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Currency internationalization and international financial centers: historical logic, evolutionary mechanisms, and implications for China

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Drawing on the history of globalization, this paper examines the historical logic and evolutionary mechanisms of the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers through five representative cases. The findings indicate that this relationship is essentially characterized by mutual reinforcement between the deepening of international currency functions and the spatial expansion of international financial centers. This relationship promotes the co-evolution of currency internationalization and international financial centers through signaling effects, network effects, and synergistic effects. China's experience shows that, although renminbi (RMB) internationalization and the development of international financial centers have undergone three stages characterized by policy support, demand-driven development, and expansion and deepening, their mutually reinforcing development still faces the challenges of a relatively weak foundation of trust in the RMB and the need for further improvement in market-oriented financial mechanisms. Accordingly, fostering the mutually reinforcing and symbiotic relationship between RMB internationalization and international financial centers requires balancing financial openness with financial security, improving the spatial configuration of a multi-tiered system of international financial centers, and leveraging the synergistic role of digital financial infrastructure in cross-border payments and market connectivity. By integrating the deepening of currency functions with the expansion of financial space, this paper develops an analytical framework that provides theoretical insights into understanding the evolution of the international financial landscape, coordinating the advancement of RMB internationalization and international financial center development in China, and promoting the high-quality development of China's financial sector.

KEYWORDS
currency internationalization, evolutionary mechanisms, historical logic, implications for China, international financial centers, mutual reinforcement and symbiosis

1 Introduction

Currency internationalization and the development of international financial centers are closely related to a country's monetary influence and its capacity to allocate financial resources within the international financial system (Green and Gruin, 2021). Their levels of development reflect a country's international financial competitiveness and have important implications for understanding the evolution of the international financial landscape. In January 2024, China identified a strong currency and strong international financial centers as key elements of becoming a financial powerhouse, underscoring the importance of promoting currency internationalization and international financial center development for the high-quality development of China's financial sector. Since the concept of RMB internationalization was first proposed in 1988, the RMB has made significant progress in expanding its international currency functions and strengthening its influence in Belt and Road Initiative (BRI) countries and across Asia. In May 2022, the International Monetary Fund (IMF) increased the RMB's weight in the Special Drawing Rights (SDR) basket from 10.92% to 12.28%. The value of cross-border RMB receipts and payments between China and countries along the Belt and Road increased from RMB 4.53 trillion in 2020 to RMB 9.1 trillion in 2023, indicating a generally stable and positive development trend.[1] However, despite China's position as the world's second-largest economy, the largest merchandise trading nation, the second-largest recipient of foreign direct investment, the third-largest outward investor, and the second-largest financial market, the RMB still has a long way to go in strengthening its international standing (Cheung, 2022). According to data from the Society for Worldwide Interbank Financial Telecommunication (SWIFT), the RMB accounted for 3.26% of global payments in August 2026, compared with 52.09% for the US dollar, 21.37% for the euro, 6.37% for the British pound, and 3.52% for the Japanese yen over the same period.[2]

In fact, the relatively underdeveloped mechanisms for matching cross-border RMB supply and demand represent a long-standing and fundamental constraint on RMB internationalization. As hubs connecting domestic and international financial circulation, international financial centers not only serve as major providers of financial infrastructure for cross-border currency settlement and clearing but also provide important platforms for offshore RMB-denominated investment and financing activities and for trading risk-management instruments. International financial centers provide essential support for matching cross-border currency supply and demand. Therefore, the continued deepening of RMB internationalization depends not only on the expansion of its cross-border use but is also closely linked to the functional development and spatial expansion of international financial centers.

Existing research on currency internationalization and international financial centers has primarily focused on the evolution of international currencies or financial centers (Zucker-Marques, 2025; Wang et al., 2024; Deng, 2024), their spatial distribution patterns (Wójcik et al., 2022; Huang and Yeung, 2022; Capelle-Blancard et al., 2024), and the unidirectional influences between the two (Töpfer and Hall, 2018; Balmas and Howarth, 2024). For example, Li and Xu (2022) empirically examined the role of Shanghai's development as an international financial center in promoting RMB internationalization. Lim (2023) investigated the underlying logic of RMB internationalization and its relationship with the existing international monetary system from a global historical perspective. Taylor (2025) noted that Hong Kong has enhanced RMB liquidity and availability in offshore markets through offshore clearing, bond markets, and market-connectivity mechanisms. Overall, most existing studies have approached this topic from the perspective of international currencies or international financial centers considered separately. Few have integrated the two into a unified analytical framework to examine their bidirectional relationship, and systematic research on the evolutionary mechanisms underlying their mutually reinforcing and symbiotic relationship remains limited. In particular, across different historical stages, the evolution of international currency status and the spatial configurations of financial centers have been shaped not only by market forces but also by the combined influence of national financial strength, institutional environments, and policy choices (Chițu et al., 2014; Eichengreen and Shah, 2020). Therefore, examining either international currencies or financial centers in isolation makes it difficult to fully explain the underlying logic of their long-term interactions.

Against this background, this paper takes the beginning of globalization in its modern sense following the Age of Discovery as its historical starting point. It conducts a comparative analysis of five representative currency–financial center systems, namely the Dutch guilder–Amsterdam, the British pound–London, the US dollar–New York, the Japanese yen–Tokyo, and the euro–Frankfurt. From the dual perspectives of the deepening of international currency functions and the spatial expansion of international financial centers, this paper examines the evolution of their interactions across different stages of globalization. It further reveals the historical logic and evolutionary mechanisms underlying the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers. Building on this analysis, the paper draws on China's experience with RMB internationalization and international financial center development to examine the practical constraints on their mutually reinforcing development. It provides theoretical insights into pathways for promoting the mutually reinforcing development of RMB internationalization and international financial centers and advancing the high-quality development of China's financial sector.

The contributions of this paper are reflected mainly in two aspects. First, drawing on the historical experiences of representative currency–financial center systems, this paper develops an analytical framework for their mutually reinforcing and symbiotic relationship from the dual perspectives of the deepening of currency functions and the expansion of financial space. It explores the bidirectional feedback mechanisms between currency internationalization and international financial centers through signaling effects, network effects, and synergistic effects. This framework not only helps explain the evolution of the international financial landscape but also extends existing theoretical explanations of the relationship between international currencies and international financial centers. Second, based on the historical logic of the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers, this paper systematically examines the interactions between RMB internationalization and the development of international financial centers in China. Taking into account practical constraints related to the foundations of trust in the currency and market-oriented mechanisms, it

1 Data are drawn from the People's Bank of China, 2024 RMB Internationalization Report. Available at: https://www.pbc.gov.cn/huobizhengceersi/fileDir/resource/cms/2025/06/2025061715474584487.pdf.

2 Data are drawn from Global Currency Tracker document centre. Available at: https://www.swift.com/products/global-currency-tracker/document-centre.

further discusses the pathways for their continued mutually reinforcing development. This analysis provides theoretical insights to support China's efforts to develop a strong currency and strong international financial centers and promote the high-quality development of its financial sector.

