. Instead, the choice of regime should consider the specific economic characteristics of the country, the nature of the shocks it faces, and its macroeconomic policy objectives. This strategic approach to exchange rate policy, supported by empirical research, provides a framework for optimizing South Korea's response to global economic fluctuations, balancing the stabilization of key economic indicators with maintaining sufficient flexibility to respond to external shocks.

3. Model

3.1. Household Sector

In this sector, we assume a representative household framework. The labor force within this framework exhibits heterogeneity, distinctly divided between trade and non-trade sectors (Al-Abri [68] and Kollmann et al. [69]). Furthermore, this labor distribution is not clustered but rather evenly and continuously spread, denoted by the variable h, which ranges from 0 to 1. Within each household, income generation is primarily through labor participation. Pertinent to this model, the utility function, which represents the household's level of satisfaction or utility derived from consumption, is defined in the following terms:

$$U = E_t \sum_{t=0}^{\infty} \beta^t \{\log(C_t - \Omega C_{t-1}) - \Phi \frac{[\alpha^{\frac{1}{n}} L_{1,t}^{\frac{n-1}{n}} + (1-\alpha)^{\frac{1}{n}} L_{2,t}^{\frac{n-1}{n}}]^{\frac{n}{n-1}}}{n} + \Psi \log \frac{M_t}{P_t}\}. \quad (1)$$

In Equation (1), E is defined as the expectation operator and β is the household's discount factor. t stands for time (in this paper, it is measured by quarter). C represents household consumption. Labor supply to the non-trade sector is denoted by L_1, while L_2 refers to labor provided to the trade sector. α encapsulates the varying disutility of labor between these sectors. The model treats labor supply as a combination of contributions to both trade and non-trade firms, with α (ranging from 0 to 1) indicating labor supply preferences; a higher $(1-\alpha)$ implies greater economic openness. n is the elasticity of substitution between labor supplies in both sectors. Ω also signifies the consumption habit. Φ and Ψ are parameters for labor weight and monetary balance weight, respectively. M stands for nominal money holdings, and P represents the price level. This study assumes that domestic households hold both domestic and foreign currency bonds, and the budget constraint of the representative household can be expressed as follows:

$$C_t P_t + \varphi_t B_{1,t} + \varrho_t \varphi_t B_{1,t} + M_t = W_{1,t} L_{1,t} + W_{2,t} L_{2,t} + D_{1,t} + D_{2,t} + D_{3,t} + R_{1,t-1} B_{1,t-1} + E_t R_{2,t-1} B_{2,t-1} + M_{t-1}. \quad (2)$$

In Equation (2), B_1 and B_2 represent the holdings of domestic and foreign currency bonds by households, respectively. $\varphi_t = \frac{B_{1,t} + e_t B_{2,t}}{B_{1,t}}$ shows the share of domestic currency bonds in the household's total bond portfolio. $\varrho_t = \frac{X(\varphi_t - \tilde{\varphi})^2}{2}$ is the cost function used for adjusting this bond portfolio. X represents the adjustment cost coefficient for the household's bond portfolio, used to measure the degree of capital controls. $\tilde{\varphi}$ represents the distribution of the household's bond portfolio when the economic system is in a steady state. W_1 and W_2 indicate the nominal wages paid by the non-trade and trade sectors, respectively. R_1 and R_2 are the nominal interest rates on domestic and foreign bonds held by households. The spot nominal exchange rate is denoted by e. D_1, D_2, and D_3 represent dividends from firms, bank credit, and intermediary services, respectively.

3.2. Firm Sector

In this sector, we assume a representative firm that manufactures final goods. For the production of these goods, especially when considering non-trade goods, the firm employs the Stiglitz production function. This function is essential for understanding how the firm combines various inputs to produce the final output, Y_t. Given the price $P_t(j)$ of the product f consumed by the firm, the firm's intra-period optimization problem is as follows:

$$U = \int_0^1 P_t(j) Y_t^N(j) df. \quad (3)$$

The budget constraint of the representative final goods produced firm can be expressed as follows:

$$Y_t = [\int_0^1 Y_t^N(j)^{\frac{\xi-1}{\xi}} dj]^{\frac{\xi}{\xi-1}}. \quad (4)$$

In Equations (3) and (4), ξ represents the substitution elasticity between different non-trade goods, with $\xi \in (1, +\infty)$ indicating that goods firms have a certain degree of monopolistic power. $Y_t^N(f)$ signifies the non-trade goods.

3.3. Tradable and Non-Tradable Sector

In this sector, we make the assumption that both trade and non-trade firms utilize the Cobb–Douglas production function in their operations. Specifically, the production function utilized by tradable firms can be outlined as follows:

$$Y_t^T = A_t^T K_{T,t}^{\gamma_T} L_{T,t}^{1-\gamma_T}. \tag{5}$$

In Equation (5), Y_t^T is used to denote the output of the tradable sector. A_t^T represents the productivity within this sector. Capital, a critical component of production, is indicated by K_T for the tradable sector. The labor input in this sector is referred to as L_T. Finally, γ_T signifies the proportion of capital's contribution to the sector's total output. The capital accumulation function for tradable sector is as follows:

$$K_{T,t} = [1 - \frac{\Theta_T}{2}(\frac{I_t^T - I_{t-1}^T}{I_{t-1}^T})^2]I_t^T + (1-\delta)K_{T,t-1}. \tag{6}$$

In Equation (6), Θ_T is defined as the adjustment cost associated with the tradable sector. I^T represents the investment made in this sector. Additionally, δ signifies the depreciation rate with the tradable sector. The budget constraint of the representative tradable sector can be expressed as follows:

$$TD_t = TD_{t-1}R_t^T - Y_t^T P_t + W_t^T L_{T,t} + R_t^T K_{T,t} + D_{T,t}. \tag{7}$$

In Equation (7), TD refers to the total balance of debts within the tradable sector. D_T denotes the net profit earned by this sector. R^T stands for the interest rate applied to debts within the tradable sector. Lastly, W^T represents the nominal wage level within the tradable sector. Similarly, the production function utilized by non-tradable firms can be outlined as follows:

$$Y_t^N = A_t^N K_{N,t}^{\gamma_N} L_{N,t}^{1-\gamma_N}. \tag{8}$$

In Equation (8), Y_t^N is used to denote the output of the non-tradable sector. A_t^N represents the productivity within this sector. Capital, a critical component of production, is indicated by K_N for the non-tradable sector. The labor input in this sector is referred to as L_N. Finally, γ_N signifies the proportion of capital's contribution to the sector's total output. The capital accumulation function for the non-tradable sector is as follows:

$$K_{N,t} = [1 - \frac{\Theta_N}{2}(\frac{I_t^N - I_{t-1}^N}{I_{t-1}^N})^2]I_t^N + (1-\delta)K_{N,t-1}. \tag{9}$$

In Equation (9), Θ_N is defined as the adjustment cost associated with the non-tradable sector. I^N represents the investment made in this sector. Additionally, δ signifies the depreciation rate with the non-tradable sector. Drawing on the methodology of Tan et al. [70], Yin et al. [71], Liu et al. [72], and Zhang et al. [73], this study models the investment behavior of non-trade firms. It posits that their investment, denoted as I_t^N, is an amalgamation of two components: domestic investment, I_t^H, and investment in the tradable sector, I_t^T. This conceptualization allows for a better understanding of investment dynamics within non-trade firms. Its form is shown as follows:

$$I_t^N = (I_t^H)^{\nu}(I_t^T)^{1-\nu}. \tag{10}$$

In Equation (10), ν represents the weight of domestic investment, with the domestic investment price cost denoted as P_t^H and the tradable sector price cost as P_t^T. In this analysis, we consider how fluctuations in investment prices affect final goods prices. It is hypothesized that the real exchange rate, represented by $q_t = \frac{P_t^N}{P_t^H}E_t = \frac{P_t^T}{P_t^H}E_t$, plays a significant role in the investment portfolio function of non-trade firms. This leads to a specific mathematical expression that incorporates the real exchange rate into the investment decision-making process.

$$I_t^H = [\nu^{1-\nu}(1-\nu)^{(\nu-1)}q_t^{1-\nu}]I_t^N. \tag{11}$$

$$I_t^T = [(\frac{1}{\nu})^{\nu}(1-\nu)^{\nu}(\frac{1}{q_t})^{\nu}]I_t^N. \tag{12}$$

Consequently, the relative real prices of domestic and tradable sector investments with respect to composite goods are as follows:

$$Q_t^H = \nu^{1-\nu}(1-\nu)^{(\nu-1)}q_t^{1-\nu}. \tag{13}$$

$$Q_t^T = (\frac{1}{\nu})^{\nu}(1-\nu)^{\nu}(\frac{1}{q_t})^{\nu}\epsilon_t^t. \tag{14}$$

In Equation (14), ϵ_t^t represents the foreign investment price shock. Therefore, the jth non-trade goods producer is represented as follows:

$$Y_t^N(j) = A_t^N K_{N,t}^{\gamma_N}(j) L_{N,t}^{1-\gamma_N}(j). \tag{15}$$

The budget constraint of the jth non-trade goods producer's cost utility function can be expressed as follows:

$$U = Q_t^H K_t^N(j) + \frac{W_t^N}{P_t} L_t. \tag{16}$$

In accordance with Rotemberg [74], Boivin et al. [75], and Dexter et al. [76]'s quadratic price adjustment cost function, this analysis assumes that product prices are not easily changeable, or "sticky". This concept is represented through a specific mathematical formula that captures the nature of this price stickiness in the market.

$$\psi_t^{\pi} = \frac{\Theta_{\pi}}{2}(\frac{P_t(j)}{P_{t-1}(j)\tilde{\pi}} - 1)^2(C_t - \Omega C_{t-1}). \tag{17}$$

In Equation (17), Θ_{π} represents the adjustment cost parameter for non-trade goods producers.

