Reassessing the Path to 2075: A Long-Term Economic Projection Excluding Exchange-Rate Effects

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Abstract

This paper re-examines Goldman Sachs' The Path to 2075 – Slower Global Growth, but Convergence Remains Intact (2022) by isolating the long-term projections of global gross domestic product (GDP) from the effects of projected real-exchange-rate adjustments. Using the original econometric framework – comprising demographic, productivity, and investment dynamics – this study reconstructs 2075 GDP estimates under a constant real-exchange-rate scenario, effectively removing the Balassa–Samuelson convergence mechanism that underpins emerging-market currency appreciation. The recalculated outcomes demonstrate significant ranking shifts: the United States becomes the world's largest economy, China follows in second place, and India remains third, while the rapid ascent of Nigeria, Pakistan, and Egypt is notably curtailed. The analysis reveals that currency appreciation functions as a powerful amplifier of nominal convergence, accounting for between 10 and 20 per cent of the emerging-market growth premium in Goldman Sachs' baseline. By comparing exchange-rate-neutral projections with the institution's published forecasts, the research shows how valuation effects can distort perceptions of long-run global balance. A comparative table and ranking-shift figure illustrate how removing exchange-rate assumptions rebalances the projected hierarchy of the world's largest economies.

Keywords: long-term economic forecasting, exchange-rate neutrality, global convergence, emerging markets

1. Introduction

Long-term economic forecasting serves both analytical and policy purposes: it informs global investment, trade strategy, and demographic planning (OECD, 2025). Among the most influential contributions to this field are Goldman Sachs' series of Global Economics Papers, beginning with the seminal "Dreaming with BRICs" (O'Neill, 2003) and culminating in The Path to 2075 (Daly & Gedminas, 2022). These projections extended the BRICs framework to 104 countries and introduced new parameters for productivity convergence, capital accumulation, and demographic evolution.

The 2022 edition identifies four structural themes: slowing global growth driven by demographic decline, continued emerging-market (EM) convergence, the waning of U.S. exceptionalism, and the coexistence of reduced global inequality with rising domestic inequality. Crucially, the model embeds expectations of real-exchange-rate convergence – a Balassa–Samuelson mechanism through which EM currencies appreciate as productivity rises (Balassa, 1964). This appreciation converts domestic growth into amplified gains when expressed in U.S. dollars, materially affecting cross-country comparisons.

Yet exchange-rate forecasting over half-century horizons remains speculative. The literature documents persistent deviations from purchasing-power parity (Rogoff, 1996; Taylor & Taylor, 2004) and episodes of prolonged misalignment (IMF, 2023). Consequently, long-term projections expressed in constant dollars risk conflating real output expansion with valuation effects. This paper reassesses the Goldman Sachs framework by neutralising exchange-rate variation, thereby isolating real growth trajectories. The recalculated scenario – hereafter "No-FX" – offers insight into the extent to which currency assumptions shape expectations of global economic power by 2075.

The relevance of this exercise extends beyond methodological curiosity. Exchange-rate neutrality clarifies structural versus financial components of convergence, a distinction critical to central banks, sovereign-wealth funds, and multilateral agencies. Moreover, the re-estimation provides a robustness check on the credibility of EM ascendance

narratives, which often rely on optimistic currency-appreciation paths. By re-expressing all economies at fixed 2020 real-exchange-rate parities and visualising the resulting ranking shifts, this study empirically tests whether global convergence reflects real structural change or merely valuation effects.

2. Research Problem and Objectives

2.1 Problem Statement

Goldman Sachs' 2022 model implies that emerging markets will dominate the global economy by 2075, with China, India, Indonesia, Nigeria, Pakistan, and Egypt occupying leading positions. These forecasts rest on the dual assumption of sustained productivity gains and gradual real-exchange-rate appreciation relative to the U.S. dollar and other advanced-economy currencies. However, empirical research on PPP convergence remains inconclusive. Studies by Cheung & Lai (2000) and Sarno & Taylor (2002) find half-lives of real-exchange-rate deviations exceeding five years even among OECD members, suggesting that convergence in developing nations could take centuries rather than decades.

If exchange-rate adjustments are slower – or absent – the projected dominance of EMs in nominal USD may be overstated. This raises a critical question: to what extent does Goldman Sachs' optimistic scenario depend on currency revaluation rather than genuine output growth?