2 Research design

2.1 Case selection

Taking the beginning of globalization in its modern sense as the historical starting point, this paper selects five representative currency–financial center systems as case studies, namely the Dutch guilder–Amsterdam, the British pound–London, the US dollar–New York, the Japanese yen–Tokyo, and the euro–Frankfurt. These cases are highly representative of their historical periods, as the corresponding currencies and financial centers maintained prominent positions in the global financial system over extended periods and exerted significant influence on the international financial landscape at the time. Among them, the Dutch guilder–Amsterdam, the British pound–London, and the US dollar–New York are representative examples of the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers during the successive stages of trade globalization, investment globalization, and financial globalization, respectively. The Japanese yen–Tokyo and the euro–Frankfurt provide two important complementary cases in the context of financial globalization. The former reflects policy-driven efforts to promote currency internationalization and financial center development, while the latter illustrates a new pathway for their interaction in the context of regional integration. Together, these five cases reflect the historical shifts in the dominant positions of international currencies and international financial centers while encompassing different development pathways under varying conditions. Therefore, they provide a valuable basis for historical comparison and practical insights, helping to identify common patterns underlying the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers.

2.2 Research methods

This paper adopts a qualitative research approach combining comparative case studies and historical analysis. First, comparative case studies are employed to examine five representative cases, namely the Dutch guilder–Amsterdam, the British pound–London, the US dollar–New York, the Japanese yen–Tokyo, and the euro–Frankfurt. By comparing the interactions between currency internationalization and international financial centers across different historical periods, this paper identifies common characteristics and distinct pathways of their mutually reinforcing development. Second, descriptive historical analysis is used to trace the evolution of the relationship between currency internationalization and international financial centers. Finally, publicly available data from sources including SWIFT, the IMF, central banks, and major financial markets are used to supplement the analysis of the payment and settlement functions, investment and financing functions, and reserve function of major international currencies, as well as the development of their associated international financial centers. These statistical data provide a more objective factual basis for examining historical evolution and comparing cases, serving as an important complement to the primarily qualitative analysis undertaken in this paper.

3 Historical logic of the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers

3.1 Historical experiences of the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers

3.1.1 The Dutch guilder–Amsterdam system

At the end of the 15th century, the Portuguese navigator Vasco da Gama rounded the Cape of Good Hope and reached India, marking the beginning of the Age of Discovery. The world subsequently entered the era of trade globalization in its modern sense, leading to a restructuring of global trade patterns (Frank, 1998). During this period, Amsterdam, as an important port in the process of trade globalization, leveraged its geographical advantages to expand its external connections in response to trade demand. This provided important support for Amsterdam's emergence as a regional international financial center and facilitated the cross-border use of the Dutch guilder.

On the one hand, the development of Amsterdam's financial center functions promoted the internationalization of the Dutch guilder. In 1602, the Dutch East India Company was established in Amsterdam, creating a trade network spanning Europe, Asia, Africa, and the Americas. As the world's largest trading center at the time, Amsterdam attracted substantial flows of goods and capital, fostering financial innovation. By 1660, the city had more than 2,000 bank accounts, with most merchant firms conducting transfers in Dutch guilders (Quinn and Roberds, 2016). Leveraging Amsterdam's advantages in trade and finance, the Netherlands emerged as a major global power, while the Dutch guilder became an international trade settlement currency. Meanwhile, to meet the substantial financing needs of long-distance maritime voyages and regulate international financial transactions, Securities trading developed in Amsterdam from 1602, and the Bank of Amsterdam was established in 1609. The bank facilitated currency exchange and payments, while these financial institutions contributed to the development of modern securities markets and banking. The Dutch guilder became a widely accepted international currency, and Amsterdam developed into a European center for savings and currency exchange. By 1750, the value of bills of exchange accepted in Amsterdam had reached 200 million florins, with its financial influence extending to London, Hamburg, and other cities (Frost et al., 2020).

On the other hand, the expanding international use of the Dutch guilder promoted the development of Amsterdam as an international financial center. As the Dutch guilder gained wider acceptance in trade settlement, demand for guilder-denominated payments, clearing, financing, and asset transactions became increasingly concentrated in Amsterdam, attracting more merchants, financial

institutions, and international capital to the local market. From the mid-17th century onward, financial activities in Amsterdam gradually expanded beyond trade finance to include the issuance of foreign bonds and international lending. Between 1713 and 1763, the average annual issuance of foreign bonds in Amsterdam reached 4 million florins. By 1772, 39 foreign bonds were listed and traded on the local exchange. During this period, guilder-denominated capital increasingly flowed to other European countries such as Denmark, Sweden, Russia, and Germany; Amsterdam gradually evolved from a trade payment center into an important European center for international financing and capital allocation (Cassis, 2006).

The key to the mutually reinforcing and symbiotic relationship between currency internationalization and international financial center development in Amsterdam lay in the establishment of a modern financial system through market development and regulatory frameworks. On the one hand, leveraging its advantages as a trading center, Amsterdam developed a marketplace that facilitated global capital flows. This strengthened the link between the internationalization of the Dutch guilder and guilder-denominated financial activities in Amsterdam, thereby enhancing the network externalities of the Dutch guilder. On the other hand, Amsterdam established a broadly applicable regulatory framework for international financial activities, improving the efficiency of financial resource flows and strengthening confidence in Amsterdam as an international financial center.

3.1.2 The British pound–London system

In the 19th century, Britain emerged as a major center of the world economy, driven by the Industrial Revolution. During this period, capital accumulation and expanding overseas investment driven by industrialization contributed to the deepening of globalization through capital exports and cross-border investment. London developed rapidly in the process of investment globalization, characterized by capital exports and international securities financing, and gradually emerged as a global financial center (Accominotti et al., 2021).

First, a relatively well-developed financial system laid the foundation for the internationalization of the British pound and the development of London as an international financial center (O'Brien and Palma, 2023). The Bank of England was established in 1694, followed by the London Clearing House in 1773, which facilitated the continued development of banking, insurance, and payment and clearing systems. In 1816, Britain adopted the gold standard, establishing a fixed exchange rate between the pound and gold and strengthening the pound's international credibility and acceptability. By improving its financial system, Britain not only enhanced London's capacity to support international financial activities but also created the institutional conditions for the expansion of the pound's international currency functions.

Second, the internationalization of the British pound strengthened London's position as an international financial center. The expansion of trade and capital exports driven by the Industrial Revolution led to the increasing use of the pound in international trade, overseas investment, and cross-border financing. Between 1825 and 1914, Britain's overseas investment increased from US$500 million to US$19.5 billion, accounting for half of the total overseas investment of Western countries (Cassis, 2006). By the 1870s, more than 40% of international trade was settled in pounds. By 1914, the pound accounted for more than 60% of both global trade invoicing and settlement and foreign exchange reserves (Frankel, 2012). As the international use of the pound expanded, related financing, clearing, and securities trading activities became increasingly concentrated in London. Between 1822 and 1825, at least 20 foreign loans were issued in London, with a total nominal value of approximately £40 million. Between 1865 and 1914, Britain raised £4.1 billion for overseas joint-stock companies and foreign and colonial governments (Campbell et al., 2026).

Finally, the development of London as an international financial center reinforced the internationalization of the British pound. As financial activities continued to concentrate in London, financial services expanded overseas, gradually forming an international financial network with increasingly broad geographical coverage. Between 1860 and 1890, the number of British overseas banks increased from 15 to 33, while their overseas branches grew from 132 to 739 (Jones, 1995). Subsequently, the London-centered global financial network improved the pound's availability and liquidity, as well as its ease of use across different regions, further strengthening its functions in international payments, investment and financing, and reserves. Between 1875 and 1914, the value of bills of exchange accepted in London increased from £50 million to £130 million (Cassis, 2006).