3.4. Commercial Bank Sector

This article discusses the division of the banking sector into two main services: credit and intermediary services. Credit services are focused on providing loans to domestic trade and non-trade sectors, while intermediary services handle underwriting domestic currency bonds and facilitating foreign currency bond transactions. This article highlights the existence of information asymmetry and financing constraints between commercial banks and these sectors. Adjustments in credit structure by banks increase external financing costs for firms, leading to greater financial friction and higher adjustment costs, a phenomenon known as the financial accelerator effect. These costs are proportionate to the scale of the credits. It is also noted that commercial banks offer foreign currency loans to trade firms, and the model sets forth a specific formula for calculating adjustment costs in the banking sector's credit services.

$$\psi_t^{cb} = \frac{\Theta_{cb}}{2}(\frac{HD_t}{HD_t + TD_t E_t} - \frac{\widetilde{HD}}{\widetilde{HD} + \widetilde{TD}\tilde{E}})^2(HD_t + TD_t E_t). \tag{18}$$

In Equation (18), Θ_{cb} denotes the operational cost coefficient of the banking credit services, and $\frac{HD_t}{HD_t + TD_t E_t}$ represents the proportion of credit to non-trade firms in the bank's credit portfolio. Then, the utility function of bank credit business is shown as follows:

$$U = \sum_{t=0}^{\infty} \frac{D_{2,t}}{(R_t^H)^t}. \tag{19}$$

In Equation (19), R^H represents the bank deposit interest rate. The budget constraint of the representative bank credit business can be expressed as follows:

$$S_t^H = S_{t-1}^H R_{t-1}^H + (R_{t-1}^H - R_{t-1}^N)HD_{t-1} + (R_{t-1}^H - R_{t-1}^T)TD_t + \frac{\Theta_{cb}}{2}\left(\frac{HD_t}{HD_t + TD_t E_t} - \frac{\widetilde{HD}}{\widetilde{HD} + \widetilde{TDE}}\right)^2 (HD_t + TD_t E_t) + D_{2,t}. \quad (20)$$

In Equation (20), S^H represents household savings, indicating the balance of bank debt originating from households, and R^H and R^T represent the debt balances of non-trade firms and trade intermediate goods manufacturers, that is, bank loans, respectively. Drawing on the research of Bajraj et al. [77], Agénor and Jia [78], Lozej et al. [79], García-Cicco and García-Schmidt [80], Davis et al. [81], and Sun et al. [82], this article posits that due to an imperfect financial system, domestic banks operate in a non-efficient state. Additionally, it is highlighted that the intermediary services provided by these banks incur operational costs. The formula for calculating these costs is specified as follows:

$$\psi_t^m = \frac{\Theta_m\left(\frac{B_{1,t} + e_t B_{2,t}}{B_{1,t}} - \frac{B_1 + eB_2}{B_1}\right)^2}{2}(B_{1,t} + B_{2,t}E_t). \quad (21)$$

In Equation (21), ψ^m represents the operational cost coefficient for the banking intermediary services, with the operational costs also depending on the changes in the structure of the bank's domestic and foreign currency bonds, as well as the scale of the domestic and foreign currency bonds held by households. Then, the utility function of intermediate business of commercial banks is as follows:

$$U_t = \sum_{t=0}^{\infty} \frac{D_{3,t}}{(R_t)^t}. \quad (22)$$

In considering liquidity, this article notes that government bonds tend to be less liquid due to longer maturities, in contrast to financial and corporate bonds, which are more liquid. The interest rates on Korean government bonds are higher compared to those on financial bonds. Consequently, the budget constraint for the intermediary services of commercial banks is established using a specific formula, reflecting these differences in liquidity and interest rates.

$$S_t^H = S_{t-1}^H R_{t-1}^H + (R_{1,t-1} - R_{t-1})B_{1,t-1} + (R_{2,t-1} - R_{t-1}^T)B_{2,t-1}E_{t-1} + \frac{\Theta_m\left(\frac{B_{1,t} + e_t B_{2,t}}{B_{1,t}} - \frac{B_1 + eB_2}{B_1}\right)^2}{2}(B_{1,t} + B_{2,t}E_t) + D_{3,t}. \quad (23)$$

3.5. Bank of Korea Sector

In this sector, the growth in reserve assets of Korean banks during a given period is subject to certain constraints. These constraints are primarily determined by two factors: the growth in the current period's balance of domestic currency bonds held by Korean households and the variation in the real monetary balance. This relationship indicates that changes in household bond holdings and shifts in real monetary values directly influence the capacity of Korean banks to alter their reserve assets within the same period, highlighting a key aspect of the financial dynamics in the Korean banking system.

$$(B_{2,t} - B_{2,t-1}R_{t-1}^T)E_t = (B_{1,t} - B_{1,t-1}R_{1,t-1}) + \left(\frac{M_t}{P_t} - \frac{M_{t-1}}{P_{t-1}}\right). \quad (24)$$

In a closed economy, Korean banks might find a simultaneous achievement of anti-inflationary measures and growth promotion, especially when the economy only faces price distortions. Achieving one goal often coincides with the attainment of another. However, in a more complex environment with additional distortions and frictions, particularly under open economy conditions, Korean banks are likely to encounter trade-offs. A significant factor here is the delayed response of exchange rates to interest rate fluctuations, largely due to high capital flow costs under South Korean capital controls. Korean banks utilize both quantitative and price-based interest rate policies, guided by the Taylor rule, to navigate these challenges.

$$R_t = (1-\rho_R)\widetilde{R} + \rho_R R_{t-1} + (1-\rho_R)\omega_\pi(\pi_t - \widetilde{\pi}) + (1-\rho_R)\omega_Y(Y_t - \widetilde{Y}). \quad (25)$$

In Equation (25), ρ_R represents the interest rate smoothing coefficient. This coefficient plays a critical role in determining how gradually or abruptly a central bank adjusts its policy rate. The variables $\widetilde{R}$, $\widetilde{\pi}$, and $\widetilde{Y}$ in the formula refer to the steady-state values of the interest rate, inflation, and output, respectively. These steady-state values are key reference points in monetary policy, as they represent the desired or targeted levels of these economic indicators under normal or balanced economic conditions. The use of these variables in conjunction with the interest rate smoothing coefficient reflects the strategic approach of monetary authorities to achieving economic stability. South Korea's economy is heavily oriented towards exports and foreign direct investment, making its exchange rate policy crucial. The proportion of foreign exchange reserves held by Korean banks is substantial, serving as a primary method for base money issuance. However, the Bank of Korea does not directly control these reserves. To effectively manage the total money supply, the Bank of Korea employs policy tools like open market operations for issuing and regulating base money liquidity. Drawing from Canzoneri and Cumby [83] and Escudé [84], a specific equation is formulated to represent the Bank of Korea's floating exchange rate regime, reflecting its strategy for managing exchange rate fluctuations in a globally interconnected economy.

$$(\frac{B_{2,t}}{\widetilde{B_2}})^{\varpi} = \frac{E_t}{E_{t-1}}. \quad (26)$$

$$(\frac{M_t}{\widetilde{M}})^{\breve{\varpi}} = \frac{E_t}{E_{t-1}}. \quad (27)$$

In Equations (26) and (27), $\breve{\varpi}$ and ϖ represent the sensitivities of money supply and foreign exchange reserves to exchange rate fluctuations, respectively. Under purchasing power parity, a higher-than-target exchange rate often leads to an increased money supply, causing the Korean won to depreciate ($\breve{\varpi} > 0$). In response, the Bank of Korea may sell U.S. dollar bonds for Korean won in the open market, reducing foreign exchange reserves to decrease the domestic currency supply ($\varpi < 0$). ϖ approaching 0 indicates strong intervention by the Bank of Korea in the foreign exchange market, focusing on stabilizing the exchange rate. Conversely, ϖ nearing $-\infty$ suggests less intervention, and if $\breve{\varpi}$ simultaneously approaches $+\infty$, it indicates a priority on maintaining a stable currency exchange rate policy. In this study, the exchange rate policy rule is considered an autonomous instrument. The Bank of Korea resorts to foreign exchange intervention policies in scenarios of significant exchange rate fluctuations or substantial deviations in the base money supply. By integrating Equations (26) and (27) and drawing insights from the exchange rate policy frameworks of Acosta et al. [85], Kang et al. [86], Bhaskar et al. [87], Liu and Spiegel [88], and Prasad [89], a distinct exchange rate policy rule for the Bank of Korea is formulated. This rule is designed to provide a structured approach for addressing exchange rate and monetary supply challenges in the Korean economy.

$$E_t = (1-\rho_E)\widetilde{E} + \rho_E E_{t-1} + (1-\rho_E)o(M_t - \widetilde{M}) + (1-\rho_E)\varpi(B_{2,t} - \widetilde{B_{2,t}}). \quad (28)$$

3.6. Market Clearing Conditions

To achieve equilibrium in the goods market, there is a fundamental condition that must be satisfied: the total quantity of goods produced must be equal to the total quantity of goods demanded. This condition, known as the goods market clearing condition, ensures that the supply of goods in the market precisely meets the demand, avoiding any excesses or shortages. In economic models, this balance is crucial for maintaining market stability and is a key factor in analyzing and predicting market behavior.

$$Y_t = C_t + I_t^N + I_t^T + Y_t^T - Q_t I_t^T. \quad (29)$$

3.7. Foreign Sector and Dynamic Optimization

The foreign sector and the dynamic optimization process are presented in Appendix A and Appendix B, respectively.

4. Results and Discussion

4.1. Parameter Calibration and Estimation

In developing the parameters for our analysis, we adopted a bifurcated approach, enhancing both the robustness and applicability of our model within the South Korean economic framework. Initially, our method involved a thorough review of the extant literature on the South Korean economy, from which we selected parameters with established empirical validation. This strategy enabled us to leverage the foundational contributions of previous scholars, incorporating proven economic indicators and insights into our study. Subsequently, we undertook an empirical examination of South Korea's GDP and CPI data, spanning from Q1 2000 to Q4 2023. Utilizing Bayesian estimation methods on this time-series data allowed us to generate parameters that were not only statistically solid but also acutely aligned with the specific economic patterns of South Korea during this timeframe. The merit of Bayesian estimation lies in its capacity to integrate prior knowledge into the analysis, thus refining our estimation efforts and improving the accuracy of our derived parameters. This dual-pronged methodology underpins the credibility and relevance of our simulation's parameters to the real-world economic scenario of South Korea. Consequently, our simulation's results are anticipated to reflect the actual economic conditions of South Korea accurately, offering insightful projections regarding future economic directions and the potential impact of various policies. This approach makes our findings highly pertinent and engaging for scholars interested in the dynamic interplay of economic theories and empirical realities in the context of the South Korean economy.

In the construction of our model, we calibrated various parameters by incorporating insights from a plethora of works to ensure its robustness and relevance to empirical realities. To begin, we adopted a discount factor (β) of 0.97, a choice inspired by the work of Lee and Song [90], which aligns our model with established temporal preferences in economic analysis. Furthermore, we integrated the calibration of the weight parameter of money balance (Ψ) at 0.1, following the methodology outlined by Kim [91], to accurately reflect the liquidity considerations within the economy. Moreover, our model adopts the calibration for the inverse of labor wage elasticity (η) at 0.7, drawing upon the insights of An and Kang [92], thereby ensuring a realistic representation of labor market dynamics. The portfolio adjustment cost parameter (X) is set at 0.6, in alignment with Cho [93] and Chang et al. [94], which enables us to model financial market frictions with greater precision. In the realm of banking operations, we have calibrated the operating cost coefficients for bank intermediaries and credit businesses (Θ_m and Θ_{cb}) at 0.005 and 0.05, respectively, following the research by Bekiros et al. [95] and Gambacorta and Signoretti [96]. This differentiation underscores the varying cost structures across different banking activities. The elasticity of the substitution parameter for intermediate products (ξ) is set at 6, guided by Katayama and Kim [97], facilitating a nuanced understanding of production processes. Furthermore, our model incorporates a cost markup for intermediate goods manufacturers at 0.1, as per the findings of Jeong and Kim [98], and a capital depreciation rate (δ) of 0.025, echoing the combined research of Rhee [99]. In addressing trade dynamics, we diverge from the average value of Korea's export trade dependence (α), typically around 0.3 as noted by Wong and Eng [100], and instead calibrate it at 0.7, based on a comprehensive analysis. Following Li et al. (2023), the capital shares of the tradable and non-tradable sectors ($\gamma_T$and γ_N) are calibrated to 0.7 and 0.3, respectively. Additionally, the model includes a calibration for the domestic investment weight (ν) of heterogeneous intermediate goods manufacturers of 0.75, following Woo [101], and an exchange rate elasticity of export demand (ϱ) of 1, as identified by Shim (2023). The consumption habit parameter (Ω) is set at 0.65, drawing from the research by Kang and Suh [102], while the labor elasticity of substitution (n) is calibrated at 1.5, following Hur and Rhee [103]. According to He and Lee [104], the interest rate persistence parameter (ρ_R), inflation gap (ω_π), and output gap (ω_Y) in the Taylor rule of monetary policy are calibrated to 0.75, 2.51, and 0.4, respectively. Lastly, we incorporate a price adjustment cost (Θ_T) of 150, adhering to the methodology of Aruoba et al. [105].

