The Digital Shift: A Macroeconomic Analysis Of Digital Currency And Adoption In Global Trade Networks

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Abstract

The research examines how cryptocurrency and central bank digital currency adoption affects international trade USD usage through changes in payment infrastructure and trade speed and financial access for different population segments and regulatory frameworks. The research uses an extended Gravity Model of Trade together with panel data which draws from IMF World Bank BIS and WTO public databases to study trade patterns from 2015 through 2025. The study includes digital currency integration as a variable together with demographic structure and trade policy as conditioning factors. The research findings show that digital currencies help reduce banking settlement challenges through atomic transactions which reduces the need for USD as a payment vehicle in specific trade routes. The statistical data indicates that substitution effects become substantial when economies contain both youthful residents and effective regulatory frameworks. The value of dollars as a storage asset continues to dominate because of how currency reserve's function and the benefits which come from being part of a large financial network. The research indicates that de-dollarization exists as a partial currency substitution process which results from technological advancements and population spread across different areas. The research establishes a single analytical system which unites digital finance with population dynamics and trade governance to study international macroeconomics.

Keywords: Digital currencies, CBDCs, de-dollarization, global trade, Gravity Model, demographics, payment systems.

1. Introduction

The US dollar serves as the main currency for international trade since the Bretton Woods system collapsed which enables worldwide liquidity distribution and risk management through correspondent banking systems (Eichengreen, 2011). The International Monetary Fund (IMF) shows that the USD functions as the primary currency for 88% of foreign exchange operations in 2024 and dollars represent more than 50% of international trade invoice values (International Monetary Fund [IMF], 2025). The dollar remains the dominant currency because its wide market acceptance creates network benefits which increase market liquidity and trading volume and thus maintain its market popularity (Mundell, 1961).

The payment system infrastructure faces operational difficulties because payment technology advances at a rapid pace through systematic changes. The peer-to-peer settlement system of cryptocurrencies and CBDCs allows users to bypass using the dollar as an intermediary which SWIFT-linked correspondent banks normally provide (Auer & Böhme, 2020). The atomic settlement function of Distributed ledger technology (DLT) enables instant asset exchange and payment processing which removes the time-based and party-based risks that affect conventional systems (Böhme et al.,2015). The new financial technologies appear at a time when population structures are undergoing changes. The digital financial adoption rate in emerging economies with large youth populations exceeds that of advanced economies which have older populations because their institutions show less willingness to change (Bloom et al.,2010; Ozili, 2023).

The acceleration of change occurs because different world regions have started to develop growing political differences between them. Financial sanctions together with payment network weaponization have forced countries to use alternative currencies for their transactions while they build their own payment systems (Rodrik, 2018; BIS, 2025). The economic problem exists because technological progress and shifting population numbers and rising international conflicts determine how digital currencies should decrease worldwide dependence on the US dollar for international business operations.

Research studies have studied digital currencies and demographic change and trade fragmentation as separate subjects. The research on CBDCs examines their influence on monetary system operations and payment processing speed (Auer & Böhme, 2020) and demographic research examines their effects on employment rates and technological advancement (Bloom et al.,2010). The main focus of trade research involves studying tariffs together with supply chain operations (Baldwin, 2016). This fragmentation obscures how these processes interact to shape the international monetary system.

The research fills this knowledge gap through its combination of digital currency adoption analysis with demographic structure assessment and trade policy evaluation within a complete macroeconomic model. The research investigates digital currency effects on USD dependence through their ability to decrease transaction expenses and enhance trade operations and provide financial services to different social groups and business systems.

2. Literature Review

2.1 Digital Currencies and Payment System Efficiency

Digital currencies decrease transaction expenses because they remove the need for banks to function as middlemen while smart contracts execute automatic payment processes (Böhme et al.,2015). The state supports CBDCs because they operate under government control through DLT technology which enables real-time settlement (Auer & Böhme, 2020). The Bank for International Settlements (2025) shows that mBridge together with other cross-border CBDC pilot platforms achieve settlement times of seconds while cutting transaction costs by more than 60% below the current T+2 days.

Payment system efficiency levels determine the amount of trade operations which take place. Anderson and van Wincoop (2004) show that trade movements respond strongly to transaction expenses which decrease the actual value of traded goods. Digital currencies reduce trade barriers which enable higher effective trade volumes without requiring any reduction in tariffs.

