FAND Country Analysis — Bolivia

Part I starts with a balance sheet as in the World Bank's 1995 Monitoring Environmental Progress (MEP, page 65), and its bottom line: Net Worth. It details the Four Types of Capital (see Epilogue here) generating income, and how much that benefits residents. It shows the bond to income statements, where Atlas GNI is the base for a 'vase' of global financial preference mechanisms. It deals with the realities of changing production possibilities and consumer preferences by taking the US as a benchmark. It is about *relative* progress.

Part II picks cherries from Wheel of Wealth data underlying Atlas GNI. It is about *absolute* progress.

Part III assesses the fitness of nation-level analyses, given information available by subnational units. And Part IV documents identified issues in data sources and methods.

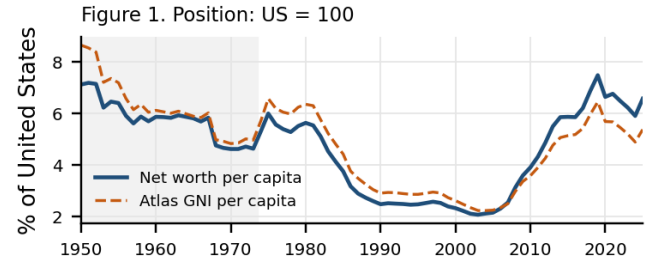
This analysis is the four-page Country Brief — Bolivia, elaborated: the same Parts, the same Figures 1–10. The Brief's text leads each section and the elaboration follows it; figures the Brief could not carry are in Sidebars, their figures labelled S1 to S3.

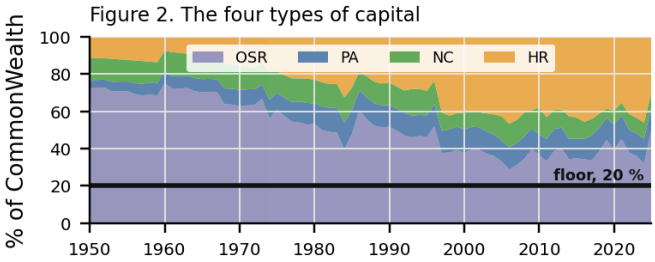


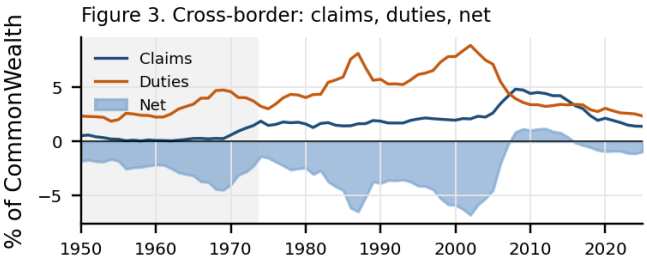
*Mnemonic of eight indicators**

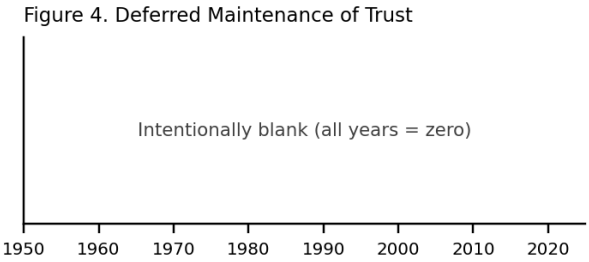
Part I. CommonWealth balance sheets and relative progress

Reading status: the lead paragraphs are the Country Brief's text (Vetted by JOC, 11/8/26 (cross-border highlight: vetting in progress)); the elaboration under them is AI-drafted and awaits the expert's vetting.









Net worth per capita, 7.1 % of the US figure in 1950, steadily lost ground under the Bretton Woods system. It recovered a bit in the 1970s but sank in the 1980s, to 3.8 % after the external debt crisis and hyperinflation. It reached its nadir in 2005 (2.2 %), recovered to 7.5 % just before COVID hit, and has since given back a bit of ground (6.6 % on the provisional 2025 column). Each turn on this sheet has a political date — 1952, 1964, 1982, 1985, 2006 — and a reading of Bolivia's prospects that skips its path is not a serious one.

Net worth and Atlas income are a year's flow and its capitalized stock. Where the two ratios part, something other than a year's income has moved: the capitalization multiple, or the cross-border position. The income line fell from 8.7 % of the US figure in 1950 to 2.3 % in 2005 and stood at 5.4 % in 2025. The net-worth line follows it, below it until the 2000s and above it since, and the first highlight below is about that gap.

Bolivia's net worth per capita stood at 7.1 % of the US figure in 1950, nearly halved to 4.6 % by 1970, held near 6.0 % through the commodity decade; then fell with the debt crisis and hyperinflation to 3.8 % in 1985, 3.2 % in 1986 and 2.5 % in 1990. It stayed on that floor for fifteen years, bottoming at 2.2 % in 2005.

It has since tripled — to 5.9 % in 2014 and 6.6 % on the provisional 2025 column — on gas exports and an agricultural land boom. Over the same 75 years Bolivia's population rose from 2.0 % to 3.6 % of that in the US.

The path matters, and on this sheet it has names. Víctor Paz Estenssoro and Hernán Siles Zuazo founded the MNR together and made the 1952 revolution together, Paz as president and Siles as the vice president who had led the April rising. What they did shows in the sheet's quantities before its values: the tin companies nationalized into COMIBOL in 1952 and output down to 18,000 tonnes by 1958; the inflation of 1953–56 and the stabilization Siles carried as president in 1956.

Paz's second government (1960–64) brought the US lending of the Alliance for Progress years that fills the 1960s duties of Figure 3 (Sidebar S2). His vice president, General Barrientos, overthrew him in November 1964, and the military governed, with brief civilian interludes, until 1982: Gulf Oil nationalized in 1969, the borrowing of the commodity decade under Banzer, the parallel market opened by the coup of 1980.

* The face: eight indicators, six of them at five levels (1 = the fifth of world population with the lowest values, 5 = the highest; 2023). Width — people per km², level 1; height — people per Roots unit, 2; eyes — other substantive rights as % of CommonWealth, 5; nose — CW/NW − 1, 3 (longer = residents owe more abroad than they are owed); mouth curve — drift of net worth per capita relative to the US since 1955, 1 (flat = the fifth containing zero); mouth width — net worth per capita as % of the US, 3; brow — FAND risk premium, zero (flat); freckles — 8 exceptions to expectations (Figure 9). A dotted feature is missing.

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The two founders then returned as the poles of the 1980s. Siles, elected in 1980 and seated in 1982, presided over the deficits and the hyperinflation that took the ratio to the United States from 5.6 % to 3.8 %; Paz, in his fourth presidency from August 1985, decreed the stabilization three weeks in and met the tin crash that October. Neither the fall nor the recovery in Figure 1 reads without that arc, which is why these balance sheets begin in 1950 rather than 1990.

The latest turn has its dates as well. The nadir of Figure 1, 2.2 % in 2005, sits in the crisis that removed two presidents — Sánchez de Lozada in the gas conflict of October 2003, Mesa in June 2005 — and in which Congress passed the Hydrocarbons Law of May 2005. Evo Morales took office in January 2006 and decreed the nationalization of hydrocarbons on 1 May; the IMF, IDA and the IDB wrote off the rest of the old debt in 2006–07, which is the fall in Figure 3 from 8.8 % of CommonWealth in 2002 to 3.4 % in 2010. The recovery that followed was priced by gas, but its terms were set in those two years. Sidebar S8 sets the five dates against the two lines.

Sidebar S8. The five dates of the lede against Figures 1 and 3

Figure S8. Net worth per capita relative to the US and cross-border duties as a share of CommonWealth, at each date and at the next

Date	The turn in government	Net worth per capita, % of US — at the date	— at the next date	Cross-border duties, % of CommonWealth — at the date	— at the next date
1952	The MNR revolution: tin nationalized into COMIBOL; universal suffrage; land reform (1953)	7.2	5.9 (1964)	2.3	3.2 (1964)
1964	Barrientos overthrows Paz; military governments, with brief civilian interludes, to 1982	5.9	5.1 (1982)	3.2	4.3 (1982)
1982	Siles Zuazo seated; dollar contracts converted; deficits and hyperinflation	5.1	3.8 (1985)	4.3	5.9 (1985)
1985	Paz Estenssoro's fourth presidency; the stabilization decree of 29 August; tin crash in October	3.8	2.3 (2006)	5.9	5.5 (2006)
2006	Morales takes office; hydrocarbons nationalized 1 May; IMF, IDA and IDB write-offs 2006–07	2.3	6.6 (2025, prov.)	5.5	2.3 (2025, prov.)

Net worth per capita relative to the US as Figure 1 draws it; cross-border duties as a share of CommonWealth as Figure 3 draws it, FAND's own tier before 1970. The 2025 column is provisional.

Each row is a segment of the two lines. The value at the date is where the segment opens; the value at the next date is where it closes, so the row for 1985 runs to 2006 and the row for 2006 to the provisional 2025 column.

Two of the five dates move both lines at once, 1982 and 2006. 1952 and 1964 move the quantities first and the values later. 1985 ended the inflation, not the slide: the ratio to the US fell for another twenty years, to the 2005 nadir, while duties stayed near 5–6 % of CommonWealth until the write-offs. The back story above says why in each case.

Figure 2 is the Four Types of Capital, and Bolivia's history in it is a substitution: of human resources — investments in individuals — for other substantive rights — investments in how people collaborate while competing. In 1955 other substantive rights were the type furthest above their share in the US benchmark, 71 % of CommonWealth against 42 %, and human resources the furthest below, 12 % against 39 %. By 2023 each had crossed to the other side of the US share: 36 % against 41 %, and 43 % against 39 %. Produced assets rose from 5 % to 13 % by 1985 and have not moved since; natural capital's share fell as CommonWealth grew. Income per capita did not converge on the US (Figure 1); the composition of CommonWealth did — the distance between the two compositions, half the sum of the four gaps, fell from 0.37 in 1955 to 0.12 in 2023. The 2025 column's 30 % for human resources is a step of measurement, not a drift (Part IV, Human resources). Per head, Bolivia holds 1–5 % of the US produced stock and 1.0–7.1 % of its human resources in every year to 2023.

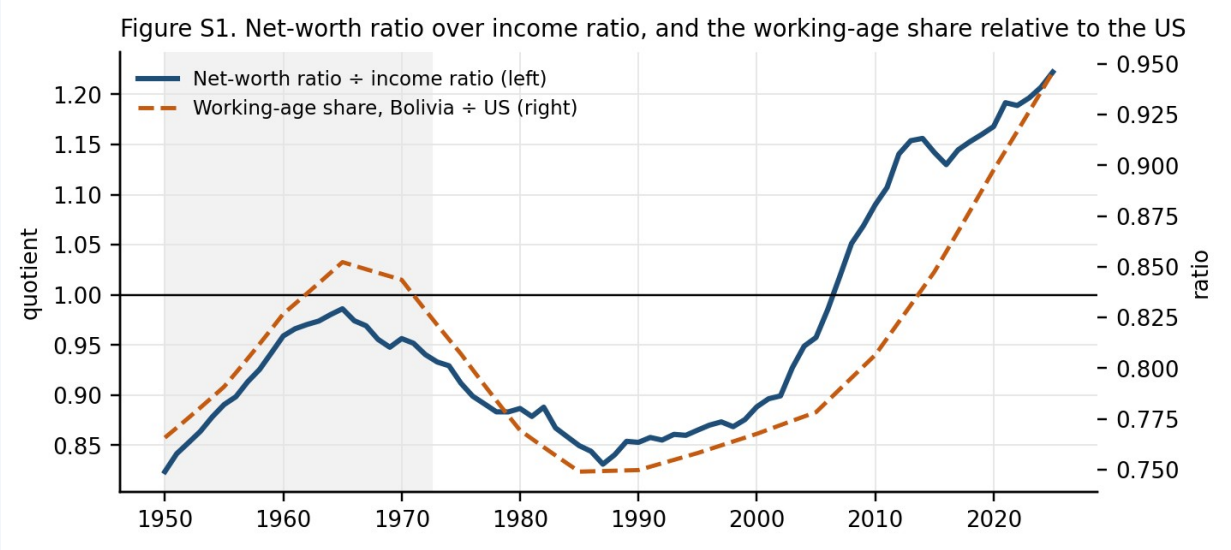
Natural capital has held 8–13 % of CommonWealth in every decade. Deferred Maintenance of Trust is zero in every year, which is why Figure 4 is blank.

