When GDP Is Not Enough: Puerto Rico, Statistical Boundaries, and the Limits of National Accounting in a Regional Economy

Jorge A. Arroyo
Independent Researcher
arroyo.jorgeantonio@gmail.com

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Abstract

Puerto Rico exhibits one of the world's largest and most persistent gaps between gross domestic product (GDP) and gross national product (GNP). While the U.S. Bureau of Economic Analysis (BEA) has substantially modernized Puerto Rico's GDP, this paper argues that the core interpretive problem is institutional rather than technical: the island is economically "external" yet statistically "internal" to U.S. survey and accounting architectures, preventing a consistently implemented resident/non-resident boundary across production, income, and financial accounts and thereby obstructing system closure. Drawing on primary-source documentation and official reports from 1989–2023, the paper reconstructs the evolution of Puerto Rico's macroeconomic accounts and shows why GDP modernization alone cannot resolve ambiguity about resident income and external dependence. It concludes by outlining what a credible macroeconomic system would require beyond GDP: outward-looking income-flow accounts, a regional balance-of-payments perspective, and flow-of-funds integration.

1 Introduction: The puzzle of Puerto Rico's GDP–GNP gap

Puerto Rico exhibits one of the largest and most persistent gaps between gross domestic product (GDP) and gross national product (GNP) observed anywhere in the world. For decades, measures of production on the island have exceeded the income accruing to its residents by a wide margin. This divergence is not a short-lived anomaly tied to business cycles or crises; it is a stable structural feature of Puerto Rico's macroeconomic accounts. The gap matters because it sits at the center of how economic performance, living standards, fiscal capacity, and sustainability are interpreted—by policymakers, analysts, creditors, and the public.

At first glance, the puzzle appears technical. A large and growing wedge between GDP and GNP might suggest outdated methods, weak deflation, or mismeasurement of output and prices. This interpretation has motivated repeated efforts to modernize Puerto Rico's production statistics, culminating in BEA-led reforms that aimed to produce *production-side* GDP estimates consistent with international guidelines and comparable to those for the United States and other jurisdictions [1, 2]. Yet even as production measures have been modernized, confusion about what the headline numbers mean has persisted. Growth in GDP has not translated cleanly into growth in resident income, and improvements in statistical technique have not settled debates about welfare, dependence, or economic health. Indeed, the same official modernization materials that emphasize comparability also acknowledge that GNP remains a more meaningful concept for assessing the well-being of Puerto Rican residents when a large share of investment income flows to nonresidents [1].

This paper argues that the puzzle is not primarily technical. Puerto Rico's GDP–GNP gap is best understood as a *statistical boundary problem*. Economically, Puerto Rico behaves like a highly open, externally owned *region* embedded in a larger economy: capital is highly mobile, multinational enterprises dominate key industries, the recorded profitability of foreign-controlled firms is extraordinarily high relative to the local wage base—a hallmark of profit shifting in tax-haven-like jurisdictions [3], profits and interest flow outward to nonresident owners, and federal transfers play a central role in financing expenditure. Statistically, however, Puerto Rico occupies a hybrid position. It is treated as internal to the United States for many administrative purposes, yet excluded from many of the federal statistical programs that underpin U.S. national and state accounts—especially those needed to measure and reconcile *income*, *capital*, and *financial* flows [4, 5]. The result is a misalignment between economic reality and statistical boundaries that makes it easier to modernize measures of production than to measure income allocation and the financial counterparts of cross-boundary

flows.

Seen through this lens, the GDP–GNP wedge is not an error to be eliminated. It is the observable trace of ownership-based income allocation operating within an accounting system that cannot consistently observe the resident/nonresident boundary across the *current (income) account*, the *capital account*, and the *financial/rest-of-the-world accounts*. GDP measures what is produced on the island; GNP measures what accrues to residents. In Puerto Rico, the dominant macroeconomic mechanisms—profit repatriation, reinvested earnings of foreign affiliates, interest payments, and transfer dependence—sit precisely at that boundary. Improving GDP therefore does not, by itself, resolve the interpretive problem, because the outward-looking accounts needed to explain the wedge remain institutionally weak. The underlying issue is not simply the availability of better methods, but the observability of key flows given survey coverage and reporting authority [4, 6].

The paper develops this argument in three steps. First, it clarifies the accounting logic behind the GDP–GNP distinction and explains why outward-looking accounts are structurally necessary in externally owned regions, drawing on the regional accounting tradition associated with Walter Isard [7]. Second, it reconstructs the institutional history of Puerto Rico's macroeconomic statistics from the late 1980s to the present, showing repeated recognition of the same missing element: sustained capacity to measure and reconcile income flows and financial counterparts across the resident/nonresident boundary [8, 9, 10, 11]. Third, it examines what recent GDP modernization has achieved—and what it could not achieve under existing survey and governance constraints—and outlines what a credible macroeconomic system for Puerto Rico would require beyond GDP [4, 12, 13].

To anchor the discussion, the paper draws on primary-source documentation and official reports spanning 1989–2023, including diagnostic evaluations, methodological notes, modernization materials, and oversight-era syntheses. These sources are used descriptively to trace how the accounts evolved, which components were strengthened, and which remained structurally under-observed.

Four figures guide the analysis. Figure 1 provides a conceptual boundary diagram linking territorial production (GDP) to primary income allocation (resident versus non-resident) and to the financial counterparts captured in rest-of-the-world and flow-of-funds accounts. Figure 2 summarizes the statistical boundary mismatch between Puerto Rico's economic reality as a highly open, externally owned region and its treatment within U.S. statistical architectures. Figure 3 illustrates the structure of a minimal flow-of-funds matrix that makes cross-boundary income flows and their financial counterparts explicit through a dedicated rest-of-the-world column. Figure 4 presents an illustrative from-whom-to-whom creditor–debtor matrix to show why counterparty structure matters for diagnosing dependence and

why current non-observability constrains policy analysis.

The remainder of the paper proceeds as follows. Section 2 reviews the accounting mechanics underlying the GDP–GNP wedge and introduces the regional perspective that motivates outward-looking accounts. Section 3 frames Puerto Rico's experience as a statistical boundary problem. Section 4 reconstructs the institutional history of the island's macroeconomic accounts. Section 5 evaluates what recent GDP modernization fixed—and what it could not. Section 6 explains why balance-of-payments and flow-of-funds perspectives remain analytically central. Section 7 outlines the components and governance of a credible macroeconomic system for Puerto Rico. The concluding section draws broader lessons for territories and regions embedded within larger statistical jurisdictions.

2 Accounting basics, with a regional twist

Puerto Rico's case turns on a small set of accounting distinctions that are standard in principle but unusually consequential in practice: (i) the difference between *territorial production* and *resident income*; (ii) the *rest-of-the-world* (ROW) account as the outward-facing complement to domestic production accounts; and (iii) the *financial counterparts* required to close the system when cross-boundary income flows are large. The goal here is not to rehearse national accounting doctrine, but to establish why even a well-modernized GDP can coexist with persistent interpretive ambiguity when outward-looking income and financial accounts are weak.

2.1 GDP, GNP/GNI, and the ownership-based allocation of income

In the System of National Accounts (SNA), gross domestic product (GDP) is a *territorial* measure: it summarizes value added generated within the domestic territory, regardless of who owns the underlying assets or receives the associated primary income.[1] GDP can be compiled from production, income, or expenditure approaches; for present purposes, the key point is that it is anchored to *where* production occurs.

Gross national product (GNP)—or, in contemporary SNA language, gross national income (GNI)—shifts the focus from *where production occurs* to *to whom primary income accrues*. The two terms are conceptually equivalent in this context; following common practice in the applied and historical literature, this paper uses "GNP" and "GNI" interchangeably, with

[1] Throughout, "resident" refers to economic residency in the SNA sense rather than legal status.

"GNI" understood as the SNA-consistent terminology. In aggregate,

$$\text{GNI} = \text{GDP} + \text{NPIA}, \tag{1}$$

where NPIA is *net primary income from abroad* (net factor income from abroad in older usage): primary income receivable by residents from non-residents minus primary income payable by residents to non-residents.[2]

In externally owned economies, NPIA can be persistently negative because a large share of locally generated operating surplus accrues to non-resident owners as property income. This is not a statistical anomaly; it is the ownership-based allocation mechanism operating as the concepts intend. More generally, multinational enterprise (MNE) organization and globalization weaken the link between the geography of production and the geography of income, creating interpretive tension whenever GDP is treated as a proxy for resident welfare or policy capacity [14]. For Puerto Rico, the implication is immediate: high (or rising) GDP can coexist with weak resident income growth if locally generated value added is systematically allocated outward.

2.2 Puerto Rico's GDP–GNP gap in historical perspective

The structural nature of Puerto Rico's GDP–GNP gap has been documented for decades in the local and comparative literature. From an accounting standpoint, both GDP and GNP follow standard definitions: GDP records the value of goods and services produced within the territory, while GNP records the value of goods and services produced by resident factors of production [15]. What distinguishes Puerto Rico is the magnitude and persistence of the wedge between the two. By the mid-2010s, GDP exceeded GNP by more than thirty percent, a gap that standard accounting logic attributes primarily to the repatriation of profits, interest, royalties, and other property income associated with foreign direct investment and externally held debt [16, 17, 18, 19]. Far from being a recent development, official U.S. government studies and Puerto Rican economic histories trace the widening of this gap back to the 1960s and 1970s, when profit remittances and interest payments to non-residents began to grow faster than resident income [18, 20]. In this sense, the GDP–GNP gap has long been recognized as a structural feature of Puerto Rico's externally owned growth model rather than a transitory measurement problem.

[2] Primary income includes compensation of employees and property income (interest, dividends, reinvested earnings, rents). The composition matters for both measurement and interpretation.

2.3 The wedge is the boundary at work, not a "measurement error"

Public debate sometimes treats a large GDP–GNP gap as evidence that the statistics are "wrong." In accounting terms, that inference is often backwards: the wedge is frequently the *signal* that the production boundary and the income-accrual boundary do not align under cross-border (or cross-jurisdictional) ownership.[3]

Let VA denote domestic value added generated on the territory. GDP summarizes VA. But the decomposition of VA into primary incomes depends on contractual and ownership relations: wages to labor; taxes on production and imports; and operating surplus/mixed income to owners. When owners are predominantly non-resident, property income payable to non-residents rises, pushing NPIA negative and widening the gap between GDP and GNI.