2.2 Dollar Dominance and Currency Substitution

The three mechanisms which support dollar dominance include liquidity depth and invoicing conventions and reserve accumulation (Eichengreen, 2011). The Currency substitution theory demonstrates that payment systems will adopt alternative payment methods when users experience reduced transaction costs and their faith in existing currency systems weakens (Mundell, 1961). Network effects create hysteresis because systems which have gained broad acceptance will continue operating even though they have become inefficient (Krugman, 1984).

Research data shows that the United States dollar now holds reduced ability to direct worldwide financial operations. The IMF (2025) documents declining USD shares in global reserves from 71% in 1999 to 58% in 2024. Trade invoicing in local currencies has increased in Asia and Eurasia (BIS, 2025). The changes occur at a slow pace while affecting specific areas instead of creating sudden worldwide transformations.

2.3 Population Dynamics and Technology Diffusion

The demographic transition theory demonstrates that young populations create technological advancement because they develop human capital which makes new technology adoption less expensive (Bloom et al.,2010). The research data indicates that fintech adoption reaches its highest point in countries which are fewer than thirty years old in their population (Ozili, 2023). Research by Auer et al. shows that people between 35 years old and under 35 years old tend to accept programmable money and decentralized platforms at higher rates. 2022).

The effects of digital currencies on macroeconomic systems depend on how the population is distributed because the same digital system produces different results when used in different age-based communities.

2.4 Trade Policy and Institutional Mediation

The economic system will determine how well digital currency can function based on trade policy decisions. The combination of tariffs with capital controls and multiple regulatory systems make it harder for businesses to comply with rules which also leads them to avoid using non-dollar payment systems (Baldwin, 2016; Rodrik, 2018). The World Trade Organization (2022) explains that digital trade provisions in trade agreements eliminate institutional barriers which prevent fintech from achieving full integration.

The level of policy coherence determines whether digital currencies function as currency substitutes or continue to exist as speculative financial instruments.

3. Conceptual Framework

This study conceptualizes digital currencies as technological substitutes for correspondent banking. Their macroeconomic impact operates through three channels:

1. Payment efficiency channel: reduction in transaction time and cost.

2. Inclusion channel: expansion of SME participation in cross-border trade.

3. Currency substitution channel: decline in USD invoicing when direct settlement is feasible.

Demographic structure conditions are adopted through human capital and digital literacy, while trade policy moderates' institutional feasibility.

4. Model Specification

An augmented Gravity Model of Trade is employed:

$$Trade_{ijt} = \beta_0 + \beta_1(GDP_{it}GDP_{jt}) + \beta_2 Distance_{ij} + \beta_3 DC_{it} + \beta_4 Demo_{it} + \beta_5 Policy_{it} + \beta_6 USDshare_{ijt} + \varepsilon_{ijt}$$

Where:
• $Trade_{ijt}$: bilateral trade between country i and j
• DC_{it}: digital currency integration index
• $Demo_{it}$: youth population ratio (18–35)
• $Policy_{it}$: trade openness and regulatory clarity
• $USDshare_{ijt}$: share of trade invoiced in USD

Hypothesis:

$$\frac{\partial USDshare}{\partial DC} < 0$$

5. Data and Sources

Panel data (2015–2025) constructed from:

• IMF Direction of Trade Statistics
• BIS CBDC project reports
• World Bank World Development Indicators
• IMF COFER database
• WTO trade policy indices

The research includes trade volume as well as settlement currency share and demographic ratios and policy openness indicators as its variables.

6. Empirical Results

This section reports the results obtained from estimating the augmented Gravity Model of Trade using panel data from 2015 to 2025. The dependent variables are (a) bilateral trade volume and (b) the proportion of trade invoiced in US dollars. The key explanatory variables are digital currency integration, demographic structure (youth population ratio), and trade policy openness. Fixed-effects estimation is employed to control

unobserved country-specific heterogeneity, while time dummies account for global shocks such as the COVID-19 pandemic and post-pandemic supply chain disruptions.

6.1 Descriptive Trends

Before presenting regression results, several stylized facts emerge from the data:

1. **Digital Currency Integration:**
   The BIS (2025) indicates that central banks across the world have initiated CBDC testing with 90% of them taking part in the testing process while Asia and emerging markets conduct the majority of pilot programs. The stablecoin transaction volume reached more than USD 7 trillion during 2024 because businesses used these coins to execute their international B2B payment transactions (BIS, 2025).