In our exploration of the dynamics influencing the Korean won exchange rate, we meticulously apply a first-order autoregressive model to encapsulate the persistence and responsiveness of the exchange rate within the policy framework. The analysis reveals a persistence parameter (ρ_E) of approximately 0.98, signifying a high degree of inertia in the exchange rate's behavior over time. Additionally, we delve into the calibration of the exchange rate's sensitivity to monetary supply elasticity (ϖ) and the elasticity of change in foreign exchange reserves (o), with the estimated values at approximately 0.1 and −0.15. This calibration underscores the nuanced interplay between exchange rate fluctuations and macroeconomic policy levers. Turning our attention to the external sector, we rigorously analyze the fluctuations in Korea's export, specifically examining South Korea's export data spanning from the first quarter of 2000 to the fourth quarter of 2023. Through a meticulous process of seasonal adjustment followed by trend extraction via the Hodrick–Prescott filter, we conduct a first-order autoregression to delineate the underlying patterns of foreign demand shock. Similarly, for the real price shock associated with foreign investment, we employ an analytical framework leveraging monthly data from the international commodity price index between the first quarter of 2000 and the fourth quarter of 2023. The application of Hodrick–Prescott filtering to discern the fluctuation trend, followed by a first-order autoregressive analysis, allows us to calibrate the real price shock parameter of foreign investment at 0.5. In the realm of international monetary policy, we examine the impact of foreign central bank interest rate shock by conducting a first-order autoregression on the quarterly data of the United States federal funds rate from 2000 to 2023. The derived impact parameter is approximately 0.5, illustrating the significant influence of global monetary conditions on domestic economic dynamics. Furthermore, we extend our analysis to the foreign bond market, calibrating the shock parameter associated with the average yield of the US three-month Treasury bond over the same period at 0.5, thereby highlighting the responsiveness of financial markets to interest rate adjustments. To encapsulate the uncertainty inherent in these external shocks, we set the standard deviation of the random terms at 0.01 across all variables. This methodological approach enhances the robustness of our model by accommodating the stochastic nature of external shocks, thereby providing a comprehensive and nuanced understanding of the factors shaping the economic landscape of South Korea. The results of Bayesian estimation are shown in Table 1.

Table 1. Results of Bayesian estimation.

Parameters	Prior Distribution			Posterior Distribution	
	Type	Mean	Standard Error	Mean	90% HPD Intervals
Ω	Beta	0.65	0.15	0.68	[0.57, 0.79]
n	Gamma	1.5	0.5	2.54	[1.59, 3.49]
Θ_T	Uniform	150	15	163	[132, 194]
ρ_a	Beta	0.5	0.01	0.71	[0.61, 0.81]
σ_a	Inverse Gamma	0.01	2	0.008	[0.006, 0.10]
ρ_b	Beta	0.5	0.01	0.65	[0.34, 0.98]
σ_b	Inverse Gamma	0.01	2	0.011	[0.007, 0.015]
ρ_c	Beta	0.5	0.01	0.53	[0.42, 0.64]
σ_c	Inverse Gamma	0.01	2	0.012	[0.004, 0.02]
ρ_d	Beta	0.5	0.01	0.57	[0.30, 0.84]
σ_d	Inverse Gamma	0.01	2	0.024	[0.011, 0.037]

Note: ϱ_a AR(1) coefficient of foreign demand shock; ϱ_b AR(1) coefficient of foreign investment real price shock; ϱ_c AR(1) coefficient of foreign central bank interest rate shock; ϱ_d AR(1) coefficient of foreign bond interest rate shock.

4.2. Impulse Response Function Analysis

This subsection explores the impact of external demand and investment price shocks on South Korea's critical economic indicators, including output, inflation, exchange rates, exchange reserves, and monetary balances. The analysis is situated within different interest rate policy frameworks to evaluate their effectiveness in buffering these shocks. Our empirical results are displayed in Figure 1, which visually elucidates the interactions between interest rate policies and the economic responses to global demand variations.

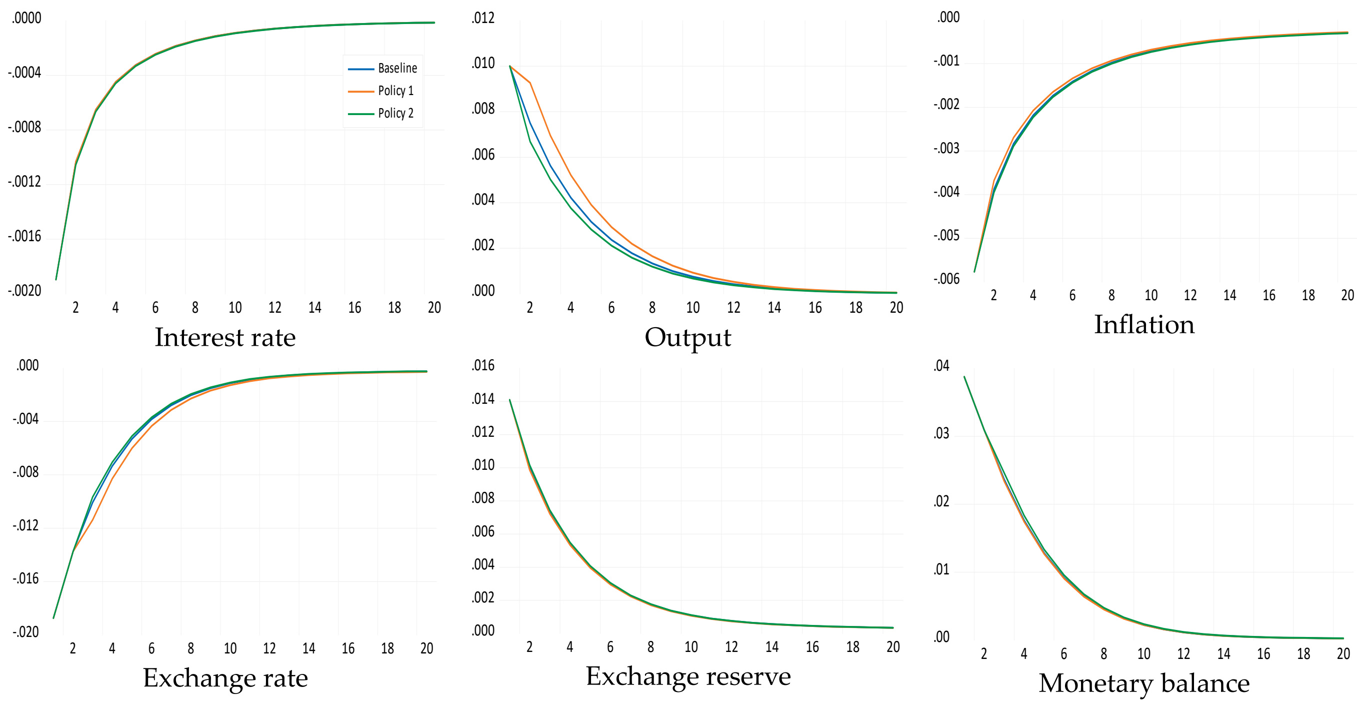

Figure 1. Simulation results of the impulse response of the external demand shock. (**a**) Baseline, $\omega_Y = 0.4$; Policy 1, $\omega_Y = 0.2$; (**b**) baseline, $\omega_\pi = 2.51$; Policy 2, $\omega_\pi = 2$.

Figure 1 illustrates that a positive shock in foreign demand significantly enhances South Korean exports, thereby expanding domestic firms' output. This shock not only augments the central bank's foreign exchange holdings due to increased export activities but also boosts foreign exchange reserves. The rise in exports enhances the central bank's foreign exchange holdings through currency exchange operations, leading to an increase in the domestic money supply. This surge in foreign exchange reserves bolsters the monetary balance, which, under typical conditions of a positive foreign demand shock, should appreciate the domestic currency and lower the nominal exchange rate. However, with proactive exchange rate intervention policies in place, we observe a decrease in the nominal exchange rate, indicating increased volatility of the Korean won. Our analysis of household utility functions reveals that an enhanced utility of the money balance reduces consumption and lowers inflation. Moreover, according to the household's optimal money demand function, an increase in the money balance results in decreased inflation. In response to a positive foreign demand shock, the economy experiences an increase in inflation due to heightened household consumption demand, which in turn stimulates economic output and increases labor demand, thereby reducing unemployment rates. The lower unemployment rate ultimately elevates national income in South Korea, signaling an overall prosperous economic trend. A comparison of these findings with existing literature identifies both agreements and discrepancies. For instance, studies by Hwang and Suh [106] and Shim [107] support the link between foreign demand and export growth, while Han and Hur [108] and Lee and Park [109] highlight the inflationary pressures arising from an increased monetary supply. Conversely, Lee and Kim [110], Lee and Yoon [111], and Cabral et al. [60] present a differing viewpoint on the responsiveness of the nominal exchange rate to monetary policy interventions, indicating less volatility than observed in our study. This analysis synthesizes insights from these studies to provide a comprehensive understanding of the South Korean economic response to external shocks.

In scenarios where inflation decreases and overall output increases, the central bank's interest rate policy, guided by the Taylor rule, results in reduced benchmark interest rates. This adjustment indicates a policy preference for easing inflation in response to positive foreign demand shocks. Furthermore, capital account controls distort non-covered interest rate parity, significantly increasing interest rate volatility. Additionally, a positive foreign demand shock boosts the labor supply in the trade sector, thereby raising marginal costs. When compared to the baseline model, Policy 1, which features a smaller output gap coefficient, indicates a shift in central bank policy towards stabilizing inflation. In contrast, Policy 2, with a smaller inflation gap coefficient, suggests a shift towards policies that promote growth. These interest rate policies, particularly Policy 1, enhance the positive impact of foreign demand shocks on output while mitigating inflation shocks, thus benefiting employment in the trade sector. Consequently, Policy 1, aimed at stabilizing inflation, proves superior to Policy 2 and the baseline model in terms of stimulating the trade sector and enhancing the positive impacts of foreign demand on South Korea's economy. Comparative analysis with existing literature shows both alignments and divergences. Studies by Kwark and Lim [112], Juselius and Takáts [113], and Cruz [114] underscore the effectiveness of inflation-stabilizing policies under similar economic conditions. However, Bongers and Díaz-Roldán [115], Onafowora and Owoye [116], and Chowdhury and Sundaram [117] argue that growth-promoting policies may not significantly dampen inflation in the face of external shocks. These insights enrich our understanding of the differential impacts of policy interventions under various economic stimuli.