- **The demographic dividend — which applies relatively more to Bolivia than to the US — helped swing the net-worth line above the income line. Those of working age were 42–43 % of Bolivia's population from 1950 to 1990 and 54 % in 2025, while the US share swung between 50 % (1965) and 59 % (2010). The net-worth ratio went from 15 % below the income ratio (1950 and 1990) to 22 % above (2025, provisional): the ratio of the two lines rose 1.48-fold. Demography relative to the US is a factor of 1.33 in that — 1.24 for the working-age share times 1.08 for the longer working life ahead of Bolivia's younger workers (28 years to age 65 for the average worker, against 24 in the US); the US turning net debtor, with the GDP/GNI ratio, is the remaining 1.11.**

Figure S1 draws the quotient of Figure 1's two lines — the net-worth ratio over the income ratio — beside Bolivia's working-age share relative to the US. FAND capitalizes a year's income over the working life ahead of the average worker, so the multiple rises with the working-age share and with the years left to age 65. Both ran against Bolivia until 1990 and for it since: the quotient was 18 % below one in 1950, 15 % below in 1990, and 22 % above in 2025.

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Sidebar S1. The two lines of Figure 1 and relative demography



The quotient (left axis) is Figure 1's net-worth line divided by its income line. The working-age ratio (right axis) is the share of Bolivia's population aged 15–64 divided by the US share. The two move together over the decades and apart in the years when the cross-border composition changed — 2008–14 above the demographic line, on the capitalized gas rents paid abroad, and 2020–25 as the boom ended.

The factors of the highlight are read off these two series and the working life: from 1950 to 2025 the quotient rose 1.48-fold, of which 1.24 is the working-age ratio, 1.08 the longer working life ahead of Bolivia's younger workers, and 1.11 the rest — the US turning net debtor and the GDP/GNI ratio.

The dividend is relative. The younger end of Bolivia's dependency ratio is lower than the older end, so those now supporting both have reason to hope they will be supported beyond working age; measured against the US, that is what the capitalization rule prices. Had Japan been the benchmark the same arithmetic would read differently, which is the point of a benchmark.

The rest is the composition of Bolivia's cross-border accounts. In 1990 its liabilities were 94 % loans; by 2008, after the HIPC and MDRI relief, they were 60 % direct investment in gas and mining, carried at book value, and its assets were 62 % reserves.

Direct investment is the long-lived claim and reserves the short-lived one, and the gas rents the direct investments earned — 5–6 % of GDP paid abroad in 2010–14 — were worth far more, capitalized, than the positions recorded for them, while the reserves earned less than their face. Hence a net-worth line above the income line in 2008–14, and back toward it as the boom ended.

- **Cross-border duties before 1970 were about the same share of CommonWealth as in recent years. They had risen gradually to 4.7 % in 1969 before settling there in the 1970s; then climbing to 5.9 % of CommonWealth, or nearly 100 % of GDP, in the 1980s, during the hyperinflation period. After a decade of respite, duties rose to 8.8 % of CommonWealth in 2002 but fell to 3.4 % by 2010 mostly because CommonWealth doubled. The composition changed: multilateral loans fell about $2.3 billion in 2006–07 with the MDRI relief, while direct investment liabilities (book value) rose from $5.1 to $10.6 billion by 2013.**

Figure 3 draws the duties across 1970 without a break: 4.7 % of CommonWealth in 1969 and 4.6 % in 1970, 820 million dollars in 1969 against 833 million in 1970 — the external-wealth total (794 million) with the US direct-investment position carried in place of its smaller all-FDI stock. What the chart does not show is how the 1950–69 segment is made and what it is made of, which is Sidebar S2; nor that the claims line still steps at 1970, from 0.3 % to 0.6 % of CommonWealth, which is Sidebar S3.

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Sidebar S2. Cross-border duties across the 1970 join, construct by construct

Figure S2. Cross-border duties by construct, 1965–1980, millions of current US dollars

Year	IBRD & IDA	IMF	US government	Other multilateral (IDB)	Other bilateral	Bonds	Suppliers & other private	Commercial banks (PPG)	Private non-guaranteed + short-term	US direct investment (BEA)	Other direct investment	All direct investment (EWN)	Duties on the page	IDS external debt	EWN total liabilities
1965	1	—	158	18	86	67	115	1	48	—	—	—	495	—	—
1966	2	—	194	22	89	67	119	1	53	82	0	—	630	—	—
1967	4	—	209	26	97	67	129	1	70	92	0	—	696	—	—
1968	5	5	224	31	99	67	131	1	83	104	0	—	750	—	—
1969	10	8	243	35	107	67	141	2	89	118	0	—	820	—	—
1970	18	6	243	40	103	67	136	2	102	—	—	77	833	716	794
1971	37	7	162	54	107	66	138	10	112	115	0	79	809	694	773
1972	49	9	196	65	123	66	139	32	132	114	0	46	924	810	856
1973*	—	22	—	126	335	65	132	34	136	105	0	62	956	851	913
1974*	—	18	—	144	369	64	118	82	152	94	7	101	1,048	946	1,048
1975*	—	16	—	170	387	63	129	142	173	100	52	152	1,233	1,081	1,233
1976*	—	0	—	204	463	62	131	277	224	92	53	145	1,506	1,361	1,506
1977	—	—	—	—	—	—	—	—	—	—	—	149	1,952	—	1,952
1978	—	—	—	—	—	—	—	—	—	—	—	166	2,405	—	2,405
1979	—	—	—	—	—	—	—	—	—	—	—	208	2,842	—	2,842
1980*	—	126	—	528	664	73	395	603	395	—	—	275	3,060	2,785	3,060

*Before 1970: the tier's measured pieces spliced onto their 1970 counterparts (IBRD & IDA, IMF, US government, the banks' foreign liabilities), US direct investment at BEA's own level, other direct investment = the external-wealth total less the US position at the join, carried back on the US series (zero where that difference is negative — the two sources conflict), and the Bank's creditor classes carried back on goods imports as a working hypothesis (bonds at level; the IDB on a ramp from 1961). From 1970: the Bank's International Debt Statistics by creditor class (counterpart detail for 1970–72 only; * = all multilateral and all bilateral, the creditor split not on file), BEA's US position where on file, all direct investment and the total from the External Wealth of Nations; other = all less US. "—" = not on file.*

Figure S2 sets the duties side of Figure 3 out construct by construct across the 1970 join: to the left of 1970 FAND's own tier, to the right the Bank's debt tables by creditor class, with direct investment and the total from the external-wealth dataset. The blank cells are what is not on file — the creditor split of multilateral and bilateral debt after 1972 and the debt tables for 1977–79 — and are left blank, not filled.

Five constructs are measured before 1970. Four are spliced at the join onto their own class in the Bank's tables: the US government — the roll-forward of the Greenbook statements reads 188 million in 1970 against 243 million the tables record as owed to the United States, so the piece is scaled by ×1.3; the banks' foreign liabilities (38 against 102 million of private non-guaranteed and short-term debt, ×2.7); IBRD and IDA (×0.97) and the IMF (×1.00). The fifth, the US direct-investment position, stands at BEA's own level. Other direct investment is the external-wealth total less the US position at the join, carried back on the US series; for Bolivia that difference is negative, so the column reads zero before 1970 and the conflict between the two sources is the vetting matter bracketed above. Three classes are the working hypothesis, carried back from their 1970 stock on goods imports — other governments (103 million in 1970: France, the United Kingdom, Germany, Japan, the USSR), suppliers' and other private credits (136 million) and the commercial banks (1.5 million); the Inter-American Development Bank (40 million) runs on a ramp from zero in 1961; and the bonds stand at 67 million throughout.

The constructs sum to 820 million in 1969 against 794 million in 1970. Official credit is 49 % of the 1969 total and the US government alone 30 %; suppliers' credits 17 %, US direct investment 14 %, the banks 11 %, the bonds 8 %. The 1960s stand on the creditors' records — the Greenbook roll-forward for the US government, the IDB's ramp, IBRD and IDA, the IMF, the banks. The 1950s stand on the bonds, the banks, the IMF credit of 1956 and two working-hypothesis classes carried back on imports from stocks mostly built in the 1960s, with the US government piece beginning only in 1959 and direct investment only in 1966; what the decade misses — the tin companies' compensation, direct investment other than US, the Export-Import Bank's credits — and what the import index overstates run in opposite directions, so the 1950s share of CommonWealth is an upper reading.

Directions for further work, each a transcription from a published source rather than a new construction: the 1950s classes against Bolivia's own creditor records (the Central Bank's external-debt registers; the Bank's country economic reports of the period, which tabulate public external debt by creditor); the Export-Import Bank's position before 1959 from its annual reports; the external-wealth direct-investment total of 1970–73 against the US position across the 1969 Gulf Oil nationalization and its 1970 settlement (which of the two is right is the vetting matter bracketed above); and the tin companies' compensation from the 1952–53 agreements.

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Sidebar S3. Cross-border claims across the 1970 join, construct by construct

Figure S3. Cross-border claims by construct, 1965–1980, millions of current US dollars

Year	Reserves incl. monetary gold	Banks' foreign assets (IFS)	Residents' claim-rights abroad (EWN)	Direct investment abroad (EWN)	Claims on the page
1965	37	2	—	—	39
1966	41	2	—	—	43
1967	38	2	—	—	40
1968	42	2	—	—	44
1969	42	1	—	—	44
1970	46	3	60	0	106
1971	56	4	131	0	187
1972	71	10	208	0	279
1973	101	6	272	0	373
1974	252	7	351	0	603
1975	197	15	407	0	604
1976	207	21	476	0	683
1977	310	23	557	0	867
1978	315	25	637	0	952
1979	528	39	646	0	1,173
1980	553	43	661	1	1,215

Before 1970: the IMF's International Financial Statistics — total reserves with gold at market value (spliced at 1970 onto the external-wealth reserves, ratio ×1.00) and the banks' foreign assets at their own level. From 1970: the External Wealth of Nations — reserves with monetary gold, residents' claim-rights abroad (the dataset's 'debt assets' column, whatever instruments it holds) and direct investment abroad; the banks' foreign assets after 1970 are the IFS cells, a memo inside the claim-rights column, not an addition. "—" = not on file.

Figure S3 does for the claims side of Figure 3 what Figure S2 does for the duties. Before 1970 FAND's tier carries two constructs from the IMF's International Financial Statistics: the central bank's reserves, gold at market value, and the banks' foreign assets. From 1970 the page carries the external-wealth totals: reserves with monetary gold, residents' claim-rights abroad and direct investment abroad.

The reserves join cleanly: 46 million in 1970 in the IMF's statistics against the external-wealth reserves with gold, ratio ×1.00. The step is the claim-rights column — the external-wealth dataset's 'debt assets', whatever instruments the estimate holds — 60 million in 1970 that no pre-1970 source carries: residents' claim-rights abroad outside the banking system. Against it the banks' foreign assets read 3.4 million, a ratio far outside the splice band, so no splice is made and the 1950–69 claims stand on reserves and the banks alone: 44 million in 1969 against 106 million in 1970.