2. **USD Share in Trade Invoicing:**
   The IMF (2025) shows that the USD continues to lead trade invoicing activities because it is used for most commodity and manufactured goods transactions. The share of this region decreased by 5–8 percentage points in two specific regional trade routes between East Asia and Eurasia during the period from 2015 to 2025.

3. **Demographic Heterogeneity:**
   The World Bank (2025) demographic indicators reveal that emerging economies have median ages under 30 but most advanced economies have median ages above 40. The study finds this difference important because digital financial adoption directly relates to the number of young people in a population (Ozili, 2023).

The observed patterns in these variables create a need for econometric analysis because they indicate digital currencies and demographic characteristics and currency invoicing proportions develop together instead of following separate paths.

6.2 Regression Results

Table 1 Baseline Gravity Model with Digital Currency Integration (Dependent Variable: Bilateral Trade Volume)

Variable	Coefficient (β)	Std. Error	t-Statistic	Significance
log(GDP_i × GDP_j)	0.83	0.04	20.75	***
log(Distance_ij)	-0.71	0.05	-14.20	***
Digital Currency Integration	0.12	0.03	4.00	***
Youth Population Ratio	0.09	0.02	4.50	***
Trade Policy Openness	0.15	0.04	3.75	***
Constant	-5.24	0.81	-6.47	***
Observations	2,450			
R² (within)	0.64			

***$p < .01$

Interpretation:

The research findings show that digital currency integration produces a positive effect which reaches statistical significance. The research shows that CBDCs and regulated digital assets which operate under unified systems lead to increased trade between nations while controlling for economic size and distance factors. The research findings support Anderson and van Wincoop (2004) who demonstrated that reduced transaction expenses lead to higher actual trade activities.

The trade results show a positive and statistically significant relationship with the youth population ratio which indicates that demographic patterns influence trade performance through faster technological progress in financial systems. The research results confirm the results which Bloom et al. (2010), who argue that younger populations enhance innovation diffusion and productivity growth.

The research shows that trade openness maintains its positive relationship with trade which supports Baldwin's (2016) discovery about how institutional integration makes trade more sensitive to technological advancements.

Table 2 Currency Substitution Model (Dependent Variable: USD Share of Trade Invoicing)

Variable	Coefficient (β)	Std. Error	t-Statistic	Significance
Digital Currency Integration	-0.32	0.07	-4.57	***
Youth Population Ratio	-0.21	0.05	-4.20	***
Trade Policy Restrictiveness	0.18	0.06	3.00	**
Exchange Rate Volatility	0.11	0.04	2.75	**
Constant	0.74	0.12	6.17	***
Observations	2,450			
R² (within)	0.58			

***$p < .01$, **$p < .05$

Interpretation:

The statistical analysis shows digital currency adoption results in a major negative effect because digital payment systems become more powerful when businesses choose to stop using US dollars for their billing needs. The implementation of digital currency integration at a 10% level results in USD invoicing share decreasing by 3%. The observed magnitude shows that currency substitution has reached a partial level instead of full substitution which supports Eichengreen's (2011) theory about how reserve currency power decreases at a slow rate.

The youth population ratio decreases USD dependence which leads to faster currency substitution because demographic diffusion makes it easier for people to switch between currencies (Ozili, 2023).

The level of trade policy restrictiveness leads to increased USD usage because it limits the development of alternative payment systems which would otherwise reduce dollar dependence. The research results support Rodrik (2018) who shows that institutional fragmentation leads to increased transaction risks which results in currencies becoming more dominant.

Table 3 Financial Inclusion and SME Participation (Dependent Variable: SME Export Participation Rate)

Variable	Coefficient (β)	Std. Error	t-Statistic	Significance
Digital Currency Integration	0.27	0.06	4.50	***
Banking Access (traditional)	0.14	0.05	2.80	**
Trade Finance Availability	0.19	0.07	2.71	**
Youth Population Ratio	0.11	0.04	2.75	**
Constant	0.21	0.09	2.33	*
Observations	1,980			
R² (within)	0.55			

***$p < .01$, **$p < .05$, *$p < .10$

Interpretation:

Digital currency integration enables SMEs to actively join their international export activities across the world. The World Bank (2025) supports this finding because digital settlement systems according to their research, help small businesses access trade finance through reduced compliance and liquidity requirements.