Drawing on its strong economic position, Britain established international confidence in the pound, laying the foundation for the pound's role under the gold standard and London's emergence as a global financial center. Specifically, London leveraged its international trade and cross-border investment networks to facilitate the international circulation of the pound. Meanwhile, the sustained stability of the pound's link to gold fostered widespread international acceptance of its status as an international currency. Correspondingly, London developed into a key hub connecting capital markets worldwide and emerged as a global financial center.

3.1.3 The US dollar–New York system

With the outbreak of World War I in 1914, Britain suffered a severe shock, and countries successively abandoned the gold standard, leading to growing instability in the international monetary system. Subsequently, global capital flows and financial transactions expanded rapidly, and the world economy gradually entered the stage of financial globalization.

The rising international status of the US dollar promoted the continued concentration of international financial activities in New York. Following the establishment of the Bretton Woods system in 1944, the US dollar became an important currency for international trade, payments and settlement, and capital flows. At that time, nearly 90% of world trade was settled in US dollars, with substantial dollar funds channeled through the US banking system for payments, deposits, and lending. Cities such as New York, San Francisco, and Chicago also became important nodes connecting the United States with global financial markets, with New York gradually developing into a center for dollar lending, settlement, and capital exports (Pažitka et al., 2021). By 1954, the total assets of commercial banks in New York had reached US$32.3 billion, exceeding the US$19.8 billion held by commercial banks in London during the same period. In addition, 11 US banks had established 117 overseas branches, while 21 foreign banks from 12 countries had entered New York to conduct currency transactions (Kennedy, 2011).

In 1971, the Triffin dilemma forced the decoupling of the US dollar from gold, shifting the interaction between dollar

internationalization and international financial centers from domestic concentration toward the expansion of global financial networks. Although the collapse of the Bretton Woods system weakened the dollar's original gold-based anchor, the United States maintained its leading position as a global financial power through offshore dollar markets and the petrodollar system. On the one hand, offshore dollar markets in London, the Caribbean, and other regions developed rapidly from the 1950s onward, extending dollar-denominated financial activities across the globe. By 1973, US banks had established 699 overseas branches, of which 177 were located in Caribbean offshore financial centers and 156 in European offshore financial centers (Brimmer and Dahl, 1975). By 1987, gross deposits in the Eurocurrency market had reached US$4.5 trillion, with dollar-denominated deposits accounting for approximately 66% (Pavel and McElravey, 1990). Meanwhile, as substantial dollar funds accumulated overseas, the United States established International Banking Facilities (IBFs) in New York, Detroit, and other cities in 1981 to reconnect offshore dollar activities with the domestic US financial market. The total assets of IBFs increased from US$63.4 billion in 1981 to US$277.3 billion in 1987. A total of 543 IBFs were operating across 24 US states and Washington, D.C.[3] On the other hand, the dollar's dominant position in the invoicing and settlement of international oil trade strengthened further after the 1970s. Substantial dollar revenues generated from oil trade were reinvested through European and US financial markets, expanding the international circulation of the dollar and demand for dollar-denominated financial services. Consequently, the US dollar maintained its status as an international currency through offshore financial markets, oil trade, and global capital circulation. These developments also accelerated the formation of a dollar-based financial network centered on New York and involving both domestic and offshore financial centers. As of June 2026, the US dollar accounted for 56.70% of global foreign exchange reserves,[4] 81.16% of global trade finance, and 50.10% of global payments, ranking first worldwide in all three categories.[2] In September 2026, nine US cities, including New York, Los Angeles, and San Francisco, ranked among the world's top 50 international financial centers.[5]

The dollar's monetary anchoring arrangements were key to maintaining the global prominence of the US dollar and New York as an international financial center. Specifically, by linking the dollar to important strategic resources on two occasions, the United States facilitated the rapid rise of its international financial centers and established the dollar as a widely recognized international currency. Meanwhile, the accumulation of substantial dollar funds overseas promoted the diversified development of offshore financial centers, thereby shaping a global financial landscape characterized by a multi-tiered system of international financial centers and the internationalization of the US dollar.

3.1.4 The Japanese Yen–Tokyo system

Against the backdrop of Japan's rapid economic growth, expanding trade surpluses, and increasing overseas investment, the country began promoting financial liberalization and yen internationalization, seeking to bring the international status of the yen and Tokyo's position as a financial center into line with its economic strength. During the 1970s, Japan eased financial restrictions and promoted the liberalization of Tokyo's bond, stock, and money markets. Through a series of policy measures, including encouraging the use of the yen in international trade invoicing, allowing non-residents to issue yen-denominated bonds in Tokyo, and easing restrictions on non-residents' purchases of stocks, Japan promoted the yen's development into an important international currency. Between 1970 and 1980, the share of Japan's exports settled in yen increased from 0.9% to 29.4%, and Tokyo emerged alongside New York and London as one of the world's three major international financial centers (Ito and Krueger, 1994).

During the 1980s, Japan further liberalized its financial system and promoted yen internationalization in response to expanding international trade surpluses and growing demand for overseas investment. In 1980, Japan substantially liberalized foreign exchange controls, moving toward a system in which foreign exchange transactions were permitted in principle. In 1983, Japan and the United States established the Yen–Dollar Committee, incorporating yen internationalization into Japan's national strategy (Mabuchi, 1990). The Japan Offshore Market (JOM) was established in 1986, and its total assets reached ¥82.5 trillion in 1996, with an average annual growth rate of 25%. In 1987, Japan relaxed the issuance requirements for Euroyen bonds by non-residents, granted national treatment to foreign banks, and allowed foreign companies to obtain membership in the Tokyo Stock Exchange (Eichengreen and Kawai, 2014). Between 1980 and 1989, the yen's share of global foreign exchange reserves increased from 4.4% to 7.9%, while the Nikkei Stock Average rose from 7,116 to 38,916 points (Tavlas and Ozeki, 1991).

However, Japan's domestic financial market reforms and external financial opening were not fully coordinated. Although restrictions on cross-border financial transactions were gradually relaxed during the 1980s, domestic interest rate liberalization and related financial institutional reforms continued into the 1990s, constraining further improvements in the international competitiveness of Tokyo's financial markets (McKay, 2014). Meanwhile, the international use of the yen remained largely dependent on Japan's own trade and investment ties. Compared with the US dollar, which continued to dominate international trade invoicing, the yen was used only to a limited extent in transactions between third countries, and sustained foreign demand for yen-denominated assets had yet to develop fully (Ito and Krueger, 1994). Following the collapse of the asset price bubble in the early 1990s, Japan's economy and financial system entered a prolonged period of adjustment, accompanied by a slowdown in the development of Tokyo's financial markets and yen internationalization. Between 1994 and 1997, the yen's share of international bond issuance declined from over 13% to 4.5%, while its share of global foreign exchange transactions fell from 27% in 1989 to 21% in 1998.[6]

3 Data are available at: https://www.federalreserve.gov/econres/ifdp/international-banking-facilities.htm.

4 Data are drawn from the IMF COFER database. Available at: https://data.imf.org/en/Datasets/COFER.

5 Data are drawn from Z/Yen Group and China Development Institute, The Global Financial Centres Index 40 (GFCI 40). Available at: https://www.long-finance.net/publications/long-finance-reports/the-global-financial-centres-index-40/.

6 Data are drawn from the Council on Foreign Exchange and Other Transactions, Internationalization of the Yen for the 21st Century: Japan's Response to Changes in Global Economic and Financial Environments. Available at: https://www.mof.go.jp/english/about_mof/councils/customs_foreign_exchange/e1b064a.htm.

