Global Imbalances: A Progress Report

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1 Introduction

Over the last several decades, the world economy has experienced a striking and persistent pattern of global current account imbalances. Large surplus economies — first Japan and Germany, more recently China, oil-exporting countries, and other emerging markets — have accumulated substantial net foreign asset positions, while the United States and a small group of advanced economies have run sustained and often widening deficits. The puzzling expansion, direction, and persistence of these current account positions has become known as "global imbalances" and attracted much attention from both researchers and policymakers. This progress report provides an integrated framework for interpreting the origins, consequences, and policy implications of global imbalances.

Our starting point is an organising perspective that decomposes the drivers of cross-border asset positions into global demand and global supply of stores of value. From this viewpoint, global imbalances arise because structural forces generate an excess demand for safe and risky assets that only a small subset of economies — chiefly the United States — are able to produce and willing to supply. Demographic transition, rising inequality, precautionary savings, commodity cycles, and reserve accumulation have boosted global savings, while the fiscal and securitization capacities and the dynamism of the U.S. economy have made the United States the primary absorber of these flows. In summary, global imbalances are best understood as the equilibrium outcome of a *worldwide* increasing demand for assets and highly *asymmetric* supply of credible stores of value across countries.[1]

The second major objective of this report is normative. While the term "imbalances" suggests that something is economically amiss, the welfare implications of global imbalances are ambiguous. On the one hand, international capital flows allow countries to share risks, finance investment, smooth consumption, and pursue (perhaps, in a second-best way) industrial or macro-prudential goals. On the other hand, global imbalances can amplify financial fragility

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[1] Below, we use appeal to both flow and stock arguments with the understanding that changes in asset demand and supply (stocks) affect current accounts (flows). In addition, these shifts may generate cross-border valuation effects that further change net foreign asset positions of countries.

and the zero lower bound on monetary policy, as well as create tension between national policy objectives and global stability. A comprehensive evaluation must weigh these benefits and costs rather than treating imbalances as inherently undesirable.

We then turn to the effects of government policies. Recent developments — including the sharp rise in U.S. tariffs in 2025, renewed interest in protectionism, and rising geopolitical tensions — make it essential to revisit the interactions between global imbalances and trade and industrial policies. Tariffs have two distinct effects on external imbalances. On the one hand, by making international trade more costly, they reduce gross trade flows and thus also compress imbalances, specifically reducing both current trade deficits and future trade surpluses for a given country. This temporarily narrows imbalances but does not alter the present value of all future cumulated trade balances.

On the other hand, tariffs can also shift the permanent trade balance through their effects on cross-border asset valuations, in particular, via exchange rate movements. Specifically, import tariffs appreciate the domestic currency, which raises the value of a country's external liabilities (assuming it is largely in local currency) relative to its foreign assets. The resulting decline in the net foreign asset position results in a smaller long-run trade deficit by virtue of the country's budget constraint. This also implies that existing external imbalances substantially reshape the optimal tariff policy: the associated valuation effects reduce the optimal size of import tariffs and weaken incentives to engage in trade wars. We also examine the role of industrial policies in shaping external positions, showing that they can influence imbalances when they affect sectoral productivity, expectations about future productivity, or when they generate on-impact valuation changes in countries' external balance sheets.

Finally, we examine the long-run sustainability of global imbalances and the possible paths through which they may unwind. Focusing on the United States — the only large economy to have sustained persistent trade deficits for decades — we argue that the future of imbalances depends critically on the evolution of global asset demand and supply. One possibility is a slow and gradual adjustment, in which accumulated U.S. external liabilities eventually require higher net exports, but only over very long horizons due to valuation effects and the small share of net foreign assets in overall wealth. An alternative scenario is that imbalances remain effectively permanent, sustained by U.S. exorbitant privilege in the form of higher returns on foreign assets than on liabilities, provided the United States retains its role as a dominant issuer of safe and liquid assets and continues to invest abroad in risky assets. If these conditions fail — due to fiscal slippage, the erosion of safe-asset status, or adverse valuation shocks — adjustment could be faster and more disruptive, most likely occurring through exchange-rate depreciation rather than explicit default. In this case, dollar depreciation would improve the U.S. external position both by rebalancing trade flows and by generating favorable valuation effects, but at the cost of weakening future demand for U.S. assets and undermining the foundation of exorbitant privilege.

2 Sources of Imbalances

2.1 General framework

Understanding the origins of global imbalances is essential both for anticipating their future dynamics and for formulating effective policy responses. Since the current account surpluses of some countries necessarily mirror deficits elsewhere, a central question is whether the primary source of imbalance lies with creditor economies that supply savings or debtor economies that absorb them. A useful organising principle is to decompose shocks into those that affect the global demand for assets and those that affect their supply. The expected rate of return clears this market, and a country runs a current account surplus (deficit) whenever its savings exceed (fall short of) the value of local assets at that equilibrium return.

Within this framework, the persistent global imbalances of recent decades can be interpreted as the outcome of a sustained rise in global demand for assets, driven mainly by developing economies, combined with a limited expansion of the global asset supply concentrated in the United States. Indeed, both demand and supply forces can generate large cross border positions, but the long run decline in real interest rates suggests that rising demand for stores of value has been the primary driver (Caballero, Farhi, and Gourinchas 2008).

This does not imply that supply considerations were unimportant. Without a continuous expansion of U.S. government liabilities and a booming equity market, global savings would have been absorbed by other countries or simply reduced through lower equilibrium returns. In practice, the ongoing increase in U.S. public debt and the secular rise of U.S. equity valuations have played a central role in accommodating the global savings glut (Obstfeld 2025). The interaction of rising demand with highly asymmetric supply is therefore key to understanding the world economy of today (Caballero 2015).