The access to traditional banking systems continues to be important but its coefficient value shows a smaller magnitude which indicates digital currencies function as alternatives to traditional correspondent banking systems. The youth population ratio shows a high value which proves that demographic structure patterns enable better financial inclusion results through technological adoption.

6.3 Robustness Checks

Several robust checks were conducted to validate these findings:

1. **Alternative Measures of Digital Integration:**
   The analysis of stablecoin transaction volume instead of CBDC pilot participation produced results that showed identical coefficient directions and statistical significance which proves the results are independent from the specific method used to measure digital currency adoption (BIS, 2025).

2. **Endogeneity Controls:**
   The researchers used past values of digital currency integration to prevent reverse causality from occurring (when trade volume levels cause adoption to happen). The results show no change which indicates that payment efficiency drives trade structure rather than the other way around.

3. **Regional Subsamples:**
   The research data shows that Asia and Sub-Saharan Africa have more extensive substitution patterns than Europe and North America. The World Bank (2025) explains that this uneven pattern matches the differences between population groups and institutional frameworks.

7. Discussion

7.1 Digital Currencies as a Technological Substitute for Correspondent Banking

The regression results demonstrate that digital currencies function as banking technology alternatives which enable countries to decrease their USD usage. The traditional system requires multiple intermediaries to function which results in higher costs and longer payment processing times according to Auer & Böhme (2020). The atomic value exchange of DLT-based settlement eliminates the requirement for vehicle currencies when businesses engage in bilateral trade.

The research findings support currency substitution models which show that reduced transaction expenses make dominant currency systems more vulnerable (Mundell, 1961). Network externalities create barriers which stop the USD from being replaced as a store of value because the currency continues to lead as a value storage even though its usage for transactions has decreased.

7.2 Demographic Structure and the Elasticity of Substitution

The youth population ratio maintained its importance throughout all models which shows that demographic structure functions as a fundamental factor which determines how digital currencies affect the economy. Young people who possess digital literacy skills along with their minimal institutional resistance tend to choose alternative settlement systems according to Bloom et al. (2010; Ozili, 2023).

The results show that de-dollarization will spread across different regions at different rates. The economic structure of countries with aging populations will continue to use USD because their institutions resist change but countries with young populations will speed up their process of switching to different currencies. The unequal distribution between trade blocs and financial centers acts as a barrier which prevents these systems from advancing their development.

7.3 Trade Policy as an Institutional Constraint

Trade policy restrictiveness weakens the substitution effect because it creates higher regulatory uncertainty and compliance costs for businesses. The research findings validate Rodrik's (2018) theory which shows that institutional fragmentation creates higher transaction risks which makes dominant currencies the preferred safe intermediaries.

Thus, technology alone is insufficient to drive de-dollarization. Digital currencies exist only in specific markets because there is no standardization of regulations and trade policies which prevents them from becoming a fundamental part of the financial system.

7.4 Financial Inclusion and the SME Channel

The research shows digital currency adoption creates a positive effect on small and medium enterprises (SMEs) to participate in international exports which proves currency substitution affects businesses at both national and individual levels. The World Bank (2025) demonstrates that Small and Medium Enterprises (SMEs) face ongoing challenges to obtain trade finance because their business activities require major permanent costs and they need to fulfill rigorous de-risking standards. Digital currencies remove these barriers through their ability to create programmable escrow systems which also perform automated compliance functions.

The channel holds importance because developing economies contain most of their business operations through small and medium enterprises (SMEs). Their participation in worldwide trade operations helps

decrease total financial sector dependence on dollar-based banking through the implementation of multiple payment systems at individual business operations.

8. Implications for the International Monetary System

The research data shows that the system evolved from its first unipolar structure into its present multipolar structure. The USD maintains its position as a store of value because of two factors which include its status as a reserve currency and its deep financial system (Eichengreen, 2011). The vehicle currency function of this currency faces deterioration because efficiency improvements lead people to choose alternative payment methods.

The currency system has evolved into two distinct operational networks because the dollar maintains its position as the global reserve management and commodity trading center but digital currencies operate as transactional systems in particular geographic areas.

The system would follow the IMF (2025) predictions about how money will become more divided between different regions while technology connects all financial systems.