Then, we turn to an analysis of the impact of external investment price shock on critical economic indicators in South Korea. The results are presented in Figure 2.

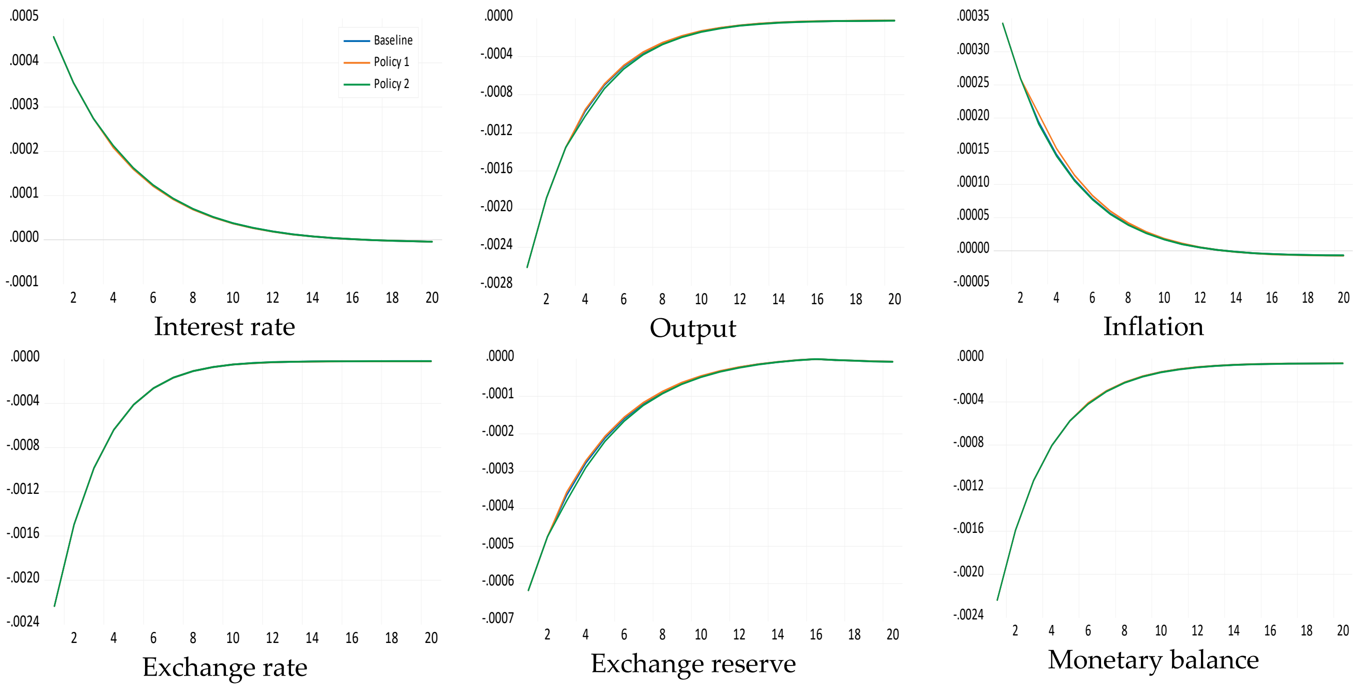

Figure 2. Simulation results of the impulse response of the external investment price shock. (**a**) Baseline, ω_Y = 0.4; Policy 1, ω_Y = 0.2; (**b**) baseline, ω_π = 2.51; Policy 2, ω_π = 2.

Figure 2 illustrates the impact of a positive shock on the real cost of foreign investment, a supply shock distinct from foreign demand shocks. Unlike demand shocks, increases in the real price of foreign investments raise costs in South Korea's non-trade sectors, subsequently reducing labor demand in these areas and adversely affecting overall output. Similarly to foreign demand shocks, this investment cost shock escalates costs in the domestic trade sector, increasing the prices of final goods and thereby driving up overall inflation rates. Furthermore, compared to foreign demand shocks, the effects of foreign supply shocks on the nominal exchange rate, foreign exchange reserves, and monetary balance are less pronounced, exerting a reduced impact on total output and inflation. Under this shock, import businesses require more foreign exchange, leading to declines in foreign reserves and monetary balances, which in turn influence the nominal exchange rate. In the baseline model, central bank policies prioritize stabilizing monetary value, indicating that an increase in the real cost of foreign investments significantly decreases the real exchange rate and subsequently lowers the nominal rate. When compared with existing literature, such as works by Cheng [118], Alba et al. [119], and Choi et al. [120], the findings concur on the inflationary impact of cost shocks but differ regarding the extent of exchange rate adjustments and policy effectiveness under varying economic conditions. Each study underscores the intricate roles that central bank policies and external shocks play in shaping national economic indicators.

Next, we examine the impact of an external demand shock on South Korea's critical economic indicators under various exchange rate policy frameworks. Our empirical results are displayed in Figure 3.

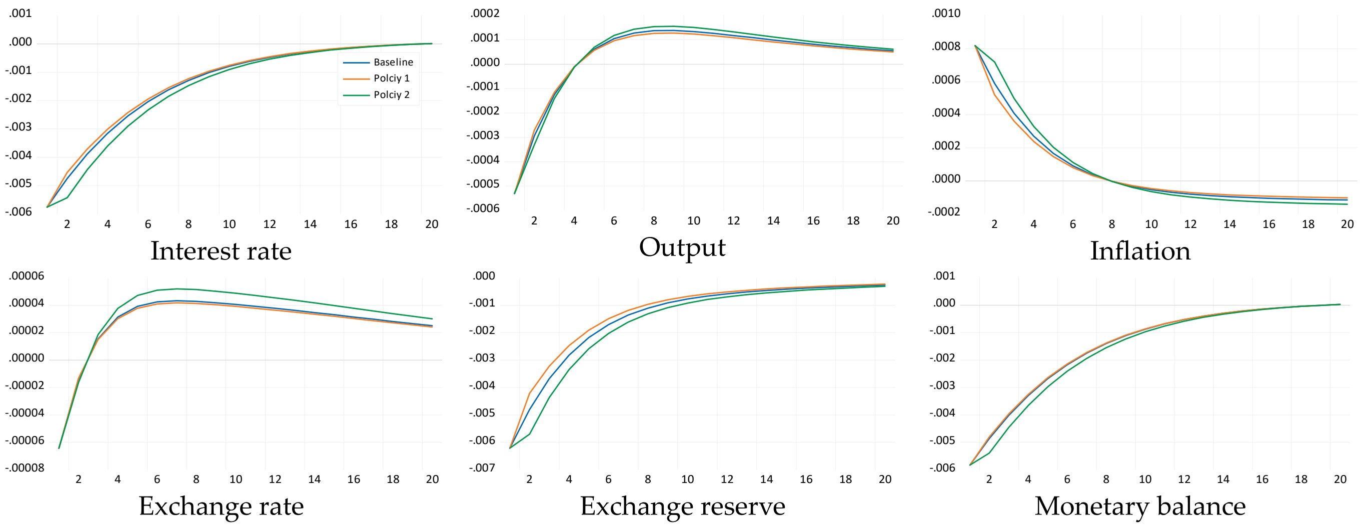

Figure 3. Simulation results of the impulse response of the external demand shock. (**a**) Baseline, o = −0.15; Policy 1, o = −0.25; (**b**) baseline, ϖ = 0.1; Policy 2, ϖ = 0.05.

Figure 3 presents the impulse responses to foreign demand shocks under different exchange rate policy objectives. Compared to interest rate policies, adjustments in exchange rate policies more significantly affect the benchmark interest rates and the nominal exchange rate. Policy 1, which aims to stabilize the exchange rate, exhibits significantly less volatility in the nominal exchange rate compared to the baseline model and Policy 2, which seeks to stabilize currency value. Additionally, Policy 1 enhances the positive impact of foreign demand on baseline interest rates due to increased foreign reserve elasticity, reflecting a central bank preference for stable exchange rates. In scenarios with distortions to uncovered interest rate parity, this policy also reduces the costs associated with capital outflows, leading to increased short-term capital outflows and domestic financial pressure, which in turn amplifies the impact on interest rates. As a result, Policy 1 also boosts the positive shock to total output and more effectively mitigates inflation compared to Policy 2, or the baseline model, establishing it as a superior policy choice given its impact on economic fluctuations. In comparison with existing literature, both similarities and differences emerge. Consistent with our findings, Yang [121] and Guzman et al. [122] observed the effectiveness of exchange rate stabilization policies in reducing economic volatility. Conversely, Fornaro [123], Bahmani-Oskooee and Baek [124], and Ha et al. [125] reported lesser impacts on inflation. Buera and Shin [126], Korinek [127], and Suh [128] highlighted the unintended consequences of increased capital outflows, aligning with our observations of heightened domestic financial pressure under Policy 1. This synthesis of our results with prior research enhances the understanding of policy impacts on South Korea's economy under various economic shocks.

Finally, we analyze the impact of external investment price shocks on South Korea's critical economic indicators within different exchange rate policy frameworks. Our empirical findings are presented in Figure 4.

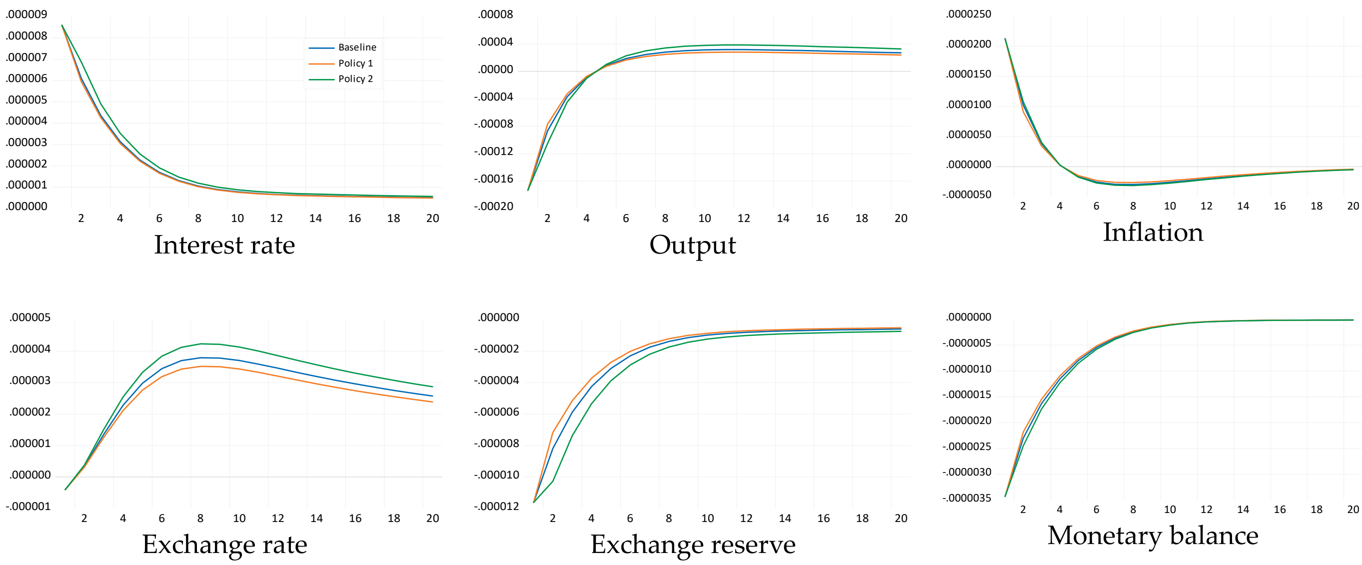

Figure 4. Simulation results of the impulse response of the external demand shock. (**a**) Baseline, $o = -0.15$; Policy 1, $o = -0.25$; (**b**) baseline, $\varpi = 0.1$; Policy 2, $\varpi = 0.05$.

