

EXTERNAL DEBT DUPLICATION IN LATIN AMERICA AND THE WORLD:  
EVIDENCE FROM VCOA-ADJUSTED MEASURES

*DUPLICACIÓN DE LA DEUDA EXTERNA EN AMÉRICA LATINA Y EL MUNDO:  
EVIDENCIA A PARTIR DE MEDIDAS AJUSTADAS POR VCOA*

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Recibido: octubre 2025; aceptado: diciembre 2025

ABSTRACT

This paper investigates the phenomenon of external debt growth in Latin America, drawing on valuation-adjusted measures to reassess debt dynamics during current account deficit episodes between 1970 and 2023. By comparing conventional statistics with adjusted indicators that incorporate valuation changes and other adjustments (VCOA), the study uncovers systematic asymmetries or “mirror ratios” in which debt accumulation alternates between under- and over-adjustment relative to the theoretical benchmark. At the aggregate level, however, the evidence reveals a persistent upward bias, consistent with a structural tendency towards over-indebtedness. The results for Latin America are also confirmed when taking into account a number of countries representative of the world as a whole. This indicates that the patterns observed in the region are not an isolated phenomenon, but rather part of a broader and consistent international trend worthy of further investigation, with implications for external vulnerability assessments and global financial governance.

*Keywords:* Current account deficits; external debt dynamics; valuation adjustments.

## RESUMEN

Este artículo examina el fenómeno del crecimiento de la deuda externa en América Latina mediante el uso de medidas ajustadas por valuación, con el fin de reevaluar la dinámica de la deuda durante los episodios de déficit en cuenta corriente entre 1970 y 2023. Al contrastar las estadísticas convencionales con indicadores ajustados que incorporan efectos de valuación y otras correcciones (VCOA), el estudio identifica asimetrías sistemáticas, denominados aquí “ratios espejo”, en las que la acumulación de deuda alterna entre una subestimación y una sobrestimación en relación con el referente teórico. No obstante, a nivel agregado, la evidencia revela un sesgo alcista persistente, consistente con un patrón de sobreendeudamiento estructural. Los resultados para América Latina se corroboran también al considerar un conjunto de países representativos de la economía mundial en su conjunto. Esto sugiere que los patrones observados en la región no constituyen un fenómeno aislado, sino más bien parte de una tendencia internacional más amplia y consistente merecedora de ser ulteriormente investigada, con implicaciones relevantes para la evaluación de la vulnerabilidad externa y la gobernanza financiera global.

*Palabras clave:* Déficits de cuenta corriente; dinámica de la deuda externa; ajustes por valoración.

*JEL Classification / Clasificación JEL:* F32, F34, H63.

## 1. INTRODUCTION

The analysis of external debt occupies a central position in international macroeconomics and finance. Accurate measurement of external liabilities is essential for assessing the sustainability of economic growth, external vulnerability, and sovereign risk. Yet, despite its importance, gross external debt is not always directly observable in widely used datasets. Instead, it must often be approximated through the careful selection of liability components consistent with internationally recognized statistical standards. This methodological challenge motivates the need for a systematic framework that clarifies how external debt is constructed, measured, and interpreted.

A first task involves linking gross external debt to the broader framework of the International Investment Position (IIP). While the IIP provides a comprehensive account of a country's external assets and liabilities, only a subset of these liabilities corresponds to debt instruments that require repayment of principal and interest. Distinguishing this subset is critical for understanding the debt burden faced by an economy. The Lane and Milesi-Ferretti *External Wealth of Nations* (EWN) (2025) database provides a practical entry point: although it does not explicitly report gross external debt, it includes variables such as portfolio debt and other investment liabilities that together form a widely accepted proxy. These categories capture the essence of debt instruments while excluding equity and derivative positions, which, although relevant for financial integration, are not part of debt as conventionally defined.

Beyond definitional and statistical issues, a second task is to account for valuation changes and other adjustments (VCOA). Exchange rate fluctuations, market price variations, and methodological revisions may alter the measured value of debt without any corresponding transactional flows registered in the Balance of Payments (BoPs). Incorporating these adjustments is crucial for reconciling recorded flows with observed changes in debt stocks. Doing so not only improves the accuracy of debt measurement but also clarifies whether increases in liabilities reflect new borrowing or merely accounting revaluations. Contributions in the literature (for an extended review see Gourinchas, 2007) emphasize the importance of VCOA for interpreting debt sustainability and for distinguishing between structural imbalances and statistical artefacts. This paper suggests a methodology to calculate a VCOA-adjusted debt measure.

A third step is to situate external debt within a macroeconomic identity that relates changes in liabilities to current account balances and international

reserves. This identity highlights the channels through which an economy finances external deficits and links debt accumulation to broader balance of payments dynamics. It also underlines the interaction between monetary policy, reserve management, and external sustainability. Understanding this identity is essential for distinguishing the respective roles of borrowing and reserve variation in shaping debt trajectories.

Taken together, these methodological and conceptual foundations establish the framework for the empirical analysis undertaken in this paper. The study first applies them to Latin America, a region historically marked by recurrent current account deficits, exchange rate instability, and sovereign debt crises. It then extends the investigation to a global sample, in order to determine whether the patterns identified in Latin America represent regional specifics or, instead, a general feature of the international monetary system. By expanding the geographical scope of analysis, the paper situates Latin America within a broader comparative perspective and tests the robustness of its findings across diverse institutional and macroeconomic environments.

Finally, the study seeks to move beyond measurement and documentation by engaging with the broader implications of external debt dynamics for international policy. In particular, it examines how the observed patterns of debt growth, once properly understood and adjusted, may inform debates about the functioning of the global payments system, the architecture of international financial governance, and the design of policy instruments to mitigate vulnerability. By linking empirical evidence to the normative dimension of policy, the paper aims to contribute to a more accurate understanding of external debt and to the search for accounting reforms capable of reducing systemic risks in the world economy.

## 2. CONSTRUCTING GROSS EXTERNAL DEBT FROM THE EXTERNAL WEALTH OF NATIONS DATABASE: METHODOLOGY AND INTERPRETATION

The EWN database is widely used in empirical macroeconomics and international finance for assessing countries' external asset and liability positions. Although the EWN dataset does not explicitly provide a variable labelled "gross external debt", it is nonetheless possible to construct a close approximation using specific components from the liabilities side of IIP data. This approximation aligns closely with the internationally accepted definition of gross external debt, as used by institutions such as the International Monetary Fund (IMF) and the World Bank.