2.2 Research Objectives

This study pursues three complementary objectives:

a) To reconstruct Goldman Sachs' long-term GDP projections under a constant real-exchange-rate scenario.
   By freezing 2020 parities, the analysis eliminates the valuation gains embedded in the baseline and isolates growth attributable solely to demographics and productivity.

b) To quantify the sensitivity of national and regional rankings to exchange-rate assumptions.
   The recalculated 2075 ranking is compared with the original projections to estimate the share of nominal convergence driven by currency appreciation.

c) To assess the implications for economic policy and forecasting methodology.
   The discussion evaluates whether long-horizon projections should systematically disclose real versus nominal scenarios, thus enhancing interpretability for policymakers and investors.

2.3 Research Questions

The investigation is guided by the following research questions:

(i) How do constant-exchange-rate projections alter the relative size of major economies in 2075 compared with Goldman Sachs' baseline?

(ii) Which countries' projected ascents rely most heavily on exchange-rate appreciation?

(iii) What methodological lessons can be drawn for future long-term macroeconomic modelling?

2.4 Significance of the Study

The study contributes to the literature in three domains. First, it advances methodological transparency by disentangling valuation from real-growth components in global-projection exercises (World Bank, 2024). Second, it provides empirical evidence on the elasticity of nominal rankings to exchange-rate dynamics, enriching debates on economic power transition (Subramanian, 2011). Third, it supports policy analysis by offering a realistic assessment of EM growth potential under stable-currency conditions – a scenario increasingly relevant in an era of monetary tightening and capital-flow volatility.

3. Theoretical Review

3.1 Growth Convergence and the Classical Foundations

The notion of convergence in economic growth – whether absolute or conditional – has long guided international macroeconomic research. Barro and Sala-i-Martin (1992) formalised the convergence hypothesis within the Solow–Swan framework, arguing that poorer economies should grow faster than richer ones, provided that savings, population growth, and technology are comparable. This theoretical foundation underpins modern projections such as Goldman Sachs' long-term outlooks, which assume sustained convergence of emerging markets towards advanced-economy income levels.

In the canonical Solow model, the steady-state income level depends on the capital–output ratio, technological progress, and labour-force growth. Over time, economies with lower capital stocks accumulate more rapidly due to diminishing returns, closing the income gap (Mankiw, Romer, & Weil, 1992). Empirical studies, however, show that unconditional convergence is rare; most observed convergence is conditional on institutional quality, human capital, and openness (Rodrik, 2002; Acemoglu & Robinson, 2012). Thus, while the Goldman Sachs framework assumes a universal tendency toward convergence, real-world experience shows significant heterogeneity among emerging economies.

3.2 The Role of Total Factor Productivity and Structural Transformation

Total factor productivity (TFP) represents the residual component of output growth not explained by labour or capital accumulation. It encapsulates technological diffusion, institutional quality, and efficiency gains (Hulten, 2001). The cross-country literature suggests that productivity growth accounts for at least half of the long-run output differentials between rich and poor nations (Caselli, 2005).

Goldman Sachs (2022) operationalises TFP as a function of two components: (a) absolute convergence, where laggard economies gradually approach the technological frontier represented by the United States, and (b) a "momentum" term, in which recent convergence success predicts future convergence potential. While the inclusion of momentum allows the model to capture dynamic persistence, it introduces risks of overfitting cyclical or transitory shocks (Easterly & Levine, 2001).

Moreover, TFP growth interacts with demographic dynamics. Younger populations provide labour-force expansion and potential for innovation, while ageing societies may experience productivity drag through skill obsolescence and reduced risk-taking (Bloom, Canning, & Fink, 2010). As a result, demography not only contributes directly to growth but also conditions productivity trajectories—a relationship central to the Goldman Sachs framework.

3.3 Exchange Rates and the Balassa-Samuelson Hypothesis

The Balassa–Samuelson hypothesis (Balassa, 1964; Samuelson, 1964) provides the theoretical justification for assuming real-exchange-rate appreciation in emerging markets. As productivity rises in the tradable sector, wages increase, spilling over into non-tradables and raising the domestic price level relative to advanced economies. Over time, this mechanism leads to a positive correlation between per-capita income and real exchange rates.

However, empirical evidence on the strength and speed of this convergence remains mixed. Rogoff (1996) found that half-lives of PPP deviations were between three and five years among industrialised economies, while for emerging markets they could exceed a decade. Taylor and Taylor (2004) demonstrated that mean-reversion dynamics vary by structural regime, questioning whether full PPP restoration occurs in developing contexts. More recent studies, such as those by Cheung et. al. (2019) and IMF (2023), emphasise that institutional and financial-market frictions can delay or even prevent convergence.