Figure 4 clearly demonstrates that, under a positive shock to the real cost of foreign investments, exchange rate policy objectives, unlike interest rate policies, have a significant influence on the nominal rate. Policy 1, which focuses on stabilizing the exchange rate, notably increases the volatility of the nominal exchange rate in response to foreign investment shocks. Compared to the baseline model, Policy 1 has a more pronounced impact on the benchmark interest rate and achieves levels of output and inflation control that are advantageous for the central bank. Exchange rate Policies 1 and 2 exhibit substantial differences from the baseline model under this cost shock, primarily due to distortions in uncovered interest rate parity, which intensify capital outflows and strain domestic liquidity, thereby increasing the pressure on interest rate policies. However, Policy 1, with its focus on stabilizing the exchange rate, is found to be less effective than Policy 2, which targets stabilizing the currency, as it more significantly impacts the benchmark rate, foreign reserves, and monetary balance.

5. Conclusions

This study has examined the dynamic transformations in the Bank of Korea's monetary policy in response to the interplay of global demand and supply shocks. Grounded in a microeconomic theoretical framework and substantiated through Bayesian estimation and impulse response functions, our analysis offers new insights into the complex impacts of these shocks on South Korea's macroeconomic stability and policy direction. We have shown that in response to global economic disturbances, the Bank of Korea has adeptly navigated challenging conditions by implementing policy adjustments. These adjustments, which include both traditional and innovative monetary tools, have been crucial in stabilizing the domestic financial landscape and promoting sustained economic growth. Notably, the adaptation of the Taylor rule to the Korean economic context has effectively balanced the trade-offs between inflation control and economic growth. Moreover, our findings indicate that the central bank's strategic interventions in the foreign exchange market have played a key role in mitigating the negative impacts of exchange rate volatility on economic stability. This approach not only protects the economy from external shocks but also enhances the effectiveness of monetary transmission mechanisms, thus bolstering financial stability. In conclusion, the Bank of Korea's adaptive response to global demand and supply shocks through its monetary policy serves as an exemplary model of proactive economic governance. By continually refining its policy tools and strategies, the Bank not only shields the Korean economy from immediate shocks but also fortifies its fundamental economic structures against future challenges.

Building on the insights from our study, we identify several key policy recommendations that bridge theoretical constructs with actionable strategies, aiming to optimize monetary policy efficacy across varying economic landscapes. Firstly, the demonstrated agility of the Bank of Korea in responding to global disturbances underscores the imperative for central banks to cultivate flexible, dynamic monetary frameworks. This adaptability can be further enhanced by establishing an analytics hub within the central bank that utilizes real-time data and advanced predictive analytics to timely adjust policy measures in response to economic shifts. Secondly, our findings advocate for a synthesis of conventional monetary instruments with innovative financial technologies to navigate economic volatility more effectively. Specifically, the integration of digital financial tools could revolutionize liquidity management and bolster economic resilience, particularly during financial upheavals. Thirdly, the effective customization of the Taylor rule in the South Korean context, which has adeptly managed the trade-offs between controlling inflation and fostering growth, suggests that monetary policies should be specifically tailored to reflect the unique economic frameworks of individual nations. Regularly revising these policies through an independent review board could ensure their ongoing relevance and effectiveness in light of evolving economic conditions. Lastly, the positive impact of proactive foreign exchange interventions on economic stability in our study highlights the critical role of such strategies in shielding the economy from external financial shocks. Enhancing this approach involves constructing a more structured exchange rate management framework equipped with clear, predefined operational triggers. This framework should be grounded in transparent criteria and robust economic indicators, thereby reinforcing market confidence and enhancing the predictability of monetary policy actions. By implementing these strategies, central banks can not only respond more adeptly to immediate economic fluctuations but also position themselves strategically for long-term stability and growth. These recommendations aim to enrich the discourse on monetary policy by providing a nuanced understanding of the interplay between theoretical economic principles and their practical applications in a globalized market context.

Despite the comprehensive insights provided by our study into the dynamic adaptations of the Bank of Korea's monetary policy, several limitations must be acknowledged, each highlighting avenues for future research. First, this study primarily focuses on global demand and supply shocks, potentially overlooking the impact of financial market shocks such as asset price volatility or international capital flow reversals. Future research could expand the model to incorporate these elements, offering a more holistic view of monetary policy resilience under various types of financial disturbances. Second, the use of aggregate quarterly data may obscure finer temporal dynamics and rapid policy responses.

Subsequent studies could utilize high-frequency data or event studies that capture the immediate effects of policy shifts and economic shocks, thus refining our understanding of the interplay between policy decisions and market reactions. Third, while this research provides insights into South Korea's economic policy environment, its findings may not be directly applicable to other economies with different structural characteristics or institutional frameworks. Comparative studies involving multiple economies could validate the generalizability of the proposed adaptations of the Taylor rule and foreign exchange interventions. Fourth, this study does not extensively explore the emerging role of digital currencies and technological advancements in monetary policy. Future research should investigate how central banks can integrate digital financial tools and blockchain technology into their monetary frameworks to enhance policy effectiveness and address new economic challenges. Finally, given the significant role that environmental factors play in shaping economic landscapes, future research could benefit from exploring the impact of climate change on economic models. Specifically, it would be valuable to investigate how shifting climate conditions affect macroeconomic stability and monetary policy effectiveness. This research could examine the vulnerability of economies like South Korea, which are heavily dependent on certain industries that may be impacted by climate policies or changes in global climate patterns. Additionally, assessing the potential for incorporating sustainable and green finance principles into monetary policy frameworks could provide insights into how central banks might contribute to a transition towards a more sustainable economic model. Such studies would not only extend our understanding of the dynamic interactions between economic and environmental systems but also offer guidance on integrating climate risk into economic policy planning.

Author Contributions: Conceptualization, Y.H.; methodology, Y.H.; software, Z.T.; validation, Z.T.; formal analysis, Z.T.; investigation, Z.T.; resources, Z.T.; data curation, Z.T.; writing—original draft preparation, Z.T.; writing—review and editing, Y.H.; visualization, Z.T. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: The data presented in this study are available from the authors upon request.

Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A

Some foreign country (∗) identities:

$$Ba_t - Ba_{t-1} = Y_t^{T*} - Q_t I_t^{T*} + E_t B_{1,t-1}^{*}(B_{1,t-1}^{*} - 1) + E_t B_{2,t-1}^{*}(R_t^{*} - 1). \quad (A1)$$

In Equation (A1), Ba represents the current account balance. In this article, we postulate that the demand for imports by foreign countries is inversely related to the real price of exports from South Korea, meaning that as the prices of these exports increase, foreign demand for them tends to decrease. Conversely, this demand is directly proportional to the overall foreign demand, suggesting that as global demand rises, so does the demand for South Korean exports. Therefore, the export equation in this article is formulated to reflect these relationships, capturing how changes in real export prices and global demand levels influence South Korea's export volumes.

$$Y_t^{T*} = \left(\frac{P_t^{N*}}{E_t P_t^{H*}}\right)^{-\varrho} \epsilon_t^2. \quad (A2)$$

In Equation (A2), ϵ_t^2 represents the foreign demand shock.

Appendix B

The dynamic optimization results of each sector are organized in Appendix B.

Appendix B.1. Household Sector

First-order condition of household:

$$C:\ \lambda_t = \frac{1}{C_t - \Omega C_{t-1}} - \beta E_t \frac{\Omega}{C_{t+1} - \Omega C_t}. \tag{A3}$$

$$L_1:\ \lambda_t = \frac{P_t}{W_{1,t}} \frac{\alpha^{\frac{1}{n}}}{n} [\alpha^{\frac{1}{n}} L_{1,t}^{\frac{n-1}{n}} + (1-\alpha)^{\frac{1}{n}} L_{2,t}^{\frac{n-1}{n}}]^{\frac{1}{n-1}} L_{1,t}^{-\frac{1}{n}} \Phi. \tag{A4}$$

$$L_2:\ \lambda_t = \frac{P_t}{W_{2,t}} \frac{\alpha^{\frac{1}{n}}}{n} [\alpha^{\frac{1}{n}} L_{1,t}^{\frac{n-1}{n}} + (1-\alpha)^{\frac{1}{n}} L_{2,t}^{\frac{n-1}{n}}]^{\frac{1}{n-1}} L_{2,t}^{-\frac{1}{n}} \Phi. \tag{A5}$$

$$M:\ E_t \beta \frac{\lambda_{t+1}}{\lambda_t} \frac{P_t}{P_{t+1}} = 1 - \frac{\Psi}{\lambda_t} \frac{P_t}{M_t}. \tag{A6}$$

$$B_1\ :\ E_t \beta \frac{\lambda_{t+1}}{\lambda_t} \frac{P_t}{P_{t+1}} R_{1,t} = 1 + \frac{X(\frac{B_{1,t}+e_t B_{2,t}}{B_{1,t}} - \frac{B_1+eB_2}{B_1})^2}{2} - X\frac{e_t B_{2,t}}{B_{1,t}} (\frac{B_{1,t}+e_t B_{2,t}}{B_{1,t}} - \frac{B_1+eB_2}{B_1}). \tag{A7}$$

$$B_2:\ E_t \beta \frac{\lambda_{t+1}}{\lambda_t} \frac{P_t}{P_{t+1}} \frac{e_{t+1}}{e_t} R_{2,t} = 1 + \frac{X(\frac{B_{1,t}+e_t B_{2,t}}{B_{1,t}} - \frac{B_1+eB_2}{B_1})^2}{2} - X(\frac{B_{1,t}+e_t B_{2,t}}{B_{1,t}} - \frac{B_1+eB_2}{B_1}) \frac{B_{1,t}+e_t B_{2,t}}{B_{1,t}}. \tag{A8}$$