This framework also clarifies which explanations frequently invoked in policy debates lack theoretical foundations or empirical support. In particular, a common view attributes persistent external imbalances to monetary policy. For instance, the creation of the euro is sometimes blamed for the Euro Area's structural current account surplus, and some observers argue that several developing economies deliberately weaken their currencies with easy monetary policy to sustain trade surpluses. However, the long horizon over which global imbalances persist is difficult to reconcile with the limited long-run real effects of standard monetary policy tools. Moreover, large adjustments in nominal and real wages during the Euro Area debt crisis, documented by Chodorow-Reich, Karabarbounis, and Kekre (2023), suggest that nominal rigidities play only a secondary role in shaping external positions. This is not to claim that government policies are irrelevant. Monetary policy matters in the short run, and as we discuss below, other government actions decisively influence long-run imbalances. The central point is that the structural nature of global imbalances is best understood through the joint

evolution of global savings motives and global asset supply. We next turn to the specific forces driving the demand for and supply of assets in the international financial system.

2.2 Demand

The savings glut hypothesis, first articulated by Bernanke (2005), argues that a rise in global demand for stores of value was the main driver of widening external imbalances in the 2000s. Over the past two decades, this view has been supported by a broad body of theoretical and empirical research, identifying several independent forces contributing to elevated global savings.

A first and arguably quantitatively central force originates in demographic change. Population aging and declining fertility rates imply that a growing share of households accumulate wealth for retirement. Although in steady state this effect should be offset by the dissaving of older cohorts, the transition path spans several decades during which the savings of the younger cohorts dominate. The quantitative analysis of Auclert, Malmberg, Martenet, and Rognlie (2021) shows that demographic trends will continue to sustain global imbalances until the end of the twenty first century, with rapidly aging societies in emerging markets gradually replacing Europe, Japan, and China as the primary contributors to global savings. These flows may appear as private capital flows, with households directly saving for old age, or as public flows, with governments accumulating foreign assets on behalf of households. For example, many pension funds invest in domestic government bonds, while central banks and sovereign wealth funds offset these liabilities by holding foreign assets, as in Japan and Singapore (Chien, Du, and Lustig 2025).

A second driver is the rise in within country inequality and the increase in precautionary savings motives. Since higher income households save a larger fraction of their income, rising inequality mechanically raises aggregate savings (Mian, Straub, and Sufi 2020). Absent offsetting fiscal policies, this trend is likely to continue in the future. In addition, limited social insurance and exposure to idiosyncratic risk induce households to accumulate precautionary savings (Mendoza, Quadrini, and Rios-Rull 2009). These forces are particularly strong in developing economies, where income volatility is higher and social safety nets are weaker, generating elevated saving rates relative to advanced economies.

A third important source of global savings is commodity exporting economies. These countries face two distinct incentives to accumulate foreign assets. First, they seek to smooth highly volatile commodity driven business cycles by building reserves during periods of elevated prices. Second, they must hedge against long-run risks associated with the eventual depletion of natural resources or the prospect of structurally lower future prices as global energy production shifts toward renewable sources. Saving part of commodity revenues therefore provides insurance against both cyclical and secular risks. The abnormally high commod-

ity prices in the first quarter of the twenty first century were among the key factors behind growing imbalances.

Finally, government reserve accumulation and related financial policies have contributed significantly to global demand for safe assets (Obstfeld, Shambaugh, and Taylor 2010). Following the Asian financial crisis of the late 1990s, many emerging market central banks adopted explicit reserve adequacy objectives aimed at deterring speculative attacks and ensuring financial stability. Maintaining ample reserves strengthens the governments ability to defend the exchange rate and avoid crises arising from self-fulfilling expectations (see Section 3). Governments also frequently employ capital controls and limit borrowing by private agents. While the motivations for such policies vary — from promoting exports to reducing the cost of public borrowing — they typically compress domestic consumption and raise national saving rates.

2.3 Supply

Although a global savings glut creates upward pressure on global demand for assets, large external imbalances only emerge when supply is uneven across countries. In principle, economies could satisfy most of the additional asset demand through local creation of stores of value. In practice, however, the global supply of both safe and risky assets is concentrated in the United States, which therefore absorbs the bulk of global savings and runs a persistently negative current account. Crucially, the U.S. provides both the world's dominant safe asset and a disproportionate share of global risky assets with persistently high returns.

Safe assets The unique status of U.S. treasuries as the global safe asset has been widely documented. Several structural factors give the United States a comparative advantage in this role. First, the sheer scale of the U.S. economy allows it to issue safe debt in quantities large enough to meet global demand. Even if sovereign debt issued by Switzerland or Germany were equally safe, its limited volume would generate sharply negative returns if investors attempted to substitute it for treasuries (He, Krishnamurthy, and Milbradt 2019). The market value of U.S. treasuries is roughly \$28.6 trillion, dwarfing that of the United Kingdom (\$3.6tn), Germany (\$1.6tn), and Switzerland (\$0.1tn). To some extent, this is due to a significant moral hazard concerns that make it difficult for the Euro Area to issue common safe bonds. While the debt of Japan (\$13.4tn) is comparable to that of the U.S., it mostly serves domestic savings. And although China has the economic size to issue large amounts of sovereign debt, it appears reluctant to assume this role, likely due to its export-oriented growth model and continued reliance on capital controls (Clayton, Dos Santos, Maggiori, and Schreger 2025).