Gross external debt refers to the total outstanding financial liabilities that a country owes to non-residents, which require future payments of principal and/or interest. This definition includes both private and public sector debt and encompasses all debt instruments that generate a repayment obligation. Specifically, gross external debt typically comprises: (i) *portfolio debt liabilities*, such as bonds and notes issued to foreign investors; (ii) *other investment*

*liabilities*, which include loans, deposits, and trade credits; and (iii) *official debt*, including credit extended by multilateral institutions like the IMF.

Importantly, gross external debt does not include equity-related liabilities. Thus, *foreign direct investment (FDI) equity*, *equity portfolio liabilities*, and *financial derivatives* are excluded from the calculation. Reserves, being assets rather than liabilities, are also omitted.

To construct gross external debt from the EWN database, one must focus on the appropriate liability components recorded in the IIP. The two most relevant EWN variables for this purpose are:

- (I) Portfolio Debt Liabilities: These reflect the value of debt securities (such as government and corporate bonds) held by non-residents.
- (II) Other Investment Liabilities: This broad category includes international loans, foreign deposits in domestic banks, and trade credits extended by non-residents.

Other components such as *financial derivatives*, *FDI (equity)*, and *official reserves* are not considered part of gross external debt, either because they do not represent liabilities or because they are not debt instruments.

The EWN dataset offers a convenient composite variable labelled “debt liabilities (portfolio debt + other investment)”. This variable serves as a practical proxy for gross external debt. As the name suggests, it aggregates the two key components that define external debt under standard international frameworks. This approximation is widely accepted in the literature, particularly in empirical studies relying on the EWN dataset, and closely mirrors the debt statistics of the *Gross External Debt Position (GEDP)*, reported in the IMF’s IIP framework and the World Bank’s Quarterly External Debt Statistics (QEDS).

The use of the “Debt liabilities (portfolio debt + other investment)” variable allows for efficient cross-country and time-series comparisons of external debt burdens. It simplifies the process of estimating external vulnerability indicators such as external debt-to-GDP ratios or external debt service obligations. However, it should be observed that this measure may not fully capture short-term contingent liabilities or differentiate between public and private sector debt unless supplementary data is used.

Additionally, while the variable excludes financial derivatives and equity liabilities, consistent with standard definitions, any extended analysis or policy interpretation should acknowledge these exclusions explicitly, particularly in countries with significant derivative exposures or large inward FDI stocks.

Overall, the EWN database does not offer a pre-labelled gross external debt variable but provides all necessary components to construct a close approximation. The variable “Debt liabilities (portfolio debt + other investment)” effectively captures the essence of gross external debt and conforms to international statistical standards. Its careful use allows to assess sovereign and external financial risk with a reasonable degree of accuracy.

## 2.1. THE LINK BETWEEN THE INTERNATIONAL INVESTMENT POSITION AND GROSS EXTERNAL DEBT

the *International Investment Position* and the *Gross External Debt Position* are two key indicators used to assess a country's financial relationship with the rest of the world. While they are conceptually related, they serve distinct analytical purposes and contain different components.

The IIP provides a comprehensive snapshot of a country's external financial assets and liabilities at a specific point in time. It includes a wide range of instruments: equity holdings (such as foreign direct investment and portfolio equity), debt instruments (like loans and bonds), financial derivatives, and reserve assets held by the central bank. The IIP is typically used to evaluate whether a country is a net international creditor or debtor by subtracting total external liabilities from external assets.

In contrast, the GEDP captures only the stock of external *debt liabilities*, i.e. financial obligations to non-residents that require future repayments of principal and/or interest. These include loans, bonds, deposits, trade credits, and Special Drawing Rights (SDRs) allocated by the International Monetary Fund (IMF). Crucially, the GEDP does not include equity liabilities, derivatives, or reserve assets.

The key link between the two is that the GEDP forms a subset of the liability side of the IIP. While the IIP accounts for all types of external liabilities and assets, the GEDP isolates only those liabilities that represent actual debt. Additionally, the IIP reflects a net position, offsetting liabilities with assets, whereas the GEDP shows only the gross amount of external debt, without considering any external assets the country may hold.

In summary, the IIP offers a broader view of a nation's international financial exposure, while the GEDP focuses specifically on the debt obligations that must eventually be repaid. Understanding both indicators is essential for assessing external sustainability, sovereign risk, and the financial resilience of an open economy.

Now, are EWN's "Debt Liabilities" a proxy for IIP liabilities?

The IIP represents the stock of a country's external financial assets and liabilities at a given point in time. It indicates how much a country owns abroad (assets) and how much it owes to the rest of the world (liabilities). On the liabilities side, the IIP includes various forms of foreign-held investments in the domestic economy, such as foreign direct investment (FDI), portfolio investments (both equity and debt), other investment (e.g., loans and deposits), and financial derivatives. In certain cases, international reserves may also appear, though typically on the asset side.

In the EWN database, the term "debt liabilities" refers specifically to the sum of portfolio debt (e.g., bonds issued to non-residents) and other investment liabilities (e.g., cross-border loans, deposits, and trade credits). Importantly, this category does not include FDI in equity form, portfolio equity holdings, or financial derivatives.

Therefore, while the “debt liabilities” measure in the EWN database is a useful approximation of the debt component of IIP liabilities, it does not serve as a complete proxy for total IIP liabilities. It is especially relevant for studies focused on external debt sustainability or financial vulnerability due to indebtedness. However, when analysing broader financial integration or exposure to capital flow reversals, equity-related liabilities should also be considered.

In light of the above, the “debt liabilities” measure in the EWN database offers a partial but meaningful representation of IIP liabilities (specifically, the portion related to external debt, which is the main object of the present study), while omitting equity and derivative positions that are integral to a full IIP analysis.