In September 2026, Tokyo ranked sixth globally in the Global Financial Centres Index (GFCI 40).[5] As of June 2026, the yen accounted for 4.96% of global foreign exchange reserves,[4] 1.35% of global trade finance, and 3.66% of global payments, ranking third in foreign exchange reserves[4] and fourth in both trade finance and payments.[2]

The mutually reinforcing and symbiotic relationship between yen internationalization and Tokyo's development as an international financial center was strongly characterized by policy-driven development. Through financial liberalization and offshore market development, Japan promoted the cross-border use of the yen and the concentration of related financial activities in Tokyo. However, relatively slow progress in domestic financial market reforms constrained Tokyo's capacity to support international investment and financing activities denominated in yen. Meanwhile, insufficiently stable and independently generated overseas demand for the yen limited the further deepening of its international currency functions and their sustained contribution to Tokyo's development as an international financial center. Following the collapse of the asset price bubble in the early 1990s and the subsequent prolonged period of economic and financial adjustment, the foundations for their mutually reinforcing development were further weakened. Consequently, the progress achieved through policy-driven initiatives did not fully translate into a sustained and self-reinforcing symbiotic relationship.

3.1.5 The Euro–Frankfurt system

Through regional economic integration, the euro has become the world's second most important international currency. The evolution of its mutually reinforcing and symbiotic relationship with international financial centers can be divided into two stages. The first stage centered on the Deutsche Mark. After World War II, Germany undertook monetary reforms to accelerate its economic recovery, establishing a two-tier central banking system in 1948, with Frankfurt becoming the seat of the central bank. Between 1950 and 1967, Germany's GDP grew at an average annual rate of approximately 8%, while its trade continued to expand, contributing to the internationalization of the Deutsche Mark (Eichengreen and Ritschl, 2009). Between 1949 and 1973, the Deutsche Mark appreciated against the US dollar, with the exchange rate moving from 4.2 to 2.9 marks per dollar. This appreciation attracted international capital and encouraged the currency's international use (Schnabl, 2024). During this period, Frankfurt's financial infrastructure gradually improved, with the establishment of the Deutsche Bundesbank in 1957 and the achievement of current account convertibility in 1958 (Rademacher, 2025). In 1979, several currencies were linked to the Deutsche Mark, enabling it to serve as a monetary anchor. In 1985, Germany eased restrictions on the issuance of Deutsche Mark-denominated bonds abroad. By 1989, the Deutsche Mark's share of international foreign exchange reserves had reached a peak of 19.6%, more than twice that of the third-ranked Japanese yen (Frankel, 2012).

The second stage centered on the euro. The euro was introduced in 1999, and the Deutsche Mark was phased out in 2002, with Frankfurt emerging as a major financial hub in the euro area. In 1998, the European Central Bank (ECB) was established in Frankfurt. In the same year, the German derivatives exchange merged with the Swiss derivatives exchange to form one of the world's largest futures exchanges. In 2002, euro banknotes and coins were introduced in 12 European Union member states. Between 2001 and 2003, the euro's share of global trade invoicing increased from 40% to over 50%, while its share of international bond issuance rose from 40.1% in 2002 to a peak of 54% in 2005 (Moss, 2012). As the international use of the euro expanded, Frankfurt gradually emerged as an important regional monetary and financial hub, supported by the European Central Bank (ECB) and financial market infrastructure. The deepening of financial market linkages across Europe provided further support for the expansion of the euro's international investment and financing functions. Meanwhile, euro-denominated financial activities gradually extended to London and other financial centers, giving rise to an offshore euro market of a certain scale. Nevertheless, monetary unification in Europe did not eliminate economic and financial differences among member states. These differences became particularly apparent during the European sovereign debt crisis beginning in 2009, when sovereign bond yields diverged significantly across some member states and cross-border bank financing activities were disrupted, accompanied by a temporary decline in financial market integration within the euro area (De Santis, 2014). Although subsequent efforts to develop the Banking Union and integrate cross-border financial infrastructure helped advance regional financial integration, institutional differences among member states' capital markets persisted. In particular, differences in securities settlement arrangements and the lack of harmonization in relevant legal and tax frameworks continued to increase cross-border financial transaction costs, constraining further financial market integration (Athanassiou, 2020). Consequently, the gap between monetary unification and financial market integration has continued to limit the development of a unified capital market with sufficient depth and liquidity, thereby constraining the further deepening of the euro's international currency functions. As of September 2026, Frankfurt was home to 280 banks and credit institutions[7] and ranked 29th among international financial centers worldwide.[5] In June 2026, the euro accounted for 21.88% of global payments, 5.59% of global trade finance,[2] and 20.60% of global foreign exchange reserves,[4] ranking second, third, and second worldwide, respectively.

The mutually reinforcing and symbiotic relationship between euro internationalization and Frankfurt's development as an international financial center has been strongly characterized by regional institutional integration. European monetary unification and the development of common financial infrastructure promoted the expansion of the euro's international currency functions and strengthened Frankfurt's position as a hub within the regional financial network. In turn, the cross-border financial service capacity of Frankfurt and other European financial centers provided important support for the international use of the euro. However, financial market fragmentation and constraints on institutional coordination among euro area member states have limited regional financial market integration and its capacity to further support the euro's international currency functions. As a result, the mutually reinforcing effects between euro internationalization and the development of the financial center network have yet to be fully realized. Therefore, although the euro–Frankfurt

7 Data are available at: https://frankfurt-main-finance.com/zh-hans/finanzplatz/.

system has established a relatively strong foundation for mutually reinforcing development through regional integration, its continued deepening still depends on further coordination of financial market institutions across the region.

3.2 International comparison of the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers

A review of the historical experiences of the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers reveals that the formation and development of representative currency–financial center systems have been underpinned by strong economic capabilities, national power, institutional foundations, and financial openness, among other factors. These conditions have provided a common foundation for currency internationalization and international financial center development. As globalization has deepened, the mutually reinforcing relationship between the two has become increasingly complex. Specifically, the functions of international currencies have gradually expanded from an initial emphasis on payments and settlement to encompass investment and financing as well as international reserves. Meanwhile, the spatial configuration of international financial centers has evolved from regional centers to global centers and further toward integrated onshore–offshore financial networks. The deepening of currency functions and the expansion of financial space thus represent a common underlying trajectory in their long-term mutually reinforcing evolution. However, differences in historical contexts and national characteristics have resulted in distinct driving forces and development pathways across currency–financial center systems, as shown in Table 1.

The Dutch guilder–Amsterdam system emerged during the stage of trade globalization, with its mutually reinforcing and symbiotic development primarily driven by the expansion of overseas trade. The growing demand for cross-border invoicing, currency exchange, and settlement arising from long-distance maritime trade strengthened the Dutch guilder's international payment and settlement functions. Meanwhile, the concentration of trade, banking, foreign exchange, and bill-related activities in Amsterdam facilitated its gradual development into a regional international financial center serving Europe and parts of the overseas trade network. The British pound–London system emerged during a period of deepening investment globalization, driven primarily by capital accumulation and capital exports resulting from the Industrial Revolution. Britain's large-scale overseas investment and international securities financing not only promoted the pound's gradual transformation from a trade settlement currency into an international currency with payment and settlement, investment and financing, and reserve functions, but also facilitated London's evolution from a regional financial center into a global center for capital allocation.