For Puerto Rico, this logic has been acknowledged in official diagnostic work. Even while recommending GDP as the *featured* measure for comparability, BEA noted that GNP growth can be more meaningful for assessing changes in residents' economic well-being when a large portion of investment income is paid out to non-resident investors [1]. The point for the argument that follows is that improved deflators and benchmarking can strengthen GDP without dissolving the wedge, because the wedge is an ownership-and-boundary phenomenon.

2.4 The rest-of-the-world account: the outward-looking complement to domestic production

If GDP and GNI distinguish territory from residency, the ROW account operationalizes that distinction within a closed system. In SNA logic, the ROW sector records all transactions between resident and non-resident units: trade in goods and services, primary income flows, secondary income (transfers), and the associated financial transactions that finance any current-and-capital account balance [21, 22].

A convenient organizing identity is:

$$(\text{Current Account} + \text{Capital Account}) \;=\; \text{Net Lending/Borrowing} \;=\; -\,\text{Financial Account}, \tag{2}$$

where net lending/borrowing indicates whether the domestic economy, in aggregate, supplies funds to the ROW (net lender) or requires funds from the ROW (net borrower) [21, 22]. Sign conventions vary across manuals; the substantive point does not: systematic balances

[3] Some literatures refer to this as an "NFIA boundary" issue (net factor income from abroad); throughout this paper we use the contemporary SNA term NPIA (net primary income from abroad), which is conceptually equivalent to NFIA in older usage.

in current-and-capital transactions must be matched by financial flows and, over time, by changes in the international investment position (IIP), i.e., the stock of external assets and liabilities [21].

This is the first "regional twist" that matters later. A region can appear strong in a production account (GDP) while the mechanisms shaping resident welfare operate primarily through the ROW interface: profit repatriation, intra-firm charges, debt service, and transfers. When the ROW account is missing, discontinuous, or weakly articulated with domestic sector accounts, analysts lose the ability to distinguish (i) strong production with large income leakage from (ii) weak production with strong resident income retention, or to reconcile income flows with the financial positions they imply. Puerto Rico's documentary record repeatedly flags this fragility: outward-looking components (income flows, external positions, and flow-of-funds integration) degrade first under institutional and data constraints [8, 23, 6].

2.5 Why GDP is a poor welfare proxy in externally owned regions

GDP was never designed to be a comprehensive welfare metric, and the SNA makes no claim that it is [14]. Puerto Rico highlights a specific structural channel: externally owned production can raise territorial output while leaving resident disposable income, wealth accumulation, and fiscal room constrained by primary income outflows.

The implication is not that GDP is uninformative. GDP answers the question: *How much value added is produced on the territory?* In regions with high factor mobility and heavy external ownership, the welfare-relevant question is often closer to: *How much primary income accrues to residents, and what external financing or asset accumulation accompanies the remainder?* Answering that requires resident-income concepts (GNI/GNP) and outward-looking accounts that measure primary income flows and their financial counterparts [1, 24].

2.6 Residency, nationality, and embedded regions

In highly integrated jurisdictions, "resident" (SNA) and "national" (ownership consolidated at the group level) need not coincide. Tissot frames this as a distinction between residency-based statistics, which track activity within boundaries, and nationality-based presentations, which consolidate exposures and ownership irrespective of geography [25]. The distinction is salient when production is dominated by corporate groups whose economic ownership, risk, and profit allocation are organized globally. A useful empirical signature of this divergence is the "excess profitability" of foreign-controlled firms in tax-haven-like jurisdictions, measured as unusually high profit-to-wage ratios relative to local firms—a pattern documented for Puerto Rico in global profit-shifting accounts [3]. From a monetary–geography perspective,

the defining criterion for a capital flow is that the transacting parties are residents of different geographical units, making these ownership-linked financial transactions inherently spatial even when they are obscured by high levels of statistical aggregation [26].

This matters for the paper's diagnosis in Section 3. Puerto Rico behaves economically like an open region with large cross-boundary flows, but it is embedded in U.S. administrative and survey architectures in ways that can prevent consistent observation of the resident/non-resident boundary for key income and service flows. In that setting, GDP is comparatively straightforward to modernize because it is anchored to territorial production, while resident-income and ROW accounts require outward-looking measurement capacity that may be institutionally misaligned with the island's hybrid status [2, 4, 5].

2.7 Isard's regional accounting perspective: why outward-looking accounts are structural

Regional science makes explicit what national accounting often leaves implicit: a region is not a closed container, so it cannot be understood solely through internal production and expenditure. Isard argues that regional analysis must "look outward as well as inward" and emphasizes that money flows are financial counterparts of commodity and service flows; balance-of-payments style statements are therefore central for assessing regional solvency and economic health [7].

This perspective is used here as an organizing logic, not a substitute for institutional explanation. In deeply integrated settings, transactions that are internal at a national scale are external at the regional scale. As a result, the ROW account and its associated financial accounts are not optional "satellite" information; they are the accounting machinery that translates production into resident income, net lending/borrowing positions, and changes in wealth.

2.8 From production to finance: why flow-of-funds completes the picture

National income accounts summarize non-financial transactions; they do not, by themselves, show how sectoral surpluses and deficits are financed.[4] Flow-of-funds (financial accounts) provide the bridge by tracking financial transactions across sectors and instruments, enforcing the organizing principle that total sources of funds equal total uses of funds [27, 28].

[4] In SNA terms, the capital account produces net lending/borrowing, which should be mirrored by the financial account; in practice, discrepancies arise.

A classical sectoral identity is:

$$(\text{Saving} - \text{Investment}) \;=\; \text{Net acquisition of financial assets} \;-\; \text{Net incurrence of liabilities.} \tag{3}$$

In an integrated system, the left-hand side is obtained from current and capital accounts and the right-hand side from financial accounts. When a region exhibits large primary-income outflows to non-resident owners, a fully articulated system should reveal the financial counterparts: dividend and reinvested-earnings payments (and the equity-claim counterpart of reinvested earnings), intercompany lending, debt service, and changes in external asset/liability positions [21, 29, 30].

The flow-of-funds literature emphasizes that its original ambition was to connect real activity to the circulation of payments and financial constraints—a connection that can be obscured when financial accounts are truncated to "lender-borrower" snapshots rather than richer "payer-payee" relations [31]. Methodologically, even imperfect matrices can be informative: discrepancies can be diagnostic, and in data-poor settings condensed matrices can be constructed to reveal hidden external leakages and residual imbalances [32, 33, 34].

2.9 Transition: what this implies for Puerto Rico

The takeaway is simple: modernizing GDP strengthens measurement of *territorial production*, but the interpretive questions that dominate Puerto Rico's debate concern *resident income allocation* and the *external financial counterparts* of that allocation. The next section therefore treats Puerto Rico's GDP–GNP wedge as a statistical boundary problem: a mismatch between the economic reality of a highly open, externally owned region and a statistical architecture that does not consistently observe and reconcile the outward-looking accounts required to interpret that reality.

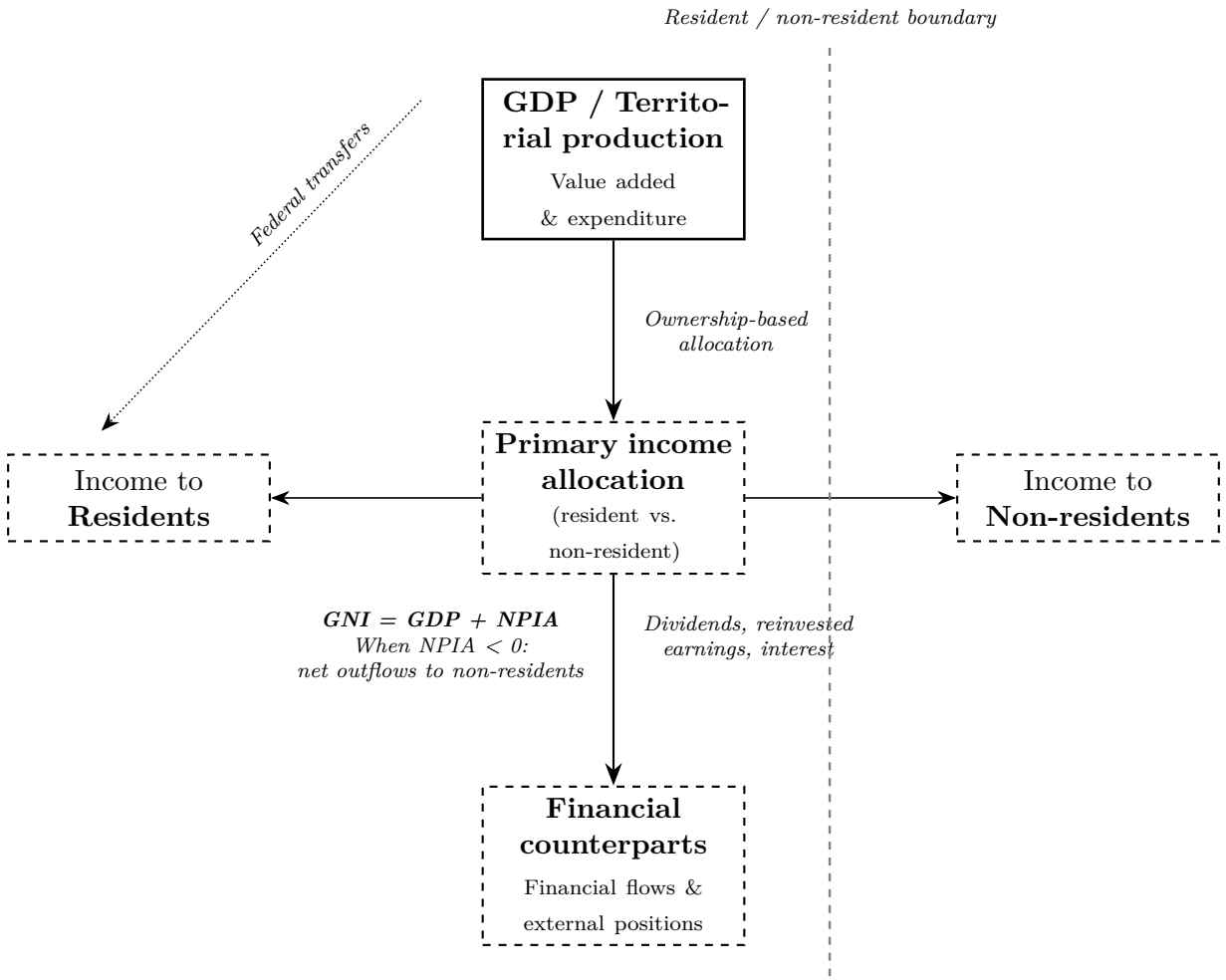


Figure 1: Conceptual boundary diagram linking territorial production (GDP) to primary income allocation and to the financial flows and positions that constitute the rest-of-the-world account [35, 36]. The diagram shows how federal transfers flow directly to residents without passing through territorial production [36], and how the GDP–GNI identity depends on net primary income flows across the resident/non-resident boundary [26]. Persistent discrepancies between primary income flows and their financial counterparts, when the system is extended to include a rest-of-the-world account, are interpreted as evidence of resident–non-resident boundary failure [37, 36].