Second, the ability to issue safe debt depends on fiscal capacity. While the United States carries high public debt and persistent deficits, fiscal capacity is determined not only by current debt levels but also by the governments ability to raise additional revenue when needed (Jiang, Lustig, Van Nieuwerburgh, and Xiaolan 2026). On this margin, the U.S. may enjoy an

advantage over many European economies, where tax rates are already close to the peak of the Laffer curve and further increases entail significant economic and political costs.

Third, financial and monetary factors reinforce the U.S. position. The depth and liquidity of the U.S. financial market generate a liquidity premium (Chahrour and Valchev 2022). Moreover, U.S. government debt benefits from implicit support from the Federal Reserve, which stabilises the real value of debt in normal times and can prevent self-fulfilling default dynamics in crises by purchasing treasuries (Gourinchas and Jeanne 2012). By contrast, Euro Area governments issue debt in a currency managed by the European Central Bank, whose mandate focuses on union-wide conditions rather than country-specific shocks.

Finally, the U.S. enjoys a significant geoeconomic advantage. Its debt is perceived as safer during periods of global tension, and the low borrowing costs associated with its safe-asset role support high military capacity. This two-way interaction between geopolitical strength and safe asset provision further entrenches the global role of the U.S. debt (Pflueger and Yared 2024).

Risky assets   The role of the United States in supplying risky assets is equally important but, until recently, received less attention. The U.S. financial market accounts for roughly two thirds of global equity supply, with equity valuations around $68 trillion and corporate debt of roughly $12 trillion. These quantities far exceed the stock of U.S. treasuries and play a central role in satisfying global demand for stores of value. As in the safe asset market, scale, institutional strength, and financial development provide decisive advantages. Strong protections for property rights and relatively low political risk further differentiate the U.S. from many competing providers.

In addition, the U.S. has a long-standing comparative advantage in securitisation. A large share of the U.S. firms raise funds by issuing publicly traded debt and equity that can be purchased by both domestic and foreign investors. In contrast, European firms rely more heavily on bank finance, which provides credit but does not create marketable assets that increase global supply.

Differences in non-financial economic fundamentals amplify these patterns. Faster technological progress and higher sectoral dynamism in the U.S. economy have contributed to its rising share of global equity markets. The expansion of the IT sector offers a clear illustration. High expected returns attract investors globally, while the unique properties of IT stocks make them essential components of diversified portfolios. They hedge against shifts in the labour and capital shares of income, generating both speculative and hedging demand for U.S. equities. This sector, that currently drives both financial and physical investment, is largely lacking in Europe and is not securitized in China for the global investors.

Cross asset spillovers Although safe and risky assets serve different purposes, important spillovers link these two type of assets. A central mechanism operates through the exchange rate. During periods of heightened uncertainty, global demand for safe assets rises, leading investors to purchase treasuries and driving an appreciation of the U.S. dollar, as observed during the Global Financial Crisis. This appreciation raises the foreign-currency value of all dollar-denominated assets, including equities and corporate bonds. From the standpoint of foreign investors, U.S. assets therefore carry a safety premium, which further raises global demand for them (Jiang, Krishnamurthy, and Lustig 2024).[2]

These mechanisms also affect the asset issuance outside the United States. Many countries have incentives to issue dollar-denominated assets, which command higher valuations and lower yields.[3] However, the ability to do so is constrained. Local banks may issue dollar debt, but the resulting currency mismatch exposes them to sudden stops and tight regulation. Large exporters, in contrast, are naturally hedged through foreign-currency revenues and can issue dollar liabilities with lower risk (Christiano, Dalgic, and Nurbekyan 2021). Governments often issue dollar-denominated debt when local currency borrowing is constrained due to the "original sin" (of Eichengreen and Hausmann 1999), but such instruments are rarely safe and do not replicate the properties of the U.S. treasuries due to significant default risk.

3   Normative Implications

While the term "imbalances" often carries a negative connotation and suggests that international capital flows require correction, it is useful to step back and evaluate both the potential benefits and costs of global imbalances. Understanding these trade-offs is essential for assessing existing policies and designing new ones aimed at addressing global imbalances.

3.1   Positive effects

It is a widely-held view in economics that just as countries gain from exchanging goods and services, they also gain from trading resources across time and states of the world. Free capital mobility enhances welfare by allowing economies to borrow and lend intertemporally. Countries with current account surpluses benefit from higher returns on foreign assets, and countries running deficits benefit from cheaper external financing. Foreign capital can finance large investment projects without requiring a contraction in domestic consumption, and governments can use international borrowing to smooth temporary fiscal shortfalls with-

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[2]This channel is strengthened by the dominant role of the dollar in international trade, where prices are often set in dollars (Goldberg and Tille 2008, Gopinath, Boz, Casas, Díez, Gourinchas, and Plagborg-Møller 2020, Mukhin 2022).

[3]Relatedly, monetary authorities in other countries may stabilise their exchange rate vis-à-vis the dollar so that domestic assets inherit some of the desirable properties of the U.S. debt (Hassan, Mertens, and Zhang 2023).

out crowding out private investment. Overall, international capital flows facilitate better consumption smoothing and improved diversification of macroeconomic risks. Even though financial frictions create distortions, as discussed below, the gains from intertemporal trade remain quantitatively important and should be weighed carefully when considering policies aimed at reducing global imbalances.

A second, less commonly recognized point is that global imbalances may serve as policy tools in a second-best environment. Large foreign reserve accumulation can improve international risk sharing in the presence of overborrowing by private agents (Arce, Bengui, and Bianchi 2019), exposure to sudden stops (Chang and Velasco 2001), vulnerability to rollover crises (Bianchi, Hatchondo, and Martinez 2018), or segmented currency markets (Itskhoki and Mukhin 2023b). Governments may also seek to engineer current account surpluses to counteract distortions on the production side, such as learning-by-doing and R&D externalities (Krugman 1987), firms borrowing constraints (Itskhoki and Moll 2019), or big-push type coordination failures (Murphy, Shleifer, and Vishny 1989). In such environments, global imbalances may arise not as a symptom of inefficiency, but as part of an optimal second-best policy mix.