Direction: claims before 1970 are understated by the order of the 1970 claim-rights column, 0.3 % of CommonWealth, and net worth with them by the same small amount. A mirror of the duties method — residents' claims carried back on exports — would put a construction on top of an estimate and is not built; the direction is recorded in Figure 9.

Before 1970 there is no debt table. What FAND does in those years for every developing economy — each creditor's own record where one exists, a working hypothesis on imports for the classes no record reaches, and the variation where decolonization initiates most of the detail — is set out once, in FAND's methodology note Cross-border positions before 1970 (oconeco.com/methodology). Bolivia is its worked example: independent since 1825, with dollar bonds outstanding since 1931, it has something in most columns back to 1950, and Sidebars S2 and S3 show the constructs year by year.

What the 1969 duties were made of: official credit was 49 % of the total — the US government alone 30 %, other governments 13 %, the Inter-American Development Bank, IBRD and IDA and the IMF together 6 %; suppliers' and other private credits 17 %, the banks' foreign liabilities 11 %, US direct investment 14 % and the 1931 bonds 8 %. The 1960s stand on the creditors' records: the US government lending of the Alliance for Progress years is the Greenbook roll-forward spliced to the 1970 stock the Bank's tables record, the IDB's a ramp from its first loans, IBRD and IDA and the IMF their own statements. The 1950s stand on fewer. The bonds, the banks and the IMF credit of 1956 are measured; the other governments' and suppliers' credits are the working hypothesis, carried back on imports from stocks that were mostly built in the 1960s; the US government piece begins only in 1959, and the Export-Import Bank's credits, which the Greenbook statements do not carry, are in no column; direct investment is on file only from 1966; and the banks' foreign liabilities read zero in 1954–55 in the IMF's statistics, converted at the official rate through the inflation of 1953–56.

Two corrections are debatable, and they run against each other. The import index imputes into the early 1950s classes whose 1970 stock was built in the 1960s — other governments' and suppliers' credits read 96 million together in 1950 — so those two are more likely overstated than not before 1960. Everything the 1950s miss runs the other way: the tin companies' compensation after the 1952 nationalization, direct investment other than US, the Export-Import Bank's credits. Direct investment is split in two, US and rest of world. The US half is BEA's position, back to 1950, carried at its own level; the rest-of-world half is what the external-wealth total shows beyond it at 1970, carried back on the US series. The rule is the same in every year: where the US position exceeds the total, the rest of the world is zero and the sheet carries the US position. For Bolivia that holds through 1973 — the external-wealth

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total for all direct investment in 1971, 79 million, is below the US position alone (115 million) — so the duties carry BEA's position in 1970–73 and the external-wealth total from 1974, when it exceeds the US position (101 against 94 million). The two sources part only at the external-wealth series' start: BEA's is a survey position at historical cost, and the external-wealth series for Bolivia is the 1997 position carried back on the percentage changes of a cumulated-flow series. The 1960s rest on the creditors' records; the 1950s do not.

Debt relief of 2005–07 shows in both limbs. Duties fell from 8.8 % of CommonWealth in 2002 to 3.4 % in 2010 while claims rose from 2.1 % to 4.4 %, reserves accumulating on the gas receipts. The net position turned positive in 2008 and stayed so through 2015 — the only years of 76 in which residents' claim-rights abroad exceeded nonresidents' claim-rights on Bolivia — and has been near balance since, −0.9 % of CommonWealth in 2025.

Default is not write-off. The 1931 dollar bonds were never cancelled: the 1958 restamping forgave most of the arrears, principal stood, and service resumed in 1969. The series carries them at the restamped principal, 67 million, through the 1950s and 1960s — not the face value with arrears; the Bank's tables carry the same 67 million in 1970 and 38 million in 1985 (Jorgensen and Sachs: 47 million).

- **The external debt of the 1980s was near 100 % of GDP but 5.9 % of CommonWealth. Against the stock, it was not a big solvency issue. The flows that had to service it — a year's income, exports, the budget — made it a liquidity problem. The same seems true now. Duties are 2.3 % of CommonWealth in 2025, the lowest share since the 1960s; at 2,108 dollars per capita they are about the 1985 level in real terms (2,014 in 2025 dollars) and below the 2019 peak (2,612) — CommonWealth grew faster.**

Cross-border duties ran at 3.0–5.9 % of CommonWealth from the mid-1970s through the debt decade (Figure 3), 7.8 % in 2000, and fell to 3.4 % by 2010 with the HIPC and multilateral debt relief of 2005–07; they stand at 2.3 % on the 2025 column, the lowest since the 1960s.

The stock-flow distinction is what the balance sheet adds to the debt story. The debt decade's duties peaked at 8.1 % of CommonWealth in 1987; measured against a year's output the same debt was near 100 % of GDP. Net worth — CommonWealth plus claims less duties — stayed at 93–101 % of CommonWealth throughout, so the net duty to nonresidents never put the stock in question. What it put in question was the flow that had to service it, in a currency the economy earned through tin and gas.

Today's duties are the smallest share of CommonWealth since 1961 — the share of the 1950s — and, per capita in 2025 dollars, about the 1985 level: smaller against the stock, not per head in real terms. FAND's premium is zero because the floor does not bind, so the balance sheet prices no deferred maintenance of trust. The liquidity question — whether the flows of 2026 clear the duties of 2026 — is the one a balance sheet cannot answer and a sovereign rating tries to.

- **The parallel market is a 1980s story before it is a 2020s one. It opened with the Cocaine Coup of 1980 and widened after dollar contracts were converted into pesos in November 1982, after Siles Zuazo assumed the Presidency. By August 1985 the street rate stood 1,080 % above the official one and most of the economy was effectively dollarized — FAND's 1985 reading puts two thirds of transactions at the parallel price. By 1991, after stabilization, over 80 % of bank deposits were again in dollars. The parallel market reemerged in 2023 at a premium over the rate held since 2011; the peg ended on 26 June 2026 (9.73 bolivianos per dollar, past 12 within weeks); the 2025 column still carries the official price.**

In both episodes the rate reported a policy choice. For the 1980s the choice is in the record: a decade of deficits financed by the central bank, of which the hyperinflation of 1984–85 under the Siles Zuazo government was the price and Paz Estenssoro's stabilization decree of 29 August 1985 the end. For 2023–26 the IMF's October 2026 tables on file record a general government deficit of 9–11 % of GDP in 2023–25 and consumer inflation of 19.5 % in 2025 under a rate held at 6.96 since 2011. The rate was the symptom. Maladjusted exchange rates drive tradeables to informal, then grey, then black markets, which is why the conversion question and the coverage question of Sidebar S5 are the same measurement problem seen from two sides.

In each episode the sheet values Bolivian claims at the posted rate while transactions cleared at another; the gap measures what reserves could not clear at the posted rate — the deficits it deferred — and the sheet's problem is that it carries the posted number, late.

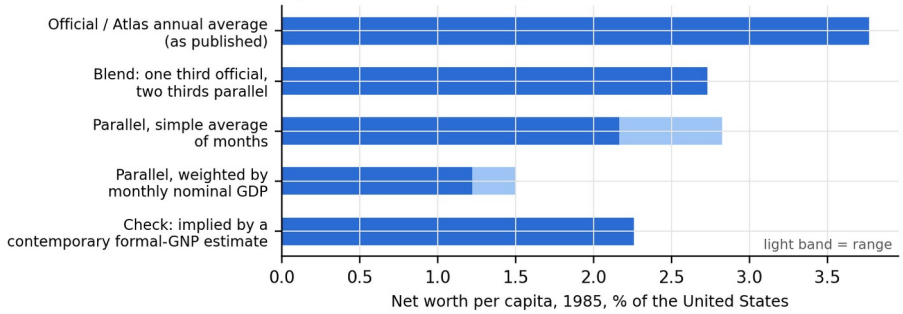
No alternative conversion factor was applied to Bolivia in the international series even though the spread between street and official rates reached 1,080 % in August 1985, and all annual aggregates for those years were sums of shorter-period data at price levels eighty-fold apart. Any price indicator is an educated guess under such conditions, and hence so is any adjustment for egregiousness; not making any adjustment is analytically worse than an educated guess. The rates that matter for those years were estimated at the time by informal and limited daily exchanges in that market; what survives in the published literature is monthly and ex post.

Sidebar S6 shows what the alternatives do to 1985. What the float of June 2026 does to the sheet is projection, and is read with the Conversion row in Part IV.

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Sidebar S6. 1985 under alternative conversion factors

Figure S6. Net worth per capita relative to the United States in 1985 under alternative conversion factors



FAND's direction: a flag on CommonWealth for years with inflation above 100 %, years with a documented parallel premium above, say, 25 %, or both — which now covers 2023–25 as well as 1982–85; and, ideally, a memo alternative CommonWealth at the simple average of the monthly parallel rate where a monthly CPI and a December anchor exist, the headline staying on the Atlas numeraire.

Figure S6 shows what the alternatives do to 1985: the published ratio to the United States is the highest of the five readings, and the parallel-rate readings put it between a third and three quarters of that. Together with Figure S5, the two corrections for 1985 — coverage up, conversion down — roughly offset in the ratio to the United States.

The five readings share one page and differ only in the factor. Official and Atlas factors are identical for Bolivia in 1979–90. The monthly path blends the official rate with a December 1985 parallel anchor bracketed at 1.5–1.9 million pesos per dollar, on the contemporary monthly CPI; the blend weights official and parallel by an assumed one-third/two-thirds transaction share; the check row backs the factor out of a contemporary estimate of formal output in dollars. 1984 needs the same treatment; 1986 does not (premium under 3 % from March).

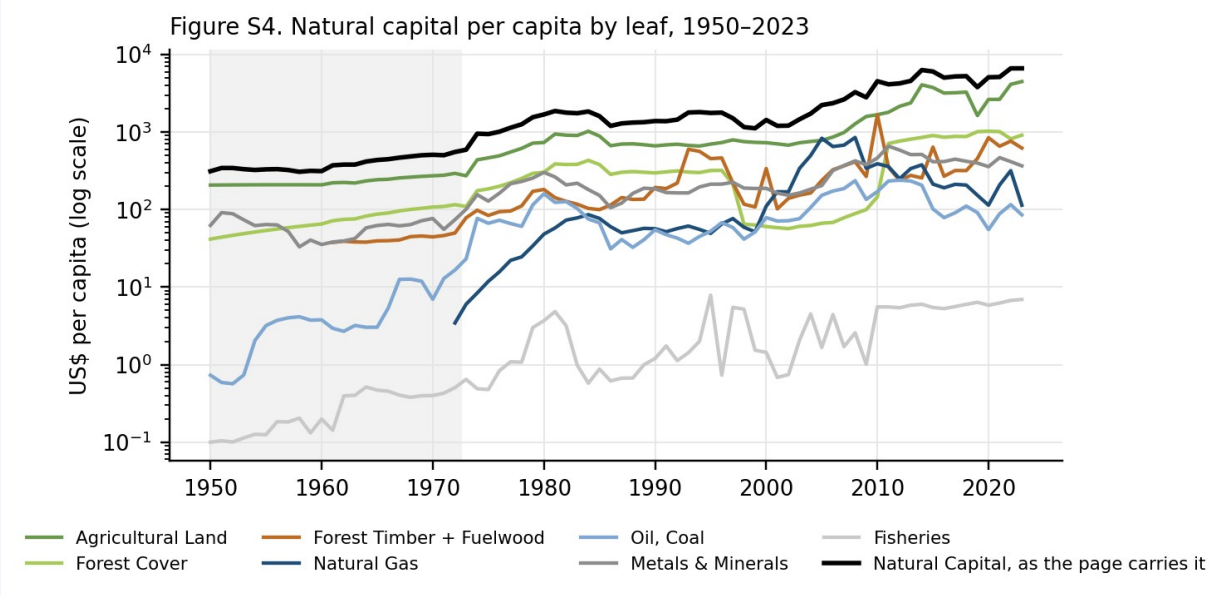
- **Natural capital is where Bolivia is least poor — 45 % of the US level per capita in 2023 — and the largest mover of the last fifteen years is agricultural land, not Fossil Fuels: 781 to 4,062 dollars per capita on the published rents of the soy expansion in Santa Cruz.**

  Natural capital is where Bolivia is not poor: 31 % of the US level per capita in 1975 and 45 % in 2023 — cropland and pasture rents, forest, fuelwood, gas and the tin base.