3 Puerto Rico as a statistical boundary problem

The persistent GDP–GNP gap in Puerto Rico—and the recurring disputes over what the island's macroeconomic indicators can legitimately be taken to mean—are best understood as a *statistical boundary problem*. The issue is not a defect in the System of National Accounts (SNA), nor simply a legacy of outdated techniques. Rather, it reflects a mismatch between economic integration and statistical coverage. Economically, Puerto Rico behaves like a highly open, externally owned *region* embedded in a larger economy. Statistically, it is treated as *internal* to the United States in key administrative and survey architectures, even as it is excluded from several federal statistical programs that underpin U.S. national and state accounts [4, 5]. This hybrid arrangement makes it possible to modernize measures of production while leaving resident income allocation and the financial counterparts of cross-boundary flows structurally under-observed.

A useful way to frame the boundary problem is to distinguish between what can be compiled from *territory-based information* and what is required to *close the system consistently*. Production accounts and supply–use balancing can, in principle, be constructed from data on output, intermediate consumption, and expenditure by activities located on the island. By contrast, the distribution of primary income, the rest-of-the-world (ROW) account, and the accumulation and financial accounts depend on a consistently implemented resident/non-resident boundary across units, transactions, and counterparties [14]. That requirement becomes especially demanding in economies dominated by multinational enterprises (MNEs), where income allocation hinges on ownership, control, and intra-group transactions. Puerto Rico's statistical system is therefore better positioned to measure *production on the territory* than *who ultimately receives the income generated there*—and how that allocation is mirrored in financial flows and positions.

3.1 Economic openness without statistical exteriority

Puerto Rico exhibits exceptionally large cross-boundary flows relative to its domestic economic base. Goods exports are dominated by foreign-owned manufacturing, while profits, interest, royalties, and intra-firm service charges flow outward to non-resident owners. Labor mobility with the U.S. mainland is effectively unrestricted, capital is highly mobile, and federal fiscal transfers materially finance domestic expenditure. In economic terms, these features place Puerto Rico squarely within the class of externally connected regional economies emphasized in the regional science tradition [7, 38]. From a monetary–geography perspective, the defining feature of such openness is not net trade balances but the prevalence of *gross* financial flows between residents of different geographical units, which are inherently spatial and often

decoupled from production-based aggregates [26].

Statistically, however, Puerto Rico is not positioned as an external economy in the way a sovereign small open economy is. It is excluded from several core federal statistical programs that underpin the U.S. accounts, yet it is also not endowed with a fully resourced autonomous statistical system capable of replicating those functions locally [4, 5]. The resulting architecture is neither fully national (in the sense of comprehensive federal coverage) nor fully external (in the sense of a standalone international statistical unit). Puerto Rico is, in effect, *economically external but statistically internal*. This condition closely matches critiques of "methodological nationalism," which emphasize that macroeconomic systems organized exclusively around national boundaries can obscure the cross-unit capital-flow relationships that drive uneven regional dynamics [26]. A concrete illustration of this hybridity is the Section 936 era: Puerto Rico was a U.S. possession yet treated as "foreign" for key tax purposes, which facilitated large-scale profit shifting into Puerto Rican affiliates and helped inflate territorial production relative to income accruing to residents [39].

This hybrid status matters because the outward-looking components of an integrated accounting system—net primary income, ROW accounts, balance-of-payments-style statements, direct investment positions, and flow-of-funds matrices—are precisely those that require clear resident/non-resident delineation and consistent coverage across institutional units. Where those conditions are absent, production accounts can be strengthened while income and financial accounts remain fragile. Figure 2 summarizes the key dimensions of this mismatch between economic reality and statistical treatment.

3.2 Free factor mobility and asymmetric observability

In a sovereign economy, the resident/non-resident distinction is reinforced by border controls, customs systems, and statistical production processes explicitly designed to capture cross-border transactions. In Puerto Rico's case, free factor mobility with the mainland weakens these practical enforcement mechanisms. Transactions that would be recorded as external in an international context—such as intra-firm services, interest payments, and profit remittances—often occur within corporate, banking, and administrative systems consolidated at the U.S. level.

The result is asymmetric observability. Production on the island can often be inferred from establishment-level information, administrative records, and sectoral proxies. By contrast, allocating operating surplus between resident and non-resident owners requires information on ownership structures and intra-group transactions typically collected through specialized international investment and income surveys. When Puerto Rico falls outside those survey

architectures, these flows must be approximated indirectly or remain partially unobserved [8, 2].

This asymmetry helps explain why GDP modernization is institutionally feasible while GNP/GNI remains difficult to compile on a consistent basis. Measuring production is territorial; measuring income allocation is ownership-based. In an embedded region, the latter is where the statistical boundary becomes most fragile—especially under modern globalization, where economic ownership rather than legal location governs income attribution [14].

3.3 Why GDP is easier to modernize than GNP in an embedded region

The differential feasibility of GDP and GNP measurement follows directly from their informational requirements. GDP aligns with the territorial principle and can be constructed using production, expenditure, or hybrid approaches even when income-side data are incomplete. For Puerto Rico, BEA-led modernization therefore concentrated on updated deflators, benchmarking to the Economic Census, chain-weighted indexes, and capitalization of intellectual property products—improvements focused squarely on production and expenditure domains [1, 2].

GNP, by contrast, requires reliable estimates of net primary income vis-à-vis the rest of the world. That, in turn, requires systems capable of (i) distinguishing resident from non-resident owners, (ii) identifying intra-firm service and property-income flows, and (iii) reconciling income flows with corresponding financial transactions and positions. In integrated SNA logic, these linkages are enforced by the sequence of accounts and the quadruple-entry bookkeeping principle [14]. When the resident/non-resident boundary cannot be implemented consistently in data collection, that connective tissue weakens: production totals may be coherent, but income distribution and external financing remain under-articulated.

Across decades of diagnostic work, the conclusion is consistent: the data required for outward-looking income and financial accounts are weak, incomplete, or discontinued not because the concepts are unclear, but because the institutional machinery to collect them is misaligned with Puerto Rico's statistical status [8, 23, 6]. In practical terms, Puerto Rico can be made more comparable on the production side while remaining structurally constrained in measuring resident income and its financial counterparts.

3.4 Survey boundaries and non-observability by design

A defining feature of the boundary problem is that key variables are not merely noisy; they are *non-observable by design* within the prevailing survey architecture. BEA documentation

repeatedly notes that Puerto Rico is excluded from Census Bureau annual business surveys and from BLS price programs, requiring reliance on indirect indicators, local administrative data, and mainland proxies [4, 5, 12].

These exclusions are concentrated at the resident/non-resident interface. Without comprehensive international investment surveys, the stock of foreign direct investment—the asset base that generates property-income outflows—cannot be measured directly and must be inferred through perpetual-inventory methods or residual balancing [6]. Without systematic service-trade and freight-and-insurance measurement, the ROW account remains incomplete, and discrepancies accumulate as "unknown transactions" rather than analytically interpretable residuals [23].

The system can therefore deliver an increasingly coherent picture of production on the island while systematically underrepresenting the outward flows that define Puerto Rico's macroeconomic dynamics. This is the statistical boundary problem in operational form.

3.5 Comparison with sovereign small open economies

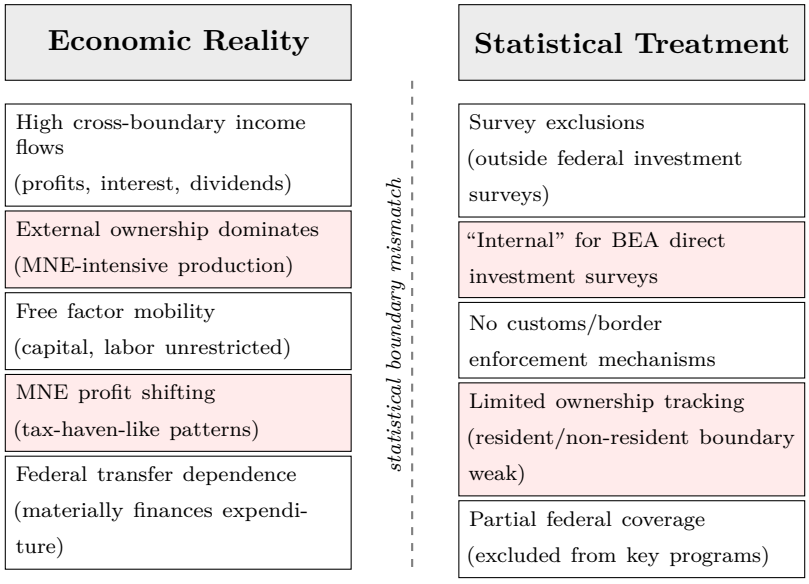
A comparison with sovereign small open economies helps clarify what is distinctive about Puerto Rico's situation. Small open states also experience large cross-border flows and can exhibit sizable GDP–GNI gaps. The difference is institutional. As sovereign statistical units, they maintain dedicated balance-of-payments and international investment position frameworks and can articulate the rest of the world as an explicit sector within the accounting system [21, 22]. The sequence of accounts links production, income distribution, saving, accumulation, and balance sheets through enforced balancing items [14], effectively closing the "money circuit" of the economy [35].

