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Main results of the 2021 cycle of the International Comparison Programme for Latin America and the Caribbean

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This study presents the main results of the 2021 cycle of the International Comparison Programme (ICP) for Latin America and the Caribbean. It also includes an overview of the concepts and methods underlying the estimation of purchasing power parities (PPPs) and real expenditure.

Introduction

The ICP is one of the largest global statistical initiatives, and it has been sustained over time to provide a volume measure of gross domestic product (GDP) and its components that allows macroeconomic aggregates to be compared across the countries of the world. The main objectives of the ICP are to produce PPPs and comparable price level indices (PLIs) for participating economies and to convert volume and per capita measures of GDP and its expenditure components into a common currency using PPPs.

The ICP 2021 cycle was the tenth comparison since the launch of the initiative more than 50 years ago and provided information on 176 participating economies, including

36 countries of Latin America and the Caribbean. In this region, the cycle was coordinated by the Statistics Division of the Economic Commission for Latin America and the Caribbean (ECLAC), acting as the regional implementing agency. It was made possible by the contributions and support of the national implementing agencies, in particular the price and national accounts divisions of the national statistical offices and central banks of 32 participating economies,¹ whose invaluable support and cooperation at all stages of the project were crucial to its successful completion.

The activities of the ICP 2021 cycle began in 2019. Price surveys and national accounts data collection were conducted between 2019 and 2023. On top of the challenges inherent in such a large-scale initiative, this cycle was particularly affected by the COVID-19 pandemic, which not only led to establishments closing and some products becoming unavailable, but necessitated changes in priorities and imposed human and financial resource constraints on the regional implementing agencies.

1. Basic concepts of ICP

1.1 Purchasing power parity

Purchasing power parities (PPPs) are currency converters derived from cross-country price comparisons that serve to compare GDP and its expenditure components across different countries by adjusting for exchange-rate distortions and differences in price levels. PPPs measure the number of currency units required in a given country to purchase the same basket of goods and services as a single unit of another country's currency. Taken together, PPPs show the price of a particular common basket of goods and services in each economy relative to a base economy. They thus allow the purchasing power of different currencies to be compared.

In simple terms, PPP is defined as:

$$PPP_{kj} = \frac{p_i^k}{p_i^j}$$

where:

PPP_{jk} : purchasing power parity of country k relative to country j.

p_i^k : price of product i in country k.

p_i^j : price of product i in country j.

1.2 Price level index

The price level index (PLI) provides a measure of the difference in price levels between different economies. It is calculated as the ratio between PPP and the market exchange rate:

$$PLI_k = \frac{PPP_{jk}}{XR_{jk}} * 100$$

where:

PLI_k : price level index for country k.

PPP_{jk} : purchasing power parity of country k relative to base country j.

XR_{jk} : nominal exchange rate of country k relative to country j.

¹ In this cycle, Chile, Colombia, Costa Rica and Mexico were included in the OECD group of countries. Bonaire and the British Virgin Islands only participated at the level of individual household consumption.

The PLI is thus a spatial price index that compares price levels between countries in a given year, with a particular country or region as the base (PLI = 100). A country with a PLI score above 100 is more expensive overall than the base country or region, and a country with a PLI score below 100 is cheaper overall than the base country or region. PLIs, like PPPs, can be calculated at the level of total GDP and its main components or at more detailed levels of the different macroeconomic aggregates.

1.3 Measuring GDP and its expenditure components in PPP

Countries compile GDP statistics using the expenditure approach in local currency, so that to be made comparable these have to be converted to a base currency by means of the following formulas:

$$\text{Nominal GDP} = \frac{\text{Nominal local currency GDP}}{\text{Market exchange rate}}$$

$$\text{Real GDP} = \frac{\text{Nominal local currency GDP}}{\text{PPP exchange rate}}$$

A comparison of GDP based on market exchange rates would reflect both differences in the volumes of goods and services produced in the countries being compared and differences in price levels between them. Thus, nominal GDP does not provide a reliable picture of the relative size of economies.

In the ICP, differences in price levels are eliminated indirectly by deriving volumes from direct measures of relative prices using PPPs. Thus, GDP based on PPP, known as real GDP, is different from GDP based on the nominal exchange rate because it eliminates the effect of differences in price levels and allows cross-country comparisons to be made.