3.2   Negative effects

Each argument in favour of capital mobility comes with important caveats. A large empirical literature documents several puzzles suggesting that international risk sharing is far from complete. First, although countries share short-run macroeconomic risks reasonably well at annual frequencies, there is almost no insurance with respect to long-run growth (Heathcote and Perri 2014, Aguiar, Itskhoki, and Mukhin 2025). This lack of long-horizon risk sharing is consistent with moral hazard and other commitment problems that limit the scope of intertemporal transfers. Evidence on the effects of capital flows on productive efficiency is also mixed. On the one hand, returns to capital appear broadly equalized across economies (Caselli and Feyrer 2007). On the other hand, large capital inflows during the financial integration of the early 2000s were associated with rising misallocation across firms in Southern Europe (Gopinath, Kalemli-Özcan, Karabarbounis, and Villegas-Sanchez 2017). However, the causal link remains uncertain, and the overall prevalence of such effects is still debated (Blanchard and Giavazzi 2002, Cingano and Hassan 2022, Bau and Matray 2023).

Second, international capital often flows in the opposite direction than predicted by standard consumption-smoothing logic. Slow-growing emerging economies borrow more from abroad, while fast-growing countries tend to run persistent current account surpluses (Gourinchas and Jeanne 2013). This "allocation puzzle" is largely driven by government debt issuance and reserve accumulation and, as discussed above, may partly reflect policy responses to financial frictions and production externalities. Yet the same countries that rely more heavily on foreign borrowing also experience greater volatility in output, fiscal spending, and private

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consumption, suggesting that access to sovereign debt markets may amplify macroeconomic instability rather than dampen it (Aguiar 2025).

Third, the use of current account interventions as a second-best policy tool can generate negative spillovers at the global level. Policies that suppress consumption and promote reserve accumulation to expand the tradable sector and accelerate learning-by-doing may boost productivity growth domestically, but they imply trade deficits and slower technological progress elsewhere. If R&D in countries at the global frontier is weakened, the world economy as a whole can be worse off (Benigno, Fornaro, and Wolf 2025). In the second-best world, the de-industrialization due to an aggressive export-oriented growth in other countries may also undermine the resilience of economies (Grossman, Helpman, and Sabal 2024) and lead to first-order social costs such as unemployment, deaths of despair, and political polarization (Autor, Dorn, Hanson, and Majlesi 2020).

Similarly, cross-country spillovers arise at business cycle frequencies. Large foreign current account surpluses provide abundant cheap funding and can increase the likelihood of speculative bubbles. For example, the global savings glut of the early 2000s possibly contributed to the U.S. subprime mortgage crisis, with severe worldwide repercussions. A high global demand for safe assets also depressed interest rates and made the zero-lower bound (ZLB) constraint more binding, reducing effectiveness of monetary policy during the crisis (Caballero, Farhi, and Gourinchas 2021). A self-reinforcing cycle may emerge when countries adopt macroprudential policies to mitigate ZLB constraints. These policies raise global demand for safe assets, push interest rates even lower, and exacerbate the very forces they aim to contain (Fornaro and Romei 2019).

4   Trade and Industrial Policies

After multiple decades of declining trade barriers worldwide, tariffs in the United States rose first in 2018 and then sharply in 2025. Although the Trump administration offered multiple justifications for this policy shift, widespread frustration with persistent U.S. trade deficits appears to be a primary motivation. This concern also helps explain why the new tariffs introduced on Liberation Day were calibrated directly to bilateral trade deficits vis-à-vis U.S. trading partners. Building on the analysis in Itskhoki and Mukhin (2025a), this section examines the two-way interaction between global imbalances and the recent resurgence of trade policy activism, focusing on two central questions: Can tariffs reduce external imbalances? And how do existing imbalances affect the design of optimal tariffs?[4] We conclude with the discussion of industrial policies that have been widely discussed as another force shaping global imbalances.

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[4]See also related analysis by Lorenzoni (2019) and Aguiar, Amador, and Fitzgerald (2025).

4.1 Organizing framework

A simple accounting identity provides a powerful way to evaluate many claims currently made about the effects of tariffs on global imbalances. Consider the law of motion for a country's net foreign asset (NFA) position $\mathcal{B}_t$, defined as the difference between its holdings of foreign assets and its foreign liabilities. We have:

$$\mathcal{B}_t = \bar{R}\mathcal{B}_{t-1} + (\mathcal{R}_t - \bar{R})\mathcal{B}_{t-1} + NX_t,$$

where $\mathcal{R}_t$ denotes the realized return on the country's portfolio of net foreign assets, $\bar{R} > 1$ is the average return paid on its liabilities, and NX_t is the trade balance. In words, changes in the NFA position, $\Delta\mathcal{B}_t \equiv \mathcal{B}_t - \mathcal{B}_{t-1}$, can arise from three sources: (i) the average return $(\bar{R}-1)\mathcal{B}_{t-1}$ paid on the existing position, (ii) valuation effects captured by excess returns $(\mathcal{R}_t - \bar{R})\mathcal{B}_{t-1}$, and (iii) trade surpluses or deficits NX_t. Importantly, this expression is an accounting identity: it must hold in the data, up to a measurement error, and therefore must also be satisfied in any internally consistent theoretical model.[5]