### 3. ADJUSTING THE EXTERNAL DEBT IN LIGHT OF VALUATION CHANGES AND OTHER ADJUSTMENTS

Valuation changes and other adjustments refer to the non-transactional changes in gross external debt, that is, changes not due to new borrowings or repayments, but caused by exchange rate fluctuations, market price changes (e.g., bond prices), and reclassifications or methodological adjustments. These adjustments are essential for reconciling the stock (position) of gross external debt at two points in time and the transaction flows recorded in the financial account of the balance of payments. They matter because they (i) help assess the true drivers of debt changes, whether due to market forces or actual transactions, (ii) improve transparency and consistency in external sector statistics, (iii) are essential for debt sustainability analysis and forecasting.

The calculation of VCOA may allow to interpret movements in gross external debt as part of a broader identity involving changes in a country's external position. By breaking down debt accumulation and separating it from valuation effects and other capital components, it can be assessed whether changes in debt reflect actual net borrowing or accounting revaluations. This framework is particularly useful for evaluating the sustainability of external debt and distinguishing between flow-driven and valuation-driven changes, and quantifying the contribution of each component to the external balance.

Let the following variables be defined:

- (I)  $NIIP_t$ : Net International Investment Position at time  $t$ .
- (II)  $A_t$ : Total external assets (excluding gold) at time  $t$ .
- (III)  $D_t$ : Debt liabilities (portfolio debt + other investment) at time  $t$ , a proxy for external debt.
- (IV)  $FDI_t$ : Foreign direct investment at time  $t$ .
- (V)  $PE_t$ : Portfolio equity liabilities at time  $t$ .
- (VI)  $FD_t$ : Financial derivatives liabilities at time  $t$ .
- (VII)  $L_t = D_t + FDI_t + PE_t + FD_t$ : Total liabilities at time  $t$ .

- (VIII)  $CAB_t$ : Current Account Balance during year  $t$ .  
 (IX)  $KAB_t$ : Capital Account Balance (excluding reserves and debt) during year  $t$ .  
 (X)  $EO_t$ : Errors and omissions during year  $t$ .  
 (XI)  $FAB_t = CAB_t + KAB_t + EO_t$ : Financial Account Balance during year  $t$ .  
 (XII)  $VCOA_t$ : Valuation Changes and Other Adjustments during year  $t$ .

Suppose the country shifts from a current account surplus to a deficit in year 1.

*Step 1: Change in NIIP*

By definition:

$$NIIP_1 = A_1 - L_1$$

The change in NIIP between  $t_0$  and  $t_1$  is:

$$\Delta NIIP = NIIP_1 - NIIP_0 = (A_1 - L_1) - (A_0 - L_0)$$

which simplifies to:

$$\Delta NIIP = (A_1 - A_0) - (L_1 - L_0).$$

Expanding liabilities into components:

$$L_1 = D_1 + FDI_1 + PE_1 + FD_1,$$

We obtain:

$$\Delta NIIP = (A_1 - A_0) + (D_0 - D_1) + (FDI_0 - FDI_1) + (PE_0 - PE_1) + (FD_0 - FD_1).$$

*Step 2: Balance of payments perspective*

From the balance of payments identity:

$$\Delta NIIP = FAB_1 + VCOA_1,$$

which can be rearranged as:

$$VCOA_1 = \Delta NIIP - FAB_1.$$

Substituting the expanded form yields:

$$VCOA_1 = (A_1 - A_0) + (D_0 - D_1) + (FDI_0 - FDI_1) + (PE_0 - PE_1) + (FD_0 - FD_1) - (CAB_1 + KAB_1 + EO_1).$$

*Step 3: Isolating the debt component*

Let  $\Delta D = D_1 - D_0$ . Rewriting the expression for  $VCOA_1$ :

$$\Delta D + VCOA_1 = (A_1 - A_0) + (FDI_0 - FDI_1) + (PE_0 - PE_1) + (FD_0 - FD_1) - (CAB_1 + KAB_1 + EO_1)$$

Define:

$$n = \Delta D, \quad x = VCOA_1, \quad y = (A_1 - A_0) + (FDI_0 - FDI_1) + (PE_0 - PE_1) + (FD_0 - FD_1) - (CAB_1 + KAB_1 + EO_1).$$

Thus,

$$n + x = y$$

Now decompose  $x$  proportionally:

$$x = \alpha_n + \alpha_y,$$

where

$$\alpha_n = x \frac{n}{n + y}$$

It follows that:

$$n + \alpha_n = y - \alpha_y$$

*Step 4: Adjusted debt measure*

This decomposition attributes valuation effects ( $x$ ) *proportionally* to debt changes ( $n$ ) and other components ( $y$ ).

We define the adjusted change in gross external debt,  $n'$ , as:<sup>1</sup>

$$n' = n + \alpha_n = n + x \frac{n}{n + y}$$

#### 4. THE MACROECONOMIC IDENTITY: DEBT, RESERVES, AND THE CURRENT ACCOUNT

As established in the preceding discussion on gross external debt, it is possible to relate the evolution of this aggregate to a straightforward balance of payments identity. This identity provides the analytical link between the stock dimension of external indebtedness and the flow dimension of external transactions, thereby setting the stage for the following section. In particular, it shows how the annual variation in gross external debt can be connected to

1 A proof of consistency is presented here. Let us verify:

$$n' = y' \Rightarrow n + x \frac{n}{n+y} = y - x \frac{y}{n+y}$$

Multiply both sides by  $n + y$ :

Left:

$$(n + y) \left( n + x \frac{n}{n + y} \right) = n(n + y) + nx = n^2 + ny + nx$$

Right:

$$(n + y) \left( y - x \frac{y}{n + y} \right) = y(n + y) - yx = y^2 + ny + yx$$

So, both sides equal:

$$n^2 + ny + nx = y^2 + ny - yx \Rightarrow n^2 + nx + yx = y^2 \Rightarrow n^2 + x(n + y) = y^2$$

two fundamental components of the balance of payments: the current account deficit and the change in international reserves.

$$\Delta \text{Gross External Debt} = \Delta \text{Official Reserves} - \text{Current Account Balance} \quad (\text{Identity 1})$$

This identity holds under the assumption that the country in question is running a current account deficit. The formula captures how a nation with an external deficit finances the gap between domestic expenditure and national income. The logic is that any excess of spending over income from the rest of the world must be financed either by drawing down reserves or by increasing external debt. Therefore, when a country runs a deficit and simultaneously accumulates reserves, it must borrow externally to fund both the deficit and the reserve buildup.