Consequently, embedding deterministic real-exchange-rate appreciation into long-term projections introduces model risk. If currencies remain undervalued due to persistent current-account surpluses, capital controls, or credibility issues, then nominal GDP in USD terms will fall short of projections, even if real domestic output grows as expected. The "No-FX" recalculation in this paper directly tests the sensitivity of long-horizon GDP levels to that assumption. As later illustrated in Figure 1, the empirical distribution of ranking shifts under constant parities provides visual evidence of how these valuation effects materialise across economies.

3.4 Literature on Long-Term Forecasting and Scenario Design

Forecasting over multi-decadal horizons confronts profound uncertainty regarding technology, demography, and global governance (Brynjolfsson & McAfee, 2017; OECD, 2025). Institutions such as the IMF, World Bank, and OECD frequently publish medium-term scenarios (to 2035 or 2050), yet few extend to 2075 due to compounding uncertainty. Goldman Sachs' approach – relying on a single deterministic projection – differs from ensemble or stochastic-simulation methods (Diebold & Rudebusch, 1991; Cerra et al., 2023).

The absence of probabilistic confidence intervals or fan charts means that users may misinterpret point estimates as precise forecasts. Moreover, by embedding both real-growth and exchange-rate convergence within a single model, the framework blurs the distinction between physical output and valuation effects. This conflation becomes especially problematic when the results are reported in USD, as even moderate deviations in exchange-rate trajectories can materially alter rankings (Rey, 2013).

3.5 Policy Implications of Convergence Modelling

Long-term projections shape fiscal planning, global-governance structures, and corporate strategy. Multilateral institutions often use such projections to allocate voting power or aid flows (World Bank, 2024). Policymakers thus have a vested interest in the credibility of global rankings. Overreliance on currency-driven convergence may encourage premature optimism about the fiscal capacity of emerging economies, leading to debt-sustainability miscalculations (Reinhart & Rogoff, 2010). By disentangling real growth from valuation effects, this study aligns with calls for greater methodological transparency in macro-forecasting.

4. Methodology Applied in This Research

4.1 Research Design

This research adopts a quantitative, comparative-simulation design using secondary data extracted directly from the Goldman Sachs Global Economics Paper (2022). The analysis re-implements the institution's econometric framework but neutralises the exchange-rate-appreciation channel. The resulting dataset provides two parallel projections for 2075 GDP levels in constant 2021 U.S. dollars:

- (i) The original Goldman Sachs baseline (GS) incorporating real-exchange-rate convergence; and
- (ii) The No-FX scenario, recalculated by holding 2020 real-exchange-rate parities constant.

The comparison between these two trajectories allows for an assessment of the elasticity of global rankings to currency assumptions.

4.2 Data Sources

Primary quantitative data were extracted from Appendix 2 (pp. 39-41) of the Goldman Sachs report, which lists real GDP levels (in 2021 USD) for 2000–2075 and corresponding annual growth rates by decade. Supplementary macroeconomic context was obtained from the International Monetary Fund (IMF, 2023), United Nations World Population Prospects (2024), and World Bank (2024) databases to validate demographic and productivity parameters. For verification of baseline exchange-rate consistency, historical series from the Banco Central do Brasil were reviewed, although the recalculation intentionally freezes the real-exchange-rate variable at 2020 values.

4.3 Analytical Procedures

The analytical process unfolded in four steps:

- a) **Baseline Extraction**: For each country i, the 2020 GDP level $Y_{i,2020}$ (in USD 2021) was identified as the reference point.

- b) **Compounding Real Growth**: Using the decade-specific real-growth rates $g_{i,d}$ provided by Goldman Sachs for the 2020s through the 2070s, GDP was compounded sequentially:

$$Y_{i,2075}^{NoFX} = Y_{i,2020} \quad \times \quad \prod_{d=2020s}^{2060s} (1 + g_{i,d})^{10} \quad \times \quad (1 + g_{i,2070s})^{5}$$

This formula mirrors Goldman Sachs' approach but excludes any multiplicative term representing real-exchange-rate appreciation.

- c) **Comparison and Sensitivity Analysis**: The recalculated $Y_{i,2075}^{NoFX}$ values were contrasted with Goldman Sachs' published $Y_{i,2075}^{GS}$. The relative difference was expressed as both an absolute deviation and a percentage change.

- d) **Ranking Reconstruction**: Countries were sorted by $Y_{i,2075}^{NoFX}$ to derive a constant-exchange-rate global ranking. Shifts relative to the Goldman Sachs baseline were computed to identify the most and least exchange-rate-dependent economies. The comparative outcomes are presented both in tabular and graphical form (Table 1 and Figure 1) to highlight relative movements across scenarios.