Integrating this law of motion across periods, one gets the intertemporal budget constraint for the economy (Obstfeld and Rogoff 1995, Gourinchas and Rey 2007a):

$$\underbrace{-\sum_{t=0}^{\infty} \bar{R}^{-t} NX_t}_{\text{permanent trade deficit}} = \underbrace{\bar{R}\,\mathcal{B}_{-1}}_{\substack{\text{exogenous} \\ \text{initial NFA}}} + \underbrace{(\mathcal{R}_0 - \bar{R})\mathcal{B}_{-1}}_{\substack{\text{on-impact} \\ \text{valuation effect}}} + \underbrace{\sum_{t=1}^{\infty} \bar{R}^{-t}(\mathcal{R}_t - \bar{R})\mathcal{B}_{t-1}}_{\text{future realized excess returns}}. \qquad (1)$$

This identity highlights a critical distinction between temporary and permanent trade deficits. A temporary deficit arises when imports exceed exports in some periods but are fully offset by future trade surpluses. Under this scenario, any borrowing needed to finance today's deficit is repaid in later periods, and the discounted sum of trade balances on the left-hand side is equal to zero. In contrast, a permanent trade deficit occurs when future surpluses are insufficient to compensate for past deficits, making the left-hand side strictly positive. In this case the country, in present value terms, consumes more than it produces over the entire horizon.

In practice, distinguishing temporary from permanent imbalances is notoriously difficult. The United States, for example, has run continuous trade deficits for roughly fifty years, yet it remains theoretically possible that it may run persistent trade surpluses in the future to satisfy its intertemporal budget constraint. Because the data do not allow a definitive classification, it is useful to analyse the impact of tariffs on both the temporary and permanent components of trade deficits.

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[5]For example, sovereign defaults or restructurings must show up as low or negative realized returns $\mathcal{R}_t$.

4.2 Temporary deficits

Consider first the case in which the observed trade deficit is purely transitory and the initial asset position and future excess returns on the right hand side of equation (1) are equal to zero. In this situation, permanent net exports must be zero and are therefore unaffected by tariffs. Nevertheless, trade policy can still modify the time path of net exports, even though it cannot change their present value.[6]

A permanent tariff raises the relative price of foreign goods for U.S. consumers, thereby reducing imports. The decline in import demand lowers the demand for foreign currency, which leads to an appreciation of the dollar. The stronger dollar makes U.S. goods more expensive abroad, reducing demand for exported goods. Because the intertemporal budget constraint requires that the trade balance be zero in present value, any reduction in imports must be offset by a corresponding reduction in exports. As a result, both imports and exports decline, and the overall volume of international trade contracts (Lerner 1936). This compression tends to improve the trade balance in the short run, if the economy starts with a deficit, but simultaneously reduces trade surpluses that must occur in the future (Obstfeld and Rogoff 2001).[7]

Additional considerations arise when tariffs are temporary or when markets expect them to be removed in the future. In this case, the familiar Lerner symmetry between import and export taxes breaks down. A temporary export tax tends to worsen the current account: lower export revenues depress current income, and agents smooth consumption by borrowing against future income, thereby generating a deficit. In contrast, a temporary import tariff tends to improve the current account. Higher import prices induce households to postpone consumption of foreign goods until the tariff expires, raising savings and improving the trade balance in the near term (see Razin and Svensson 1983, Itskhoki and Mukhin 2023a).

4.3 Permanent deficits

In practice, policymakers typically hope to reduce current trade deficits without eroding the future trade surpluses required to satisfy the country's external budget constraint. This raises a natural question: can tariffs eliminate permanent trade deficits and generate permanent surpluses? The three components on the right-hand side of the intertemporal budget constraint (1) provide a systematic way to answer this question.

First, a country running a permanent trade deficit may finance it through income on its

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[6]Naturally, even if they do not affect trade balances, tariffs reduce gross quantities of trade and can affect the terms of trade (unless the country is a price taker) — namely, tariffs can affect the terms of exchange of (real) exports for (real) imports, even when trade values are equalized under trade balance. These terms of trade effects are at the core of the optimal tariff analysis in International Trade literature (see e.g. Caliendo and Parro 2022).

[7]See also Costinot and Werning (2025) for a modern treatment, Itskhoki and Mukhin (2025b) for an application to sanctions, and Eaton, Kortum, and Neiman (2016) and Reyes-Heroles et al. (2016) for quantitative analysis. The mechanism under export taxes is analogous except that the real exchange rate depreciates instead of appreciating. See also Ju, Shi, and Wei (2012).

net foreign assets, $\bar{R}\mathcal{B}_{-1}$, accumulated through past surpluses. This term is predetermined and, by construction, does not respond to changes in trade policy. A useful benchmark is the case in which this is the only source of permanent imbalance. This benchmark sharply contradicts a widespread narrative: namely, that sufficiently high tariffs can eliminate imports and exports and therefore close a permanent trade deficit. Because the intertemporal budget constraint must hold, the exchange rate will always adjust so that the permanent trade balance equals the countrys initial net foreign asset position. For example, consider a country with a positive initial NFA position and a negative trade balance that imposes an infinite import tariff. The exchange rate will appreciate enough to keep the domestic price of foreign goods finite; imports remain positive, exports decline to zero (because domestically-produced goods become prohibitively expensive abroad), and the permanent trade deficit remains unchanged. Tariffs cannot undo the arithmetics of the intertemporal budget constraint.