Puerto Rico, by contrast, lacks a fully articulated external sector within its official macroeconomic accounts, not because the need is unrecognized, but because the statistical boundary is institutionally misaligned. As [37] note, statistical architectures are not neutral reflections of reality but are "rhetorical" constructions that "build" a reality based on the worldviews of the agencies involved. The island is too open to be analyzed as a closed regional economy, yet too embedded to be treated as an external economy in the standard international statistical sense. This predicament is a direct consequence of "methodological nationalism" in official statistics, which obscures the structural exteriority of regional economies embedded within larger jurisdictions [26]. The GDP–GNP wedge is therefore not an anomaly to be explained away; it is the observable trace of this boundary mismatch.

3.6 Implications for interpretation

Recognizing Puerto Rico's macroeconomic challenges as a statistical boundary problem reframes several persistent debates. First, it clarifies why repeated technical fixes to GDP do not resolve confusion about growth, welfare, or fiscal capacity: the main disputes concern income allocation and external dependence, not production measurement. Second, it explains why income-based and financial narratives—profit extraction, transfer dependence, debt dynamics—remain difficult to anchor empirically even as production statistics improve, because the relevant flows sit at the resident/non-resident interface. Third, it shifts attention from isolated indicators to the architecture of the accounting system itself, and to the missing outward-looking accounts required to connect production to distribution and finance.

This diagnosis sets up the historical analysis that follows. Section 4 reconstructs how this boundary problem has been recognized, revisited, and partially addressed since the late 1980s, and why outward-looking accounts have repeatedly proven the hardest component to sustain.



Interpretation: Puerto Rico exhibits the economic characteristics of a highly open, externally owned regional economy (left column), but the statistical infrastructure treats it as partially internal to the U.S. system (right column). This hybrid status makes production measurement feasible while leaving income allocation and financial flows structurally under-observed [35]—a consequence of what has been described as "methodological nationalism" in macroeconomic accounting [26]. Shaded rows highlight the mechanisms where the institutional "world view" of the statistical agencies [37] creates the most significant blind spots in the GDP–GNP wedge.

Figure 2: The statistical boundary mismatch: Puerto Rico's economic reality versus its treatment within U.S. statistical architectures. The misalignment between economic exteriority and statistical interiority [26] explains why GDP can be modernized by the BEA while outward-looking income and financial accounts—which depend on a different institutional architecture [36]—remain constrained.

4 A short institutional history of Puerto Rico's macroeconomic accounts

Puerto Rico's macroeconomic accounting challenges have been diagnosed repeatedly for nearly four decades. Despite changes in context and actors, the documentary record shows a remarkably stable pattern: (i) recurring recognition that outward-looking accounts—income flows, a coherent rest-of-the-world articulation, and financial counterparts—are indispensable in a highly externally connected regional economy; (ii) episodic efforts to modernize methods, classifications, and benchmarks; and (iii) persistent institutional fragility—survey coverage gaps, low compliance, and limited continuity—that has constrained sustained system-building. (See, e.g., 8, 9, 1, 4.) Consistent with the SNA emphasis on boundary coherence and system closure [14], this section reconstructs that history in a series of episodes, emphasizing what each phase *produced* and what it *left structurally unmeasured*.

4.1 Baseline diagnosis and early boundary frictions (Parker, 1987)

Robert Parker's 1987 assessment provides an institutional baseline for problems that recur throughout the record. On the technical side, it documents the persistence of an obsolete valuation period (1954) and recommends updating the base year to align with U.S. practice and international guidance [8]. On the institutional side, it records deteriorating cooperation from U.S. statistical agencies in providing accurate data—an early indication of the boundary frictions associated with Puerto Rico's hybrid statistical position [8].

Most importantly for the argument of this paper, Parker foreshadows a feasibility divide between GDP and GNP. He notes that, owing to missing source data for the services component of net exports, it may be feasible only to calculate GDP rather than GNP [8]. The implication is structural rather than temporary: production-oriented measures can be improved even when outward-looking income allocation and service-trade measurement remain constrained.

4.2 Early outward-looking and flow-of-funds (1980s)

By the late 1980s, Puerto Rico's institutions had already identified a key missing layer: a financial-accounting framework capable of linking income and saving to changes in assets and liabilities, and of treating the *rest of the world* as an explicit counterpart sector. The 1989 *Estudio de Flujo de Fondos* is a pivotal marker of this recognition. It characterizes Puerto Rico as having relatively developed income and product accounts while lacking the flow-of-funds accounts needed to complete a coherent macroeconomic system [9].

Two features are diagnostically important. First, the report treats the financial system as the primary channel through which Puerto Rico articulates with the U.S. economy, anticipating the boundary logic developed later. Second, it identifies an atypical sectoral configuration—corporations as net suppliers of funds and households as net users—underscoring the importance of external ownership and financing structures [9]. The report also flags the incompleteness of the rest-of-the-world sector and the need for balance-of-payments detail to close the accounts. The missing element, even at this early stage, is not GDP *per se* but the outward-looking sequence required for reconciliation.

This ambition was consistent with the original conception of financial accounts in the United States, rather than a Puerto Rico–specific deviation. Early "moneyflows" frameworks, developed by Copeland, were explicitly designed to trace the circulation of funds by integrating real and financial transactions across sectors, treating income payments and financial flows as inseparable components of a single accounting circuit. Subsequent institutional simplifications—notably the shift in 1959 toward higher-frequency publication—dropped much of this non-financial payment detail, prioritizing timeliness over comprehensive system closure and thereby weakening the visibility of outward-looking linkages [37]. Puerto Rico's late-1980s flow-of-funds initiative can thus be understood not as an anomaly, but as a continuation of an accounting tradition that was increasingly marginalized within standard U.S. statistical practice.

The same outward-looking logic appears in contemporaneous regional-science work. Isard emphasizes that regions require outward-looking tools—commodity flows, money flows, and balance-of-payments statements—to assess solvency and economic health, and he illustrates this logic using Puerto Rico's mid-century balance-of-payments-style data [7]. The relevance of this perspective lies not in nostalgia but in continuity: outward-looking accounting in Puerto Rico was once treated as both feasible and central, even as institutional evolution elsewhere made such detail progressively harder to sustain.

4.3 Diagnostic phase: technical fragility and boundary misalignment (2010–2011)

The 2010–2011 diagnostic phase marks a shift from incremental critique to systemic diagnosis. Independent technical reviews described an apparatus whose internal coherence was fragile and whose data foundations were methodologically obsolete.

Werling's evaluation—prepared by Jeff Werling (Inforum) as an external technical reviewer of the Planning Board's macro-modeling system—documents failures of basic accounting consistency: key aggregates were determined independently rather than constrained by

accounting identities [11]. Beyond internal fragility, Werling identifies a boundary-consistent structural issue: prices and other key variables were driven by autoregressive processes or U.S. proxies with little domestic feedback. The system effectively treated Puerto Rico's internal economy as an appendage of an external driver rather than as a system with observable internal mechanisms [11]. The absence of producer price information further reinforced reliance on mainland proxies [11].

Planting's companion evaluation—authored by Mark Planting (a former BEA economist) as an external audit of Puerto Rico's national accounts—focuses on the commodity flow method used to estimate consumption and investment. It documents a production-to-final-demand mapping based on fixed proportions from an outdated input–output table, applied to a domestic supply series inferred largely from export movements [10]. Institutionally, this made the external sector the implicit driver of internal measurement. Planting also identifies circularity between the input–output framework and the national accounts, weakening benchmarking discipline, and recommends adopting GDP as the featured statistic for comparability while retaining GNP as an analytically important secondary measure [10].

The BEA's 2011 evaluation consolidates these diagnostics into an official modernization blueprint. It documents severe obsolescence (fixed-weighted indexes with a 1954 base) and recommends shifting to GDP as the featured measure to facilitate comparability [1]. At the same time, it explicitly acknowledges that GNP remains the more meaningful concept for assessing residents' economic well-being when a large share of investment income is paid to non-residents [1]. The tension between comparability and welfare relevance is thus made explicit.

4.4 Structural critique and the politicization of the wedge (2015–2016)

By the mid-2010s, Puerto Rico's macroeconomic statistics became entangled with a broader crisis of governance and credibility. MacEwan and Hexner argue that reliance on antiquated price bases rendered inflation-adjusted measures unreliable and that GDP is a poor measure of Puerto Rican economic health insofar as it includes profits of firms based outside Puerto Rico [24]. Their critique foregrounds mechanisms central to the GDP–GNP wedge—transfer pricing and the location of intellectual property ownership—and links statistical reform to institutional legitimacy and oversight capacity.

In this phase, the wedge is no longer treated primarily as an analytical nuance. It becomes a focal point of public and policy debate about what the numbers can support—fiscal planning, debt restructuring, and credible economic narratives. This shift increases the political value of

producing a comparable GDP figure even if the outward-looking accounts needed to interpret resident welfare and dependence remain underdeveloped.

4.5 BEA modernization and the production of comparable GDP (2019–2023)

The BEA modernization phase operationalizes the 2011 blueprint. The 2019 release of prototype expenditure components positions the project as a step toward GDP statistics consistent with international guidelines and comparable to other U.S. jurisdictions and countries [2]. Methodologically, it confirms the adoption of Fisher chain-weighted price and quantity indexes, formally ending decades of fixed-base deflation.

Two features are central for the boundary argument developed in Section 5. First, BEA emphasizes that Puerto Rico is excluded from most major federal surveys used to estimate U.S. GDP, making cooperation from Puerto Rico institutions essential [2]. Second, the prototype estimates highlight an externally oriented production structure, including sustained goods trade surpluses dominated by pharmaceuticals and organic chemicals—stylized facts that production accounts alone cannot interpret in welfare or financial terms [2].

The 2020 technical note and subsequent documentation make the structural constraints explicit by listing key data sources from which Puerto Rico is excluded, including Census annual surveys and BLS price programs, and by noting reliance on local administrative data to fill federal gaps [4, 12]. The 2021 fact sheet further clarifies that Puerto Rico GDP cannot be estimated using state-level methodologies and must instead be compiled "as if it were a country," using an expenditure approach [5]. These documents consistently acknowledge that gaps are concentrated at the resident/non-resident interface relevant for income and financial accounts.

Taken together, BEA's materials illustrate a modernization trade-off that is central to this paper: substantial progress in producing comparable GDP can coexist with persistent non-observability of outward-looking income flows and financial positions.