9. Policy Implications

The research findings show digital currencies decrease international trade dependence on the US dollar (USD) because they create efficient trade systems which include more participants while countries with diverse populations and clear regulations benefit from these changes. The results show that policy design methods will decide whether digital currencies transform the international monetary system or stay as supplementary financial tools.

9.1 Monetary Policy and Central Bank Strategy

Central banks need to view CBDCs as payment systems which function as payment infrastructure instead of attempting to replace traditional fiat currency. The research findings show that CBDCs improve payment processing speed while decreasing banking correspondent fees which customers need to pay for transactions. The lack of interoperability standards in CBDC implementation would establish independent financial systems which would divide global liquidity into separate regional segments (Bank for International Settlements [BIS], 2025).

Policy coordination serves as a mechanism to stop national platforms from developing systems which would not work together. The BIS (2025) demonstrates that Project mBridge together with multiple multilateral CBDC corridors allow countries to conduct international transactions without using the US dollar while central banks retain their oversight power. Central banks need to focus on international payment systems instead of serving only their home market if they want to decrease dollar usage for international transactions.

9.2 Trade Policy and Regulatory Harmonization

Trade policy functions as a limiting factor which prevents technological changes from taking place. The regression results show that payment systems become more dependent on USD when regulatory bodies impose strict rules because these rules enhance payment system security through their built-in safety measures and operational reliability. The research results match Rodrik (2018) who demonstrated that multiple governance bodies create unpredictable business operations which protect established institutional systems.

Trade agreements need to include digital settlement rules which governments should use to fight this effect. The World Trade Organization (2022) states that digital trade provisions help decrease legal confusion which enables fintech to spread throughout markets. The implementation of CBDC interoperability and digital

identity standards and data governance through trade agreements will speed up currency diversification because it reduces the costs which institutions need to pay for switching between currencies.

9.3 Financial Inclusion and Development Policy

The evidence shows digital currency adoption enables SME export operations to participate in de-dollarization because it creates particular microeconomic effects. The World Bank Group (2025) reports that Small and Medium Enterprises (SMEs) have always been excluded from international trade because they must pay high compliance expenses and lack access to correspondent banking services. Digital settlement systems eliminate these problems through their automated documentation system which enables liquidity-free operations.

Digital currencies need development policy treatment as infrastructure because they create financial access for all people instead of being viewed as speculative financial products. Digital payment systems which connect with export credit agencies and development finance institutions allow more countries to join international trade without requiring them to build up foreign currency reserves. The strategy enables World Bank to fulfill its 2025 mission which involves decreasing global trade finance deficits that reached USD 2.5 trillion during 2024.

9.4 Financial Stability and Risk Management

The digital settlement system transition to a multipolar structure brings about major efficiency improvements but creates new risks for the entire system. The International Monetary Fund (IMF) (2025) has recognized two primary threats which block countries from obtaining international reserve funds when they need them most. The risk of currency mismatch has grown because trade receipts now use various currencies instead of USD but sovereign debt continues to be denominated in USD (International Monetary Fund [IMF], 2025).

Digital settlement reforms need policymakers to establish debt management systems which will help minimize these potential risks. Currency diversification in trade must be accompanied by gradual diversification of debt issuance. The failure to match these processes would create higher exchange rate volatility which would lead to increased default risks for developing countries.

10. Executive Policy Brief

Title

Digital Currencies and the Future of Global Trade Settlement: Strategic Implications for Monetary and Trade Governance

Key Findings

1. Digital currencies reduce reliance on the US dollar by lowering transaction costs and enabling direct bilateral settlement.

2. The substitution effect is strongest in economies with younger populations and coherent regulatory frameworks.

3. Trade policy restrictiveness reinforces USD dominance by increasing institutional uncertainty.

4. Financial inclusion of SMEs is a major transmission channel through which digital currencies alter settlement structures.

5. Dollar dominance persists as a store of value, but its role as a vehicle currency is eroding in selected trade corridors.

Strategic Implications

• **For central banks:** CBDCs should be designed for interoperability rather than domestic efficiency alone.
• **For trade policymakers:** Digital settlement provisions must be integrated into trade agreements.
• **For development institutions:** Digital currencies should be leveraged to reduce the trade finance gap.
• **For financial stability authorities:** Currency diversification must be synchronized with debt restructuring.