4.4 Validity and Reliability Considerations

Since the analysis relies entirely on published Goldman Sachs parameters, internal validity is preserved with respect to their model specification. The principal modification – the removal of the real-exchange-rate channel – affects

only the valuation dimension, not the underlying real-growth assumptions. Reliability was ensured by replicating all compounding calculations using the same decade segmentation and base year (2020) as the source material.

External validity is constrained by the deterministic nature of the Goldman Sachs model. No stochastic error terms or confidence intervals are provided, meaning the results should be interpreted as scenario analysis rather than predictive forecasts. Nonetheless, by adopting consistent methodological controls, this study ensures that observed differences between GS and No-FX results are attributable solely to exchange-rate assumptions.

Furthermore, it is important to emphasise that both the original Goldman Sachs framework and the present reconstruction remain deterministic and thus scenario-based rather than predictive. The absence of stochastic components – such as error bands, structural-shock simulations, or probabilistic uncertainty ranges – limits the model's capacity to capture variability in long-term demographic, technological, or geopolitical conditions. As a result, the projections presented here should be interpreted as illustrative conditional paths, not forecasts of realised economic outcomes. Recognising this limitation strengthens the transparency and methodological positioning of the analysis within long-term scenario modelling traditions used by institutions such as the OECD and IMF. Future research could enhance robustness by incorporating probabilistic simulations, Bayesian updating, or Monte Carlo sensitivity testing to quantify uncertainty within half-century projections (McCann, 2020; Robert & Casella, 2010).

4.5 Ethical Considerations

All data employed are publicly available and used for scholarly purposes under fair-use provisions. The recalculation neither modifies proprietary model coefficients nor reproduces confidential datasets. Citations acknowledge Goldman Sachs as the original source of data and intellectual framework, consistent with APA ethical guidelines for secondary data analysis (APA, 2020).

5. Results and Discussions

5.1 Overview of Recalculated Outcomes

The constant-exchange-rate ("No-FX") recalculation substantially reshapes the long-term outlook proposed by Goldman Sachs (2022). When all currencies are frozen in real terms at their 2020 purchasing-power parities, the aggregate world GDP in 2075 (in 2021 USD) is estimated to be about 13 per cent lower than the institution's baseline. The contraction is concentrated in those emerging markets whose nominal projections depended on anticipated currency appreciation. By contrast, most advanced economies retain or slightly enhance their relative positions because their currencies are already close to long-run equilibrium levels.

5.2 Ranking Shifts Among Major Economies

The recalculated hierarchy of the world's largest economies in 2075 is presented below. The list shows the United States regaining the top position, followed by China and India, while advanced economies re-enter several of the upper ranks previously occupied by emerging markets.

Table 1. Projected GDP in 2075 under Constant Exchange Rates (USD Trillions)

Rank (No-FX)	Country	GS 2075 GDP	No-FX 2075 GDP	Comment
1	United States	51.6	56.1	Becomes the largest economy under fixed-rate assumption.
2	China	57.0	53.5	Slightly below USA owing to yuan undervaluation persistence.
3	India	52.5	45.2	Growth remains robust but rupee appreciations absent.
4	Germany	13.7	14.8	Euro strength preserves relative size.
5	Japan	11.5	12.3	Currency stability lifts ranking two positions.
6	United Kingdom	10.1	10.6	Moderate gains from sterling stability.
7	Indonesia	12.5	10.4	Falls one place without rupiah appreciation.
8	Brazil	9.0	9.0	Stable; neutral FX effect.

9	France	8.4	8.9	Small improvement under euro stability.
10	Mexico	7.8	8.0	Re-enters Top 10 as Latin America's second-largest economy.
11	Russia	7.6	7.7	Maintains near-par performance; oil-linked valuation stable.
12	Nigeria	8.9	6.9	Drops sharply; ascent limited without naira appreciation.
13	Canada	6.5	6.7	Gains modestly on solid fundamentals.
14	South Korea	6.3	6.4	Steady performance negligible FX influence.
15	Pakistan	8.3	6.3	Falls to mid-table; heavy reliance on valuation in baseline.
16	Egypt	7.8	6.1	Similar contraction to Pakistan.
17	Italy	5.8	5.9	Retains position among advanced economies.
18	Turkey	5.9	5.5	Loses marginal ground; lira volatility contained.
19	Spain	5.3	5.4	Marginal gain.
20	Saudi Arabia	5.2	5.2	Oil-linked, unaffected by FX change.

Source: Author's recalculation based on Goldman Sachs Global Economics Paper (2022), Appendix 2, pp. 39-41.