  Sidebar S4 draws the leaves behind the total since 1950. The sequence is tin, then gas, then land, and the land is the only one of the three that has appreciated and kept its value.

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Sidebar S4. The natural-capital leaves since 1950



1950–1960. Surprisingly, the revolution is not visible in the initial balance-sheet years but it is visible in the quantities: tin output 31,700 t in 1950, 18,000 t by 1958 after the COMIBOL nationalization. The Tin leaf falls from 129 to 102 dollars per capita: a 20 % fall in the real tin price from the Korean-war peak, a 12 % drawdown of the reserve base, and 15 % population growth.

1975–1990. The 1975–80 rise is price — the real tin price rose by almost three quarters, silver and oil rose with it — and 1985–90 is its reversal: tin fell 48 % in real terms in 1986 alone after the London Metal Exchange collapse of October 1985, output halved by 1987, and the Tin leaf lost three quarters of its value per capita between 1980 and 1990 (340 to 84 dollars).

The ratio to the United States fell from 5.6 % in 1980 to 3.2 % in 1986: the hyperinflation of 1984–85 was the price of a decade of deficits financed by the central bank, and the stabilization of August 1985 the point at which the official rate became again the rate at which transactions cleared. Figure S4 shows the shift of natural capital away from the subsoil over the whole period.

2005 on. Gas is the 2005 story — the capitalized rent rises from 111 to 832 dollars per capita as exports to Brazil took output from 3.3 to 12.4 bcm.

The largest single mover of the last fifteen years, however, is agricultural land, whose leaf goes from 781 to 4,062 dollars per capita between 2005 and 2014 on the published rents of the soy expansion in Santa Cruz, and stands at 4,475 in 2023. The signal is that Bolivia's land, not its subsoil assets, is the asset that has appreciated; the reader should know that the rents behind it are crop revenue times a regional rental-share coefficient, so the leaf inherits both the soy boom and any error in that coefficient.

For Bolivia the model's bias also runs the other way: coca land is not priced at its own rent in this leaf — only, at best, at the generic cropland rate — so the leaf should have been higher for decades before 2005 even where the acreage is captured. Sidebar S5 sets out the trade and the two gaps it leaves on the sheet.

Forest cover follows pasture rent. Fossil Fuels fall after 2014 as reserve life shortens and prices drop, and recover with prices in 2022–23; the relative value of the remaining reserves moves with world oil and gas prices rather than with volumes.

The leaf's fall in 2019, 1,632 dollars per capita against 3,274 in 2018 and 2,633 in 2020, is not Bolivia's land. The rent behind the leaf is crop and pasture revenue times a rental share, and the crop revenue is summed from FAOSTAT's production times its producer prices in dollars, item by item. FAOSTAT publishes no dollar producer price for any Bolivian item in 2019, and none for soya beans, cattle, sugar cane and maize in 2020 and 2021. An unpriced item drops out of the sum unless the leaf's existing price extension reaches it — a producer price carried past its last observation on the price index — and in 2019 that extension reached little: the crop revenue the leaf carries reads 0.5 billion dollars against 3.4 in 2018 and 4.4 in 2022, a partial sum carried as a total.

Filling each unpriced item-year as OGF fills an interior gap — the item's own price interpolated between the nearest priced years — puts the 2019 crop revenue at 3.9 billion. FAO's own value of agricultural production, all items at its own imputed prices, reads 7.5 billion for 2019 against the 3.5 billion the leaf's two legs sum to, which puts the crop revenue near 4.5 billion. On the two, the leaf is 3,171–3,451 dollars per capita in 2019 and natural capital 6.9–7.3 % of CommonWealth, against 5 % on the page; 2020 and 2021 move by about two thirds as much (3,641–3,729 and 3,839–3,882 dollars per capita against 2,633 and 2,639). The page carries the published input until it is rebuilt, and Figure 9 carries the direction. The Brief's Part II reading stands on either number: natural capital's share fell while net worth per capita rose, from 13 % in 2005 to about 7 % rather than 5 %.

The same gap sits in 31 economy-years of 22 economies in FAND's agricultural-land input, Brazil 2017 the largest (0.19 billion of crop revenue in the leaf against FAO's 174 billion for all agriculture). The fill is OGF's rule applied at the item-price level, one rule for all of them, not a Bolivian patch; the census and Bolivia's fill are among Figure 10's sources.

On the page, the Natural Capital line and the branch rows beneath it — Agricultural Land, Forest Timber, Fuelwood, Forest Cover and the depletable leaves — do not add up in 1980–2005: the line sits 2–7 % below the sum of the rows (the page's own check row reads

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0.93–0.98 where it should read 1.000; seven years beyond 5 %, 1986, 1988–89, 1997–99, 2001; 1999 the widest). Before 1980 and from 2010 they add up to within 1 %. The line and the rows come from two build runs; the next natural-capital rebuild restores line equals sum of rows, and until then the line is kept as the roll-up carries it and Figure 9 carries the gap. Metals & Minerals in Figure S4 is the roll-up's valuation, Subsoil less Fossil Fuels; the Tin leaf read above is the leaf's own tab.

- **Other Substantive Rights (OSR) are 36 % of CommonWealth in 2023, far above the 20 % floor (the United States: 41 %). Coca pulls two ways: its land, priced at the generic cropland rate, leaves rent in OSR that belongs in natural capital — a small amount, the whole leaf crop being about 1 % of GDP — while the illicit export share, outside the accounts, leaves out CommonWealth and OSR alike. Human resources priced at the stipulated labor share, above INE's measured bound (Part II), hold OSR down further. Net, OSR is understated, and deferred maintenance stays zero.**

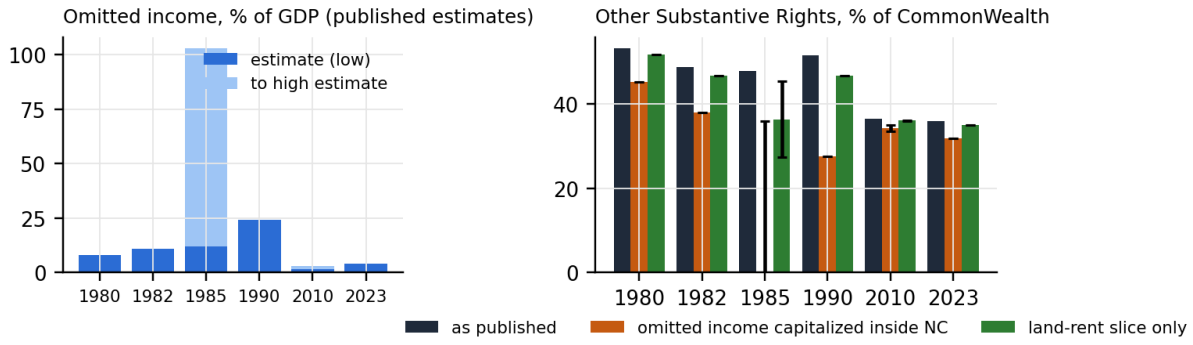
  Bolivia's share of other substantive rights in 2023, 36 %, is below the United States' (41 %) and far above the 20 % floor; Figure 2 gives the decadal percentages. The substitution read in Part I's opening is the common road, not Bolivia's alone: of 83 developing economies with the four types on the sheet in both 1970 and 2023, 77 moved share from the type furthest above the US benchmark to the type furthest below, and 78 ended closer to the US composition than they began. Human resources were the furthest-below type for 74 of them. What differs is what was given up: natural capital for 41, other substantive rights for 23 — Bolivia's group, with Argentina, Mexico, Turkey, Morocco and Senegal — and produced assets for 10.

  Other Substantive Rights are what the territory produces that no claim-right or recorded labor accounts for. For Bolivia the residual is large for documented reasons, and the two coca gaps run in opposite directions. The land gap moves value from the land leaf into the residual; the coverage gap removes value from CommonWealth and the residual alike. Sidebar S5 sets out both, with the published estimates of what the accounts omit.

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Sidebar S5. Coca on the balance sheet — the enclave, the land, the residual

Figure S5. Published estimates of the coverage omission, and what they would do to Other Substantive Rights



Bolivia's national accounts treat the coca-cocaine circuit as an “enclave” — a construct dating to INE's Base-1990 methodology that ring-fences the circuit as quasi-extraterritorial. Its domestic-facing transactions — wages, inputs bought within Bolivia, capital formation — flow into GDP directly, like any other sector; only its cross-border flows (the export side) are netted out as if the enclave sat outside the territory.

So the coverage gap is narrower than a simple exclusion: it is the illicit export share the enclave construct still cannot observe, not the whole sector. Because CommonWealth is capitalized income on the Atlas numeraire, that share is missing from the top line of the sheet in every year it was large; there are no useful estimates before 1980, and the activity was probably not of macro-analytic importance then.

Bolivia's current place in the trade is smaller in cultivation and larger in processing than in the 1980s: about 13 % of world coca area, third after Colombia and Peru, with 36,400 hectares in 2025 (up 7 % from 34,000 in 2024) against a legal ceiling of 22,000 — 14,400 hectares over — and roughly half the late-1980s peak; production is now carried downstream into cocaine for export to Brazil, Paraguay and Europe. Coca is grown in two of the nine departments, the Yungas of La Paz and the Chapare of Cochabamba, which is why a national treatment is the wrong grain for it (Part III).

A separate and more certain gap sits in natural capital. Coca-cultivated land is not priced at its own rent: to the extent it is captured in Bolivia's reported cultivated area at all — confirmed at the municipal level in INE's agricultural census for licensed zones; whether it survives into the national aggregate that reaches FAOSTAT-style methodologies is unconfirmed — it is priced at the generic cropland rate, well under coca's actual return. The CWoN methodology on which the rental-share coefficient rests carries no coca-specific treatment at all, so the coefficient is silent on coca by construction, not by a documented choice.

The balance-sheet consequence may be the one Figure 2 shows: the land of the largest income-generating crop is mispriced in natural capital, so its capitalized rent ends up in the residual and lifts Bolivia's share of other substantive rights — 36 % in 2023. This is a mispricing, not an omission, and it runs the opposite way from the enclave gap: the one understates CommonWealth, the other moves value from the land leaf into the residual.

FAND's two directions are to annotate the coverage gap — a memo row for CommonWealth including the non-observed share in the documented years and a coverage register, the headline left on the Atlas numeraire for comparability — and to price coca land at its own rent inside natural capital, monitored hectares at a coca rent per hectare, which moves value from the mispriced residual into the land leaf. The pricing direction (P5) is open for the author's ruling; the mechanism is agreed in principle, the rent series and the TL1-versus-TL2 grain are not.

Figure S5 shows the published estimates of the coverage omission (left) and what each would do to the share of Other Substantive Rights in CommonWealth (right). The left panel is the literature: contemporary Bolivian estimates of cocaine value added and of informal against formal output for 1980 and 1985, Morales and Sachs for 1982, a country-study synthesis for 1990, UNODC as cited officially for 2010, and the illustrative value of coca as agricultural production for 2023; whiskers span the range of estimates. On the right, the middle bar treats the estimate as income FAND would capitalize inside natural capital at the same multiple as CommonWealth, so the residual falls by the same percentage points — an upper bound; the right bar treats only the land-rent fifth of that income as capitalizable rent. Neither changes the level of CommonWealth; both change its composition. In 1985 the coverage correction (up) and the conversion correction of Sidebar S6 (down) roughly offset in the ratio to the United States.