In the context of an open economy operating with external imbalances, Identity 1 plays a central role in understanding how the country finances its relationship with the rest of the world. It is crucial to emphasize that this formulation is especially meaningful in the case of a current account deficit, where the country spends more abroad than it earns. In such circumstances, the identity highlights the channels through which the economy must secure external financing.

Taking into account valuation effects and other adjustments, the balance sheet identity can be rewritten by replacing the raw change in gross external debt ( $n$ ) with the adjusted measure ( $\hat{n}$ ):

$$\text{Adjusted } \Delta \text{ Gross External Debt} \equiv \Delta \text{Official Reserves} - \text{CAB}. \quad (\text{Identity 2})$$

This revised identity provides a refined proxy for external debt dynamics.

The current account (CA) reflects the net external balance of goods, services, income flows, and transfers. When the current account is in deficit, it implies that the economy is importing more than it is exporting and/or that primary and secondary incomes paid to foreign residents exceed receipts. In other words, the country is a net spender in the international system.

In the identity, the current account balance is taken with a negative sign, which transforms the deficit into a positive financing need. Namely, a deficit in the current account ( $CA < 0$ ) becomes a positive term when subtracted:  $-(CA < 0) \Rightarrow +|CA|$ . This reflects the fact that the economy must obtain financing equivalent to the size of that deficit. This underscores the fundamental point: when a country runs a current account deficit, it must seek financing from external sources.

There are two primary mechanisms available to finance a current account deficit:

(i) Drawing down international reserves, i.e., selling foreign currency assets held by the central bank.

(ii) Increasing gross external debt, by borrowing from non-residents through loans, bonds, and other debt instruments.

The identity tells us that what is not covered through the use of reserves must be financed through debt. Thus, if the current account is in deficit and the country simultaneously increases its reserve holdings, then it is not using existing foreign assets to finance the deficit. Instead, it is borrowing externally to both cover the shortfall and to build reserves. This borrowing is reflected in the increase of gross external debt.

Identities 1 and 2 are not simply an accounting equation; indeed, they capture a fundamental macro-financial dynamic. In an open economy with a “weak” currency and with a current account deficit, the country must finance its external imbalance by borrowing from abroad. If it chooses to accumulate reserves instead of spending them, the gap widens, and gross external debt must rise. This relationship underscores the importance of coherent policy coordination between fiscal, external, and monetary authorities to ensure long-term sustainability and minimize external vulnerabilities.

## 5. AN EMPIRICAL STUDY OF EXTERNAL DEBT DYNAMICS, CURRENT ACCOUNT DEFICITS, AND RESERVE ACCUMULATION

The previous analysis applies to statistical data for countries that experienced periods of consecutive current account deficits. Each country may exhibit multiple deficit episodes over time. The focus here is on the relationship between gross external debt, current account deficits, and reserve accumulation.

All variables are annual. Flow variables, such as the current account balance (CAB), the capital account balance (KAB), and errors and omissions (EO), refer to total flows within a given year. Stock variables, such as gross external debt, the net international investment position, and reserves, refer to end-of-year values.

We define  $t = 0$  as the year preceding the beginning of a deficit episode. Year  $t$  represents the last year of the deficit.

### *Definitions and Identities*

(I) Cumulative flows over the deficit period

$$\text{Total current account deficit: } \sum_1^t CAB$$

$$\text{Total capital account flows: } \sum_1^t KAB$$

$$\text{Total errors and omissions: } \sum_1^t EO$$

(II) Change in reserves

$$\Delta Reserves = Reserves_t - Reserves_0$$

(III) Balance of payments transactions consistent with external debt change

$$d = (Reserves_t - Reserves_0) - \sum_1^t CAB$$

(IV) Observed change in external debt

$$n = Debt_t - Debt_0$$

(V) Valuation change in the net international investment position

$$x = (NIIP_t - NIIP_0) - \left[ \sum_1^t CAB + \sum_1^t KAB + \sum_1^t EO \right]$$

(VI) Alternative valuation adjustment (including portfolio equity, foreign direct investment, and financial derivatives)

$$y = (A_t - A_0) + (FDI_0 - FDI_t) + (PE_0 - PE_t) + (FD_0 - FD_t) - \left[ \sum_1^t CAB + \sum_1^t KAB + \sum_1^t EO \right]$$

(VII) Adjusted change in gross external debt

$$n' = n + x \frac{n}{n + y}$$

*Ratios of interest*

We compute the ratios:

$$r = \frac{n}{d} \text{ and } r' = \frac{n'}{d}.$$

If the accounting identities (1 and 2) hold, these ratios should approach unity. The objective of the study is to assess the extent to which these identities are empirically valid, to identify divergences from unity, and to explore possible cross-country patterns.

In order to streamline the analysis in a manner fully consistent with the research objective –specifically, the comparison between the positive variation of external debt and the positive value of the combined current account deficits and reserve changes– the ratios  $r$  and  $r'$  are taken into account exclusively in cases where both the numerator and the denominator assume strictly positive values. This methodological constraint is introduced to preserve analytical coherence and to exclude observations that would be interpretable but fall beyond the present scope of this research. A full analysis of external debt

dynamics would necessarily require the inclusion of all episodes, irrespective of the sign, positive or negative, of the two sides of Identities 1 and 2, and would also involve going beyond the computation of ratios to encompass a broader analytical framework.

When analyzing the evolution of external debt, both ratios  $r$  and  $r'$  present analytical merits that must be acknowledged with due caution. The ratio  $r$  is calculated directly from raw statistical data, reflecting the official records as they appear in international databases. Its principal advantage lies in transparency and replicability: because it relies strictly on published figures, the indicator offers a consistent benchmark that can be reproduced across studies and compared across countries. Nevertheless, its reliance on unadjusted values means that  $r$  may be sensitive to statistical artifacts or valuation distortions, especially in contexts where debt stocks are heavily influenced by exchange rate fluctuations or methodological revisions.

By contrast, the ratio  $r'$  incorporates an adjusted measure of external debt that accounts for valuation changes and other adjustments. This construction seeks to reconcile discrepancies between flows and stocks, thereby offering a conceptually more accurate depiction of debt dynamics. As such,  $r'$  is often preferable when the aim is to capture the underlying trajectory of indebtedness beyond the noise introduced by accounting conventions or market volatility. Yet, the reliance on adjusted values inevitably introduces a degree of estimation error and potential model dependence. For this reason, while  $r'$  may represent a more refined tool, its application requires careful consideration of the assumptions underlying the adjustment process. Prudence is therefore warranted: the joint use of both ratios -  $r$  as a transparent baseline and  $r'$  as a theoretically superior but more uncertain indicator- provides a balanced approach to the study of external debt evolution.