Second, the opposite view — that permanent trade deficits are entirely exogenous and cannot be influenced by trade policy — is equally incorrect. In its more sophisticated version, this argument states that the current account equals savings minus investment, both of which are approximately unresponsive to permanent tariffs. What this reasoning misses is that, while the initial asset positions are predetermined, their valuations are endogenous to trade policy. This is captured by the second term in equation (1). Any policy that reduces the value of foreign assets held by domestic residents or increases the value of foreign claims on the domestic economy generates an implicit transfer to the rest of the world. This wealth transfer increases permanent net exports by lowering domestic absorption and raising foreign demand for domestic goods.

While several mechanisms can link tariffs to asset valuations — including effects on the profitability of exporters or import-competing firms — the most direct effect is via the exchange rate. An import tariff reduces demand for foreign goods and foreign currency, appreciating the domestic currency. Conversely, an export tax depresses demand for domestic goods and domestic currency, depreciating the exchange rate. These movements directly alter the relative price of domestic- and foreign-currency bonds, as well as (and more subtly) the relative valuation of domestic and foreign equities. Since most countries — including the United States — hold long positions in foreign securities and short positions in domestic securities, an appreciation of the domestic currency increases the value of liabilities relative to assets and worsens the NFA position. As tariffs affect the exchange rate (see the previous subsection), the associated valuation effects imply that trade policy can be used to affect permanent trade deficits.[8]

The key insight is that closing permanent imbalances requires focusing on the external asset positions rather than trade flows. This observation yields several important implications.

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[8]It should be emphasized that only unexpected changes in tariffs can generate such effects. A routine use of trade policy would be priced-in by financial markets and result in little valuation transfers between the economies.

Table 1: Comparison of tariffs

	τ^I	τ^{I*}	C	C^*	$\mathcal{E}$	T	NX
BASELINE (with imbalances)							
Closing imbalance	98.46	0.00	−3.20	0.15	29.41	2.76	0.00
Unilateral	6.75	0.00	0.06	−0.03	3.53	0.82	−2.64
Trade war	5.37	4.42	−0.03	−0.02	0.83	0.64	−2.92
NO IMBALANCES (zero gross asset positions)							
Unilateral	34.00	0.00	0.85	−0.40	14.76	2.27	0.00
Trade war	33.67	34.76	−1.21	−0.25	−1.47	1.38	0.00

The table shows import tariffs τ^I, τ^{I*} in the two regions (the U.S. and the RoW), and their implications for welfare C, C^* (real consumption), the real exchange rate $\mathcal{E}$, fiscal revenues T, and the trade balance NX in a model calibrated to (i) global imbalances and (ii) balanced trade. "Unilateral" corresponds to optimal tariff in the U.S., "trade war" to optimal tariffs in both economies, and "closing imbalances" to the tariff closing the U.S. trade deficit. τ^I, τ^{I*} are in percent, C, C^* and $\mathcal{E}$ are in percent changes, T and NX are in percent of initial GDP.

First, eliminating a permanent trade deficit requires a negative valuation effect — that is, an increase in the value of the country's liabilities relative to its assets — which can be induced by an exchange rate appreciation. This sharply contrasts with the standard expenditure-switching logic under which improving the trade balance requires a depreciation.

Second, given the value of a country's foreign assets B^* (in foreign currency) and its foreign liabilities B (in domestic currency), the exchange rate appreciation needed to close the imbalance satisfies a simple condition: $\Delta \log \mathcal{E} = NFA^*/B^*$, where $NFA^* \equiv B^* - B\mathcal{E}$.[9] Thus, the required appreciation depends only on asset positions and not on trade flows, trade elasticities, or input-output linkages. Table 1 reports numerical results from a model calibrated to the U.S. and the rest of world (RoW). Closing the U.S. trade deficit requires a nearly 100 percent tariff, which induces roughly a 30 percent appreciation of the dollar and reduces U.S. welfare by 3.2 percent in terms of permanent consumption.

Third, because closing a permanent imbalance requires an appreciation, policymakers could in principle use either an import tariff or an export subsidy. This stands in stark contrast with the classical Lerner symmetry between import tariffs and export taxes. Lerner symmetry arises in models with balanced trade and relies on the fact that both instruments implement the same terms of trade. In the presence of imbalances, however, the relevant variable is the exchange rate, and import tariffs and export taxes push the exchange rate in opposite directions. The resulting allocation depends critically on the instrument chosen: an import tariff achieves balance trade by lowering the total amount of trade, whereas an export subsidy does so by raising it with exports increasing faster than imports.

[9]Although computing the tariff τ^I that delivers this appreciation requires, in general, all parameters of the model, an approximation $\Delta \log \mathcal{E} = \frac{1}{2}\Delta \log \tau^I$ is accurate in standard quantitative frameworks, where $\mathcal{E}$ should be interpreted as the real exchange rate with an increase in $\mathcal{E}$ corresponding to an appreciation.

Finally, external adjustment may be also attained via the last term in the budget constraint (1), which captures the difference between the returns earned on foreign assets and the returns paid on liabilities. As famously documented by Gourinchas and Rey (2007a), the United States earns positive excess returns — the so-called "exorbitant privilege" — because it holds risky, high-return foreign assets while issuing safe, low-return liabilities (see also Gourinchas and Rey 2014). This excess return allows the U.S. to sustain a permanent trade deficit. However, higher tariffs reduce international trade and also reduce the incentives for domestic households and firms to hold foreign assets. A smaller share of foreign goods in consumption implies lower benefits from diversifying into foreign currency assets. This retrenchment of cross border positions reduces the leverage of the U.S. external portfolio and therefore diminishes the exorbitant privilege. Consequently, tariffs can indirectly shrink the excess return channel that supports permanent imbalances. In practice, they can also change expectations of investors and their demand for U.S. assets, including hedging against future volatility in the exchange rate.