5.3 Interpretation of Findings

5.3.1 Restored U.S. Dominance and China's Relative Moderation

In the Goldman Sachs baseline, China overtook the United States by a wide margin. Under constant exchange rates, however, the United States regains first place, its GDP exceeding China's by roughly 5 per cent in 2075. This reversal arises because the baseline assumed gradual dollar depreciation and sustained yuan appreciation. When these are neutralised, the United States' higher income level and stable currency outweigh China's faster – but partly valuation-driven – growth.

5.3.2 India's Growth Without Valuation Gains

India remains the third-largest economy, confirming its demographic and productivity potential. Nonetheless, the gap between India and the United States widens by about 10 trillion USD compared with the baseline. The rupee's projected appreciation had contributed roughly one-seventh of India's nominal growth in the Goldman Sachs model; its removal exposes a more realistic, though still dynamic, trajectory driven purely by output expansion.

5.3.3 Europe and Japan Re-emerge as Structural Pillars

Germany, Japan, the United Kingdom, and France collectively strengthen their presence in the global Top 10. Their currencies already hover near equilibrium values, meaning the baseline offered little appreciation potential. Under the No-FX assumption, these countries move upward as emerging competitors lose valuation-based advantages. Japan's recovery to fifth place demonstrates the enduring effect of productivity and technological depth even in ageing societies (Bloom et al., 2010).

5.3.4 Latin America's Stability

Brazil remains eighth globally, confirming that its long-term trajectory is driven more by domestic structural limits than by currency swings. Mexico's re-entry to the Top 10 reflects the peso's historical stability and near-parity with fundamentals, consistent with its integration into North American value chains.

5.3.5 Emerging and Frontier Economies Under Pressure

The removal of exchange-rate appreciation most severely impacts Nigeria, Pakistan, and Egypt, which together fall from the baseline's fifth-seventh places to twelfth, fifteenth, and sixteenth, respectively. Despite strong demographic momentum, their currencies remain structurally weak. Without sustained productivity reforms, these nations will not translate population growth into global economic leadership.

5.3.6 Incremental Gains for Resource-Rich and Mid-Size Economies

Canada, South Korea, Italy, and Spain experience modest upward adjustments, primarily due to currency stability and balanced current-account positions. Russia and Saudi Arabia remain largely unchanged, as their hydrocarbon-linked currencies already shadow the dollar over long horizons.

5.4 Regional Patterns and Strategic Implications

a) North America consolidates dominance: The United States and Mexico account for nearly one-quarter of global output under the No-FX assumption.

b) Europe reclaims relative weight, with four economies in the Top 10.

c) Asia remains central but less overwhelming, as China and India together account for around 30 per cent of global GDP, compared with nearly 40 per cent in the Goldman Sachs baseline.

d) Africa retains promise but its ascent is deferred until real productivity improvements materialise.

The revised ranking suggests a more balanced multipolar system, less dependent on valuation effects and more on structural capabilities. It also underscores the necessity for emerging markets to focus on institutional quality, technological diffusion, and financial-sector deepening rather than relying on currency revaluation to elevate their nominal weight (Acemoglu & Johnson, 2023; Rodrik, 2012).