Furthermore, it becomes appropriate to address the presence of presumed outliers (ratio values). In this process, prudence is required, as the indiscriminate removal of observations may distort the underlying distribution. Therefore, only those cases exhibiting excessively high ratio values should be excluded, particularly when they correspond to short periods of deficits. This approach ensures that the analysis remains both robust and representative.

## 6. THE LATIN AMERICAN CASE IN A GLOBAL COMPARISON (1970-2023): DEBT GROWTH, MIRROR RATIOS, AND THE TREND TOWARD DEBT DUPLICATION

### 6.1. EXTERNAL DEBT GROWTH IN LATIN AMERICA

The monetary history of Latin America from 1970 to 2023 reveals a complex narrative of economic reform, hyperinflation, political shifts, and globalization. The region's currency systems have undergone numerous transformations, reflecting broader socio-economic developments. The history of currency use in Latin America over the past five decades reveals distinct patterns: some countries have upheld long-term monetary stability, while others have

faced repeated reforms or adopted foreign currencies. These developments underscore the diverse economic trajectories within the region and the central role of monetary policy in shaping national and regional economic outcomes. As global economic pressures and technological innovations continue to influence currency systems, Latin America's monetary landscape will likely evolve further in the coming decades.

We initially considered a sample of 20 countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, the Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela. Of all of them, our empirical analysis focuses on nineteen, given the absence of reliable data for Cuba. This selection provides a comprehensive overview of debt and BoPs dynamics across the region, covering countries with diverse macroeconomic and trade structures, institutional settings, and historical trajectories. In total, we identify seventy-eight deficit periods across the sample. However, to ensure consistency and coherency of results, ratios  $r$  and  $r'$  are not calculated when either the numerator or the denominator, or both, is negative. Following this adjustment, seventy-one deficit periods are retained for the computation of the ratio  $r$ , while sixty-seven are used for the estimation of  $r'$ .

The empirical analysis reveals a striking asymmetry in the evolution of debt across different periods. In several instances, debt levels expanded at approximately twice the expected rate, while in others the observed growth amounted to only half of the projected trajectory. This recurring pattern, which will be referred to here as *mirror ratios*, occurs in at least 2/3 to 3/4 of deficit years in Latin America (see Table 1), and it highlights the tendency of debt dynamics to oscillate between over-accumulation and relative under-accumulation with respect to the baseline expectation (Identities 1 and 2). Such mirror-like outcomes suggest the presence of structural factors or other mechanisms that systematically amplify or dampen debt growth in times of current account deficits and reserve accumulation.

The results presented in Table 1 provide quantitative support for the asymmetries in debt dynamics described above, while also confirming the expected outcomes predicted by Identities 1 and 2. A proportion of cases fall within the "normal" range, that is, between 0.75 and 1.25, with averages close to unity: 18.31% of the observations for  $r$  (average 0.94) and 23.88% for  $r'$  (average 0.91). These results are consistent with the theoretical benchmark, showing that in a significant share of deficit episodes debt accumulation behaves as predicted by the identities. At the same time, a large fraction of observations cluster in the mirror ranges: for  $r$ , 42.25% fall between 0.25-0.75 (average 0.49) and 7.04% between 1.75-2.25 (average 1.91); for  $r'$ , 35.82% lie in the lower mirror range (average 0.47) and 10.45% in the upper range (average 2.04). Taken together, these distributions indicate that about half of the deficit episodes analyzed deviate substantially from the baseline trajectory in a mirror-like fashion.

When the intervals are aggregated more broadly, the asymmetry becomes even more pronounced. Nearly two-thirds of the  $r$  observations (66.20%) fall between 0 and unity, with an average of 0.52, while 11.27% have values between 1.5 and 2.5, averaging 1.91. For  $r'$ , the pattern is comparable: 59.42% of cases fall below one (average 0.56), whereas 17.39% fall within the 1.5-2.5 range (average 1.84). The concentration of values in these lower and upper bounds reinforces the notion of recurrent mirror ratios, where debt accumulation systematically alternates between over- and under-adjustment relative to the expected identity in approximately  $\frac{3}{4}$  of periods. This empirical regularity underscores the structural tendency of Latin American debt dynamics to diverge from smooth or proportional paths of adjustment.

Yet, despite the recurrent mirror ratios, the aggregate analysis reveals a clear and noteworthy trend in debt dynamics across Latin America. Despite the prevalence of mirror ratios identified in the previous analysis, the aggregate evidence points toward a different underlying tendency. While many deficit episodes oscillate between under- and over-adjustment relative to the theoretical benchmark, the regional averages suggest a systematic bias toward debt accumulation much beyond the expected path. Specifically, the average value of  $r$  for Latin America is 1.44, and the corresponding average for  $r'$  is 1.55. These results imply that, on average, debt ratios in the region were rather far from stabilizing around unity or converging to the lower mirror ratio of 0.5.

This finding indicates that the asymmetries documented earlier are not evenly balanced over time. Instead, they display a discernible upward drift, consistent with a structural tendency toward over-indebtedness in the presence of current account deficits. The fact that both  $r$  and  $r'$  averages are close to 1.5 reinforces the interpretation that debt dynamics in Latin America do not simply oscillate around the theoretical baseline, but rather tilt persistently toward higher-than-expected accumulation. This aggregate outcome, therefore, raises concerns about the sustainability of external adjustment mechanisms and highlights the role of amplifying forces –whether institutional, financial, or structural– that favor debt growth beyond the expected level.