4.6 Oversight-era synthesis and the risk of losing outward-looking accounts

Oversight-era analyses sharpen the system-level stakes. The *Economic Macrodata of Puerto Rico* report prepared for the Financial Oversight and Management Board explicitly frames Puerto Rico as a regional economy with high factor mobility and invokes Isard's outward-looking accounting logic [13]. It warns that adopting BEA methodology as the exclusive official

system risks losing precisely those outward-looking series—balance-of-payments estimates, net returns of non-resident companies, and federal flow data—that are most relevant for interpreting Puerto Rico's economic condition [13].

Earlier Planning Board evaluations document similar concerns and add institutional concreteness. The 2010 evaluation identifies a dedicated *Unidad del Resto del Mundo* within the Planning Board's accounting infrastructure and documents how its output was compromised by missing data, low survey compliance (including voluntary responses to BP-10-type instruments), and a continuing reduction in the number of technicians responsible for producing the series [23]. The same evaluation highlights boundary-specific measurement failures: direct investment position estimates were not published for long periods, administrative records often failed to distinguish resident from non-resident assets and liabilities, and large balancing items labeled as "unknown transactions" emerged when external capital movements could not be identified [23].

Later methodology notes confirm that the core constraint persists: in the absence of direct measurement, direct investment positions are constructed via a perpetual-inventory approach that accumulates flow estimates over time, and the Planning Board continues to rely on partial administrative sources (e.g., tax data and consolidated financial statements) that do not reliably separate domestic from foreign balance sheets [6]. In combination, these sources sharpen the point of §4.6: it is not merely that outward-looking accounts are conceptually desirable; they are the first to degrade when compliance, staffing, and boundary-relevant identifiers fail.

4.7 Summary: repeated recognition of the same missing element

Across the period, the institutional record shows repeated recognition of the same missing element: sustained capacity to measure and reconcile outward-looking income and financial flows. Early assessments identify feasibility constraints that tilt practice toward GDP rather than GNP [8]. Late-1980s work identifies flow-of-funds as the missing layer needed to complete the macroeconomic system [9]. Diagnostic reviews in the 2010s emphasize fragile identities, outdated deflation, and circular benchmarking [11, 10]. BEA modernization produces comparable GDP while candidly documenting survey exclusions and proxy dependence concentrated at the resident/non-resident boundary [2, 4, 5, 12]. Oversight-era synthesis warns that a narrow focus on GDP comparability risks abandoning precisely the outward-looking accounts Puerto Rico most needs [13, 23].

This history motivates the analytical turn of the next section: what modernization fixed in production measurement—and what it could not fix given the statistical boundary constraints

identified here.

5 What BEA fixed—and what it could not

The BEA-led modernization of Puerto Rico's GDP is a substantial methodological upgrade. It replaces obsolete deflation practices, introduces benchmarking and contemporary index-number methods, and improves comparability with other U.S. jurisdictions and with international standards. Yet modernization did not—and, under current institutional constraints, largely *cannot*—resolve the interpretive confusion associated with Puerto Rico's GDP–GNP wedge. The constraint is structural rather than technical. The reforms primarily strengthen measurement on the *production and expenditure* side of the accounts, while Puerto Rico's dominant macroeconomic mechanisms operate through *income allocation across the resident/non-resident boundary* and the *financial counterparts* of those allocations. In an embedded region where outward-looking information is weak by design (Section 3), GDP can be brought closer to best practice even as the outward-looking accounts needed to interpret resident income and external dependence remain underdeveloped.

5.1 What BEA fixed: comparability in production and expenditure measurement

BEA's modernization agenda begins from a clear diagnosis: Puerto Rico's legacy "real" measures relied on fixed-weight indexes with a very old base period, so changes in economic structure and relative prices were not properly reflected in inflation-adjusted series [1]. The modernization program addresses this directly by adopting contemporary index-number practice. Prototype expenditure estimates employ Fisher chain-weighted price and quantity indexes, incorporating adjacent-year weights and thereby reducing substitution bias and the structural drift inherent in fixed-base measures [2]. This change corrects one of the most consequential technical weaknesses of the pre-modernization accounts.

A second improvement is conceptual and classificatory alignment. BEA frames the objective as producing Puerto Rico GDP statistics consistent with international guidelines and directly comparable to other U.S. territories, states, the nation, and many other countries [2]. In practice, this includes adopting contemporary treatments such as the capitalization of intellectual property products (including R&D and related intangibles), aligning Puerto Rico's production boundary with the SNA 2008/BEA framework [4]. These changes matter in Puerto Rico because measured value added is concentrated in MNE-intensive industries where intangible capital and ownership conventions shape recorded output.

Third, modernization improves transparency on the expenditure-side structure of Puerto Rico's economy. The prototype components make visible stylized facts that are difficult to recover cleanly from legacy series alone, including sustained goods trade surpluses driven largely by pharmaceuticals and organic chemicals [2]. Even without resolving income allocation, clearer expenditure accounting strengthens descriptive analysis and comparability by enabling standard growth decompositions (consumption, investment, government, net exports) and clarifying what GDP is summarizing in Puerto Rico's case.

These reforms substantially strengthen measurement of territorial output and expenditure flows. Their limitation is not that the gains are marginal, but that they occur largely *within* the production/expenditure boundary and therefore do not, by themselves, generate the outward-looking income and financial accounts needed to interpret the GDP–GNP wedge.

5.2 What BEA could not fix: Puerto Rico-specific prices, trade costs, and proxy dependence

A persistent constraint is the limited availability of Puerto Rico-specific price information for key domains. BEA notes that Puerto Rico is excluded from major BLS consumer and producer price programs and that price information specific to Puerto Rico is especially limited [4]. As a result, mainland U.S. price indexes must be used to deflate many components, including capital goods (private fixed investment), for which Puerto Rico-specific deflators are not available [12]. In an economy with distinctive import composition and supply chains, deflator choice can materially affect measured real growth.

A second gap is especially consequential for an island economy: BEA reports that it is not aware of regularly collected data on freight and insurance charges on goods imported to Puerto Rico from all other locations, including from the 50 states [12]. These costs are not a negligible residual in a highly import-dependent region. Their absence weakens the import valuation and external resource-cost measurement that a ROW-consistent system would require, and constrains the coherence of the external sector even within an expenditure framework.

These limitations are not best understood as isolated technical problems. They reflect Puerto Rico's partial exclusion from federal price-statistics infrastructure combined with the absence of a locally resourced substitute. Modernization corrected the most severe legacy distortions in deflation and indexing, but it must still estimate real quantities using deflators and adjustments only imperfectly matched to Puerto Rico's local conditions and trade structure.[5]

[5]The modernized expenditure-side framework also rests on specific regulatory data pipelines that are

5.3 Why BEA cannot (yet) produce a consistent GNP for Puerto Rico

BEA modernization is sometimes interpreted as a project that should "solve" Puerto Rico's GDP–GNP gap by improving the data. That expectation mis-specifies the binding constraint. GDP can be estimated using production and expenditure approaches anchored in establishment activity and product flows; GNP (or GNI) requires systematic measurement of cross-boundary *primary income* flows and the ownership structures that generate them. Multiple sources across decades identify the same feasibility divide: the information required to measure income receivable by residents from non-residents and income payable by residents to non-residents is weak, incomplete, or institutionally difficult to collect.

This divide appears early. Parker (1987) notes that, given missing source data for the services component of net exports, it may be feasible only to calculate GDP rather than GNP [8]. In 2011, BEA recommends emphasizing GDP for comparability but simultaneously acknowledges that GNP remains more meaningful for assessing residents' well-being because a large portion of investment income is paid out to non-resident investors [1]. The persistence of this duality is the point: the welfare-relevant measure is precisely the one most constrained by the statistical boundary.

The obstacle is not conceptual ambiguity but data architecture. Measuring net primary income requires information on dividends, reinvested earnings, interest, and other property-income flows across the resident/non-resident boundary, often embedded in multinational corporate structures and cross-jurisdictional financial intermediation. In Puerto Rico, these are the flows most likely to be consolidated within U.S.-level reporting systems and least likely to be captured by local surveys, especially under conditions of low compliance and limited enforcement capacity.

BEA's own prototype documentation makes this feasibility boundary explicit: producing a Puerto Rico GNP/GNI estimate consistent with BEA standards would require primary-income flow estimates built on BEA's direct investment surveys, but those surveys treat Puerto Rico as *part of* the United States and therefore do not collect income-flow data between Puerto Rico and the 50 states (treated as domestic inter-area flows rather than cross-border investment income) [40]. This "statistical interiority" in the federal investment-survey frame is a hard constraint: the institutional boundary that simplifies U.S. national measurement simultaneously renders the key cross-boundary flows *non-observable* for a territorially embedded economy.

not guaranteed to persist. BEA's prototype work notes that key trade measurement relies on Electronic Export Information (EEI)-sourced data, and warns that there is "currently no substitute" for this source—a dependence that becomes consequential if filing requirements or access conditions change [40].

In this sense, the GDP–GNP wedge in Puerto Rico is not primarily a measurement error to be reduced, but an accounting relationship whose interpretation requires data that lie outside the production boundary. Under plausible institutional reforms, however, this constraint could be relaxed: inclusion in the federal direct-investment and primary-income survey architecture (or a dedicated Puerto Rico external-account program capable of measuring PR–states income flows on a consistent residence basis) would change what is observable and make a resident-income measure feasible on BEA standards.

5.4 Non-observability created by survey boundaries

The most important limitation is not simply that some inputs are noisy, but that key variables are structurally *non-observable* within prevailing survey boundaries. BEA's documentation lists core federal programs from which Puerto Rico is excluded, including the Census Bureau's annual business surveys and BLS consumer and producer price programs [4]. BEA's 2021 fact sheet states the methodological consequence plainly: it is not feasible to estimate Puerto Rico GDP using the same methodology used for state GDP because that approach requires Puerto Rico's inclusion in numerous federal and state-level data sources; instead, BEA estimates Puerto Rico "as if it was a country" using an expenditure approach [5].

This matters for outward-looking accounts even more than for GDP. In the state system, dense survey coverage and integrated administrative frames support the linkages that improve internal coherence. In Puerto Rico, missing federal surveys must be filled with local administrative data, indirect indicators, and ad hoc cooperation [4]. Yet local statistical systems have long faced low response rates and limited continuity [1]. More consequentially for the GDP–GNP wedge, many administrative forms do not distinguish resident from non-resident counterparties in ways that support income and financial accounts, so the resident/non-resident boundary remains difficult to implement consistently [23, 6].