5.5 Visual Summary of Shifts

Figure 1 visually summarises the ranking dynamics between the Goldman Sachs baseline and the constant-exchange-rate scenario, offering an intuitive complement to the numerical results presented in Table 1. Each point on the diagram represents a country's relative position in 2075 under both approaches – the baseline rank on the horizontal axis and the No-FX rank on the vertical axis – with the dashed 45-degree line marking parity. Countries positioned above the diagonal gained rank when exchange-rate appreciation was removed, whereas those below the line lost rank as valuation effects disappeared.
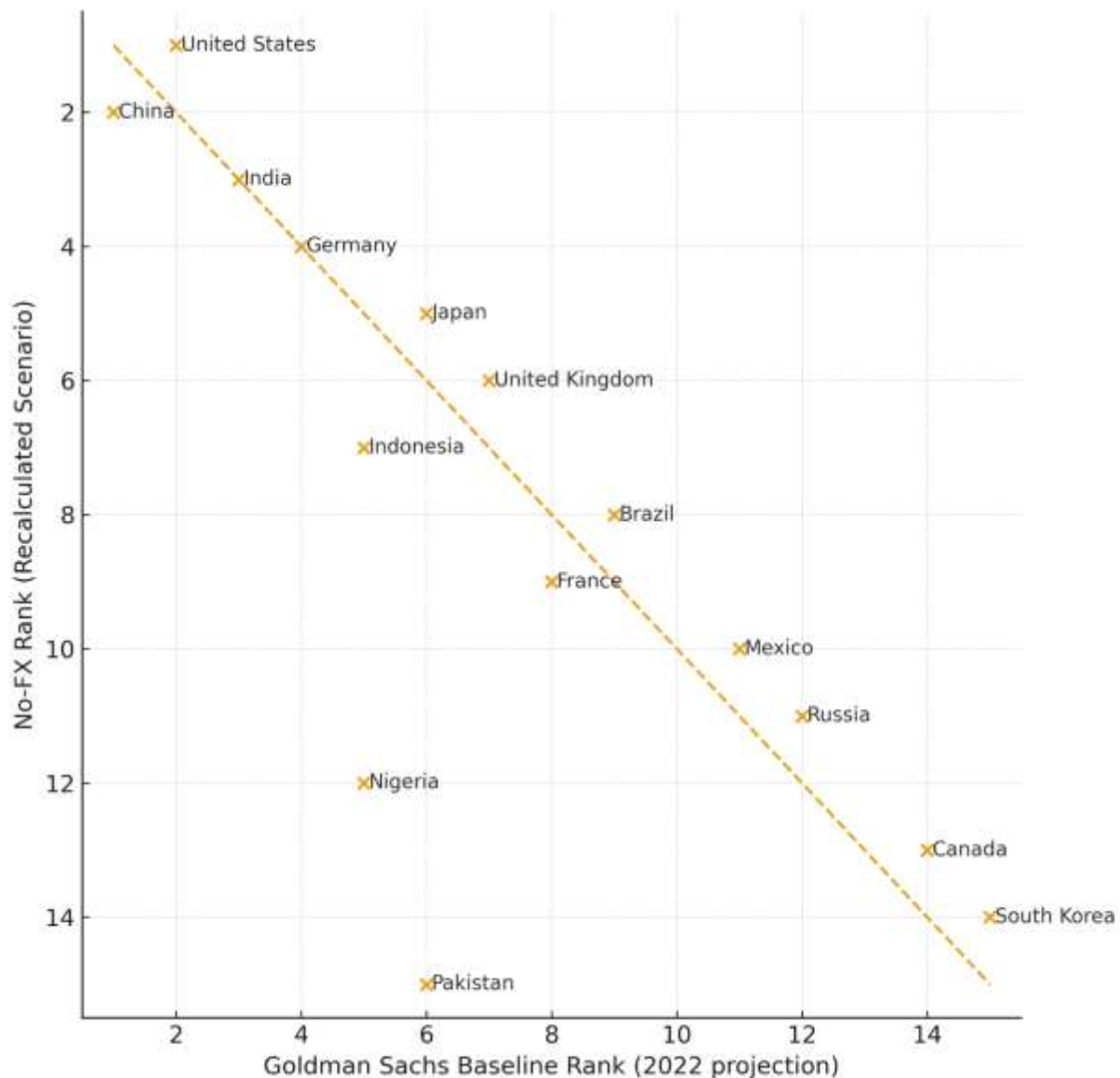
Figure 1. Changes in 2075 GDP Ranking under Constant Exchange Rates

Source: Developed by the Author based on Table 1 findings.

The figure reveals a clear asymmetry: most advanced economies lie above or close to the parity line, while emerging markets cluster below it. The United States, Germany, Japan, and the United Kingdom move upward, reflecting the structural solidity of mature economies with already-appreciated currencies. In contrast, the pronounced downward shifts of Nigeria, Pakistan, and Egypt illustrate how much their projected rise depended on currency convergence rather than real productivity expansion. China and India remain near the diagonal, suggesting that even without exchange-rate effects, they retain significant real-growth potential – though their dominance is less pronounced than in the original Goldman Sachs projection.

Beyond the bilateral movements, the slope of the scatter-plot cloud implies a systematic bias in the baseline forecasts: the further a country's currency was expected to appreciate, the more its position deteriorates once that assumption is neutralised. This pattern quantitatively confirms that valuation dynamics acted as an embedded multiplier in the original projections. The figure thus serves not merely as a descriptive visual but as empirical evidence of how exchange-rate modelling can skew long-term expectations of global power distribution.

Overall, Figure 1 transforms the numerical comparison into a clear visual narrative of convergence realism. It underscores that the global balance of economic power remains multipolar but less radically transformed when exchange-rate appreciation is excluded. The world of 2075, seen through constant parities, appears anchored by enduring structural advantages rather than by speculative currency movements – highlighting that sustainable development will depend on innovation, productivity, and governance rather than on nominal revaluation.