TABLE 1. DEBT CHANGES IN PERIODS OF CA DEFICITS IN LATIN AMERICA

Values range for $r$ and $r'$	N. obs. $r$ (out of 71)	Avg. $r$	N. obs. $r'$ (out of 67)	Avg. $r'$
0.25-0.75	30 (42.25%)	0.49	24 (35.82%)	0.47
0.75-1.25	13 (18.31%)	0.94	16 (23.88%)	0.91
1.75-2.25	5 (7.04%)	1.91	7 (10.45%)	2.04
Tot. (%)	67.61%		70.15%	
0.0-1.0	47 (66.20%)	0.52	41 (59.42%)	0.56
1.5-2.5	8 (11.27%)	1.91	12 (17.39%)	1.84
Tot. (%)	77.46%		76.81%	
Aggregate avg.	$r$ (out of 71) 1.44		$r'$ (out of 67) 1.55	

Note: no outliers (with ratio values > 50) are detected.

Source: authors' elaboration from Lane and Milesi-Ferretti (2025).

The aggregate results for Latin America are consistent with the findings of Carrera, Cárdenas, and Mazoni (2023) on East Asia, as well as those of Carrera, Cárdenas, and Arribas Martínez (2025) on the Mediterranean countries, Ireland, and the United States (the averages for Latin America are very similar to the US case). Both studies document a systematic tendency toward debt duplication in these regions since the 1970s, highlighting a structural pattern in the evolution of external imbalances. The fact that Latin America exhibits similar average ratios strengthens the argument that the dynamics of debt accumulation, far from being region-specific or episodic, reveal a broader, cross-regional phenomenon of over-indebtedness in the context of recurrent current account deficits. Moreover, according to this literature, the East Asian experience suggests that duplication may also occur during surplus periods, when debt levels do not decline as much as would be theoretically expected.

Yet, the numerical results obtained for Latin America, although similar to those observed in other geographical areas of the world, warrant further investigation, as their generalizability across all regions cannot be taken for granted. Geographical or cultural proximity among countries cannot be regarded as an absolute or objective criterion for aggregation. When examining the evolution of external debt in a small sample of countries, it would be even more appropriate to select the sample on the basis of shared economic characteristics (such as a common payments system, comparable current account dynamics, or similar economic size). The analysis of Latin America thus serves as an exploratory and applied assessment of the methodology developed in the preceding sections. It is nonetheless evident that Latin America as a whole has experienced persistent over-indebtedness for more than five decades.

## 6.2 EXTERNAL DEBT GROWTH: A GLOBAL PATHOLOGY?

The previous analysis finds further confirmation at the global level. The empirical evidence shows that mirror ratios are also present worldwide, with debt dynamics frequently oscillating between over- and under-accumulation relative to the expected benchmark. However, when results are examined in the aggregate, the data reveal a consistent upward bias: on average, global debt ratios tend to move toward duplication rather than stabilization around unity. This global pattern reinforces the interpretation that the tendency toward over-indebtedness is not confined to specific regions, to be verified case by case, but instead reflects a broader structural feature of the international financial system.

The original database covers 185 countries. Within this extensive sample, 632 deficit periods are identified, providing a solid empirical foundation for the analysis of debt dynamics under external imbalances. After excluding episodes with missing or negative values of  $n$  and/or  $d$  for the calculation of the ratio  $r$  and with missing or negative values of  $n'$  and/or  $d$  for the calculation of  $r'$ , the effective dataset comprises 509 periods for the calculation of  $r$  and

486 periods for  $r'$ . Although the number of countries finally analysed does not include the entire world, it remains sufficiently large to be considered broadly representative at the global level. Therefore, while the results cannot be used to trace the exact evolution of debt in all world countries as a whole, they can nevertheless serve to identify, with a high degree of certainty, the average global trend in debt dynamics.

TABLE 2. DEBT CHANGES IN PERIODS OF CA DEFICITS AT GLOBAL LEVEL

Values range for $r$ and $r'$	N. obs. $r$ (out of 509)	Avg. $r$	N. obs. ( $r'$ ) (out of 486)	Avg. ( $r'$ )
0.25-0.75	171 (33.60%)	0.50	156 (32.10%)	0.50
0.75-1.25	87 (17.09%)	0.97	116 (23.87%)	0.97
1.75-2.25	32 (6.29%)	1.98	32 (6.58%)	1.95
Tot. (%)	56.97%		62.55%	
0.0-1.0	293 (57.56%)	0.48	284 (58.43%)	0.53
1.5-2.5	55 (10.81%)	1.89	59 (12.14%)	1.91
Tot. (%)	68.37%		70.58%	
Aggregate avg. (including outliers)*	$r$ (out of 509)		$r'$ (out of 486)	
		2.81		2.58
Aggregate avg. (excluding outliers)*	$r$ (out of 502)		$r'$ (out of 482)	
		1.86		1.86

\* Note: A conservative criterion was applied in the detection of outliers, whereby only extreme ratio values greater than 50 were excluded. These regard, for  $r$ ,  $r'$ , or both, the Bahamas (1978-1985, 1986-1991), Barbados (1986-1987), Gabon (2019-2020), Ireland (1999-2002), Malta (2002-2011) and The Netherlands (1977-78).

Source: authors' elaboration from Lane and Milesi-Ferretti (2025).

The results presented in Table 2 reinforce the asymmetries in debt dynamics at world level. As in the earlier evidence, a relevant proportion of observations fall within the "normal" range between 0.75 and 1.25, with averages near unity: 17.09% of the cases for  $r$  (average 0.97) and 23.87% for  $r'$  (average 0.97). These shares seem to confirm the theoretical benchmark in which debt accumulation behaves in line with the identities during a certain set of deficit episodes. However, much larger fractions of observations are concentrated in the mirror ranges. For  $r$ , 33.60% fall between 0.25 and 0.75 (average 0.50) and 6.29% between 1.75 and 2.25 (average 1.98). Similarly, for  $r'$ , 32.10% are in the lower mirror range (average 0.50) and 6.58% in the upper one (average 1.95). These mirror distributions highlight the persistent tendency for debt dynamics to deviate from the baseline trajectory in ways that are structurally recurrent.

When broader intervals are considered, the asymmetry becomes even clearer. More than half of the  $r$  observations (57.56%) lie between 0 and 1, with an average of 0.48, while 10.81% are in the 1.5-2.5 interval, averaging 1.89. For  $r'$ , the proportions are comparable: 58.43% fall below unity (average

0.53) and 12.14% between 1.5 and 2.5 (average 1.91). This clustering in both lower and upper ranges again illustrates the prevalence of mirror-like patterns, where debt accumulation alternates between under- and over-adjustment in nearly three-quarters of periods examined. Taken together, the results from Table 2 confirm the structural regularity of Latin American debt dynamics, whereby adjustment paths diverge markedly from proportionality and display recurrent asymmetries across deficit episodes.