Following the transition to financial globalization, the US dollar–New York, Japanese yen–Tokyo, and euro–Frankfurt systems all developed relatively comprehensive payment and settlement, investment and financing, and reserve functions, while the spatial organization of their international financial centers expanded beyond the boundaries of individual cities. However, these three systems differed to some extent in their primary driving forces and patterns of spatial expansion. The US dollar–New York system relied primarily on a dollar-anchored international monetary system, through which the dollar established comprehensive international currency functions and came to dominate global payments, investment and financing, and reserves. Meanwhile, the development of offshore dollar markets facilitated the formation of an integrated onshore–offshore financial network centered on New York and connecting major financial centers worldwide. In particular, the absorption and reallocation of offshore dollar funds by financial centers in London, the Caribbean, and other regions, together with multinational banks, enabled the dollar to circulate continuously beyond the domestic US market, strengthening its international financing and reserve functions. The Japanese yen–Tokyo system was more strongly characterized by policy-driven development. Through financial liberalization, capital market opening, and offshore market development, Japan simultaneously promoted yen internationalization and Tokyo's development as an international financial center. These measures gradually expanded the yen's payment and settlement, investment and financing, and reserve functions, giving rise to a spatial structure in which Tokyo's onshore and offshore markets coexisted. However, Japan's domestic financial market reforms and external financial opening were not fully coordinated,

TABLE 1 Comparison of major international currency–financial center systems.

Dimension	Dutch Guilder–Amsterdam system	British pound–London system	US dollar–New York system	Japanese Yen–Tokyo system	Euro–Frankfurt system
Formation period	17th–18th centuries	19th–early 20th century	Mid-20th century–present	1970s–present	Late 20th century–present
Historical context	Trade globalization	Investment globalization	Financial globalization	Financial globalization	Financial globalization
Primary driver	Overseas trade	Industrial Revolution	Dollar-based monetary system	Policy-driven development	Regional institutional integration
International currency functions	Primarily payment and settlement	Payment, investment and financing, and reserve	Payment, investment and financing, and reserve	Payment, investment and financing, and reserve	Payment, investment and financing, and reserve
Spatial configuration of financial centers	Regional financial center	Global financial center	Coordinated onshore–offshore network	Coordinated onshore–offshore network	Coordinated onshore–offshore network

constraining Tokyo's capacity as an international financial center to support yen-denominated international investment and financing activities. Meanwhile, relatively limited independent overseas demand for yen-denominated assets also weakened the role of yen internationalization in promoting the continued concentration of financial activities. By contrast, the euro–Frankfurt system relied primarily on regional institutional integration in Europe. Through the introduction of a single currency and the integration of financial markets, this system promoted the expansion of the euro's international currency functions and fostered the development of a multi-tiered financial structure centered on Frankfurt and other major regional financial centers, with financial activities extending into markets outside the euro area. However, financial market fragmentation among member states continued to affect the cross-border allocation of financial resources, constraining the capacity of the financial center network to support the further deepening of the euro's international currency functions.

Overall, the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers represents a process in which existing currency functions and the spatial hierarchy of financial centers progressively expand, deepen, and become increasingly interconnected through networks. Although the representative systems differ significantly in their primary driving forces, their evolutionary trajectories exhibit considerable similarities. As globalization deepens, international currency functions gradually expand from payments and settlement to encompass investment and financing as well as reserves, while the spatial organization of international financial centers extends from regional centers to global centers and integrated onshore–offshore financial networks. In this process, the expanding use of international currencies generates increasingly complex demand for cross-border financial services, and the spatial expansion of financial centers provides platforms that enhance the capacity for international currency use. These interactions give rise to a sustained relationship of mutual reinforcement between currency internationalization and international financial centers.

4 Evolutionary mechanisms of the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers

Although factors such as economic strength, national power, institutional foundations, and financial market conditions provide a common basis for the emergence and development of international currencies and international financial centers, they do not fully explain the underlying mechanisms of the bidirectional feedback between the deepening of currency functions and the expansion of financial space. Therefore, this section further examines the evolutionary mechanisms underlying the mutually reinforcing and symbiotic relationship between currency internationalization and international financial centers from three perspectives, namely signaling effects, network effects, and synergistic effects, as shown in Figure 1.

On the one hand, currency internationalization promotes the spatial expansion of international financial centers through signaling effects. According to signaling theory, under conditions of information asymmetry, market participants rely on observable information to assess underlying attributes that are difficult to identify directly and adjust their decisions accordingly (Spence, 1973). A currency serves not only as a medium for cross-border transactions but also as an important representation of a country's economic strength and institutional credibility. Once a currency becomes integrated into international payment and settlement, investment and financing, and reserve systems, its international status can convey signals of power and trust to foreign market participants, influencing the spatial distribution of international financial institutions and cross-border capital. First, currency internationalization promotes the concentration of international financial resources through power signals. The international influence of a currency, as an important manifestation of financial power, reflects the extension of a country's economic power

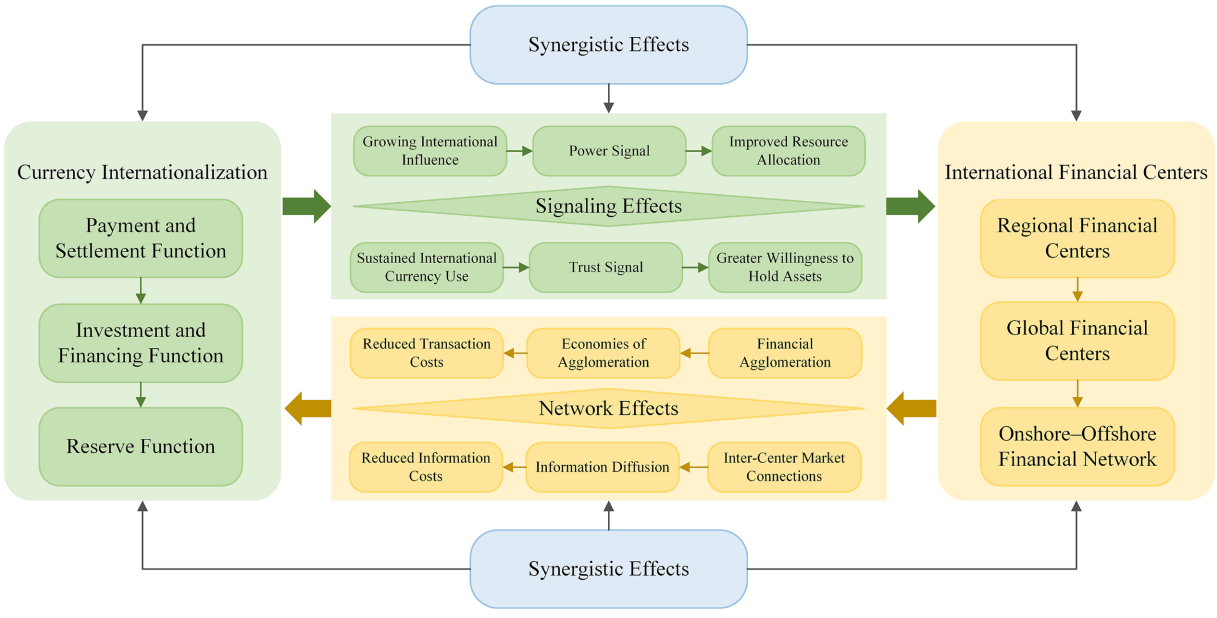


FIGURE 1
Mechanisms of mutual reinforcement. Source: Created by the authors.

into the international system (Cohen, 2015). As the use of a domestic currency expands in international payments, investment and financing, and reserves, its growing international status sends signals of increasing international influence and financial resource allocation capacity (Maggiori et al., 2020). These signals encourage international banks, investment institutions, and multinational enterprises to expand their currency-related transactions and business operations and concentrate in major cities capable of supporting such financial activities, thereby promoting the continued development of international financial centers. Second, currency internationalization strengthens foreign market participants' willingness to engage in long-term financial activities through trust signals. The sustained use and holding of an international currency by foreign market participants reflect market confidence in its value stability and the issuing country's ability to fulfill its obligations (Chinn et al., 2024). As currency internationalization deepens, trust signals help reduce foreign market participants' uncertainty regarding the currency and its associated financial markets, strengthening their willingness to hold related assets over the long term and conduct financial business. Consequently, foreign financial institutions extend their financial service networks by establishing branches and developing offshore operations, contributing to the continued spatial expansion of international financial centers.