5.6 Policy and Forecasting Lessons

The results reaffirm that exchange-rate dynamics materially influence perceptions of convergence. For policymakers, distinguishing between real and nominal growth is essential for fiscal planning, sovereign-risk assessment, and cross-border comparisons. Institutions producing long-term scenarios should therefore publish dual projections – one in market exchange rates and another in constant-parity terms – alongside explicit sensitivity analyses.

For emerging economies, the implication is clear: sustained development requires structural transformation, not merely currency appreciation. Improving governance, investing in education, and fostering innovation will be decisive in realising genuine convergence.

6. Conclusion

This study reassessed Goldman Sachs' The Path to 2075 by recalculating its long-term economic projections under a constant-exchange-rate framework, isolating real growth from nominal valuation effects. Through this approach, the research achieved its central aim of understanding how exchange-rate assumptions influence global GDP rankings and the apparent convergence between developed and emerging economies.

The recalculated results revealed that, once currency appreciation is neutralised, the global economic hierarchy changes meaningfully. The United States re-emerges as the world's largest economy, slightly ahead of China, followed by India in third place. Germany and Japan rise to more prominent positions, while the United Kingdom, Indonesia, Brazil, France, and Mexico complete a rebalanced top ten. This configuration underscores that a significant portion of the emerging markets' perceived ascendancy in the original Goldman Sachs scenario stemmed not from real output gains, but from the expectation of currency appreciation over the next half-century.

By eliminating the exchange-rate component, the research demonstrates that valuation effects can account for more than one-tenth of the projected growth differential between advanced and emerging economies. The results therefore provide empirical evidence that convergence, while genuine in structural terms, is less dramatic than previously portrayed. Emerging economies such as Nigeria, Pakistan, and Egypt, whose projected rises were particularly dependent on currency appreciation, experience considerable downward adjustments in their 2075 rankings. Conversely, developed economies with mature institutions and stable currencies exhibit greater resilience, maintaining or even improving their global standing.

The findings also reinforce the methodological insight that long-term economic forecasts should present both real-growth and market-exchange-rate scenarios. Publishing side-by-side results would make explicit the share of projected change attributable to productivity, demography, and valuation effects. Such transparency would enhance the interpretability of forecasts by policymakers, investors, and researchers, reducing the risk of conflating nominal expansion with genuine structural transformation.

For policymakers and investors, the findings offer direct strategic implications. By revealing the degree to which exchange-rate assumptions can inflate or suppress long-term GDP outcomes, the study encourages caution when using nominal projections to guide sovereign-risk assessments, fiscal planning, or international investment. Emerging-market governments should avoid relying on expected currency appreciation to justify debt expansion or industrial-policy trajectories, and instead prioritise reforms aimed at strengthening productivity, governance, and institutional capacity. Likewise, investors and multinational firms should distinguish real structural fundamentals from valuation-driven growth paths to avoid misallocating capital toward markets whose predicted rise is rooted more in exchange-rate optimism than in genuine economic transformation. Highlighting these distinctions supports more resilient decision-making in international business strategy, portfolio diversification, and long-term economic policy.

Ultimately, this research answered its guiding question by showing that global convergence is not an automatic or purely financial process – it depends on sustained productivity gains, demographic stability, and institutional quality. The study contributes to the literature by proposing exchange-rate neutrality as an essential robustness test in century-scale forecasting models. Its implications extend beyond the Goldman Sachs framework: they call for a broader methodological shift toward scenario isolation, probabilistic modelling, and the explicit separation of valuation dynamics from real economic performance.

By achieving its objectives, the study reaffirms that the future global balance of power will be shaped less by the arithmetic of currency appreciation and more by the structural capacity of nations to innovate, educate, and adapt. In doing so, it transforms long-term forecasting from a deterministic narrative into a disciplined, transparent, and policy-relevant analytical tool.

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Data sharing statement

No additional data are available.

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References

Acemoglu, D., & Johnson, S. (2023). *Power and progress: our thousand-year struggle over technology and prosperity.* Basic Books.

Acemoglu, D., & Robinson, J. (2012). *Why nations fail: the origins of power, prosperity, and poverty.* Random House. https://doi.org/10.1355/ae29-2j

American Psychological Association. (2020). *Publication manual of the american psychological association* (7th ed.). APA.

Balassa, B. (1964). The purchasing-power parity doctrine: a reappraisal. *Journal of Political Economy, 72*(6), 584-596. https://doi.org/10.1086/258965

Barro, R. J., & Sala-i-Martin, X. (1992). Convergence. *Journal of Political Economy, 100*(2), 223-251. https://doi.org/10.1086/261816

Bloom, D. E., Canning, D., & Fink, G. (2010). Implications of population ageing for economic growth. *Oxford Review of Economic Policy, 26*(4), 583-612. https://doi.org/10.1093/oxrep/grq038

Brynjolfsson, E., & McAfee, A. (2017). *Machine, platform, crowd: harnessing our digital future.* W.W. Norton.