The result is asymmetric progress: modernization can substantially improve what is observable within the production and expenditure boundary, while the resident/non-resident allocation mechanisms that generate the wedge remain partially hidden. This is the statistical boundary problem in operational form.

5.5 Implications for interpreting the GDP–GNP wedge

Comparable GDP is necessary for trend analysis, cross-jurisdiction comparison, and growth decomposition—and BEA's modernization materially improves Puerto Rico's performance on those dimensions. But comparable GDP does not, by itself, resolve questions about resident welfare, fiscal capacity, or financial dependence in an externally owned regional

economy. Those questions hinge on the distribution of primary income and on the financial counterparts of cross-boundary flows, which remain constrained by proxy deflators, missing Puerto Rico-specific inputs, and incomplete rest-of-the-world articulation.

Viewed through the logic of an integrated *sequence of accounts*, this is exactly what one would expect. Improving the production and expenditure layers does not automatically repair the downstream linkages from primary income to saving and, ultimately, to net lending/borrowing and balance-sheet positions. When outward-looking components are missing or weak, the accounting discipline that would otherwise force the GDP–GNP wedge to appear as a measurable set of income flows with identifiable financial counterparts cannot operate.

This helps explain why public debate can converge on GDP modernization while confusion about living standards and sustainability persists. Modernization improves the visibility of what the system can measure well (territorial production) but leaves under-identified what matters most for Puerto Rico's boundary condition (resident income allocation and external financial relationships). The next section therefore returns to the outward-looking perspective: why balance-of-payments and flow-of-funds frameworks remain necessary, and what diagnostic leverage they provide even in data-constrained settings.

6 Why flow-of-funds and balance-of-payments perspectives still matter

Puerto Rico's statistical boundary problem is ultimately a problem of *system closure*. Recent GDP modernization has materially strengthened measurement of production and expenditure on the island, improving coherence on the real side of the accounts. But GDP is not designed to answer two questions that are first-order in Puerto Rico's case: (i) how locally generated value is distributed between residents and non-residents, and (ii) how that distribution is reflected in financial transactions and accumulated balance-sheet positions. Flow-of-funds (financial accounts) and balance-of-payments (BoP) perspectives remain indispensable because they provide the outward-looking structure that connects production and income to finance and stocks of wealth. In an embedded regional economy marked by large ownership-based income outflows, these linkages are not optional refinements; they are the accounting machinery required to interpret the GDP–GNP wedge as a *mechanism* rather than a descriptive curiosity.

6.1 Regions must look outward: the accounting logic revisited

Regional accounting makes explicit what national accounting often leaves implicit: a region is not a closed container, so it cannot be understood solely through internal production and expenditure. Isard emphasizes that regional analysis must "look outward as well as inward" and that money flows are the financial counterparts of commodity and service flows [7]. The analytical question is not simply whether a region exports more than it imports, but whether its income–expenditure relationships are sustainable and how persistent imbalances translate into changes in assets, liabilities, and claims on future income.

Puerto Rico's contemporary macroeconomic debates mirror precisely the situations this framework is designed to address: large cross-boundary income flows, reliance on transfers, and the capacity to finance persistent imbalances. Historically, Puerto Rico was unusual among regions in maintaining balance-of-payments-style accounts that enabled such outward-looking diagnosis. The relevance of this perspective has increased rather than diminished as ownership structures and financial integration have intensified.

6.2 Balance of payments as the rest-of-the-world discipline

In a coherent SNA system, the rest-of-the-world sector records the full set of transactions and positions between residents and non-residents. The balance of payments provides the operational framework for this sector and for interpreting net lending/borrowing as an externally financed (or externally financing) position [21, 22]. The logic is simple but powerful: any surplus or deficit on the current-and-capital accounts must be matched by financial transactions, and persistent imbalances cumulate into an international (or external) investment position.

This discipline matters for Puerto Rico for two reasons. First, the GDP–GNP wedge is fundamentally a *primary-income* phenomenon: profits, dividends, interest, and reinvested earnings accruing to non-resident owners. In BoP/SNA terms, these income flows must have financial counterparts—dividend payments, intercompany lending, or changes in equity claims. Second, without BoP-style articulation, analysts cannot distinguish between (i) an economy that produces a surplus but transfers it outward through property income and (ii) an economy that relies on external borrowing or transfers to sustain domestic expenditure. Production accounts alone cannot adjudicate between these diagnoses.

The institutional record illustrates the cost of missing this discipline. Planning Board evaluations document long gaps in published direct investment positions, difficulties in identifying the residency of debtors and creditors, and large balancing items labeled as "unknown transactions" when external capital movements could not be traced [23]. Later

methodology notes confirm continued reliance on indirect estimation because consolidated reporting and low survey compliance undermine direct measurement [6]. These failures are not peripheral; they prevent the rest-of-the-world account from disciplining macroeconomic narratives.

6.3 Flow-of-funds as the bridge from income flows to balance sheets

Flow-of-funds accounts complete the outward-looking picture by showing how sectoral saving and investment positions are financed through the acquisition of financial assets and the incurrence of liabilities. The organizing principle is that total sources of funds equal total uses of funds across sectors and instruments [27, 28]. In integrated accounts, net lending/borrowing should be equal whether derived from current-and-capital accounts or from financial accounts; discrepancies identify where boundaries, sources, or methods fail to align [29, 30].

For Puerto Rico, the analytical payoff is direct. If locally generated income is paid out to non-resident owners, a coherent system should reveal *how* those payments occur and *through which instruments and counterpart sectors*. Reinvested earnings, for example, are recorded as income outflows but simultaneously as financial inflows that increase foreign equity claims—altering the interpretation of "leakage" in any given period. Without financial-account counterparts, analysts are left to infer mechanisms that the accounting system is designed to make explicit.

To make "system closure" operational rather than aspirational, the appropriate benchmark is what the Financial Accounts literature describes as *quadruple-entry* discipline: for any transaction, each involved sector records both a source and a use of funds, and the counterparty sector records the corresponding entries, so that Sources of Funds equal Uses of Funds within sectors and across the full system. This payer–payee logic is central both to modern presentations of the U.S. Financial Accounts and to recent reconstructions that integrate non-financial and financial transactions into unified matrices [36, 35]. In such frameworks, the rest of the world appears not as a residual, but as an explicit institutional sector whose position in the circulation of funds varies with macroeconomic conditions [35].

This emphasis is not new. Copeland's original "moneyflows" framework was explicitly designed to trace the circulation of payments across sectors by integrating real and financial transactions. Subsequent institutional simplifications in U.S. statistical practice prioritized frequency and timeliness, dropping much of the non-financial payment detail that made these circuits visible [37]. The continuity between Puerto Rico's 1989 flow-of-funds initiative and this earlier tradition underscores that the core missing link is institutional rather than conceptual.

Figure 3 illustrates the structure of a minimal flow-of-funds matrix that would make cross-boundary income flows and their financial counterparts explicit through a dedicated rest-of-the-world column.

6.4 What GDP systematically hides in Puerto Rico's case

The issue is not that GDP is incorrect, but that it is systematically silent about mechanisms that are central in Puerto Rico's context.

(i) Financing and sustainability of sectoral balances. Real-side accounts describe income generation and expenditure, but they do not show how consumption, investment, or government activity are financed, nor how financial wealth is accumulated. Where borrowing, transfer dependence, or external lending are central, this silence is analytically costly.

(ii) The counterpart structure of primary-income outflows. Primary-income outflows differ in implication depending on whether they take the form of dividends, interest, or reinvested earnings. Without financial-account detail, retained profits may be misinterpreted as permanently "lost" rather than as additions to external equity positions.

(iii) External balance sheets and path dependence. Vulnerability and adjustment depend on stocks as well as flows: the size, composition, and maturity of external assets and liabilities. GDP modernization improves flow measures of production; it does not generate an external balance sheet capable of anchoring debates about dependence and solvency.

(iv) From-whom-to-whom dependence. Policy-relevant dependence is relational. It matters not only how much a sector borrows or pays out, but *to whom* and through which instruments. From-whom-to-whom matrices reveal exposure to external corporate parents, bondholders, federal agencies, and financial intermediaries—relationships that aggregate GDP cannot show. This principle, emphasized in both the historical development of financial accounts and in modern integrated-matrix reconstructions, is therefore a high-value diagnostic target for Puerto Rico [37, 35, 36].

Figure 4 illustrates what such a matrix would reveal about relational exposure and why current non-observability constrains policy analysis.

6.5 The diagnostic value of discrepancies and residuals

A common objection in data-constrained environments is that flow-of-funds and BoP accounts will not balance cleanly. The literature suggests the opposite: discrepancies are diagnostically valuable. Walsh argues that it is "fortunate" flow-of-funds data are not forced to satisfy budget identities, because discrepancies highlight measurement failures that would otherwise remain hidden [32]. International guidance similarly emphasizes that large net errors and omissions signal missing or poorly observed flows [21, 22].

This logic is especially relevant for Puerto Rico, where institutional evaluations document persistent residuals in external capital accounts. Rather than smoothing these away, an outward-looking framework treats them as structured signals indicating which sectors and instruments are least observed and where institutional reform would yield the greatest informational returns.

6.6 Feasible minimal-data strategies

The outward-looking agenda need not begin with a fully articulated best-practice system. Methodological work on data-poor environments shows that condensed matrices can be constructed using existing information, with residual sectors absorbing what cannot yet be measured transparently [33, 34]. Even simplified flow-of-funds and BoP frameworks can reveal hidden external leakages, financing patterns, and inconsistencies that GDP-centric narratives obscure.

For Puerto Rico, the choice is therefore not between an ideal system and nothing. It is between continued reliance on production-centered indicators that under-identify outward mechanisms and incremental construction of outward-looking accounts that make boundary processes visible, even imperfectly.

6.7 Summary

Flow-of-funds and balance-of-payments perspectives still matter in Puerto Rico because they address the part of the macroeconomic system where the island's key mechanisms reside: cross-boundary income allocation and the financial counterparts of those allocations. GDP modernization improves measurement of territorial production and expenditure, but it does not close the system. Outward-looking accounts provide the discipline that connects production to resident income, sectoral balances, external financing, and wealth positions. The next section builds on this logic to specify what a credible macroeconomic system for Puerto Rico would require beyond GDP and how such a system could be assembled under

realistic institutional constraints.