The third reason is the labor share. Human resources are priced at a stipulated share of GDP of about 0.8 since 2000, above the 56–60 % that INE's own income approach measures (Part II); every point of labor share above the measured bound is a point taken from the residual. Net of the three, OSR is understated, and the 20 % floor is not in sight: 36 % of CommonWealth in 2023, against 41 % for the US.

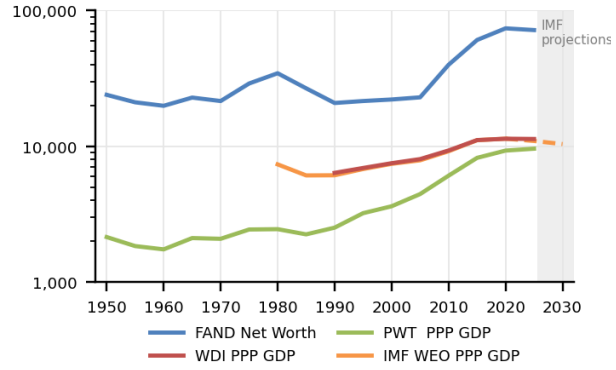
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Part II. Income statements and getting ‘real’

Reading status: the lead paragraphs are the Country Brief's text (Vetted by JOC, 11/1/26); the elaboration under them is AI-drafted and awaits the expert's vetting.

Figure 5. Gauging “absolute” progress

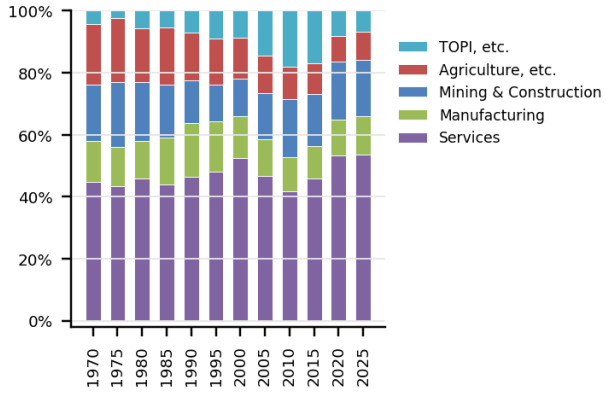
(Deflated US$ per capita, centered 5-year average, semi-log)



Sources: OconEco (FAND), World Bank (WDI), Groningen (PWT), IMF (WEO)

Figure 6. Industrial Activity

(%GDP, 5-year centered average)



Source: WDI

Figure 5 shows three ways to mitigate intractable index number problems in estimating ‘purchasing power’ in a world of change. FAND keeps it simple, applying the US GDP deflator to a country's net worth per capita — as if all purchases were at US prices and of what it prices. Changes in production possibilities and consumer preferences appear ‘real’ in this construct. They are smoothed out in the two leading sources for purchasing power parities (PPP): Bretton Woods institutions, with the IMF WEO extending the World Bank (WDI) construct; and the University of Groningen (PWT). Showing five-year centered averages makes the fundamental difference more obvious. Figure 6 considers how much of this has to do with the mix of income-generating industries (and hence production possibility frontiers and such).

The FAND line of Figure 5 is net worth per capita from Figure 1 divided by the US GDP price index. It carries whatever moved the dollar value of Bolivian output — the terms of trade, the rate at which the accounts were converted, and the capitalization multiple — and calls the result real. On the five-year centered averages the figure draws, it reads 23,938 dollars of 2021 in 1950, 34,523 in 1980, 20,840 in 1990, 22,940 in 2005 and 73,971 in 2020.

The two PPP lines price Bolivian output at international prices. The Bank's series, extrapolated on national growth, admits neither the terms of trade nor the conversion rate; Penn's expenditure side admits the terms of trade on current account. They are flows, not stocks, an order of magnitude below the FAND line; the comparison is of shapes, which is why the axis is logarithmic. The Penn line runs from 2,142 in 1950 to 9,293 in 2020; the World Bank line from 6,367 in 1990 to 11,365 in 2020; the IMF line extends the Bank's back to 1980 and forward to 2030.

- **FAND and PWT tell a similar story over the long haul and over the decades covered by WDI. That is because PWT's chained PPPs reassess ‘reality’ with each global pricing exercise (ICP cycle), and its expenditure-side measure counts terms-of-trade gains as purchasing power. Bretton Woods finds little improvement since 1980 because it applies growth rates in locally priced GDP to results from the latest (2021) ICP exercise. The further one goes back from that date, the more the choice of PPP measure is the finding.**

The level gap between the two PPP lines in 1990 — 6,367 against 2,513 — is the same economy priced on two benchmarks. The Bank's series carries the 2021 benchmark back on Bolivian growth rates; Penn's reprices at every ICP round and chains the rounds. Where the rounds found Bolivian prices cheaper, Penn's level is higher; where Bolivia's terms of trade improved, Penn's expenditure side counts the gain and the Bank's cannot. The choice of PPP measure is the finding, and more so the further back one goes.

- **The IMF's World Economic Outlook (WEO), on WDI's method, follows WDI to within 2 % from 1990, adds the 1980s — the hyperinflation slump Penn smooths, the 1980 level not regained until 2006 — and a turn now: GDP per capita at PPP peaked at 11,931 dollars in 2019; the projections, the first since the peg ended in June 2026, take it to 10,158 in 2028 and back only to 10,455 by 2030, 12 % of the US level against 14 % in 2025. On the IMF's line, Figure 5's leveling-off turns into a decline.**

The IMF's PPP line needs no exchange rate: it is real growth on the 2021 benchmark, which is why it runs to 2031. Its dollar path is another matter. On the October 2026 tables on file, GDP per capita in current dollars stops at 2026 — 4,223 dollars, 19 % below 2025 — because the Fund publishes no exchange-rate assumption beyond the year in hand. That is the only sense in which the WEO is shy about future rates; what the float does to the balance sheet is read with the Conversion row in Part IV.

The real projection is a two-year contraction, −3.0 % in 2026 and −1.5 % in 2027, with growth back to 2.9 % by 2030; on it Bolivia's GDP per capita at PPP in 2030 stays below the 2019 peak. Figure 5 shades those years and dashes the line.

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- **The back story, beyond the ken of WDI, is that Bolivia's economy just grew with population over 1950–90, and the hysteresis FAND sees before and after hyperinflation is smoothed out in PWT. FAND then sees a decade plus of return to earlier realities, just population growth, followed by a clear takeoff that seems to have leveled off. PWT argues for a smoother takeoff and an earlier plateau.**

  "Grew with population" is a statement about totals. Bolivia's population rose from 3.1 to 7.1 million between 1950 and 1990; net worth per capita in 2021 dollars was 23,047 in 1950 and 20,394 in 1990, so the stock roughly doubled while the stock per head did not move. Penn's line agrees on the per-capita verdict (1,994 to 2,540); it does not see the 1980 peak of 36,045 that FAND sees, nor the fall to 20,394 after it.

  That fall is the hysteresis. FAND's line did not regain its 1980 level until 2010; the IMF's regained 1980 in 2006; Penn's never lost it. The three series are not measuring the same thing: FAND's dollars of 2021 measure what Bolivian output was worth to the rest of the world at the time, and in the 1980s that was less, for a decade.

- **Measured against the US, the takeoff is mostly a terms-of-trade adjustment. Bolivia's net worth per capita rose 3.5-fold relative to the US in 2005–19: 1.3-fold had its prices, relative and absolute, stayed as in the 2021 ICP benchmark — what WDI counts as real — times 2.2 for the terms of trade (oil-linked gas prices strengthened the boliviano abroad; pump prices frozen for twenty years passed the gain to fuel users at home) times 1.2 for the capitalization multiple. Such gains run through capital as well as current accounts: PPPs extrapolated on national growth (WDI, WEO) cannot admit them, PWT admits them on current account only; FAND counts them, leaving open how much was windfall and how much forward-looking investment. Natural capital did not follow: its CommonWealth share fell from 13 % in 2005 to 5 % in 2019, and Natural Gas from 832 to 377 dollars per capita by 2014. FAND prices gas at Henry Hub, the one series for every economy; US shale halved it while Bolivia's oil-indexed contracts tripled, so the page understates what Bolivia was paid. Output nearly doubled against the gas known, in hindsight, to be there — reserve life fell from 38 to 15 years: the decade drew down the gas that paid for it.**

  The factors multiply: 3.5 = 1.3 × 2.2 × 1.2. The first is what WDI counts as real; the second is the dollar price of Bolivian output, which rose with oil-linked gas and fell with nothing, since pump prices were frozen; the third is the capitalization multiple, demography. FAND counts all three because its numeraire is the dollar at the year's rate, which is what the rest of the world paid and what Bolivians could buy abroad with it.

  What the page shows of investment is modest. Produced assets per capita rose from 1,946 to 9,032 dollars over 2005–19, 4.6-fold, against 4.5-fold for CommonWealth; the share stayed near 12 %. The gain sits in capitalized income and, by residual, in Other Substantive Rights, which rose from 5,681 to 34,364 dollars per capita. How much of that was windfall and how much forward-looking investment is the open question the highlight states.

  The gas price on the page is Henry Hub, the one series FAND uses for every economy. Bolivia's contracts with Brazil and Argentina were oil-indexed; they tripled while shale halved Henry Hub, so the Natural Gas leaf understates what Bolivia was paid across the decade. That is an Exception to Expectations with its direction, not a reason for bespoke pricing (Part IV). Reserve life fell from 38 to 15 years because output nearly doubled against the gas known, in hindsight, to be there.

- **Figure 6 is where the hydrocarbon decade shows: mining, utilities and construction rose from 12.1 % of GDP around 2000 to 18.8 % around 2010. TOPI, etc. — GDP less the four industries' value added, mostly taxes on products net of subsidies — rose from 8.8 to 18.1 % and was back to 6.8 % by 2025. The direct hydrocarbon tax of 2005 (a 32 % production tax on wellhead value, not an export tax) is most likely booked there: it yielded 15.6 billion bolivianos at its 2014 peak and some 2 % of GDP in 2020, INE leaving only half a percent of GDP for other production taxes. Agriculture fell from 20.6 % in the mid-1970s to 9.1 %; manufacturing has stayed between 10 and 17 %.**

  TOPI, etc. is the remainder once the four industries' value added is taken from GDP: mostly taxes on products net of subsidies. Its rise from 8.8 % around 2000 to 18.1 % around 2010 and fall to 6.8 % by 2025 is the fiscal shadow of the hydrocarbon decade. The direct hydrocarbon tax of 2005 is a production tax on wellhead value, so INE most likely books it there rather than in mining's value added; its yield of 15.6 billion bolivianos at the 2014 peak fell to some 2 % of GDP by 2020.

  The other movements are the long ones. Agriculture fell from 20.6 % of GDP in the mid-1970s to 9.1 %; services rose from 43.5 % to 53.6 %; manufacturing has stayed between 10 and 17 %. Mining, utilities and construction carried the decade and have since settled near 18.1 %.

- **The coca-cocaine circuit is carried as an enclave: its domestic transactions flow into GDP like any sector's, only the illicit export share is outside the accounts — a coverage gap narrower than a simple exclusion, missing from the top line in every year it was large. About 13 % of world coca area, third after Colombia and Peru, 36,400 hectares in 2025 against a legal ceiling of 22,000.**

  The enclave is INE's construct, not FAND's, and FAND takes the accounts as given. What the construct leaves out is the illicit export share; what it keeps in is everything the circuit buys and pays inside Bolivia. The published estimates of the omitted share, and what they would do to the sheet, are in Sidebar S5 (Part I). The direction is one-sided: CommonWealth and the residual are understated in every year the share was large, and the 1980s are the years.