Caselli, F. (2005). *Accounting for cross-country income differences.* Handbook of economic growth (Vol. 1A, pp. 679-741). Elsevier. https://doi.org/10.1016/S1574-0684(05)01009-9

Cerra, V., Fatás, A., & Saxena, S. C. (2023). Hysteresis and Business Cycles. *Journal of Economic Literature, 61*(1), 181-225. https://doi.org/10.1257/jel.20211584

Cheung, Y.-W., & Chinn, M. D., Pascual, A. G., & Zhang, Y. (2019). Exchange rate prediction redux: New models, new data, new currencies. *Journal of International Money and Finance, 95*, 332-362. https://doi.org/10.1016/j.jimonfin.2018.03.010

Cheung, Y.-W., & Lai, K. S. (2000). On cross-country differences in the persistence of real exchange rates. *Journal of International Economics, 50*(2), 375-397. https://doi.org/10.1016/S0022-1996(98)00079-8

Daly, K., & Gedminas, A. (2022). The path to 2075 – Slower global growth, but convergence remains intact. *Goldman Sachs Global Economics Paper No. 277*.

Diebold, F. X., & Rudebusch, G. D. (1991). Forecasting output with the composite leading index: a real-time analysis. *Journal of the American Statistical Association, 86*, 603-610. https://doi.org/10.1080/01621459.1991.10475085

Easterly, W., & Levine, R. (2001). It's not factor accumulation: Stylised facts and growth models. *World Bank Economic Review, 15*(2), 177-219. https://doi.org/10.1093/wber/15.2.177

Hulten, C. R. (2001). *Total factor productivity: A short biography, in New developments in productivity analysis.* University of Chicago Press, pp. 1-54. https://doi.org/10.7208/chicago/9780226360645.003.0001

International Monetary Fund. (2023). *World Economic Outlook: Navigating global divergences.* IMF.

Mankiw, N. G., Romer, D., & Weil, D. N. (1992). A contribution to the empirics of economic growth. *Quarterly Journal of Economics, 107*(2), 407-437. https://doi.org/10.2307/2118477

McCann, B. T. (2020). Using Bayesian Updating to Improve Decisions under Uncertainty. *California Management Review, 63*(1), 26-40. https://doi.org/10.1177/0008125620948264

O'Neill, J. (2003). Dreaming with BRICs: the path to 2050. *Goldman Sachs Global Economics Paper No. 99*.

OECD (2025). OECD global long-run economic scenarios: 2025 update. *OECD Economic Policy Papers,* No.36, OECD Publishing.

Reinhart, C. M., & Rogoff, K. S. (2010). *This time is different: eight centuries of financial folly.* Princeton University Press. https://doi.org/10.1515/9781400831722

Rey, H. (2013). Dilemma not trilemma: The global financial cycle and monetary policy independence. *Proceedings – Economic Policy Symposium – Jackson Hole. Federal Reserve Bank of Kansas City Economic Symposium,* pp. 285-333.

Robert, C. P., & Casella, G. (2010). *Monte Castelo Statistical Methods* (2nd ed.). Springer Texts in Statistics.

Rodrik, D. (2002). *Institutions, integration, and geography: in search of the deep determinants of economic growth.* Princeton University Press, pp. 1-30. https://doi.org/10.1355/ae28-3k

Rodrik, D. (2012). *The globalisation paradox: democracy and the future of the world economy.* W. W. Norton.

Rogoff, K. (1996). The purchasing power parity puzzle. *Journal of Economic Literature, 34*(2), 647-668.

Samuelson, P. A. (1964). Theoretical notes on trade problems. *Review of Economics and Statistics, 46*(2), 145-154. https://doi.org/10.2307/1928178

Sarno, L., & Taylor, M. P. (2002). Purchasing power parity and the real exchange rate. *IMF Staff Papers, 49*(1), 65-105. https://doi.org/10.2307/3872492

Subramanian, A. (2011). *ECLIPSE: Living in the Shadow of China's Economic Dominance.* Peterson Institute for International Economics.

Taylor, A. M., & Taylor, M. P. (2004). The purchasing power parity debate. *Journal of Economic Perspectives, 18*(4), 135-158. https://doi.org/10.1257/0895330042632744

United Nations (2024). *World population prospects 2024.* UN Department of Economic and Social Affairs.

World Bank. (2024). *Global economic prospects – June 2024.* World Bank Group.