On the other hand, international financial centers promote the deepening of international currency functions through network effects. Complex network theory suggests that the concentration of nodes and the patterns of connections within a network can influence the process of information diffusion (Newman, 2003). As important nodes in cross-border financial networks, international financial centers generate internal "pull" forces through the concentration of trading activities, and external "push" forces through market connections with other financial centers. These forces help reduce the costs of cross-border currency use and facilitate cross-border currency flows. First, international financial centers reduce currency transaction costs through economies of agglomeration. By attracting financial institutions and market participants, international financial centers promote the concentration of currency-related transactions, thereby increasing market size and liquidity (Eichengreen et al., 2023). The concentration of financial market participants helps reduce the transaction costs incurred by foreign market participants in using and holding assets denominated in the currency, facilitating the gradual expansion of its international use beyond trade settlement to investment and financing and reserve functions. Second, international financial centers reduce information costs through information diffusion. Market connections among financial centers facilitate the cross-border transmission of information on currency-denominated assets and trading conditions (Robinson et al., 2023). Greater access to such information lowers foreign market participants' costs of assessing investment opportunities and transaction risks, thereby facilitating their use of the currency in international payments and investment and financing activities. Consequently, information diffusion across financial centers supports the wider international use of the currency and contributes to the deepening of its international functions.

Finally, building on the continuous feedback between network effects and signaling effects, currency internationalization and international financial centers further generate synergistic effects. Complex systems theory suggests that different components within a system can produce collective effects that exceed the sum of their individual contributions through continuous interaction, feedback, and cooperation (Holland, 1992). In the context of currency internationalization and international financial centers, the deepening of international currency functions expands demand for cross-border financial services, providing sustained impetus for the functional development and spatial expansion of financial centers. At the same time, the development of international financial centers strengthens the foundations for international currency use by improving currency liquidity and asset allocation conditions. As the two become increasingly interconnected, currency functions in payments and settlement, investment and financing, and reserves gradually form a more integrated functional system, and connections between onshore and offshore financial markets continue to strengthen. These developments enhance the efficiency of cross-border currency circulation and the capacity for global financial resource allocation. Compared with the independent development of either currency internationalization or international financial centers, their mutually reinforcing and symbiotic relationship can therefore enhance both financial service capacity and the capacity for international currency use. Through sustained interaction, the deepening of currency functions and the expansion of financial space thus generate collective benefits beyond those achievable by either system alone, promoting the mutually reinforcing and symbiotic development of currency internationalization and international financial centers.

5 Current state of the mutually reinforcing development of RMB internationalization and international financial centers

5.1 Analysis of the current state of RMB internationalization and international financial center development

5.1.1 Policy support stage (1978–2012)

In 1978, the Third Plenary Session of the 11th Central Committee of the Communist Party of China adopted domestic reform and opening up to the outside world as fundamental national policies, marking the beginning of China's reform and opening-up process. Since then, China has actively expanded foreign trade while encouraging foreign investment. In 2013, China's total merchandise trade surpassed that of the United States, making it the world's largest merchandise trading nation. Against this background, China simultaneously advanced the internationalization of its financial sector to further support the development of an export-oriented economy and deepen its integration into the international economic system. A series of supportive policies were introduced to promote the cross-border use of the RMB and improve the functions of international financial centers. For example, in 1984, the Ministry of Foreign Economic Relations and Trade issued the Interim Measures for the Administration of Small-Scale Border Trade, a nationwide policy document supporting border trade settled in domestic currencies. In 1990, the State Council announced the development and opening up of Pudong in Shanghai and established the Lujiazui Finance and Trade Zone, the only national-level development

zone in China designated specifically for finance and trade. In the same year, the establishment of the Shanghai Stock Exchange and the Shenzhen Stock Exchange was approved. In 2003, Hong Kong began providing RMB clearing services, marking the initial establishment of a mechanism for the return flow of offshore RMB funds. In 2007, Hong Kong Interbank Clearing Limited launched the RMB Real-Time Gross Settlement (RTGS) system, connecting the clearing systems of mainland China and Hong Kong. In 2009, the People's Bank of China and five other government departments jointly issued the Administrative Measures for the Pilot Program of RMB Settlement in Cross-Border Trade, accelerating the development of cross-border RMB trade settlement. In the same year, the State Council issued the Opinions on Promoting the Accelerated Development of Modern Services and Advanced Manufacturing in Shanghai and the Establishment of an International Financial Center and an International Shipping Center. The document set the goal of developing Shanghai into an international financial center by 2020, broadly commensurate with China's economic strength and the international status of the RMB. However, during this stage, RMB internationalization and the development of international financial centers in China relied primarily on the government's gradual relaxation of controls, leaving limited scope for market forces. Consequently, both remained relatively limited in their international standing, and their mutually reinforcing development was still characterized by fragmentation and slow progress.

5.1.2 Demand-driven stage (2013–2022)

Following the introduction of the Belt and Road Initiative (BRI) in 2013, China's reform and opening-up process entered a new stage characterized by a shift from predominantly trade-oriented opening up toward two-way opening up. In 2022, China's outward foreign direct investment (OFDI) flows reached US$163.12 billion, ranking second globally, while its actually utilized foreign direct investment (FDI) reached US$189.13 billion.[8] Both inward and outward direct investment remained at relatively high levels. During this stage, RMB internationalization and the development of international financial centers in China became increasingly driven by market demand. The expansion of cross-border investment increased demand for RMB-denominated financing and asset allocation, strengthening connections between onshore and offshore RMB markets. On the one hand, two-way investment promoted the expansion of cross-border RMB use into investment and financing activities. In 2013, cross-border RMB receipts and payments for direct investment totaled RMB 543.76 billion, of which RMB 86.68 billion was associated with outward direct investment and RMB 457.09 billion with inward foreign direct investment.[9] By 2022, cross-border RMB receipts and payments for direct investment had increased to RMB 6.5 trillion.[10] Meanwhile, the Shanghai–Hong Kong Stock Connect, Shenzhen–Hong Kong Stock Connect, and Bond Connect schemes were launched in 2014, 2016, and 2017, respectively, strengthening connections between onshore financial centers such as Shanghai and Shenzhen and overseas capital markets. In 2022, cross-border RMB receipts and payments for securities investment reached RMB 23.6 trillion, of which bond investment and transactions through the Shanghai–Hong Kong and Shenzhen–Hong Kong Stock Connect schemes accounted for RMB 17.7 trillion and RMB 1.6 trillion, respectively. By the end of 2022, a total of 1,071 foreign institutions had entered China's domestic interbank bond market.[10] On the other hand, growing demand for cross-border RMB investment and financing accelerated the development of the network of offshore RMB financial centers. Singapore established RMB clearing arrangements in 2013, followed by London and Frankfurt in 2014. These developments facilitated the formation of an offshore RMB network centered on Hong Kong and connecting major financial centers in Asia and Europe. In 2022, cross-border RMB receipts and payments between mainland China and Hong Kong accounted for 50.3% of China's total cross-border RMB receipts and payments, while Singapore, the United Kingdom, and Germany accounted for 10.3%, 5.9%, and 2.2%, respectively.[10] In addition, London, as the world's largest RMB foreign exchange spot trading center and second-largest offshore RMB payment center, had developed relatively mature RMB trading and clearing functions. In 2022, the average daily trading volume of offshore RMB foreign exchange transactions reached £105.95 billion, while annual RMB clearing volume totaled RMB 11.16 trillion and cross-border RMB receipts and payments between China and the United Kingdom reached RMB 2.50 trillion.[10]