	Households	**Corps**	**Govt**	**Financial**	**ROW**
Sources of funds	Wages, transfers	Sales, equity	Taxes, borrowing	Deposits, lending	Exports, transfers in
Uses of funds	Consumption, saving	Investment, wages	Spending, debt service	Loans, deposits	Imports, primary income out
Net lending / borrowing	Net user (-) (atypical)	Net supplier (+) (atypical)	Deficit (-)	Net user (-) (atypical)	Net borrowing (-)
Discrepancy	*residual*	*residual*	*residual*	*residual*	*unknown transactions*

Interpretation: A minimal flow-of-funds matrix for Puerto Rico would organize sources and uses of funds across five sectors: households, non-financial corporations, government, financial institutions, and the rest of the world (ROW). The ROW column (shaded blue) captures outward-looking flows—exports and transfer inflows (sources), imports and primary income outflows (uses)—and net external borrowing. The 1989 flow-of-funds study documented an atypical sectoral configuration (Corp +, HH −, Fin −, ROW −): corporations as net suppliers of funds, while households and financial institutions were net users—the opposite of typical patterns in developed economies. Yellow-shaded discrepancy rows are diagnostic: large residuals in the ROW column signal "unknown transactions" where cross-boundary flows cannot be identified—precisely the measurement gap emphasized throughout the paper.

Figure 3: Illustrative structure of a flow-of-funds matrix for Puerto Rico based on the 1989 flow-of-funds study. The rest-of-the-world (ROW) column makes outward-looking income and financial flows explicit, while the atypical sectoral pattern (corporations as net suppliers, households as net users) reflects Puerto Rico's distinctive economic structure. Discrepancy rows reveal measurement gaps where cross-boundary flows remain unobserved.

Issuer (Debtor) → / Holder (Creditor) ↓

	PR Govt & public corps	PR private corps	PR households
PR households & credit unions	Local holdings (?)	Small	—
PR banks & financial	Significant (?)	Intermed.	Mortgages
U.S. households & mutual funds	Large (?)	Unknown	Small
U.S. hedge funds & pooled	Significant (?)	Unknown	Small
Federal entities	Growing post-crisis	Minimal	Minimal
Foreign (non-U.S.)	Unknown	Unknown	Small

Interpretation (Figure 4): A from-whom-to-whom bond-holder matrix reveals *relational* dependence: who holds claims against whom, through which instruments, and in what amounts. For Puerto Rico, the most policy-relevant question is the exposure structure of public and quasi-public debt: how much is held locally (households, credit unions, domestic financial institutions) versus externally (U.S. mutual funds, hedge funds and other pooled vehicles, federal entities, and foreign holders). These relationships directly shape bargaining power in debt restructuring, rollover risk, and the distributional incidence of adjustment. The prevalence of "unknown" entries reflects structural non-observability rooted in fragmented custody chains and pooled vehicles, limited sectorization of holders in available administrative records, the absence of integrated financial accounts (and IIP-style position surveys) for Puerto Rico, and discontinuity or coverage gaps in Puerto Rico-specific financial reporting. Residual methods can partially fill sector totals, but they cannot recover counterparty structure when holder identities are not observed or cannot be mapped consistently into sectors.

Figure 4: Illustrative structure of a from-whom-to-whom bond-holder matrix for Puerto Rico. Rows show creditor sectors (holders), columns show debtor sectors (issuers). The matrix makes relational exposure explicit—a high-value diagnostic tool for debt-crisis analysis that current statistical systems do not provide. Yellow shading highlights the most policy-relevant column (public debt holdings).

7 Toward a credible macroeconomic system for Puerto Rico

The preceding sections show that Puerto Rico's macroeconomic challenges are not principally a problem of production measurement, but of *system incompleteness*. GDP modernization has substantially improved measurement of territorial output through updated deflation methods and improved comparability, yet the accounting architecture remains unable to connect production to income allocation and, in turn, to the financial transactions and positions that mirror those allocations [1, 2, 4, 5, 12, 13]. In such a setting, credibility cannot be assessed by the technical sophistication of GDP alone. It must be assessed by whether the accounts, taken together, permit coherent interpretation of resident income, external dependence, and sectoral balances [22, 29, 21].

This section therefore outlines (i) the minimal components required for a trustworthy macroeconomic system, (ii) the institutional and governance conditions needed to sustain it, and (iii) a feasible implementation pathway under realistic constraints.

7.1 What a trustworthy system must contain

A credible system must restore, in form if not immediately in full detail, the *sequence of accounts* embedded in the System of National Accounts (SNA): production → income distribution → use of income and saving → accumulation (capital and financial accounts) → balance sheets [22, 29]. For Puerto Rico—an embedded regional economy with unusually large cross-boundary income flows and documented historical reliance on outward-looking accounting—this sequence is not aspirational. It is the minimum structure required to distinguish what is produced on the island from what accrues to residents, and to identify the external and financial counterparts of that difference [7, 38, 13, 21]. Four components are essential.

(i) Production and expenditure accounts (GDP). Modern GDP estimates remain necessary. They anchor Puerto Rico's production structure in internationally comparable terms and correct long-standing weaknesses arising from obsolete deflators and limited benchmarking [1, 2, 4]. GDP is indispensable for trend analysis and cross-jurisdictional comparison [1]. But in Puerto Rico's case, GDP should be treated as the *entry point* to macroeconomic analysis, not the summary statistic on which interpretation ends [1, 24].

(ii) Resident income accounts (GNP/GNI). Resident income is a first-order analytical object in Puerto Rico. The persistent divergence between GDP and resident-income concepts

reflects ownership-based allocation of primary incomes—profits, interest, and related flows—that directly shape welfare, fiscal capacity, and the political economy of development [1, 24, 13]. A credible system must therefore maintain explicit income accounts that separate income generated on the territory from income accruing to residents [1, 21]. Where direct observation is incomplete, early estimates can be provisional or accompanied by uncertainty ranges; what undermines credibility is leaving the resident/non-resident boundary implicit and then treating GDP movements as a proxy for resident well-being [1, 41].

(iii) A regional balance-of-payments perspective. The outward-looking hinge of the system is the rest-of-the-world account. A balance-of-payments (BoP)-style framework is required to organize goods and services trade, primary income, secondary transfers, and capital transfers into a coherent external account [21, 22]. This perspective is essential for distinguishing (a) domestic expenditure financed externally (through borrowing or transfers) from (b) domestic production whose surplus is transferred externally (through primary income outflows) [21, 7]. Without such a frame, claims about "dependence" or "leakage" remain narrative rather than accounting-based [7, 21].

(iv) Flow-of-funds integration. Financial accounts provide the discipline of consistency. They link saving and investment to borrowing and lending and translate income flows into sectoral net lending/net borrowing and associated changes in balance-sheet positions [29, 22, 27, 28]. For Puerto Rico, flow-of-funds integration is essential for identifying *how* large cross-boundary income outflows and external imbalances are reflected in sectoral financing patterns—through which instruments (equity, intercompany debt, deposits, government securities) and with which counterpart sectors [22, 42, 21, 36]. Modern integrated-matrix reconstructions illustrate how such closure can be operationalized by harmonizing production and income accounts with financial transactions in payer–payee form, treating the rest of the world as an explicit institutional sector rather than a residual [35]. The diagnostic power of this approach depends critically on *from-whom-to-whom* identification—linking issuers and holders across sectors and jurisdictions—a principle emphasized in the historical development of financial accounts [37, 36]. Even a condensed matrix covering households, non-financial corporations, financial institutions, general government, and the rest of the world would materially improve interpretability by forcing sectoral consistency and making net lending/net borrowing observable rather than assumed [34, 33, 42].

Together, these elements define credibility not as perfection, but as *system closure*: the ability to trace production through income allocation into external and financial counterparts and, ultimately, into accumulated positions [22, 29, 21].

7.2 Institutional and governance requirements

History shows that technical design alone cannot sustain credibility. The binding constraints have been institutional: fragmented authority, survey exclusions, weak enforcement capacity, and limited continuity [10, 1, 4, 5, 23, 6]. More generally, credibility is not only a property of statistical products; it is also a property of statistical institutions and their relationship to users. Childs et al. distinguish trust in *statistical products* (driven by credibility and relevance) from trust in *statistical institutions* (supported by integrity, confidentiality, and transparency), emphasizing transparency as a distinct mechanism through which trust is earned [41]. Arora similarly argues that sustaining public trust requires responsiveness to evolving information needs and that persistent gaps invite less coherent substitutes [43]. Several governance conditions follow.

First, there must be a clearly designated institutional steward for the outward-looking accounts. Whether housed in a Puerto Rico statistical agency, a federally supported unit, or a hybrid arrangement, this function must have an explicit mandate to produce rest-of-the-world and financial accounts *alongside* GDP, rather than treating them as optional supplements [7, 9, 4, 13]. Experience shows that mandate alone is insufficient: the Planning Board's 2017 modernization roadmap explicitly committed to publishing foreign direct investment (FDI) estimates and subdividing the foreign transactions account into current and capital accounts, yet subsequent evaluations and federal documentation indicate that these outward-looking deliverables were not sustained at the level needed for system closure [44, 40]. The lesson is not that local intent is absent, but that outward-looking compilation is resource-intensive and brittle when it relies primarily on local capacity in an environment of low compliance, fragmented frames, and fiscal stress [1, 23].

Second, reporting authority and administrative access must align with accounting needs. Many boundary failures arise because administrative records do not reliably distinguish resident from non-resident ownership and counterparties, and because key boundary data depend on low-compliance voluntary reporting [23, 6, 1]. A credible system therefore requires either stronger enforcement of existing reporting channels or formal integration with federal statistical architectures that already collect ownership and cross-boundary information in other contexts [5, 43]. Arora's emphasis on targeted gap-filling is instructive here: credibility is sustained when agencies build capacity for precisely the difficult-to-observe phenomena that dominate public concern (such as foreign ownership and external claims) [43].

The first step is to establish a small but explicit core: (a) a simplified rest-of-the-world account and (b) a condensed flow-of-funds matrix covering general government, households, non-financial corporations, financial institutions, and the rest of the world [21, 22, 34, 33]. Existing GDP, fiscal, banking, and trade data can anchor the system, with residuals identified

explicitly rather than buried in aggregates [34, 32]. Where feasible, the core should be extended to limited from-whom-to-whom detail for the largest counterpart relationships involving non-resident owners, in the spirit of payer–payee matrix approaches that make the circulation of funds explicit [35, 36].