- **Bolivia's INE estimates GDP in all three spokes of Knight's Wheel of Wealth; its income approach (reference 2017) separates mixed income, 20–22 % of GDP in 2017–24. FAND counts it all as labor's (ideally it would be split with capital), so labor's take**

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runs 56–60 % of GDP, an upper bound. FAND's stipulated labor share, about 0.8 of GDP since 2000, sits above that bound — human resources overstated, other substantive rights understated.

The international series FAND carries for the generation of income (UNSD Table 4.1) does not separate mixed income for Bolivia: the income of the self-employed sits inside the operating surplus, and the labor share it shows is compensation of employees alone — 33 % of GDP in 1995 and 29 % in 2015, the last year published. INE's income approach on the 2017 reference separates it: 20–22 % of GDP in 2017–24, which with compensation puts labor's take at 56–60 %, an upper bound because FAND would count all of mixed income as labor's.

The stipulated labor share that prices human resources on the page is about 0.8 of GDP since 2000, above that bound. The direction is stated in Figure 9: human resources overstated, Other Substantive Rights understated by the same amount. The direction for further work is INE's income approach from 2017 as the measured series for Bolivia, the stipulated share as the backcast where INE does not reach.

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Part III. Why subnational: the country's units among their income group

Reading status: the lead paragraphs are the Country Brief's text (Vetting in progress by JOC (his 11/1/26 text; one clause corrected on the corpus, 11/8/26)); the elaboration under them is AI-drafted and awaits the expert's vetting.

> Vetting includes digging deeper into data sources and methods. In general, that starts by comparing FAND's Global Roots (GR) exercise with its nearest equivalent, key indicators reported by the Global Data Lab. For Bolivia, that included a deep dive into the national statistical institute (INE), which in this case flagged a full set of UNSNA accounts, down to sources and uses of funds. This suggests directions for further work, notably updating Global Roots estimates of economic size of Bolivia's TL2 units.

Figure 7. Among all lower-middle-income Roots units



Figure 8. Key subnational indicators

Unit	GR density (/km²)	GR income pc ($k)	GDL income index	GDL mean years of schooling	GDL life expect. (years)	INE GDP pc 2024 ($k)
Tarija	13.6	5.25	0.693	9.4	68.8	5.50
Santa Cruz	8.5	4.20	0.720	11.5	69.2	5.36
La Paz	23.4	3.66	0.651	10.3	64.3	4.80
Cochabamba	35.7	3.55	0.669	9.2	63.8	4.34
Chuquisaca	11.5	3.45	0.615	7.5	67.7	4.38
Beni	10.9†	3.22	0.627	10.8	67.6	4.65
Pando	2.2	3.01	0.660	11.8	66.9	4.18
Potosi	6.9	2.93	0.598	7.2	59.1	4.75
Oruro	10.6	2.70	0.654	10.1	65.9	4.05

Figure 8: Global Roots (GR) TL2 units; GDL Subnational HDI v8.4, 2022; INE GDP per capita 2024 at 6.91 per US$, on Census population. † land area analog-inferred: density not informative. Where to start vetting: Global Roots land area is analog-inferred for 1 of 9 units (Beni): their density is not informative. Income rank, Global Roots against GDL, differs by 3 or more places for Oruro (GR 9, GDL 5); La Paz (GR 3, GDL 6); Chuquisaca (GR 5, GDL 8); Pando (GR 7, GDL 4). Against INE GDP per capita (2024), Global Roots income ranks differ by 3 or more places for Potosi (GR 8, INE 4); Cochabamba (GR 4, INE 7). GDL's subnational pattern rests on the 2008 DHS, carried forward on national trends to 2022.

The note under Figure 8 is where a reviewer who is not the author starts. It names three checks the build runs for every economy: which units' land area is analog-inferred (Beni, so its density is not informative); where the Global Roots income rank differs from GDL's by three places or more (Oruro, La Paz, Chuquisaca, Pando); and where it differs from the national statistical institute's (Potosí, Cochabamba). The last line names the survey behind GDL's subnational pattern — the 2008 DHS, carried forward on national trends — which is the reason INE's own surveys and the 2024 Census are the better source.

> Among the 1,259 lower-middle-income units (LMIU) in the Global Roots (GR) exercise, Figure 7 shows most of Bolivia's nine Departments (TL2) are in the top fifth on income per capita. Oruro, the poorest, is just below it in the fourth. All are on the quintile row for least densely populated places.

Figure 7 places Bolivia's nine Departments among the 1,259 lower-middle-income units of the Global Roots exercise on two benchmarks, income per capita and density, in population-weighted fifths of the group. Eight of the nine sit in the top income fifth and the sparsest density fifth, the cell Figure 7 marks; Oruro sits one column to the left. On these benchmarks Bolivia is not a poor place among lower-middle-income places; it is a sparse one.

That qualifies the national reading in two ways. The within-country ordering — Tarija and Santa Cruz first, Oruro and Potosí last — survives, but the distance from the group's poorer places does not: no Department is where a lower-middle-income place cannot expect capital on reasonable terms by this benchmark, consistent with FAND's zero premium and with reading 2026 as a liquidity problem, not solvency. And the density placement is the take-off question in its sharpest form: whether sparse places with natural capital — Santa Cruz's land, Tarija's gas — take off on the terms dense ones do, which is the subnational sheet FAND owes.

> Figure 8 shows diversity within rather than between countries. Economic size in Global Roots, the Global Data Lab's 2020 income pattern scaled to the national total rather than departmental GDP, runs from Oruro at $2,700 per capita, the traditional mining capital, to Tarija at $5,300, the gas Department. Santa Cruz, the soy Department, is second; tin Departments last. The spread is two to one (1.4 to one on INE's 2024 departmental GDP), across 2 of the group's five income quintiles. The 47 lower-middle-income nations occupy 5 fifths and spread 2.9 to one between the tenth and ninetieth percentile.

The spread of two to one across the nine Departments is read against two comparators on the same bounds. Within the group's income fifths, Bolivia's units span 2 of five; the 47 lower-middle-income nations span all five and spread 2.9 to one between the tenth and ninetieth percentile. Diversity within Bolivia is real and is smaller than diversity between the nations of its group — the comparative word is computed from the benchmarks, not asserted.

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Global Roots' economic size for the nine Departments is not departmental GDP of any vintage. It is the Global Data Lab's subnational income pattern — log GNI per capita at 2017 purchasing-power parity, for 2020 — applied to the national total, the Where exercise's gap-fill for every economy without OECD or national regional accounts. Its ranks and GDL's current income index differ because they are two GDL measures — the 2020 GNI-per-capita pattern and the latest index — which is what the vetting starter under Figure 8 flags for Oruro, La Paz, Chuquisaca and Pando.

INE's departmental GDP for 2024, the native source, keeps Tarija, Santa Cruz and La Paz first, second and third and Oruro last, and moves Potosí from eighth to fourth and Cochabamba from fourth to seventh. Read as Figure 8 reads Tarija, Potosí's move would be output produced in the Department — mining — more than income its households receive; INE's activity detail is the check. The spread across the nine is 1.9 to one on the Roots pattern and 1.4 to one on INE's 2024 GDP per capita.

Direction: INE's departmental GDP, 2017–2024, replaces the GDL pattern for Bolivia at the next Global Roots vintage — the update the Brief's Part III names — and Figure 7's placement of the nine Departments is read on the GDL pattern until then.

> The Global Data Lab reports a subnational human development index (HDI) for the same TL2 units. The HDI ordering is broadly similar — Santa Cruz 0.758, Potosí 0.612, national 0.698 — but the HDI places Tarija below Santa Cruz, contrary to income per capita: Tarija's life expectancy matches Santa Cruz's (68.8 and 69.2 years, 2022), its adults have two fewer years of schooling (9.4 against 11.5), and GDL's own income measure also ranks it second. INE's departmental GDP for 2024 sides with Global Roots (Tarija first at $5,505 per capita, Santa Cruz second at $5,360, on 2024 Census population); GDL's income for Bolivia is not output but household assets, last surveyed in 2008, scaled to the national total. Where the two orderings differ, the gap suggests income produced in a place is not accruing to its households — Tarija's government is rich in royalties and its share of the hydrocarbon tax, its households less so, the departmental counterpart of CommonWealth over net worth — and then rent not yet turned into schooling.

Three measures of the same nine places agree on the ends and disagree in the middle. Income per capita, from Global Roots and from INE, puts Tarija first; GDL's HDI puts Santa Cruz first and Tarija below it, on two fewer years of schooling. GDL's own income component ranks Tarija second, so the disagreement is not about income. It is about what income produced in a Department does for the people who live there — the departmental counterpart of CommonWealth over net worth — and Tarija's royalties and hydrocarbon-tax share accrue to its government first.

> INE publishes GDP by economic activity for all nine Departments, 2017–2024, and the 2024 Census counts their people. The Global Data Lab's departmental life expectancy and schooling go back to the 2008 DHS, carried forward on national trends; INE's demographic and health surveys of 2016 and 2023 (EDSA, representative by department) and the 2024 Census are the better source. With these, FAND can complete the departmental (TL2) balance sheets — CommonWealth from Departmental GDP, human resources from each department's own health and schooling, and the gas, soy and coca rents where they are earned. Source: INE, PIB departamental.

The sources for departmental balance sheets exist. INE publishes departmental GDP by economic activity for 2017–2024 on the 2017 reference; the 2024 Census counts the people; the 2016 and 2023 EDSA surveys carry health and schooling by Department. With these, CommonWealth per Department follows from departmental GDP, human resources from each Department's own life expectancy and schooling, and the rents — gas in Tarija, soy in Santa Cruz, coca in La Paz and Cochabamba — where they are earned rather than apportioned by population. That is the direction for further work the Brief names, and the grain at which the coca and gas exceptions of Part IV stop being national averages.

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Part IV. Where to go next: sources and methods, NUSAP-lite, exceptions to expectations

Sources and methods. Every line of the balance sheet and the income statement is built from a posted method — which source, which price, which conversion, which carry — and every departure from it is listed as an Exception to Expectations. The methods, with hyperlinks to the databases FAND draws on, are at oconeco.com/methodology/sources.

NUSAP-lite. Every number carries a five-part pedigree — Numeral, Unit, Spread, Assessment, Pedigree — and an honesty badge (Production, Experimental, Prototype) that travels with it in the metadata. What FAND carries today is the numeral, the unit and the pedigree on nearly every cell and a spread and an assessment on a few; the blanks are shown, not filled. The badge taxonomy is at oconeco.com/methodology/nusap.

Exceptions to Expectations. FAND does not correct official statistics; where a series does what its posted method says it should not, the case is documented with its direction and a status (noted, open, ruled). Figure 9 lists them one line each, as in the Brief; each row is elaborated below it, and the full Statements of Expectations for this economy — posted method, what the series show, the exception, the status — are Sidebar S7.