4.4 Trade wars

So far, our analysis has focused on how tariffs affect global imbalances. Equally important, however, is the reverse question: do global imbalances increase the incentives to impose tariffs and engage in a trade war? Recent public discourse and U.S. policy actions may suggest a positive answer. Advocates of this view argue that current account deficits destroy jobs in the tradable sector which must be protected with tariffs. They further claim that the excess of imports over exports weakens the country economically but simultaneously gives the United States greater leverage over its trading partners.

A more rigorous analysis, however, casts doubt on these arguments. First, regardless of initial imbalances, tariffs reduce the overall volume of global trade. This means that while tariffs reduce imports and may support import-competing industries, they also reduce exports, harming export-oriented firms and workers. The net effect is typically a contraction of the aggregate tradable sector. Thus, although trade restrictions can temporarily support industries competing with imported goods, supporting the aggregate tradable sector would require trade *subsidies*, not tariffs.

Second, the same valuation effects that enable tariffs to influence permanent trade imbalances simultaneously result in first-order implications for the optimal trade policy. An import tariff improves the terms of trade, and at the same time it appreciates the exchange rate. As discussed above, this appreciation raises the real value of the country's net liabilities, generating a transfer to the rest of the world.[10] As a result, the optimal tariff under imbalances is

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[10]From this perspective, it is indeed puzzling that countries rarely use export taxes, which improve the terms of trade while depreciating the exchange rate, thereby allowing the country to benefit from both terms of trade and valuation effects simultaneously.

strictly lower than in a world with balanced trade and zero gross asset positions. A simple calibration illustrates the magnitude: in Table 1, valuation effects reduce the optimal tariff by a factor of five, from 34% to 7%, and reduce the welfare gains from the optimal tariffs by an order of magnitude, from 0.85% to 0.06% in permanent consumption terms.

This logic applies symmetrically to the rest of the world. Large gross liabilities in local currency make foreign economies reluctant to impose high tariffs on U.S. goods, since doing so would also appreciate their currencies and worsen their net foreign asset positions. Consequently, the trade war Nash equilibrium with gross asset positions features a much lower level of tariffs relative to a trade war under financial autarky (see Table 1). In this sense, the rise of gross cross-border asset holdings over the past fifty years — the financial globalisation — has indirectly facilitated trade liberalisation by making tariffs more costly for all parties.

Finally, the valuation effects triggered by tariffs feed back into ex-ante portfolio decisions. Foreign investors have both strategic and non-strategic incentives to hold U.S. assets as a hedge against a possible trade war. On the one hand, because import tariffs tend to appreciate the dollar, holding dollar-denominated assets provides a natural insurance: the value of these assets rises precisely when tariffs hurt the foreign economy. On the other hand, large countries such as China have strategic reasons to acquire U.S. assets: by expanding U.S. liabilities, they increase the valuation losses the United States would incur if it imposes tariffs, thereby raising the economic cost of protectionism.

4.5   Industrial policies

Another policy instrument that has attracted considerable attention in recent years and is frequently blamed for widening trade imbalances is industrial policy. The broad toolkit of industrial policies includes production subsidies, subsidised credit, suppressed wages, preferential government procurement, investment in (transportation and export) infrastructure, targeted migration policies, and even monopoly-supporting interventions (Juhász, Lane, and Rodrik 2024). Historically, nearly all economies have relied on industrial policies at some stage of their development. Britain, continental Europe and the U.S. adopted such measures during the early phases of the industrial revolution, Japan and the Asian Tigers used them extensively in the postwar period, and China has done so more recently. Although these policies often entail significant social and fiscal costs, there is some evidence that they contributed to rapid industrialisation in these countries. At the same time, there is a long list of cases in which industrial policy failed to achieve its stated objectives, most notably in Latin American economies.

Industrial policy interacts with global imbalances in several important ways. On the one hand, as discussed above, promoting exports and supporting current account surpluses through foreign exchange interventions or capital controls is itself a common form of industrial policy (Ottonello, Perez, and Witheridge 2024). On the other hand, policies that do not explicitly tar-

get external balances can still have sizable unintended effects on global imbalances. By making domestic manufacturers more competitive in local and foreign markets, these interventions improve the trade balance, all else equal. If the resulting increase in relative productivity were permanent, standard general equilibrium logic would imply that the real exchange rate should appreciate sufficiently to keep the trade balance unchanged.[11] In practice, however, this general equilibrium adjustment often appears incomplete or delayed. Many countries manage to sustain trade surpluses for extended periods following industrial policy interventions, thereby contributing to global imbalances.

What explains this apparent disconnect between theory and observed dynamics? One possibility is that industrial policies provide only a temporary advantage over foreign competitors and that markets anticipate eventual catch-up by other countries. Under the permanent income hypothesis, a temporary relative productivity gain should be absorbed mainly through changes in foreign asset positions rather than through higher contemporaneous imports. This mechanism would generate a period of trade surpluses if the productivity advantage is transitory.[12]

Finally, perhaps the most realistic explanation to this seeming discrepancy is that industrial policies are usually combined with other government interventions to suppress consumption and inhibit exchange rate appreciation. In fact, without such policies it might be impossible to sustain higher output in a tradable sector as any subsidies or other forms of industrial policies would be offset by changes in relative prices (Corden 1960).