Finally, continuity is a condition of credibility. Puerto Rico's experience suggests that outward-looking accounts are often the first to be abandoned under fiscal or political stress, precisely because they are institutionally demanding and less salient to casual users [23, 9, 13]. A credible system requires insulation against this cyclical erosion, treating external and financial accounts as core statistical infrastructure rather than discretionary add-ons [43]. Arora's warning is directly relevant: when official systems fail to sustain coverage of salient blind spots, alternative sources fill the vacuum, often at lower standards of coherence and documentation [43].

7.3 Comparability versus completeness

Puerto Rico's recent experience highlights a fundamental tension: comparability and completeness do not always move together. Elevating GDP as the featured statistic improves comparability with U.S. states and international norms, but it can coincide with the marginalization of the accounts that track external income allocation and financial dependence [10, 1, 13]. This is a setting in which product-level *credibility* can rise while system-level *relevance* remains contested: technically improved GDP may still fail to meet users' needs for outward-looking evidence in an externally owned regional economy [41, 1].

A credible macroeconomic system must therefore state the trade-off explicitly. Comparability is valuable for benchmarking production [1]. But it cannot substitute for completeness in economies where ownership structures and factor mobility dominate macroeconomic outcomes [7, 21, 13]. Treating Puerto Rico purely as a production site strengthens alignment while risking systematic misinterpretation if resident income and external balances remain opaque [1, 24].

7.4 A feasible implementation pathway

The choice is not between a fully articulated best-practice system and inaction. Experience in data-constrained environments suggests a staged approach that prioritizes outward-looking coherence and transparent reconciliation [33, 34].

Minimal outward-looking core. The first step is to establish a small but explicit core: (a) a simplified rest-of-the-world account and (b) a condensed flow-of-funds matrix covering

general government, households, non-financial corporations, financial institutions, and the rest of the world [21, 22, 34, 33]. Existing GDP, fiscal, banking, and trade data can anchor the system, with residuals identified explicitly rather than buried in aggregates [34, 32]. Where feasible, the core should be extended to limited from-whom-to-whom detail for the largest counterpart relationships involving non-resident owners, in the spirit of payer–payee matrix approaches that make the circulation of funds explicit [35].

Transparency over spurious precision. Early-stage compilation should aim for diagnostic clarity rather than false exactness. Publishing reconciliation tables and residuals disciplines interpretation and aligns with the transparency mechanisms through which trust in statistical institutions is built [41, 32].

Incremental enrichment. As administrative access expands and survey coverage improves, the system can be progressively refined: separating instruments, identifying counterpart sectors, and adding balance-sheet positions (including an external investment position where feasible) [22, 21]. Improvements should deepen outward-looking coherence—especially the linkage between income flows and financial counterparts—rather than exclusively refining internal production detail [12, 13].

Institutional division of labor: a statistical archipelago. No single institution must produce the entire system. The governance goal is not bureaucratic consolidation but coordinated *closure*, achieved through a "statistical archipelago" in which different nodes own different layers of the sequence of accounts, linked by shared standards and reconciliation. The practical artifact is a published reconciliation table that shows how BEA GDP, local fiscal/banking data, and a rest-of-the-world account map into a single net-lending/net-borrowing identity.

On the federal side, BEA (and partner federal statistical programs) can continue to anchor the "real" system—GDP, deflators, and benchmarking—where the comparative advantage lies in integrated frames and national infrastructure [4, 12, 36]. But if resident-income accounts are to be credible, the feasibility boundary identified in BEA's prototype work must be addressed: producing a Puerto Rico GNP/GNI estimate requires primary-income flow estimates, but the relevant federal surveys include Puerto Rico as part of the United States and therefore do not collect income-flow data between Puerto Rico and the 50 states [40]. A hybrid solution therefore requires an explicit federal statistical accommodation that treats Puerto Rico as "foreign" *for the limited purpose of measuring cross-boundary investment-income flows*, closing the specific gap that prevents GNP/GNI estimation consistent with BEA standards, without

altering legal status, tax treatment, or national-accounts residency concepts—only the survey frame for inter-area primary-income measurement [40].

On the local side, Puerto Rico institutions—the Planning Board and/or the Institute of Statistics—should concentrate on the domains where proximity and administrative access can generate unique value: balance-sheet and instrument detail for locally regulated entities (banks, cooperatives, public corporations, pension systems, and government units) and the sectoral counterpart information needed to populate from-whom-to-whom matrices [23, 6, 13]. In this division of labor, the local role is not to replicate federal GDP machinery, but to build the Z.1-equivalent "financial side" that makes internal sectoral balances and external counterparties visible, consistent with the long-standing diagnostic value of from-whom-to-whom identification in financial accounts [37, 36].

Federal agencies can continue to anchor GDP and price measurement [4, 12]; Puerto Rico institutions can focus on resident income, external flows, and institutional detail [6, 23, 13]; and oversight bodies can incentivize continuity, documentation, and reconciliation [43]. What matters is coordinated design that preserves the sequence of accounts and makes boundary choices explicit, reducing the space for ad hoc substitutes when gaps persist [43, 41].

7.5 Why credibility matters

A credible macroeconomic system changes the terms of debate. It allows analysts to distinguish growth driven by local accumulation from growth driven by externally owned capital; consumption sustained by resident income from consumption sustained by transfers or borrowing; and temporary imbalances from structural dependence [21, 22, 7]. In Puerto Rico's case, these distinctions are not academic. They shape interpretations of welfare, fiscal capacity, debt sustainability, and policy autonomy [1, 24, 21].

The central claim of this paper is therefore not that Puerto Rico lacks "good statistics," but that it lacks a macroeconomic system aligned with its economic reality. Completing GDP modernization with outward-looking income and financial accounts does not diminish comparability; it restores interpretability and relevance [1, 41, 43]. The concluding section draws broader lessons from Puerto Rico's experience for regions and territories embedded within larger statistical jurisdictions.

8 Broader lessons and conclusion

Puerto Rico's experience is not an idiosyncratic failure of technique, nor a marginal curiosity in the history of national accounting. It illustrates a more general lesson that resonates with

long-standing debates about what headline indicators can legitimately carry: macroeconomic statistics are shaped as much by *institutional boundaries and governance arrangements* as by conceptual frameworks and measurement technology. When economic reality and statistical architecture are misaligned, even technically sophisticated indicators can mislead or be systematically over-interpreted. This is a familiar theme in the broader "GDP and beyond" discussion, but Puerto Rico shows how the problem can arise *inside* a larger statistical jurisdiction, not only across national borders [7].

8.1 Broader lessons for territories and embedded regions

Three broader lessons emerge.

First, *GDP comparability does not guarantee interpretability.* In territories and regions embedded within larger economies, production can often be measured with increasing precision while income allocation and financial dependence remain opaque. Where ownership structures are external and factor mobility is high, GDP is a necessary descriptive statistic but an unreliable guide to resident welfare, fiscal capacity, or sustainability unless it is complemented by outward-looking accounts—especially those that track primary income flows and their financial counterparts. This is not a claim that GDP is "wrong," but that it is incomplete for questions that are inherently about *who ultimately receives income* and *how expenditures are financed* [1].

Second, *statistical boundaries are policy-relevant choices.* Whether a jurisdiction is treated as "internal" or "external" to a statistical system determines which flows are observable *by design.* Survey coverage, administrative access, and reporting authority define what can be measured consistently and what must be inferred, proxied, or left as a residual. Puerto Rico shows that partial inclusion can be more problematic than either full integration or full statistical autonomy: it enables modernization of production accounts while structurally under-resourcing the very accounts needed to interpret distributional and financial outcomes. The result is a persistent asymmetry: what can be benchmarked and chain-weighted improves, while the resident/non-resident boundary—central to income and finance—remains thinly observed [4, 5].

Third, *outward-looking accounts are not luxuries.* Balance-of-payments and flow-of-funds perspectives are sometimes treated as advanced extensions suitable only for sovereign states or data-rich environments. Puerto Rico's case demonstrates the opposite. In embedded regions with large cross-boundary income flows, outward-looking accounts perform the essential task of *system closure*: they discipline narratives, expose residuals, and make dependence mechanisms visible even when data are imperfect. Their absence does not simplify analysis;

it shifts interpretation from accounting evidence to conjecture and encourages an excessive policy load to be placed on a single production aggregate [7, 9, 13].

These lessons extend beyond Puerto Rico to other territories, regions with extensive multinational activity, and jurisdictions operating inside large statistical unions. Wherever production is geographically localized but ownership, pricing, and finance are not, the risk of misinterpretation is inherent unless the accounting system explicitly tracks the resident/non-resident boundary and its financial mirror.

8.2 Conclusion

This paper has argued that Puerto Rico's persistent GDP–GNP gap is best understood as a *statistical boundary problem*. The wedge is not a measurement error to be eliminated, nor a conceptual flaw in national accounting. It is the observable trace of ownership-based income allocation operating within a statistical architecture that can modernize production measurement more readily than it can observe outward-looking income and financial flows.

Recent BEA-led GDP modernization represents a substantial and necessary improvement. It corrects long-standing technical weaknesses and places Puerto Rico's production accounts on a far sounder footing. But modernization alone cannot resolve the interpretive questions that dominate policy and public debate on the island. Those questions concern who ultimately receives the income generated by production, how expenditure is financed, and how persistent imbalances accumulate into dependence or vulnerability. Answering them requires outward-looking accounts—resident income measures, rest-of-the-world articulation, and flow-of-funds integration—that remain institutionally fragile under the prevailing survey and administrative architecture, and that continue to rely on proxies for key prices and trade margins [4, 5, 12].

The central implication is not that GDP should be abandoned, but that it should be *repositioned*. In Puerto Rico, GDP is the entry point to analysis, not its conclusion. Credibility lies in system closure: the ability to trace production through income allocation into financial flows and balance-sheet positions, and to confront discrepancies where data fall short—precisely the diagnostic value of a coherent sequence of accounts emphasized in the national accounting tradition [7].

Puerto Rico's experience thus offers a cautionary lesson for official statistics. Improving what is easiest to measure can coexist with persistent blind spots where economic mechanisms matter most. A credible macroeconomic system is not defined by a single headline indicator, but by the coherence of the accounts as a whole—and by whether they are aligned with the economic reality they are meant to describe.

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