Appendix B.2. Firm Sector

First-order condition of representative final goods produced by the firm:

$$Y_t^N(f):\ Y_t^N(j) = [\frac{P_t(j)}{P_t}]^{-\xi} Y_t. \tag{A9}$$

$$P_t:\ P_t = \{\int_0^1 [P_t(j)]^{1-\xi} dj\}^{-\frac{1}{\xi-1}}. \tag{A10}$$

Appendix B.3. Tradable and Non-Tradable Sector

First-order condition of representative tradable sector:

$$\frac{K_T}{L_T}:\ \frac{K_T}{L_T} = \frac{\gamma_T}{1-\gamma_T} \frac{W_t^T}{P_t R^T}. \tag{A11}$$

$$MC_t^T:\ MC_t^T = (\frac{1}{\gamma_T})^{\gamma_T} (1-\gamma_T)^{(\gamma_T - 1)} \frac{1}{A_t^T} (\frac{W_t^T}{P_t})^{1-\gamma_T} (R_t^T)^{\gamma_T} \tag{A12}$$

Non-tradable sector:

$$\frac{I_t^N}{I_t^T}:\ \frac{I_t^N}{I_t^T} = \frac{\nu}{1-\nu} \frac{P_t^T}{P_t^H} E_t. \tag{A13}$$

$$\frac{K_t^N(j)}{L_t^T(j)}:\ \frac{K_t^N(j)}{L_t^T(j)} = \frac{\gamma_N}{1-\gamma_N} \frac{W_t^N}{P_t Q_t}. \tag{A14}$$

$$MC_t^N:\ MC_t^T = (\frac{1}{\gamma_N})^{\gamma_N} (1-\gamma_N)^{(\gamma_N - 1)} \frac{1}{A_t^N} (\frac{W_t^N}{P_t})^{1-\gamma_N} (Q_t)^{\gamma_N}. \tag{A15}$$

In this sector, the pricing decision $P(j)$ for firm j, irrespective of whether it operates in the trade or non-trade sector, is uniform across all firms. Each firm, regardless of its sector, selects the same optimal adjustment price, leading to a scenario where $P_t(j)$ equals P_t for all firms. Consequently, the optimal price equation, which is derived from the first-order condition of this scenario, is articulated as follows:

$$MC_t:\ MC_t = \frac{\xi-1}{\xi} + \frac{\Theta_\pi}{\xi} \frac{C_t - \Omega C_{t-1}}{Y_t^N} [(\frac{\pi_t}{\tilde{\pi}} - 1) \frac{\pi_t}{\tilde{\pi}} - \beta E_t (\frac{\pi_{t+1}}{\tilde{\pi}} - 1) \frac{\pi_{t+1}}{\tilde{\pi}}]. \tag{A16}$$

Appendix B.4. Commercial Bank Sector

Assuming that the bank's debt balance each period ($S_t^H - R_{t-1}^H S_{t-1}^H$) equals zero to satisfy the non-Ponzi game condition, solving the first-order conditions for the debts of non-trade and trade firms, respectively, yields the following:

$$R_t^N:\ R_t^N = R_t^H + [\frac{\Theta_{cb}}{2}(\frac{HD_t}{HD_t+TD_tE_t} - \frac{\widetilde{HD}}{\widetilde{HD}+\widetilde{TDE}})^2 + \Theta_{cb}(\frac{HD_t}{HD_t+TD_tE_t} - \frac{\widetilde{HD}}{\widetilde{HD}+\widetilde{TDE}})(1 - \frac{HD_t}{HD_t+TD_tE_t})]R_t^H. \tag{A17}$$

$$R_t^T:\ R_t^N = R_t^H + [\frac{\Theta_{cb}}{2}(\frac{HD_t}{HD_t+TD_tE_t} - \frac{\widetilde{HD}}{\widetilde{HD}+\widetilde{TDE}})^2 - \Theta_{cb}(\frac{HD_t}{HD_t+TD_tE_t} - \frac{\widetilde{HD}}{\widetilde{HD}+\widetilde{TDE}})\frac{HD_t}{HD_t+TD_tE_t}]R_t^H. \tag{A18}$$

This article assumes that the financial system in South Korea is not efficient. Therefore, the right side of the plus sign in Equations (20) and (A17) represents the interest spread between the banking sector and the two real sectors, which measures the degree of financial friction in the banking sector's domestic credit operations. Here, the deposit rate is equal to the central bank's risk-free rate, that is, $R_t^H = R_t$.

$$R_t:\ R_t = R_{1,t} + [\frac{\Theta_m(\frac{B_{1,t}+e_tB_{2,t}}{B_{1,t}} - \frac{B_1+eB_2}{B_1})^2}{2} + \Theta_m(\frac{B_{1,t}+e_tB_{2,t}}{B_{1,t}} - \frac{B_1+eB_2}{B_1})(1 - \frac{B_{1,t}+e_tB_{2,t}}{B_{1,t}})]R_t. \tag{A19}$$

$$R_t^T:\ R_t^T = R_{2,t} + [\frac{\Theta_m(\frac{B_{1,t}+e_tB_{2,t}}{B_{1,t}} - \frac{B_1+eB_2}{B_1})^2}{2} - \Theta_m(\frac{B_{1,t}+e_tB_{2,t}}{B_{1,t}} - \frac{B_1+eB_2}{B_1})\frac{B_{1,t}+e_tB_{2,t}}{B_{1,t}}]R_t. \tag{A20}$$

Equation (A19) in this paper represents the disparity between the interest rate on bonds issued by the Bank of Korea and the rate on domestic currency bonds held by Korean households. Equation (A20) captures the difference in interest rates between bonds issued by foreign central banks and those on foreign currency bonds held by Korean households. These differences collectively illustrate the extent of financial friction in the banking sector's intermediary services under the conditions of an open economy.

References

1. Agénor, P.-R.; Alper, K.; da Silva, L.P. External Shocks, Financial Volatility and Reserve Requirements in an Open Economy. *J. Int. Money Finance* **2018**, *83*, 23–43.
2. Kim, J.; Kim, S.; Park, D. Monetary Policy Shocks and Exchange Rates in Asian Countries. *Jpn. World Econ.* **2020**, *56*, 101041.
3. Oskolkov, A. Exchange Rate Policy and Heterogeneity in Small Open Economies. *J. Int. Econ.* **2023**, *142*, 103750.
4. Pasten, E.; Schoenle, R.; Weber, M. The Propagation of Monetary Policy Shocks in a Heterogeneous Production Economy. *J. Monet. Econ.* **2020**, *116*, 1–22.
5. Miranda-Agrippino, S.; Ricco, G. The Transmission of Monetary Policy Shocks. *Am. Econ. J. Macroecon.* **2021**, *13*, 74–107.
6. Holm, M.B.; Paul, P.; Tischbirek, A. The Transmission of Monetary Policy under the Microscope. *J. Polit. Econ.* **2021**, *129*, 2861–2904. https://doi.org/10.1086/715416.
7. Ha, J. Financial Market Spillovers of U.S. Monetary Policy Shocks. *Rev. Int. Econ.* **2021**, *29*, 1221–1274. https://doi.org/10.1111/roie.12542.
8. Lee, E.K.; Park, K. Identifying Government Spending Shocks and Multipliers in Korea. *J. Asian Econ.* **2021**, *76*, 101366.
9. Shareef, A.O.; Prabheesh, K.P. Do Foreign Banks in India Respond to Global Monetary Policy Shocks? A SVAR Analysis. *Stud. Econ. Finance* **2021**, *38*, 303–316.
10. Ha, J.; Lee, S.; So, I. The Impact of Uncertainty Shocks: Evidence from Geopolitical Swings on the Korean Peninsula. *Oxf. Bull. Econ. Stat.* **2022**, *84*, 21–56. https://doi.org/10.1111/obes.12456.
11. Hao, Y.; Kong, M. Economic Effect of the Golf Simulation Industry in Korea: An Analysis Based on the SVAR Model. *Humanit. Soc. Sci. Commun.* **2022**, *9*, 1–11.

12. Vechsuruck, T.P. The Political Economy of Exchange Rates and Export-Led Industrialization in South Korea. *Rev. Polit. Econ.* **2024**, 1–24. https://doi.org/10.1080/09538259.2024.2312355.
13. Dominguez, K.M.E. Revisiting Exchange Rate Rules. *IMF Econ. Rev.* **2020**, *68*, 693–719. https://doi.org/10.1057/s41308-020-00120-6.
14. Leni Anguyo, F.; Gupta, R.; Kotzé, K. Monetary Policy, Financial Frictions and Structural Changes in Uganda: A Markov-Switching DSGE Approach. *Econ. Res.-Ekon. Istraživanja* **2020**, *33*, 1538–1561.
15. Rodríguez, G.; Castillo, P.; Hasegawa, H. Does the Central Bank of Peru Respond to Exchange Rate Movements? A Bayesian Estimation of a New Keynesian DSGE Model with FX Interventions. *North Am. J. Econ. Finance* **2023**, *68*, 101965.
16. Gereffi, G.; Lim, H.-C.; Lee, J. Trade Policies, Firm Strategies, and Adaptive Reconfigurations of Global Value Chains. *J. Int. Bus. Policy* **2021**, *4*, 506–522. https://doi.org/10.1057/s42214-021-00102-z.
17. D'Orazio, P.; Thole, S. Climate-Related Financial Policy Index: A Composite Index to Compare the Engagement in Green Financial Policymaking at the Global Level. *Ecol. Indic.* **2022**, *141*, 109065.
18. Zenchenko, S.; Strielkowski, W.; Smutka, L.; Vacek, T.; Radyukova, Y.; Sutyagin, V. Monetization of the Economies as a Priority of the New Monetary Policy in the Face of Economic Sanctions. *J. Risk Financ. Manag.* **2022**, *15*, 140.
19. Kim, S.; Lee, J.; McKibbin, W.J. Asia's Rebalancing and Growth. *World Econ.* **2018**, *41*, 2709–2731. https://doi.org/10.1111/twec.12608.
20. Karmelavičius, J.; Ramanauskas, T. Bank Credit and Money Creation in a DSGE Model of a Small Open Economy. *Balt. J. Econ.* **2019**, *19*, 296–333. https://doi.org/10.1080/1406099X.2019.1640958.
21. Chadha, J.S. The New Art of Central Banking. *Natl. Inst. Econ. Rev.* **2015**, *234*, R27–R39.
22. Jordà, Ò.; Schularick, M.; Taylor, A.M. Macrofinancial History and the New Business Cycle Facts. *NBER Macroecon. Annu.* **2017**, *31*, 213–263. https://doi.org/10.1086/690241.
23. Gomes, S.; Jacquinot, P.; Mestre, R.; Sousa, J. Global Policy at the Zero Lower Bound in a Large-Scale DSGE Model. *J. Int. Money Finance* **2015**, *50*, 134–153.
24. Tng, B.H.; Kwek, K.T. Financial Stress, Economic Activity and Monetary Policy in the ASEAN-5 Economies. *Appl. Econ.* **2015**, *47*, 5169–5185. https://doi.org/10.1080/00036846.2015.1044646.
25. Arias, J.E.; Erceg, C.; Trabandt, M. The Macroeconomic Risks of Undesirably Low Inflation. *Eur. Econ. Rev.* **2016**, *88*, 88–107.
26. Fernández-Villaverde, J.; Guerrón-Quintana, P.; Kuester, K.; Rubio-Ramírez, J. Fiscal Volatility Shocks and Economic Activity. *Am. Econ. Rev.* **2015**, *105*, 3352–3384.
27. Howes, C. Financial Constraints, Sectoral Heterogeneity, and the Cyclicality of Investment. *Rev. Econ. Stat.* **2023**, 1–45.
28. English, W.B.; López-Salido, J.D.; Tetlow, R.J. The Federal Reserve's Framework for Monetary Policy: Recent Changes and New Questions. *IMF Econ. Rev.* **2015**, *63*, 22–70. https://doi.org/10.1057/imfer.2014.27.
29. Han, X.; Wei, S.-J. International Transmissions of Monetary Shocks: Between a Trilemma and a Dilemma. *J. Int. Econ.* **2018**, *110*, 205–219.
30. Klingelhöfer, J.; Sun, R. Macroprudential Policy, Central Banks and Financial Stability: Evidence from China. *J. Int. Money Finance* **2019**, *93*, 19–41.
31. Ghosh, A.R.; Ostry, J.D.; Qureshi, M.S. Exchange Rate Management and Crisis Susceptibility: A Reassessment. *IMF Econ. Rev.* **2015**, *63*, 238–276. https://doi.org/10.1057/imfer.2014.29.
32. Yildirim, Z.; Ivrendi, M. Exchange Rate Fluctuations and Macroeconomic Performance: Evidence from Four Fast-Growing Emerging Economies. *J. Econ. Stud.* **2016**, *43*, 678–698.
33. Viziniuc, M. Winners and Losers of Central Bank Foreign Exchange Interventions. *Econ. Model.* **2021**, *94*, 748–767.
34. Dou, W.W.; Lo, A.W.; Muley, A.; Uhlig, H. Macroeconomic Models for Monetary Policy: A Critical Review from a Finance Perspective. *Annu. Rev. Financ. Econ.* **2020**, *12*, 95–140. https://doi.org/10.1146/annurev-financial-012820-025928.
35. Agoba, A.M.; Fiador, V.; Sarpong-Kumankoma, E.; Sa-Aadu, J. Central Bank Independence, Exchange Rate Regime, Monetary Policy and Inflation in Africa. In *The Economics of Banking and Finance in Africa*; Abor, J.Y., Adjasi, C.K.D., Eds.; Palgrave Macmillan Studies in Banking and Financial Institutions; Springer International Publishing: Cham, 2022; pp. 183–225 ISBN 978-3-031-04161-7.
36. Dokas, I.; Oikonomou, G.; Panagiotidis, M.; Spyromitros, E. Macroeconomic and Uncertainty Shocks' Effects on Energy Prices: A Comprehensive Literature Review. *Energies* **2023**, *16*, 1491.
37. Boucekkine, R.; Laksaci, M.; Touati-Tliba, M. Long-Run Stability of Money Demand and Monetary Policy: The Case of Algeria. *J. Econ. Asymmetries* **2021**, *24*, e00217.