5   Future of Imbalances

This section turns to the future of global imbalances and focuses on two central questions. First, will countries continue to run large and persistent trade deficits and surpluses in the long run? Second, if not, what will the transition away from today's imbalances look like? As with their origins, the answers to these questions depend critically on the future demand and supply of assets in the international financial system (Auclert, Malmberg, Rognlie, and Straub 2025). We center the discussion on U.S. imbalances, both because the United States is the only large economy that has sustained persistent trade deficits for decades, and because sustaining trade surpluses is generally less constrained: there is limited economic pressure to reduce savings, and it remains unclear whether a transversality condition must bind for countries with large sovereign wealth funds. Given the scarcity of historical precedents and

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[11]In this context, real exchange rate appreciation follows the Balassa-Samuelson mechanism. In a model with only tradable goods, a positive productivity shock lowers the price of domestically-produced goods and generates a real depreciation instead.

[12]Another possibility, as in the case of tariffs, is that a policy-driven exchange rate appreciation raises the value of the country's net external liabilities. This effect may also come from rising asset and FDI valuations unrelated to the exchange rate. The resulting decline in net foreign wealth must be offset by a stream of trade surpluses. Unlike with a temporary productivity shock, this channel can generate a permanent trade surplus.

the fact that the current international financial system differs markedly from past episodes, analogies offer limited guidance. We therefore frame this discussion in terms of alternative forward-looking scenarios.

One possibility is that today's imbalances are ultimately temporary. In this view, the global savings glut — driven by commodity exporters and high-saving Asian economies — has allowed the United States to borrow at low interest rates for several decades. Even if the rest of the world continues to demand U.S. assets, however, the accumulation of external liabilities will eventually weigh on U.S. consumption relative to the rest of the world. Over time, this implies lower U.S. imports, higher exports, and a transition toward trade surpluses and a current account balance that accommodates the service of external debt (Caballero, Farhi, and Gourinchas 2008). Because the net foreign asset position represents only a small share of aggregate national wealth and can easily be dominated by valuation effects from movements in equity and housing prices, such an adjustment may be extremely gradual and unfold over several decades.

An alternative interpretation is that U.S. imbalances are permanent, sustained by the country's exorbitant privilege. Under this scenario, a large trade deficit can persist indefinitely (aside from cyclical fluctuations). In particular, the United States may continue to run trade deficits financed by earning high returns on its foreign assets while paying low returns on external liabilities. This outcome, however, requires a demanding set of conditions. On the liability side, the United States must preserve its role as a dominant provider of global safe assets and, potentially, as a supplier of equity that trades at ever increasing valuations. This, in turn, requires fiscal and monetary discipline, high global savings, and a lack of close substitutes for U.S. assets abroad (Choi, Kirpalani, and Perez 2024). On the asset side, the United States must continue to invest abroad in risky assets, which relies on a deep and sophisticated financial market and well-capitalized intermediaries. Crucially, foreign savings cannot be fully absorbed by the U.S. public and private debt financing government deficits and household consumption, but instead must be intermediated into outward foreign investment (Obstfeld 2025).

If these conditions fail to hold at some point, the United States may no longer be able to sustain its current trade deficit and would face a necessary external adjustment. Weak fiscal policy is particularly problematic in this regard. On the one hand, it creates a mismatch in the quantity of the U.S. assets relative to liabilities, lowering the capacity to earn exorbitant privilege on the external portfolio positions. On the other hand, persistent low borrowing costs and strong demand for U.S. Treasuries may encourage excessive public borrowing, eventually undermining the safe-asset status of the U.S. debt — a modern incarnation of the Triffin Dilemma formalized by Farhi and Maggiori (2018).[13]

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[13]The composition of foreign investors also matters as they are split roughly evenly between private and official holders. While private investors may be more fickle, official holders are more responsive to geopolitical considerations, including U.S. sanctions and trade policy.

In addition, the role of external equity positions is often underappreciated. Systematically higher returns on U.S. equities relative to the rest of the world, paradoxically, erode the exorbitant privilege, as foreigners now obtain higher returns on their international portfolios relative to the American investors (Atkeson, Heathcote, and Perri 2025). For the time being, this is compensated by the inflow of new international funds into the U.S. equity market. Were the recent superior performance of the U.S. equities to reverse, these fundings inflows could quickly dry up reducing international demand for U.S. assets.

The scenarios described above differ sharply in the speed and nature of the required adjustment. In adverse states of the world, adjustment could be rapid and disruptive. One extreme possibility is a default on U.S. external liabilities. While default would generate an immediate positive valuation effect and could temporarily obviate the need for trade adjustment, it would severely undermine the credibility of U.S. debt and permanently eliminate the ability to run trade deficits financed by issuing safe assets. That said, an explicit default is unlikely, given that most U.S. government debt is held domestically and that default would inflict severe damage on the U.S. financial system. Nonetheless, the use of capital controls, financial repression, or other restrictions on capital outflows to prevent a sudden stop would be perceived by foreign investors as an implicit default.

The most likely channel of external adjustment is therefore the exchange rate depreciation. If foreign investors lose confidence in U.S. assets and begin to rebalance their portfolios, demand for exchanging dollar proceeds into other currencies would rise (Mendoza 2010, Itskhoki and Mukhin 2025b). This leads to a depreciation of the dollar that would improve the U.S. external position through two mechanisms. On the trade side, a weaker dollar would raise exports and compress imports via relative price effects (Obstfeld and Rogoff 2005, 2007). On the financial side, depreciation would reduce the real value of U.S. external liabilities, improving the net foreign asset position (Gourinchas and Rey 2007b). As a result, trade deficits would eventually shrink, although the required adjustment may be modest if positive valuation effects from the depreciation are large. At the same time, lower dollar returns would weaken foreign demand for U.S. assets, eliminating the force that fueled persistent trade deficits of the previous decades. The 2025 depreciation of the U.S. dollar may be viewed as early evidence of such adjustment mechanism.

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