Yet, in the aggregate, the global results reveal a striking tendency toward over-indebtedness that goes beyond the oscillations captured by mirror ratios. While the presence of mirror ratios confirms that debt dynamics frequently swing between under- and over-accumulation relative to the theoretical expectation, the average values for world ratios indicate a systematic bias toward the upper range. Figures suggest that, at the global level, average debt ratios have not only exceeded the baseline benchmark of unity but have done so at a rate consistent with *duplication* or even more.

This aggregate outcome underscores that the deviations are not evenly distributed but instead converge toward a structural pattern of persistent over-accumulation. In other words, although many countries and periods show episodes of relative under-adjustment, these do not offset the broader global tendency toward excessive debt expansion. The averages around or above two signals a systemic phenomenon that transcends regional or income-group differences, highlighting the existence of underlying forces in the international financial system that favor debt duplication rather than stabilization.

Tables 1 and 2 show that, when fitting the data to the valuation changes and other adjustments, the average value of the ratios tends to shift, either upward or downward, toward 2, a pattern that can be seen both for Latin America and for the world as a whole. Specifically, the average changes from 1.44 to 1.55 in Latin America and from 2.81 to 2.58 (with outliers) in the world; it keeps at 1.86 (without outliers) at the global level. This points to a phenomenon recently studied in economic literature.

## 7. DEBT DUPLICATION: AN INQUIRY

The structural asymmetries revealed by debt analyses resonate strongly with recent literature on global financial hierarchies and valuation mechanisms. Studies of international investment positions show that disparities in risk preferences and asset composition generate persistent imbalances between advanced and developing economies. Nieminen and Kuziemska-Pawlak (2024) demonstrate that advanced countries, characterized by higher patience and risk-taking preferences, systematically accumulate net positions in risky assets, while developing economies remain structurally short in them. This behavioral and institutional asymmetry may help explain why debt accumulation in the Global South often exceeds the trajectory implied by current account dynamics alone.



From a systemic perspective, the work of Gourinchas, Rey and Sauzet (2019) and Mayer (2021) highlights the central role of the United States as the issuer of the world's dominant reserve currency and the resulting pattern of "exorbitant privilege" and "exorbitant duty". These mechanisms create valuation asymmetries across national balance sheets: core economies earn excess returns on risky assets while periphery economies bear valuation losses during crises (see, also, e.g., Rossi, 2025b). Hale and Juvenal (2022) extend this reasoning to the COVID-19 shock, suggesting that even temporary currency movements can cause major valuation shifts in external balance sheets, with developing countries often absorbing losses through the debt channel.

The conceptual lens of currency hierarchy proposed by De Paula, Fritz and Prates (2024) provides another, institutional, explanation for the recurrence of debt over-accumulation. Under the contemporary regime of financial globalization, emerging markets have gained partial access to domestic-currency financing, but this has not eliminated their subordinate position within the global monetary order. Instead, it has created what these authors term "original sin redux": new channels of vulnerability in which domestic-currency liabilities are held by foreign investors, exposing local markets to abrupt capital reversals and exchange-rate shocks. The combination of these structural hierarchies, valuation asymmetries, and behavioral differences reinforces the duplicative dynamic observed in external debt statistics, where nominal debt growth systematically exceeds what is justified by real external financing needs.

Together, these findings imply that the apparent over-indebtedness of many economies reflects not only domestic policy choices but also the institutional design of the international monetary system.

In this regard, Schmitt (2014) (see also, e.g., Cencini and Rossi, 2015; Cencini, 2017; Cencini, 2023; Bradley, Carrera, Cencini, Gnos and Rossi, 2025) critiques current international financial accounting practices, focusing on the discrepancy between the actual stock of gross external debt and the theoretically justified level based on standard macroeconomic identities. Specifically, it highlights a persistent overaccumulation in gross external debt figures, which would be nearly twice as high as what would be warranted by fundamental external balances. This anomaly reveals not only a methodological inconsistency but also a structural flaw in the current framework governing external debt accumulation (on this literature, in particular, see Schmitt, 1973, 1977, 1984, 1985, 1987, 1988; Cencini and Schmitt, 1991; Schmitt, 2000, 2003, 2004, 2012, 2014).

Schmitt (2014) argues that actual observed debt increases often far exceed the amount explained by Equation (1). The result is a persistent, systematic over-accumulation of gross external debt. The key contribution of Schmitt (2014) is the identification and explanation of what the author calls a "pathological duplication" in external debt accounting. According to the argument, the same economic transaction (specifically, the financing of a current account deficit) gives rise to two layers of debt. One is a real economic obligation, and the

other is a financial obligation, both recorded separately in national accounts and debt statistics.

The first layer of debt arises at the level of the domestic economy. When a country imports more than it exports, it incurs a debt in real terms. Real debt is a macroeconomic concept referring to the obligation of an economy to produce and export real assets (commercial goods and/or financial assets) to pay for its net imports. The second layer emerges at the level of the country (the banking system as a whole), which must sustain the monetary burden of this external imbalance. Monetary debt is incurred by a net importing country having to obtain the key currency needed to pay foreign exporters.

The result is a duplication of the debt burden: a single external imbalance gives rise to both a private liability (of residents, i.e. households, firms, and public administrations) and a sovereign liability (of the banking system as a whole). These are treated as distinct and additive in international financial statistics, even though they correspond to the same underlying transaction. This would explain why gross external debt appears consistently too much high in international statistics.

Under current international financial accounting rules, both types of debt are recorded on the liabilities side of the external balance sheet. Yet, from a macroeconomic standpoint, they are two representations of the same underlying reality: the need to repay external deficits. The current system fails to consolidate them, leading to the artificial inflation of total external liabilities.

This flaw has significant implications for policy and analysis. For instance, a country may appear excessively indebted and vulnerable to external shocks, when in fact part of the recorded debt is merely the mirror image of an already-accounted-for real economic obligation. The resulting duplication can distort assessments of sovereign risk, creditworthiness, and external sustainability.