5.1.3 Expansion and deepening stage (2023–Present)

In October 2023, the Central Financial Work Conference introduced the goal of accelerating the development of China into a financial powerhouse for the first time, further highlighting the importance of RMB internationalization and the development of international financial centers in China. On the one hand, the RMB's international currency functions have continued to deepen. The RMB's share of global trade finance increased from 5.80% in September 2023 to 9.14% in August 2026,[2] ranking second worldwide. In August 2026, its share of global payments stood at 3.26%, ranking fifth. By comparison, progress in strengthening the RMB's international reserve function has been relatively slow. Although the RMB's weight in the Special Drawing Rights (SDR) basket increased to 12.28% in 2022, its share of global foreign exchange reserves was only 2.11% in June 2026. During the same period, the US dollar, euro, Japanese yen, and British pound accounted for 56.70%, 20.60%, 4.96%, and 4.57%, respectively,[4] indicating that a substantial gap remains between the RMB and major international reserve currencies. On the other hand, connections between China's international financial centers and offshore RMB markets have developed further. In the onshore market, 12 financial centers in mainland China were included in the Global Financial Centres Index (GFCI 40), with Shanghai, Shenzhen, and Beijing ranking fifth, eighth, and sixteenth worldwide, respectively.[5] In June 2026, the *Action Plan for the Development of Offshore Finance in Shanghai International Financial Center proposed establishing an offshore financial system commensurate with Shanghai's status as an*

8 Data are drawn from the Ministry of Commerce of China, statistics on foreign investment utilization in China. Available at: https://images.mofcom.gov.cn/hzs/202310/20231027112320497.pdf.

9 Data are drawn from the People's Bank of China, 2016 RMB Internationalization Report. Available at: https://www.pbc.gov.cn/en/3688241/3688636/3828468/3828488/2025080817514324817/20190516145756641366.pdf.

10 Data are drawn from the People's Bank of China, 2023 RMB Internationalization Report. Available at: https://www.pbc.gov.cn/huobizhengceersi/214481/3871621/9888705c3c8345bfa573a246cf4b89ca/2023102720175126516.pdf.

international financial center, with the aim of expanding its offshore financial functions. In offshore markets, the network for international RMB use has continued to expand, covering major financial markets in Asia, Europe, the Americas, and Oceania. In August 2026, Hong Kong accounted for 75.94% of global offshore RMB payment activity, followed by the United Kingdom and Singapore at 7.06% and 3.96%, respectively. The United States, France, Germany, and Australia accounted for 2.90%, 1.77%, 0.69%, and 0.57%, respectively,[2] reflecting a relatively pronounced cross-regional distribution of offshore RMB use. In addition, the overseas RMB clearing network has continued to improve, with 42 banks authorized to serve as RMB clearing banks across 36 countries and regions,[11] providing infrastructure support for RMB circulation across offshore markets.

5.2 Practical challenges facing the mutually reinforcing development of RMB internationalization and international financial centers

Although China has made progress in RMB internationalization and international financial center development alongside its growing international influence, gaps remain relative to global financial centers such as New York, London, and Frankfurt, and major international currencies such as the US dollar, British pound, and euro. At present, the cross-border use of the RMB still relies considerably on China's own trade and economic ties, while independently generated demand for RMB-denominated financial activities among foreign market participants remains relatively limited (Eichengreen et al., 2024). A certain degree of institutional segmentation also persists between onshore and offshore financial markets, and the role of international financial centers in supporting the global circulation of the RMB has yet to be fully realized (Balmas and Howarth, 2024). Therefore, although some interaction has emerged between the deepening of RMB functions and the expansion of financial space, a more stable mechanism of mutual reinforcement between the two remains to be further developed.

First, the foundation of trust underpinning the international use of the RMB needs to be further strengthened. A sustained improvement in a currency's international status depend not only on the expansion of its cross-border use but also on stable expectations regarding its use and long-term confidence in holding it among foreign market participants. At present, the cross-border use of the RMB still relies considerably on China's trade volume and real economic ties, while independently generated demand for RMB-denominated investment, financing, and reserves among foreign market participants remains relatively limited. Meanwhile, fluctuations in the RMB exchange rate and the risk–return characteristics of RMB-denominated assets continue to influence foreign market participants' willingness to hold these assets over the long term. Particularly during periods of heightened external uncertainty, their holdings of RMB-denominated assets are more sensitive to changes in expectations (Wang and Huang, 2026). Therefore, the foundations of trust supporting the RMB's different international currency functions remain uneven, limiting the sustained expansion of cross-border financial demand and thereby reducing the impetus for the functional development and spatial expansion of international financial centers.

Second, market-oriented financial mechanisms require further improvement. At present, China has established an emerging global financial network supported by major domestic financial centers as onshore hubs and offshore markets such as Hong Kong. However, certain institutional barriers remain between onshore and offshore financial markets. Foreign market participants still face restrictions on access to China's domestic financial markets, while domestic capital remains subject to constraints on overseas asset allocation. In addition, the supply of RMB-denominated assets and market liquidity remain relatively limited in some offshore RMB markets (Tobin, 2021). These constraints not only limit the continued concentration of financial resources in international financial centers but also hinder effective connectivity between onshore and offshore RMB markets. As a result, the capacity of international financial centers to support cross-border RMB use through economies of agglomeration and information diffusion has yet to be fully realized.

6 Implications for the mutually reinforcing and symbiotic development of RMB internationalization and international financial centers

In recent years, although RMB internationalization and the development of international financial centers in China have made some progress, the foundation of trust underpinning the international use of the RMB remains relatively weak, and market-oriented financial mechanisms still require further improvement, constraining the continued deepening of their mutually reinforcing relationship. International historical experience suggests that sustained mutual reinforcement between currency internationalization and international financial centers depends not only on the deepening of international currency functions and the spatial expansion of financial centers but is also influenced by the coordination of domestic financial market reforms and external financial opening, independently generated demand among foreign market participants, and cross-border financial market linkages. Therefore, taking into account China's current conditions and international historical experience, this paper further explores pathways for the sustained mutually reinforcing development of RMB internationalization and international financial centers, focusing on balancing financial openness and financial security, optimizing the spatial configuration of a multi-tiered system of international financial centers, and leveraging the synergistic role of digital financial infrastructure.