38. Nyati, M.C.; Muzindutsi, P.-F.; Tipoy, C.K. Macroprudential and Monetary Policy Interactions and Coordination in South Africa: Evidence from Business and Financial Cycle Synchronisation. *Economies* **2023**, *11*, 272.
39. Benes, J.; Berg, A.; Portillo, R.A.; Vavra, D. Modeling Sterilized Interventions and Balance Sheet Effects of Monetary Policy in a New-Keynesian Framework. *Open Econ. Rev.* **2015**, *26*, 81–108. https://doi.org/10.1007/s11079-014-9320-1.
40. Cesa-Bianchi, A.; Rebucci, A. Does Easing Monetary Policy Increase Financial Instability? *J. Financ. Stab.* **2017**, *30*, 111–125.
41. Bernanke, B.S. The New Tools of Monetary Policy. *Am. Econ. Rev.* **2020**, *110*, 943–983.
42. Yoshino, N.; Kaji, S.; Asonuma, T. Exchange Rate Regime Switching in Malaysia and Singapore in Response to China’s Move to a Basket Peg: A DSGE Analysis. *J. Asian Econ.* **2016**, *46*, 17–37.
43. Ca’Zorzi, M.; Kolasa, M.; Rubaszek, M. Exchange Rate Forecasting with DSGE Models. *J. Int. Econ.* **2017**, *107*, 127–146.
44. Jalali-Naini, A.R.; Naderian, M.A. Financial Vulnerability, Fiscal Procyclicality and Inflation Targeting in Developing Commodity Exporting Economies. *Q. Rev. Econ. Finance* **2020**, *77*, 84–97.
45. Fernando, R. Global Impact of Loss of Confidence in Asian Emerging Markets. *World Econ.* **2020**, *43*, 1907–1927. https://doi.org/10.1111/twec.12926.
46. Rodríguez, G.; Vassallo, R.; Castillo, P. Effects of External Shocks on Macroeconomic Fluctuations in Pacific Alliance Countries. *Econ. Model.* **2023**, *124*, 106302.
47. Shvets, S. Public Investment as a Growth Driver for a Commodity-Exporting Economy: Sizing up the Fiscal-Monetary Involvement. *Natl. Account. Rev.* **2024**, *6*, 95–115.
48. Viktorov, I.; Abramov, A. The 2014–2015 Financial Crisis in Russia and the Foundations of Weak Monetary Power Autonomy in the International Political Economy. *New Polit. Econ.* **2020**, *25*, 487–510. https://doi.org/10.1080/13563467.2019.1613349.
49. Bitar, J. The Unique Dollarization Case of Lebanon. *Econ. Syst.* **2021**, *45*, 100765.
50. Diluiso, F.; Annicchiarico, B.; Kalkuhl, M.; Minx, J.C. Climate Actions and Macro-Financial Stability: The Role of Central Banks. *J. Environ. Econ. Manag.* **2021**, *110*, 102548.
51. Elahi, N.; Salimi, F.; Masoomzadeh, E. Investigating Asymmetric Effects of Monetary Shocks on the Exchange Rate and Trade Balance, with an Emphasis on Inflation Targeting. *Procedia Econ. Finance* **2016**, *36*, 165–176.
52. Nasir, M.A.; Huynh, T.L.D.; Vo, X.V. Exchange Rate Pass-through & Management of Inflation Expectations in a Small Open Inflation Targeting Economy. *Int. Rev. Econ. Finance* **2020**, *69*, 178–188.
53. Valogo, M.K.; Duodu, E.; Yusif, H.; Baidoo, S.T. Effect of Exchange Rate on Inflation in the Inflation Targeting Framework: Is the Threshold Level Relevant? *Res. Glob.* **2023**, *6*, 100119.
54. Nakatani, R. Adjustment to Negative Price Shocks by a Commodity Exporting Economy: Does Exchange Rate Flexibility Resolve a Balance of Payments Crisis? *J. Asian Econ.* **2018**, *57*, 13–35.
55. De, K.; Sun, W. Is the Exchange Rate a Shock Absorber or a Source of Shocks? Evidence from the US. *Econ. Model.* **2020**, *89*, 1–9.
56. Kaltenbrunner, A.; Painceira, J.P. The Impossible Trinity: Inflation Targeting, Exchange Rate Management and Open Capital Accounts in Emerging Economies. *Dev. Change* **2017**, *48*, 452–480. https://doi.org/10.1111/dech.12304.
57. Ahmed, R.; Aizenman, J.; Jinjarak, Y. Inflation and Exchange Rate Targeting Challenges under Fiscal Dominance. *J. Macroecon.* **2021**, *67*, 103281.
58. Olamide, E.; Ogujiuba, K.; Maredza, A. Exchange Rate Volatility, Inflation and Economic Growth in Developing Countries: Panel Data Approach for SADC. *Economies* **2022**, *10*, 67.
59. Ebeke, C.; Fouejieu, A. Inflation Targeting and Exchange Rate Regimes in Emerging Markets. *BE J. Macroecon.* **2018**, *18*, 20170146. https://doi.org/10.1515/bejm-2017-0146.
60. Cabral, R.; Carneiro, F.G.; Mollick, A.V. Inflation Targeting and Exchange Rate Volatility in Emerging Markets. *Empir. Econ.* **2020**, *58*, 605–626. https://doi.org/10.1007/s00181-018-1478-8.
61. Keefe, H.G. The Impact of Exchange Rate Volatility on Inflation Targeting Monetary Policy in Emerging and Advanced Economies. *Int. Finance* **2020**, *23*, 417–433. https://doi.org/10.1111/infi.12368.
62. Değerli, A.; Fendoğlu, S. Reserve Option Mechanism as a Stabilizing Policy Tool: Evidence from Exchange Rate Expectations. *Int. Rev. Econ. Finance* **2015**, *35*, 166–179.
63. Corsetti, G.; Kuester, K.; Müller, G.J. Fixed on Flexible: Rethinking Exchange Rate Regimes after the Great Recession. *IMF Econ. Rev.* **2017**, *65*, 586–632. https://doi.org/10.1057/s41308-017-0038-0.
64. Carrière-Swallow, Y.; Magud, N.E.; Yépez, J.F. Exchange Rate Flexibility, the Real Exchange Rate, and Adjustment to Terms-of-trade Shocks. *Rev. Int. Econ.* **2021**, *29*, 439–483. https://doi.org/10.1111/roie.12534.