Figure 9. Exceptions to Expectations, one line each

Component	Exception to Expectations? — with its direction	Status
CommonWealth	regime: the sheet carries the government's price in 1982–85 and 2023–25 (flag and memo direction ruled 09-15; the 2023–25 extension open)	ruled
CommonWealth	the Atlas GNI input is spliced end to end onto the World Bank's series at 1976 with no overlap year (the splice rule's no-overlap case): against the author's own history the series steps 3.9 % where the history moves 18.7 % — a level break of about 14 % hidden by the 1974–75 surge, direction to be checked; the position relative to the US is struck against BEA GDP per capita, which carries no seam of its own	open
Produced assets	no — stated method; the 1950s carry-back is a pedigree	noted
Natural capital	coca pricing and the forest-cover rule (P1, P2 built; P6 approved; P5 open); the Natural Capital line and the branch rows beneath it do not add up in 1980–2005 (the line 2–7 % below the sum of the rows; exact before, within 1 % after) — restored at the next natural-capital rebuild	open
Natural capital	Natural Gas priced at Henry Hub, the one series for every economy, not Bolivia's oil-indexed pipeline contracts: contract prices tripled while Henry Hub halved, so the page understates what Bolivia was paid across the gas decade; no bespoke pricing (ruled 11-02)	ruled
Natural capital	Agricultural Land 2019–21: FAOSTAT carries no dollar producer price for any Bolivian item in 2019 and none for soya, cattle, sugar cane and maize in 2020–21, so the crop revenue behind the rent is a partial sum — the leaf and the 2019 natural-capital share understated (about 7 % of CommonWealth at interpolated item prices, 5 % on the page); a class of 22 economies, the input fill ticketed	open
Human resources	the stipulated labor share (about 0.8 of GDP since 2000) sits above INE's measured upper bound (56–60 %, 2017–24) — overstated; and the P7 tail artifact (2025)	open
OSR and DM	no — far above the 20 % floor; coca mispricing lowers OSR a little, coca coverage and the stipulated labor share understate it more	noted
Cross-border	the 1950–69 method is a Statement of Expectations (ruled 11-07); outside it the sheet misses the tin companies' compensation after 1952, non-US direct investment and the Export-Import Bank before 1959, and claims before 1970 carry reserves and the banks' foreign assets only — duties and claims understated, by little against the stock	open
Generation of income	the international series omits mixed income; INE publishes it from 2017 (20–22 % of GDP) — the series to carry	open
Conversion	no alternative factor was ever applied; the 2025 column carries the official price the June 2026 float ended	open

Status: noted (a property of the method), open (awaiting an expert's ruling), ruled (decided by the author, dated). Each row is elaborated below; the posted method and what the series show are in Sidebar S7.

Figure 9, row by row: the evidence, its direction, the status, and directions for further work

CommonWealth — *regime: the sheet carries the government's price in 1982–85 and 2023–25 (flag and memo direction ruled 09-15; the 2023–25 extension open)* [ruled]

Evidence: the Atlas factor equals the official rate in 1979–90 and the 6.96 peg in 2011–June 2026, while transactions cleared at another rate in 1982–85 (a premium to 1,080 %) and from 2023. Direction: in those years the dollar value of CommonWealth, and so the position relative to the US, is overstated at the posted rate; Sidebar S6 puts the 1985 overstatement at a quarter to two thirds. Status: the flag and the memo direction were ruled 09-15; extending both to 2023–25 is open. Further work: the flag rule (inflation above 100 %, a documented premium above 25 %, or both) applied to 2023–25 on the page; the memo alternative where a monthly CPI and a December anchor exist.

CommonWealth — *the Atlas GNI input is spliced end to end onto the World Bank's series at 1976 with no overlap year (the splice rule's no-overlap case): against the author's own history the series steps 3.9 % where the history moves 18.7 % — a level break of about 14 % hidden by the 1974–75 surge, direction to be checked; the position relative to the US is struck against BEA GDP per capita, which carries no seam of its own* [open]

Evidence: the Atlas GNI input is the author's own history to 1975 spliced end to end onto the World Bank's series from 1976, with no overlap year; across the join the series steps 3.9 % where the history moves 18.7 %. Direction: to be checked — on the history's level the 1950–75 columns, and the position relative to the US in those years, would be about 14 % higher; on the series' level they stand. The US side of the ratio carries no seam: it is struck against BEA GDP per capita. Status: open. Further work: a ratio splice at the 1976 join, the level chosen stamped in the pedigree either way, as the splice rule requires.

Produced assets — *no — stated method; the 1950s carry-back is a pedigree* [noted]

Evidence: produced assets are a perpetual inventory on own-currency investment converted at the year's rate; the own-currency factor is measured from 1960 and carried back to 1950–59, and the 2025 column is carried off 2024. Direction: none claimed; the carry-back is a pedigree entry, not an exception. Status: noted.

Natural capital — *coca pricing and the forest-cover rule (P1, P2 built; P6 approved; P5 open); the Natural Capital line and the branch rows beneath it do not add up in 1980–2005 (the line 2–7 % below the sum of the rows; exact before, within 1 % after) — restored at the next natural-capital rebuild* [open]

Evidence: coca land is priced at the generic cropland rate (Sidebar S5); the forest-cover rule and the 2024–25 carry are in the author's words below. Direction: coca land understated in the leaf and overstated in the residual; forest cover whipsawed by a price that is not its own. Status: P1 and P2 built on this page, P6 approved and not built, P5 open. The second matter in this row: the Natural Capital line and the branch rows beneath it do not add up in 1980–2005 (the line 2–7 % below the sum of the rows; Sidebar S4) — two build runs; restored at the next natural-capital rebuild.

Forest cover per capita falls by four fifths between 1995 and 2005 and rises more than tenfold by 2015 because the rule prices accessible forest at the published pasture rent per hectare, which itself swings between 1.5 and 8.8 dollars within a single decade while forest area and the accessible share barely move; the direction — a centered five-year median of that rent feeding the rule and the pasture leaf — is approved (P6) and not yet built.

Natural capital for 2024–25 is carried from 2023 in real terms, which is why its share in Figure 2 falls while its level does not; the carry stays until the 2024 rents and reserves are published. The gas-reserves layer (P1) and the perpetuity cap on timber and fuelwood (P2) are built into this page.

Natural capital — *Natural Gas priced at Henry Hub, the one series for every economy, not Bolivia's oil-indexed pipeline contracts: contract prices tripled while Henry Hub halved, so the page understates what Bolivia was paid across the gas decade; no bespoke pricing (ruled 11-02)* [ruled]

Evidence: the Natural Gas leaf is priced at Henry Hub for every economy; Bolivia's export contracts were oil-indexed and tripled while Henry Hub halved. Direction: the leaf, and natural capital with it, understate what Bolivia was paid across 2006–14 — the leaf fell from 832 to 377 dollars per capita while receipts rose. Status: ruled 11-02 — the computation stays standard and the departure is documented here, not priced bespoke. The reserve-life finding (38 to 15 years) stands on its own: it is output against the stock known in hindsight.

Natural capital — *Agricultural Land 2019–21: FAOSTAT carries no dollar producer price for any Bolivian item in 2019 and none for soya, cattle, sugar cane and maize in 2020–21, so the crop revenue behind the rent is a partial sum — the leaf and the 2019 natural-capital share understated (about 7 % of CommonWealth at interpolated item prices, 5 % on the page); a class of 22 economies, the input fill ticketed* [open]

Evidence: FAOSTAT's producer-price file carries no dollar price for any Bolivian item in 2019 and none for soya beans, cattle, sugar cane and maize in 2020–21; the crop revenue the leaf carries is 0.5 billion dollars in 2019 against 3.4 and 4.4 either side (Sidebar S4). Direction: the leaf and natural capital understated — 2019 by 1,539–1,819 dollars per capita on the interpolated prices and on FAO's own total (natural capital about 7 % of CommonWealth, not 5 %), 2020–21 by about two thirds as much; nothing else on the sheet moves. Status: open — a class of 22 economies in the agricultural-land input. Further work: OGF at the item-price level (each unpriced item-year at its own price interpolated across the gap), or FAO's own value of production, which carries its imputation and is on file for the two witness economies, and rebuild the leaf for all economies at once (ticketed, BT-AGL-PRICE01).

Human resources — *the stipulated labor share (about 0.8 of GDP since 2000) sits above INE's measured upper bound (56–60 %, 2017–24) — overstated; and the P7 tail artifact (2025)* [open]

Evidence, the share: the stipulated labor share is about 0.8 of GDP since 2000; INE's income approach measures 56–60 % (Part II). Evidence, the tail, in the author's words:

The most recent years. Two series move in 2024–25 for reasons of measurement rather than economics, and FAND's directions are stated so the reader can weigh them.

Human resources per capita fall by a quarter between 2024 and 2025 (36,071 to 27,205 dollars) because the labor share stipulated for Bolivia in the latest labor-statistics vintage drops from 0.83 to 0.58 while wages and hours do not move; the underlying employees ratio in that vintage (0.184 → 0.141) is the only such move in 220 economies. The step is a source artifact at the tail, under review with the other vintage jumps (P7).

On the page the fall lands in the residual by identity, which is why Other Substantive Rights read 50 % of CommonWealth in 2025 against 36 % in 2023. Direction: human resources overstated by the share and understated at the tail; the 2023 column is the one to read. Status: open (the stipulated-share rule is ruled; the vintage jump is under review). Further work: P7's direction — carry the last measured ratio — applied to the 2025 column, a one-cell carry, reversible; and INE's measured series from 2017.

OSR and DM — *no — far above the 20 % floor; coca mispricing lowers OSR a little, coca coverage and the stipulated labor share understate it more* [noted]

Evidence: Other Substantive Rights are 36 % of CommonWealth in 2023 and have not been below 33 % in any decade; the floor is 20 %; Deferred Maintenance of Trust and the premium are zero in every year. Direction: the residual is high for documented reasons —

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coca mispricing lowers it a little, coca coverage and the stipulated labor share understate it more — not an exception. Status: noted. The residual is the complement of the human-resources choice, which is why the HR vintage is named whenever DM is read.

Cross-border — *the 1950–69 method is a Statement of Expectations (ruled 11-07); outside it the sheet misses the tin companies' compensation after 1952, non-US direct investment and the Export-Import Bank before 1959, and claims before 1970 carry reserves and the banks' foreign assets only — duties and claims understated, by little against the stock* [open]

Evidence: the 1950–69 method is the Statement of Expectations for every developing economy (Sidebar S7, Cross-border; Sidebar S2 applies it to Bolivia construct by construct): duties read 4.7 % of CommonWealth in 1969 and 4.6 % in 1970, no step. What stays outside the method before 1970: the tin companies' compensation after 1952, rest-of-world direct investment, the Export-Import Bank before 1959; other direct investment before 1970, zero for Bolivia because the external-wealth total for all direct investment (79 million in 1971) is below the US position alone (115 million), so the US position is carried in 1970–73 as well (Part I); on the claims side, residents' claims abroad beyond the banking system, which is why claims step from 0.3 % to 0.6 % of CommonWealth at 1970 (Sidebar S3). Direction: duties and claims understated before 1970, each by little against the stock — the two import-backcast classes of the 1950s the other way. Status: the method ruled 11-07; the gaps open. Further work: the transcriptions Sidebar S2 lists.

Generation of income — *the international series omits mixed income; INE publishes it from 2017 (20–22 % of GDP) — the series to carry* [open]

Evidence: UNSD Table 4.1 carries compensation of employees only for Bolivia, to 2015; INE's income approach on the 2017 reference separates mixed income at 20–22 % of GDP in 2017–24. Direction: labor's take understated in the international series (to 2015) and bounded above by INE's (from 2017); the stipulated share on the page exceeds the bound. Status: open. Further work: INE's series as the measured labor share from 2017, named as a national-source substitution in the pedigree.

Conversion — *no alternative factor was ever applied; the 2025 column carries the official price the June 2026 float ended* [open]

Evidence: no alternative conversion factor was ever applied to Bolivia in the international series; the 2025 column carries the official price the June 2026 float ended. Direction, the past: Sidebar S6. Direction, the projection: the Atlas factor averages three years, so the new rate reaches the sheet over 2026–28. Arithmetic on the 2025 column, not a forecast: at 9.73 bolivianos per dollar every line converted at the rate is 28 % lower in dollars, at 12 it is 42 % lower; natural capital, priced in dollars, does not move; net worth per capita relative to the US would read 3.8–4.7 % if every line moved with the rate, the range of 2010–12 rather than a new low. Status: open.