Balancing financial openness and financial security. The historical experience of the Japanese yen–Tokyo system suggests that although financial opening can help expand the cross-border use of a domestic currency, insufficient support from domestic financial market reforms, together with a lack of stable demand for domestic currency-denominated assets among foreign market participants, can constrain the development of a sustained and increasingly mutually reinforcing relationship between currency

11 Data are available at: https://www.nfra.gov.cn/cn/view/pages/ItemDetail.html?docId=1271585&itemId=920.

internationalization and international financial centers. In fact, although the RMB's investment and financing functions and its reserve function have continued to expand, long-term demand generated independently by foreign market participants remains relatively limited compared with demand for trade settlement. Stable international demand for a currency is closely related to foreign market participants' long-term expectations regarding the currency's value and RMB-denominated assets (Gopinath and Stein, 2021). Therefore, while consolidating the RMB's role in trade settlement, enhancing the attractiveness and cross-border accessibility of RMB-denominated assets can help sustain the international use of the RMB and strengthen the trust signals associated with its international use. However, the deepening of the RMB's international functions is constrained by the need to balance financial openness and risk control. Greater financial market openness can broaden the scope of investment in RMB-denominated assets and facilitate RMB holdings by foreign market participants, but the expansion of cross-border capital flows can also increase the exposure of domestic financial markets to international financial volatility (Sun et al., 2022). In particular, during periods of heightened external uncertainty, short-term capital flows may amplify exchange rate and asset price volatility (Li et al., 2018). Therefore, a gradual approach to financial opening is more appropriate for RMB internationalization. This involves improving the investability of RMB-denominated assets and facilitating the international use of the RMB while maintaining exchange rate flexibility and improving the availability of risk-hedging instruments and cross-border capital flow management, thereby allowing RMB internationalization to be based on more stable market expectations and risk-bearing capacity.

Optimizing the spatial configuration of a multi-tiered system of international financial centers. The historical experience of the euro–Frankfurt system suggests that although regional integration can strengthen regional financial linkages, institutional fragmentation across financial markets in member states increases cross-border financial transaction costs, constraining the capacity of the financial center network to support the further deepening of international currency functions. The continued development of international financial center networks is closely linked to effective connectivity between different financial markets. At present, China has established a spatial network of financial centers supported by major domestic financial centers as onshore hubs and connected through offshore markets such as Hong Kong. However, foreign market participants still face restrictions on access to domestic financial markets, and domestic capital also remains subject to constraints on overseas asset allocation (Hao et al., 2026). Market segmentation limits the concentration of financial resources and connectivity between onshore and offshore RMB markets (Wan et al., 2020), preventing the network effects of international financial centers in supporting cross-border RMB use from being fully realized. Therefore, optimizing the spatial configuration and functional division of international financial centers can help improve the efficiency of cross-market flows of RMB-denominated assets. In onshore markets, Shanghai can continue to strengthen its RMB asset pricing and international trading functions. Beijing can capitalize on its advantages in financial administration and the concentration of financial institution headquarters. Shenzhen can leverage its capital markets and the Guangdong–Hong Kong–Macao Greater Bay Area to expand cross-border financial services, while other regional financial centers can develop differentiated roles based on their respective industrial foundations. In offshore markets, building on established offshore RMB financial centers such as Hong Kong and London, the offshore RMB network can be gradually expanded in response to genuine market demand, while strengthening business linkages and institutional coordination between onshore and offshore financial markets to facilitate the cross-market allocation of RMB-denominated assets. In addition, consideration could be given to leveraging pilot free trade zones as testing grounds for financial opening, allowing initial experimentation with measures to facilitate cross-border investment and financing, liberalize the capital account, and expand cross-border RMB use. Such experiments could provide practical experience in financial opening within a controlled scope and provide room for adjustment as market connectivity expands.

Expanding the synergistic functions of digital financial infrastructure. Further mutually reinforcing development of RMB internationalization and international financial centers depends not only on currency demand and the foundations of financial markets but is also influenced by the efficiency of cross-border payments and clearing and the degree of connectivity between financial infrastructures (Chu et al., 2025). The development of digital financial infrastructure, including cross-border payment and clearing systems, the digital RMB, and multilateral central bank digital currency platforms, can help reduce frictions in cross-border RMB payments and strengthen market connections between onshore and offshore financial centers (Zeng and Lau, 2025). However, digital financial infrastructure primarily improves the efficiency of payments and clearing and enhances market connectivity, and its effectiveness still depends on the supply of RMB-denominated assets and the development of financial markets (Zhang et al., 2024). Improvements in payment efficiency cannot substitute for long-term demand among foreign market participants to hold RMB-denominated assets, nor can they directly promote the deepening of the RMB's reserve function. Cross-border digital payments also face constraints related to regulatory coordination and data security. Therefore, given that the capital account is not yet fully convertible and overseas demand for RMB-denominated asset allocation remains relatively limited, a gradual expansion of the cross-border applications of digital financial infrastructure through regional cooperation and multilateral pilot programs is more appropriate. This approach would help improve settlement efficiency while taking into account data security and financial risks.

7 Conclusion

From the perspective of the evolution of globalization, this paper systematically reviews the historical evolution of five representative currency–financial center systems, namely the Dutch guilder–Amsterdam, the British pound–London, the US dollar–New York, the Japanese yen–Tokyo, and the euro–Frankfurt, focusing on the interactions between currency internationalization and international financial centers. It further reveals the evolutionary

mechanisms underlying their mutually reinforcing and symbiotic relationship. The findings indicate that this relationship results from the interaction between the deepening of international currency functions and the spatial expansion of international financial centers. As international currencies expand from payment and settlement functions to investment and financing and reserve functions, signaling effects associated with power and trust enhance their influence in international markets and promote the spatial expansion of international financial centers. Meanwhile, as financial centers expand from regional to global centers and further develop into onshore–offshore financial networks, network effects arising from economies of agglomeration and information diffusion improve the conditions for cross-border currency use, thereby promoting the deepening of international currency functions. Through continuous feedback, signaling effects and network effects further generate synergistic effects, reinforcing the mutually supportive development of currency internationalization and international financial centers.

As the world's second-largest economy, China currently plays an important role in the global economic and financial landscape. RMB internationalization and the development of international financial centers in China have progressed through three stages characterized by policy support, demand-driven development, and expansion and deepening, with increasingly strong connections between the international use of the RMB and onshore–offshore financial networks. However, their mutually reinforcing development still faces practical challenges, including a relatively weak foundation of trust in the RMB and the need for further improvement in market-oriented financial mechanisms. Therefore, further mutually reinforcing and symbiotic development between RMB internationalization and international financial centers requires greater coordination between financial openness and financial security, a clearer functional division and stronger spatial linkages within a multi-tiered system of international financial centers, and improvements in cross-border payment efficiency and market connectivity supported by digital financial infrastructure. Together, these factors can promote the deepening of currency functions and the expansion of financial space, contributing to the high-quality development of China's financial sector.

This paper has certain limitations. The research primarily adopts a comparative case study approach, focusing on explaining the long-term evolutionary logic of the relationship between currency internationalization and international financial centers. The identification of signaling effects, network effects, and synergistic effects is based on theoretical analysis and historical evidence, without quantitative testing. Meanwhile, the selected cases mainly focus on representative international currencies and financial centers in modern history. Given the substantial differences in institutional environments and stages of development across countries, the applicability of the findings to other emerging economies requires further examination. Future research could develop consistent measures of international currency functions and network connections among financial centers and incorporate cross-country panel data and financial network data covering longer periods to empirically examine the bidirectional effects between currency internationalization and international financial centers and their nonlinear characteristics.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

YY: Conceptualization, Data curation, Formal analysis, Investigation, Writing – original draft. LH: Conceptualization, Data curation, Funding acquisition, Writing – review & editing. DW: Investigation, Writing – original draft.

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