65. Uz Akdogan, I. The Effects of Macroprudential Policies on Managing Capital Flows. *Empir. Econ.* **2020**, *58*, 583–603. https://doi.org/10.1007/s00181-018-1541-5.
66. Yildirim, Z. Global Financial Risk, the Risk-Taking Channel, and Monetary Policy in Emerging Markets. *Econ. Model.* **2022**, *116*, 106042.
67. Coulibaly, L. Monetary Policy in Sudden Stop-Prone Economies. *Am. Econ. J. Macroecon.* **2023**, *15*, 141–176. https://doi.org/10.1257/mac.20200201.
68. Al-Abri, A.S. Optimal Exchange Rate Policy for a Small Oil-Exporting Country: A Dynamic General Equilibrium Perspective. *Econ. Model.* **2014**, *36*, 88–98.
69. Kollmann, R.; Pataracchia, B.; Raciborski, R.; Ratto, M.; Roeger, W.; Vogel, L. The Post-Crisis Slump in the Euro Area and the US: Evidence from an Estimated Three-Region DSGE Model. *Eur. Econ. Rev.* **2016**, *88*, 21–41.
70. Tan, Z.; Tang, Q.; Meng, J. The Effect of Monetary Policy on China's Housing Prices before and after 2017: A Dynamic Analysis in DSGE Model. *Land Use Policy* **2022**, *113*, 105927.
71. Yin, Z.; Peng, H.; Xiao, W.; Xiao, Z. Capital Control and Monetary Policy Coordination: Tobin Tax Revisited. *Res. Int. Bus. Finance* **2022**, *59*, 101514.
72. Liu, D.; Sun, W.; Chang, L. Monetary–Fiscal Policy Regime and Macroeconomic Dynamics in China. *Econ. Model.* **2021**, *95*, 121–135.
73. Zhang, X.; Zhang, Y.; Zhu, Y. Covid-19 Pandemic, Sustainability of Macroeconomy, and Choice of Monetary Policy Targets: A Nk-Dsge Analysis Based on China. *Sustainability* **2021**, *13*, 3362.
74. Rotemberg, J.J. Sticky Prices in the United States. *J. Polit. Econ.* **1982**, *90*, 1187–1211. https://doi.org/10.1086/261117.
75. Boivin, J.; Giannoni, M.P.; Mihov, I. Sticky Prices and Monetary Policy: Evidence from Disaggregated US Data. *Am. Econ. Rev.* **2009**, *99*, 350–384.
76. Dexter, A.S.; Levi, M.D.; Nault, B.R. Sticky Prices: The Impact of Regulation. *J. Monet. Econ.* **2002**, *49*, 797–821.
77. Bajraj, G.; Lorca, J.; Wlasiuk, J.M. On Foreign Drivers of Emerging Markets Fluctuations. *Econ. Model.* **2023**, *129*, 106533.
78. Agénor, P.-R.; Jia, P. Capital Controls and Welfare with Cross-Border Bank Capital Flows. *J. Macroecon.* **2020**, *65*, 103220.
79. Lozej, M.; Onorante, L.; Rannenberg, A. Countercyclical Capital Regulation in a Small Open Economy DSGE Model. *Macroecon. Dyn.* **2023**, *27*, 1230–1267.
80. García-Cicco, J.; García-Schmidt, M. Revisiting the Exchange Rate Pass through: A General Equilibrium Perspective. *J. Int. Econ.* **2020**, *127*, 103389.
81. Davis, J.S.; Fujiwara, I.; Huang, K.X.; Wang, J. Foreign Exchange Reserves as a Tool for Capital Account Management. *J. Monet. Econ.* **2021**, *117*, 473–488.
82. Sun, Z.; Xu, X.; Yang, W. Capital Account Liberalization, External Shocks and Economic Fluctuations of China. *Int. Rev. Econ. Finance* **2022**, *82*, 220–240.
83. Canzoneri, M.; Cumby, R. Optimal Exchange Intervention in an Inflation Targeting Regime: Some Cautionary Tales. *Open Econ. Rev.* **2014**, *25*, 429–450. https://doi.org/10.1007/s11079-013-9287-3.
84. Escudé, G.J. The Possible Trinity: Optimal Interest Rate, Exchange Rate, and Taxes on Capital Flows in a DSGE Model for a Small Open Economy. *Economics* **2014**, *8*, 20140025. https://doi.org/10.5018/economics-ejournal.ja.2014-25.
85. Acosta, J.; Rancan, A.; Sergi, F. Multi-Country Modelling at the Commission of the European Communities: Centralised and Decentralised Approaches. *Eur. Econ. Rev.* **2023**, *158*, 104564.
86. Kang, W.; Ratti, R.A.; Vespignani, J.L. The Implications of Monetary Expansion in China for the US Dollar. *J. Asian Econ.* **2016**, *46*, 71–84.
87. Bhaskar, R.; Hunjra, A.I.; Bansal, S.; Pandey, D.K. Central Bank Digital Currencies: Agendas for Future Research. *Res. Int. Bus. Finance* **2022**, *62*, 101737.
88. Liu, Z.; Spiegel, M.M. Optimal Monetary Policy and Capital Account Restrictions in a Small Open Economy. *IMF Econ. Rev.* **2015**, *63*, 298–324. https://doi.org/10.1057/imfer.2015.8.
89. Prasad, N. Sterilized Interventions and Capital Controls. *J. Int. Money Finance* **2018**, *88*, 101–121.
90. Lee, J.; Song, J. Housing and Business Cycles in Korea: A Multi-Sector Bayesian DSGE Approach. *Econ. Model.* **2015**, *45*, 99–108.
91. Kim, T.B. Analysis on Korean Economy with an Estimated DSGE Model after 2000. *KDI J. Econ. Policy* **2014**, *36*, 1–64.
92. An, S.; Kang, H. Oil Shocks in a DSGE Model for the Korean Economy. In *Commodity Prices and Markets*; University of Chicago Press, 2011; pp. 295–321.

93. Cho, S.-W.S. Household Wealth Accumulation and Portfolio Choices in Korea. *J. Hous. Econ.* **2010**, *19*, 13–25.
94. Chang, C.; Liu, Z.; Spiegel, M.M. Capital Controls and Optimal Chinese Monetary Policy. *J. Monet. Econ.* **2015**, *74*, 1–15.
95. Bekiros, S.; Nilavongse, R.; Uddin, G.S. Bank Capital Shocks and Countercyclical Requirements: Implications for Banking Stability and Welfare. *J. Econ. Dyn. Control* **2018**, *93*, 315–331.
96. Gambacorta, L.; Signoretti, F.M. Should Monetary Policy Lean against the Wind?: An Analysis Based on a DSGE Model with Banking. *J. Econ. Dyn. Control* **2014**, *43*, 146–174.
97. Katayama, M.; Kim, K.H. Uncertainty Shocks and the Relative Price of Investment Goods. *Rev. Econ. Dyn.* **2018**, *30*, 163–178.
98. Jeong, K.-Y.; Kim, D. Mark-Ups and Rent Sharing: The Case of Korean Manufacturing Firms. *Glob. Econ. Rev.* **2012**, *41*, 131–145. https://doi.org/10.1080/1226508X.2012.684466.
99. Rhee, W. Can RBC Models Explain Business Cycles in Korea? *Macroecon. Dyn.* **2017**, *21*, 599–623.
100. Wong, C.-Y.; Eng, Y.-K. International Business Cycle Co-Movement and Vertical Specialization Reconsidered in Multistage Bayesian DSGE Model. *Int. Rev. Econ. Finance* **2013**, *26*, 109–124.
101. Woo, J. Policy Implications of Investment Rate Distributions in the Korean Manufacturing Sector. *Korean Econ. Rev.* **2020**, *36*, 445–480.
102. Kang, H.; Suh, H. Macroeconomic Dynamics in Korea during and after the Global Financial Crisis: A Bayesian DSGE Approach. *Int. Rev. Econ. Finance* **2017**, *49*, 386–421.
103. Hur, J.; Rhee, W. Multipliers of Expected vs. Unexpected Fiscal Shocks: The Case of Korea. *Econ. Model.* **2020**, *85*, 244–254.
104. He, Y.; Lee, M. Macroeconomic Effects of Energy Price: New Insight from Korea? *Mathematics* **2022**, *10*, 2653.
105. Aruoba, S.B.; Bocola, L.; Schorfheide, F. Assessing DSGE Model Nonlinearities. *J. Econ. Dyn. Control* **2017**, *83*, 34–54.
106. Hwang, S.J.; Suh, H. Overall and Time-Varying Effects of Global and Domestic Uncertainty on the Korean Economy. *J. Asian Econ.* **2021**, *76*, 101344.
107. Shim, J.H. Monetary Policy and Net Exports Externalities in the Small Open Economy. *J. Money Credit Bank.* **2023**, jmcb.13047. https://doi.org/10.1111/jmcb.13047.
108. Han, J.-S.; Hur, J. Macroeconomic Effects of Monetary Policy in Korea: A Time-Varying Coefficient VAR Approach. *Econ. Model.* **2020**, *89*, 142–152.
109. Lee, S.; Park, J. Identifying Monetary Policy Shocks Using Economic Forecasts in Korea. *Econ. Model.* **2022**, *111*, 105803.
110. Lee, S.; Kim, Y.M. Effect of Foreign Exchange Intervention: The Case of Korea. *Pac. Econ. Rev.* **2020**, *25*, 641–659. https://doi.org/10.1111/1468-0106.12317.
111. Lee, Y.; Yoon, S.-M. Relationship between International Reserves and FX Rate Movements. *Sustainability* **2020**, *12*, 6961.
112. Kwark, N.-S.; Lim, H. Have the Free Trade Agreements Reduced Inflation Rates? *Econ. Lett.* **2020**, *189*, 109054.
113. Juselius, M.; Takáts, E. Inflation and Demography through Time. *J. Econ. Dyn. Control* **2021**, *128*, 104136.
114. Cruz, C.J. Reduced Macroeconomic Volatility after Adoption of Inflation Targeting: Impulses or Propagation? *Int. Rev. Econ. Finance* **2022**, *82*, 759–770.
115. Bongers, A.; Díaz-Roldán, C. Stabilization Policies and Technological Shocks: Towards a Sustainable Economic Growth Path. *Sustainability* **2019**, *11*, 205.
116. Onafowora, O.; Owoye, O. Impact of External Debt Shocks on Economic Growth in Nigeria: A SVAR Analysis. *Econ. Change Restruct.* **2019**, *52*, 157–179. https://doi.org/10.1007/s10644-017-9222-5.
117. Chowdhury, A.; Sundaram, J.K. Inflation and Development: Central Bank Stabilization Policies Revisited. *Development* **2023**, *66*, 3–14. https://doi.org/10.1057/s41301-023-00359-2.
118. Cheng, C.H.J. Effects of Foreign and Domestic Economic Policy Uncertainty Shocks on South Korea. *J. Asian Econ.* **2017**, *51*, 1–11.
119. Alba, J.D.; Liu, J.; Chia, W.-M.; Park, D. Foreign Output Shock in Small Open Economies: A Welfare Evaluation of Monetary Policy Regimes. *Econ. Model.* **2020**, *86*, 101–116.
120. Choi, S.; Furceri, D.; Yoon, C. Policy Uncertainty and Foreign Direct Investment. *Rev. Int. Econ.* **2021**, *29*, 195–227. https://doi.org/10.1111/roie.12495.
121. Yang, S.-P. Exchange Rate Dynamics and Stock Prices in Small Open Economies: Evidence from Asia-Pacific Countries. *Pac.-Basin Finance J.* **2017**, *46*, 337–354.

122. Guzman, M.; Ocampo, J.A.; Stiglitz, J.E. Real Exchange Rate Policies for Economic Development. *World Dev.* **2018**, *110*, 51–62.
123. Fornaro, L. Financial Crises and Exchange Rate Policy. *J. Int. Econ.* **2015**, *95*, 202–215.
124. Bahmani-Oskooee, M.; Baek, J. Do Exchange Rate Changes Have Symmetric or Asymmetric Effects on the Demand for Money in Korea? *Rev. Econ. Anal.* **2017**, *9*, 155–168.
125. Ha, J.; Stocker, M.M.; Yilmazkuday, H. Inflation and Exchange Rate Pass-Through. *J. Int. Money Finance* **2020**, *105*, 102187.
126. Buera, F.J.; Shin, Y. Productivity Growth and Capital Flows: The Dynamics of Reforms. *Am. Econ. J. Macroecon.* **2017**, *9*, 147–185.
127. Korinek, A. Regulating Capital Flows to Emerging Markets: An Externality View. *J. Int. Econ.* **2018**, *111*, 61–80.
128. Suh, J.-H. Capital Outflow Waves in the Korean Economy during Financial Turmoil: Its Implications and Policy Suggestions. *J. Korea Trade* **2019**, *23*, 113–127.