Sidebar S7. The Statements of Expectations in full

Figure S7. Statements of Expectations — the posted method, what the series show, the exception and its status

Component	Statement of Expectation (posted method)	What Bolivia's series show	Exception to Expectations?	Status
CommonWealth (CW)	Atlas GNI per capita × GDP/GNI ratio, capitalized — CommonWealth is capitalized GDP, what the territory produces; Atlas factor throughout; columns before 1973 era-flagged (the grey band on every chart)	Atlas factor = the official rate 1979–90 (parallel premium to 1,080 % in Aug 1985) and the 6.96 peg 2011–June 2026 with a parallel market from 2023; GDP/GNI ratio observed from 1976, extrapolated back before; 1950–62 GNI on the author's own history (JOC_History pedigree)	Yes — regime: the sheet carries the government's price in 1982–85 and 2023–25	ruled (JOC 09-15: flag + memo direction); 2023–25 extension open
Produced assets (PA)	Perpetual inventory on own-currency investment, converted at the Atlas factor (Route 1)	Own-currency factor 0.50–0.60 in the 1950s–60s, carried back 1950–59 from 1960; measured since	No — stated method; 1950s carry-back is a pedigree	noted
Natural capital (NC)	Sum of published leaves; AgLand own-currency backcast before 1995; gas on the P1 reserves layer; timber and fuelwood on the P2 cap; 2024–25 carried from 2023	Coca land at the generic cropland rate (P5 open); forest cover follows the pasture rent whipsaw (P6 approved, not built); 2024–25 OCF	Yes — coca pricing; forest-cover rule	ruled (JOC 09-15: P1, P2 built; P6 approved); P5 open
Human resources (HR)	Two-asset PIM on the stipulated labor share (SPMF-HRRULE-1); ILO employment and wages beneath	2025 falls by a quarter (36,071 to 27,205 dollars per capita) on the ILO 2025 employment-ratio vintage (0.184 → 0.141) while wages and hours do not move; INE's own releases do not corroborate	Yes — a source artifact at the tail (P7): the only economy of 220 whose 2025 ILO employees-to-population ratio moves by more than a fifth; on the stipulated labor share the step is the share itself (0.83 → 0.58)	under review (JOHN 2026-10-29: stipulated-HR ruled; vintage jumps to the next-session lane)
Other substantive rights (OSR) and DM	OSR = CW − PA − NC − HR; floor at 20 % of CW; DM = shortfall	OSR 33–71 % of CW by decade, 36 % in 2023; never on the floor; DM and premium zero	No — high for a documented reason (coca mispricing; coverage), not an exception	noted

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Component	Statement of Expectation (posted method)	What Bolivia's series show	Exception to Expectations?	Status
Cross-border (CBA, CBL)	The cross-border frame: EWN/IIP positions from 1970 (EWN-totals overlay 1970–94; IMF-published totals from 1990; the 2025 edge completed with the income group where unreported). Before 1970, for every developing economy: each creditor's own record of what it was owed — IBRD and IDA, the IMF, the US government, the resident banks' foreign liabilities, the US direct-investment position — each spliced at 1970 onto its own class in the Bank's debt tables (the US direct-investment position at BEA's own level; other direct investment = the external-wealth total less the US position at the join, carried back on the US series — the dataset publishes no partner detail — and zero where that difference is negative), and the classes no creditor record reaches (other multilateral, other bilateral, bonds, suppliers' and other private, commercial banks) carried back from their 1970 stock on goods imports as a working hypothesis; the regional development banks on a ramp from their first lending year; where independence came after 1946, nothing before independence where nothing was measured — the decolonization variant, in which most of the detail begins at independence. Claims before 1970: reserves and the banks' foreign assets. Bolivia's 1931 bonds at the restamped principal throughout. Net worth = CommonWealth + claims − duties, what residents own	IFS tier 1950–69, EWN totals 1970–94, the P1 panel's EWN/IIP tier 1995–2006 and 2008–13, IMF totals 2007 and 2014–25: CBL 1.9–2.6 % of CW in the 1950s, 4.7 % in 1969 and 4.6 % in 1970 (no step), 4.0–8.1 % through the debt decade, 6.1–8.8 % 1995–2005, 3–4 % after the 2005–07 relief, 2.3 % in 2025; claims step from 0.3 to 0.6 % of CW at 1970 (reserves and the banks' assets before, the external-wealth totals after); direct investment: the US position (BEA) at level in every year it exceeds the all-FDI total (1950–73 for Bolivia), the external-wealth total otherwise; in 1969 official credit 49 % of duties, the US government alone 30 %, the 1931 bonds at the restamped principal; net worth 93–101 % of CommonWealth throughout — the net duty to nonresidents is small against the stock: a liquidity story, not solvency	Yes — coverage before 1970 (the method itself is stated, ruled 11-07): the tin companies' compensation after 1952, direct investment other than US (zero for Bolivia: the external-wealth total for all direct investment in 1970–73 is below the US position alone — a source conflict, bracketed in the Country Analysis), the Export-Import Bank credits the Greenbook statements do not carry; claims without residents' claims abroad beyond the banking system — duties and claims understated, by little against the stock; the two working-hypothesis classes of the 1950s the other way (Figure 9 row 7; Country Analysis Sidebars S2–S3)	the method ruled 11-07; the gaps open
Generation of income	UNSD SNA Table 4.1; L = D.1 + B.3	B.3 not separated (zero by omission): L = D.1 only, 29–33 % of GDP; series ends 2015; net taxes rise with the 2005 hydrocarbon tax	Yes — omission in the source, disclosed, not imputed	noted

FAND's Statements of Expectations are its posted sources and methods: what each component should do, given how it is built. Results that show what they ought to are not exceptions.

NUSAP-lite

What the pedigree says for Bolivia. Columns before 1973 carry the era flag of the Bretton Woods years. The natural-capital basis is measured to 2023 and carried for 2024–25. The human-resources price is an identity backcast to 1988 and spliced to the ILO's measured series from 1989, with mixed income zero by omission in the source throughout. Conversion is the Atlas factor from 1960 and a CommonWealth-implied proxy before. The cross-border frame changes tier in 1970, 1995, 2007, 2014 and 2025, each change flagged on the page. The GDP/GNI ratio is observed from 1976 and extrapolated back before. Every one of these is a pedigree entry, not an exception; the exceptions are the ten rows above.

Metadata

Balance sheet: Bolivia country page v8 20261029 (current US dollars per capita, GDP basis, 1950–2025); Part II: net worth per capita deflated by the BEA GDP price index (NIPA Table 1.3.4, 2021 = 100), WDI GDP per capita at PPP (constant 2021 international dollars) and industrial origin (NV.AGR, NV.IND, NV.IND.MANF, NV.SRV; TOPI, etc. = the remainder), Penn World Table 11.0 (rgdpe / pop); IMF World Economic Outlook, October 2026; labor shares UNSD Table 4.1; INE Bolivia, GDP by the income approach (Cuadro 2.3.2, reference 2017) and departmental GDP (2017–2024); FAND Q-Matrix 2023 and Roots index; Global Data Lab subnational HDI. Reading: the lead of every section is the Country Brief's text (four-page text revision 11, 2026-11-10); the elaboration is Country Analysis text revision 6, 2026-11-08, AI-drafted, not yet vetted; the balance sheet carries the Experimental badge. **Side of the numbers:** every series is from the author's workbench (John's side), none from fand-etl, the production system FAND's GitHub team runs — series by series below.

Figure 10. Side of the numbers

Series	Side	Artifact	Filed to move it
GNI (Atlas), population, GDP/GNI ratio, CommonWealth	John	tl1_basis_panel_P1 (ship 09-12e)	D33 copy-with-manifest
PA	John	P1 tiers × Route 1 own-currency factor, on the page	D33 (BT-PA03 Part A)
NC	John	P1 roll-up; AgLand on the Route 1 rent path, on the page	fand-etl #1640
HR	John	Exhibits/HR_PIM_TL1_20260910	fand-etl #934
OSR, DM, premium	John	residual and D1 floor, on the page	D33
CBA / CBL	John	P1 EWN/IIP tier + patches 10-09, 10-10, 10-21	#1288 adopted; #1391 open
Part II: real net worth, WDI, PWT, IMF WEO, industrial origin	John	part2_cache.json from Data_Extracts (part2_data.py)	none filed
Sidebar S4: FAO value of agricultural production (the authority's own total)	outside	A_Background/Data_Extracts/NC/FAO_GPV_via_OWID (FAO QV via Our World in Data, FAO retrieved 2026-02-25; BOL 2014–2024, BRA 2016–2018)	none filed (witness, not a FAND series)
Sidebar S4: the producer-price gap and its fill	John	D_Process/Exhibits/AgLand_PriceGap_20261108 (build_agland_pricegap_20261108.py on FAOSTAT QCL and PP, 3-15-2026, and nc_agland_panel.csv)	BT-AGL-PRICE01 (John-side); fand-etl proposed refinement
Sidebar S1: working-age shares, working life	John	WT_WorkingPct_FAND.xlsx (WPP 2024); avg_labor_force_age_by_iso3.csv	none filed
Sidebar S5: published coverage estimates (1980–2023)	outside	brief_BOL/bol_tables.json (the literature as cited in the Sidebar); residual effect computed on the page	none filed (witnesses, not FAND series)

Caution: FAND is AI-generated and so far vetted only by one expert in substance and one on systems. Every number carries its NUSAP-lite honesty badge (oconeco.com/methodology/nusap); this balance sheet carries the Experimental badge. © OconEco.

Series	Side	Artifact	Filed to move it
Sidebar S4: natural-capital leaves	John	the page's branch detail (World_Tables/NC roll-up as the page carries it)	fand-etl #1640
Sidebar S6: 1985 conversion alternatives	John	brief_BOL/bol_charts6.py (monthly CPI path, parallel anchor, blend), rescaled to the page in force	none filed
Sidebar S2: the 1950–69 duties by construct; the Bank's creditor classes 1970–85	John / outside	D_Process/Exhibits/CrossBorder_Backdate_20261108f_fdilevel (detail); Data_Extracts/CrossBorder/DRS/IDS_DOD_by_creditor_class_all_reporters_1970_1972_20261107.csv and IDS_BOL_external_debt_by_creditor_1970_1985_20261107.csv (witnesses)	none filed (the pre-1970 tier is John-side)
Sidebar S3: the 1950–69 claims by construct (IFS reserves, banks' foreign assets); EWN asset columns 1970–80	John / outside	D_Process/Exhibits/CrossBorder_Backdate_20261108f_fdilevel (tier_source_cells); Data_Extracts/NC/Mangroves/Cross-border/EWN-dataset (witness)	none filed (the pre-1970 tier is John-side)
Part I: the Four Types test across developing economies (1970–2023)	John	D_Process/Exhibits/FourTypes_Substitution_20261108 (build_four_types_substitution_20261108.py on tl1_exhibit_frame SL0915, stipulated L)	none filed (fand-etl carries the V4 regression HR, #1803)
Part II and Part IV: IMF WEO dollar path, growth, deficit, CPI	outside	A_Background/Data_Extracts/WEO/WEOOct2026all.xlsx	none filed (witnesses, not FAND series)

Addendum — how this analysis was made. The Country Brief's text leads each section word for word; the elaboration under it is AI-drafted on the same country page and awaits the expert's vetting. Every series in Figures 1–10 and in the Sidebars is from the author's workbench (John's side), none from fand-etl, the production system FAND's GitHub team runs — series by series in Figure 10. The analysis is built by build_country_detailed.py on the Brief's own builder; the Brief text is compared with the Brief of record at every build and the build stops on a difference.

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