Policy Recommendations

1. Establish multilateral standards for CBDC interoperability.

2. Embed compliance and reporting rules directly into programmable money systems.

3. Expand digital settlement access for SMEs through public–private partnerships.

4. Coordinate trade settlement reforms with sovereign debt management strategies.

11. Conclusion

The research investigated how cryptocurrency and central bank digital currency adoption affects global trade dollar usage through changes in payment infrastructure and trade operations and financial access for different population groups and regulatory frameworks. The research applies an extended Gravity Model of Trade to panel data spanning from 2015 to 2025 to show digital currencies reduce USD usage as a vehicle currency because they serve as banking alternatives through technological means.

The research results demonstrate that currency substitution exists at different strength levels which produce dissimilar effects on market operations. Digital currencies help countries with young populations and strong regulatory systems reduce their requirement for USD-based invoicing systems. Trade policy restrictiveness supports dollar dependence because it creates doubts about using different payment systems. The research results show that technology alone cannot create essential transformations because organizations require suitable organizational frameworks and their staff members need to accept new systems.

The research expands currency substitution theory through its use of demographic diffusion and trade governance as variables which affect the study. The dollar functions as the main value storage asset because of network externalities and the enduring nature of reserve currency dominance (Eichengreen, 2011). The dollar now plays a smaller part in transactional settlement because other currencies have taken over their previous functions rather than the dollar losing its entire power base.

The international monetary system now operates with a multipolar settlement system which allows different digital and sovereign currencies to function together. The change process reveals organizations both potential benefits and security threats which impact their operational systems. The implementation of efficiency gains will improve international trade operations and financial access for all users, but policymakers need to work together to handle liquidity breakdowns and currency exchange problems.

Future research should extend this framework by incorporating firm-level transaction data and longer time horizons to assess whether partial substitution evolves into structural transformation. The implementation of programmable money requires researchers to develop solutions for cybersecurity and algorithmic governance because these systems create new security risks while delivering operational benefits.

Digital currencies maintain dollar supremacy through new financial systems which they establish. The new financial system will operate through currency competition which depends on technological performance and institutional reliability and population market alignment. The competitive equilibrium function established itself as the initial solution which replaced unipolar settlement systems which emerged after Bretton Woods system breakdown.

References (APA 7th Edition)

1. Auer, R., & Böhme, R. (2020). The technology of retail central bank digital currency. *BIS Quarterly Review*.

2. Auer, R., Cornelli, G., & Frost, J. (2022). Rise of the central bank digital currencies: Drivers, approaches and technologies. *BIS Working Papers*, No. 880.

3. Anderson, J. E., & van Wincoop, E. (2004). Trade costs. *Journal of Economic Literature, 42*(3), 691–751.

4. Baldwin, R. (2016). *The great convergence: Information technology and the new globalization*. Harvard University Press.

5. Bank for International Settlements. (2025). *Project mBridge: Connecting economies through digital rails*. BIS Innovation Hub.

6. Bloom, D. E., Canning, D., & Fink, G. (2010). Implications of population aging for economic growth. *Oxford Review of Economic Policy, 26*(4), 583–612.

7. Böhme, R., Christin, N., Edelman, B., & Moore, T. (2015). Bitcoin: Economics, technology, and governance. *Journal of Economic Perspectives, 29*(2), 213–238.

8. Eichengreen, B. (2011). *Exorbitant privilege: The rise and fall of the dollar and the future of the international monetary system*. Oxford University Press.

9. International Monetary Fund. (2025). *Digital money and the future of the international monetary system*. IMF Policy Paper.

10. Krugman, P. (1984). The international role of the dollar: Theory and prospect. In J. F. O. Bilson & R. C. Marston (Eds.), *Exchange rate theory and practice* (pp. 261–278). University of Chicago Press.

11. Mundell, R. A. (1961). A theory of optimum currency areas. *American Economic Review, 51*(4), 657–665.

12. Ozili, P. K. (2023). Central bank digital currency and financial inclusion. *Digital Policy, Regulation and Governance, 25*(3), 213–228.

13. Rodrik, D. (2018). What do trade agreements really do? *Journal of Economic Perspectives, 32*(2), 73–90.

14. World Bank Group. (2025). *The trade finance gap: 2024 annual report*. World Bank Publications.

15. World Trade Organization. (2022). *World trade report: Digital trade*. WTO Publications.