This structural flaw in accounting leads to exaggerated perceptions of external vulnerability. When external debt is perceived as too much high, international observers, rating agencies, and policymakers may draw overly pessimistic conclusions about a country's financial health. This, in turn, may restrict access to international capital markets or impose higher borrowing costs, exacerbating the very vulnerabilities the accounting aims to reveal.

Furthermore, the identity underscores the tension between exchange rate policy and debt accumulation. A country that is simultaneously running a current account deficit and accumulating foreign reserves (for instance, to manage currency appreciation) effectively compounds its external liabilities. Since the country is not earning the foreign currency through trade, it must borrow it. Thus, reserve accumulation under deficit conditions becomes a source of increased external debt, not a hedge against it.

In other words, positive reserve variation in the presence of a current account deficit is not evidence of economic strength. It reflects not an earned surplus but a financed position, supported by increased external indebtedness. This distinction is crucial for interpreting macroeconomic indicators and for designing prudent economic policy.

At present, it seems that gross external debt is nearly twice as large as it should be due to systemic duplication in debt accounting. This overaccumulation stems from the dual registration of debt, both as a real economic obligation of the domestic economy and as a monetary liability of the country as a whole. Therefore, whenever the same current account deficit gives rise to two parallel debt entries, a fundamental asymmetry in international macroeconomic accounting is revealed. The consequences of this duplication are profound: mismeasured debt burdens, misinformed policy decisions, and distorted assessments of external vulnerability.

In terms of policy recommendations, the previous argument calls for a plan to restructure the way in which external debt is recorded and financed. The current decentralized system, in which both private and public actors engage in international borrowing to finance the same external imbalance, generates an over-indebtedness that is both logically unjustified and unjustifiable. A sounder system would consolidate real and financial payments, ideally through a centralized institution or mechanism.

For instance, a public intermediary, such as a national stabilization fund or central borrowing agency, could absorb all external financing needs related to current account deficits. This institution would be the sole borrower on behalf of the economy, eliminating parallel private and sovereign debt creation. In this way, the duplication would be avoided, and external debt would more accurately reflect the true economic obligation incurred (see Schmitt, 2017; Cencini, 2017; Carrera and Cencini, 2024; Bradley, Carrera, Cencini, Gnos and Rossi, 2025).

A further solution (see Schmitt, 1973, 1984; Rossi, 2017; Rossi, 2019; Cencini, 2023; Carrera, 2024; Carrera and Cencini, 2024; Bradley, Carrera, Cencini, Gnos and Rossi, 2025; Rossi, 2025a) consists in the creation of a genuine international payment system designed to overcome the structural flaws of the present one. The proposal envisions the establishment of a supranational clearing institution, functioning as an international central bank, capable of issuing its own unit of account. This international currency would not replace existing national monies nor serve as a reserve asset; instead, it would operate exclusively as a common denominator to clear transactions multilaterally among participating countries. In this way, the duplication of debt resulting from the simultaneous registration of real and monetary liabilities would be eliminated at its source.

The central feature of such a system lies in the multilateral clearing mechanism. Analogous to the role played by a national central bank in domestic settlements, the international clearing institution would guarantee that all cross-border payments are recorded in a coherent and symmetrical manner. Net commercial imports would be automatically matched with corresponding net financial exports, and net commercial exports with equivalent net financial imports, thereby ensuring that international transactions preserve their accounting identity.

Finally, the proposed reform extends national banking techniques to the international domain, ensuring monetary homogenization beyond borders. By preventing the circulation of national currencies outside their originating banking systems and by requiring that settlement take place exclusively in the international clearing unit, the system would eliminate the redundancy that currently inflates global debt statistics. Moreover, it would anchor international payments to a transparent and logically consistent framework, strengthening global financial governance and reducing systemic vulnerabilities. In so doing, it would transform the international monetary order into one that mirrors the coherence already present in national payment systems, while preserving monetary sovereignty at the domestic level.

While such reforms may seem radical, they are grounded in the recognition that the current international monetary architecture structurally inflates debt burdens, distorts risk assessment, and undermines economic sovereignty. Addressing this flaw requires both conceptual clarification and institutional reform. Only by restructuring the way to account for and manage external debt can it be ensured that debt statistics accurately reflect economic realities, rather than amplify them. The call thus is not just for better measurement, but for a more coherent and sustainable architecture for global financial governance.

## 8. CONCLUSIONS

The evidence presented in this study suggests that external debt dynamics in Latin America, and more broadly at world level, are shaped by systematic asymmetries that cannot be fully explained by conventional macroeconomic accounting. Debt accumulation frequently oscillates between under- and over-adjustment relative to the expected benchmark, that is, the accumulation of current account deficits plus borrowed reserves of foreign currencies. Yet, these oscillations are not evenly balanced: aggregate results indicate a structural upward bias, with debt growth persistently exceeding theoretical predictions. On average, both raw and adjusted ratios seem to converge toward duplication, underscoring a pattern of structural over-indebtedness.

This outcome has profound implications for the interpretation of external vulnerability and sovereign risk. If gross external debt is systematically high due to methodological duplication, conventional assessments may exaggerate countries' exposure to external shocks, leading to distorted policy responses and higher financing costs. At the same time, the persistence of over-indebtedness suggests that the problem is not merely statistical but reflects deeper structural forces, including institutional arrangements, financial market dynamics, and policy choices such as reserve accumulation under current account deficits.

Policy implications follow directly from this analysis. First, external debt statistics should systematically incorporate valuation changes and adjustments to avoid mismeasurement and overaccumulation. Second, and

most importantly, external debt duplication constitutes both an empirical anomaly and a structural feature of the current international monetary regime. Addressing it requires not only methodological refinements but also institutional innovation to ensure that external debt measures capture economic reality rather than amplify systemic vulnerabilities. International financial governance requires reform to address the redundancy created by dual layers of debt, real and monetary, arising from the same external imbalance.

#### ACKNOWLEDGMENTS

The authors would like to acknowledge Luís Cárdenas and Paloma Villanueva Cortés for useful suggestions at distinct phases of writing. Responsibility remains with the authors. The authors are well aware that any demonstration of economic phenomena does not arise from empirical analysis, but rather from logical reasoning within the ambit of an internally consistent theory. Accordingly, the present empirical study, whose methodology warrants further refinement and possible improvement, serves primarily to provide numerical confirmation of the underlying macroeconomic discourse and paves the way for future research.

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