2. Results of the ICP 2021 cycle for Latin America and the Caribbean

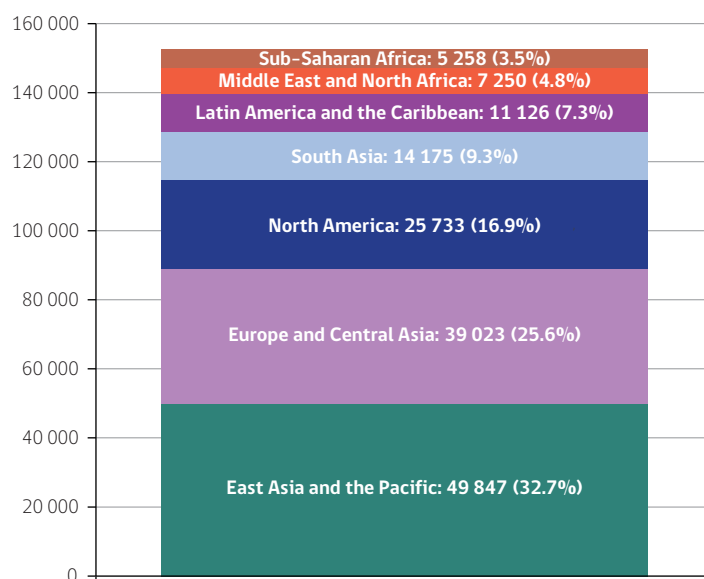
According to the results of the latest comparison cycle, the world economy was worth US\$ 152.4 trillion in 2021, with more than half of global GDP originating in low- and middle-income economies.

The world's largest economy in 2021 was China, with GDP measured in PPP of US\$ 28.8 trillion, representing 18.9% of global GDP, while the United States ranked second with almost US\$ 23.6 trillion (15.5% of global GDP) and India third with US\$ 11.0 trillion (7.2% of global GDP). These three economies accounted for 41 per cent of the world's population and 42 per cent of world GDP based on PPP.

As can be seen in figure 1, Latin America and the Caribbean, with 34 economies, was in fifth position with US\$ 11,126 billion, of which 68% was accounted for by Brazil, Mexico and Argentina.

» **Figure 1. World regions: shares of world GDP in PPP, 2021**

(Billions of dollars and percentages)

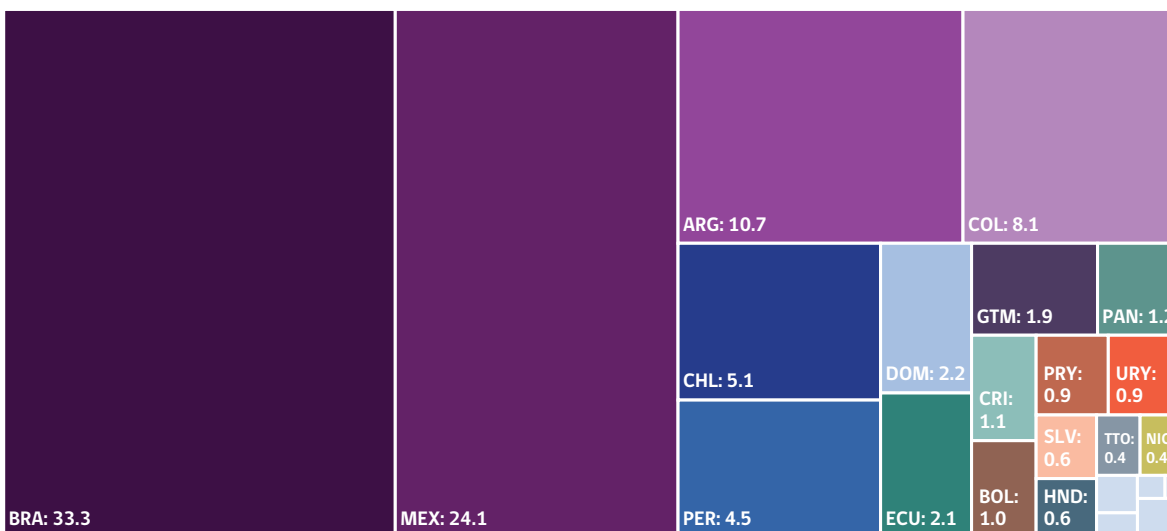


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of the results of the ICP 2021 cycle available in the World Bank database.

At the regional level, Latin America and the Caribbean accounted for 7.3% of the world’s GDP and 8.0% of its population. The main economies were Brazil, Mexico and Argentina, with 33.2%, 24.0% and 10.7% of Latin American and Caribbean GDP, respectively, as shown in figure 2.

» **Figure 2. Latin America and the Caribbean (34 countries): shares of regional GDP in PPP, 2021**

(Percentages)

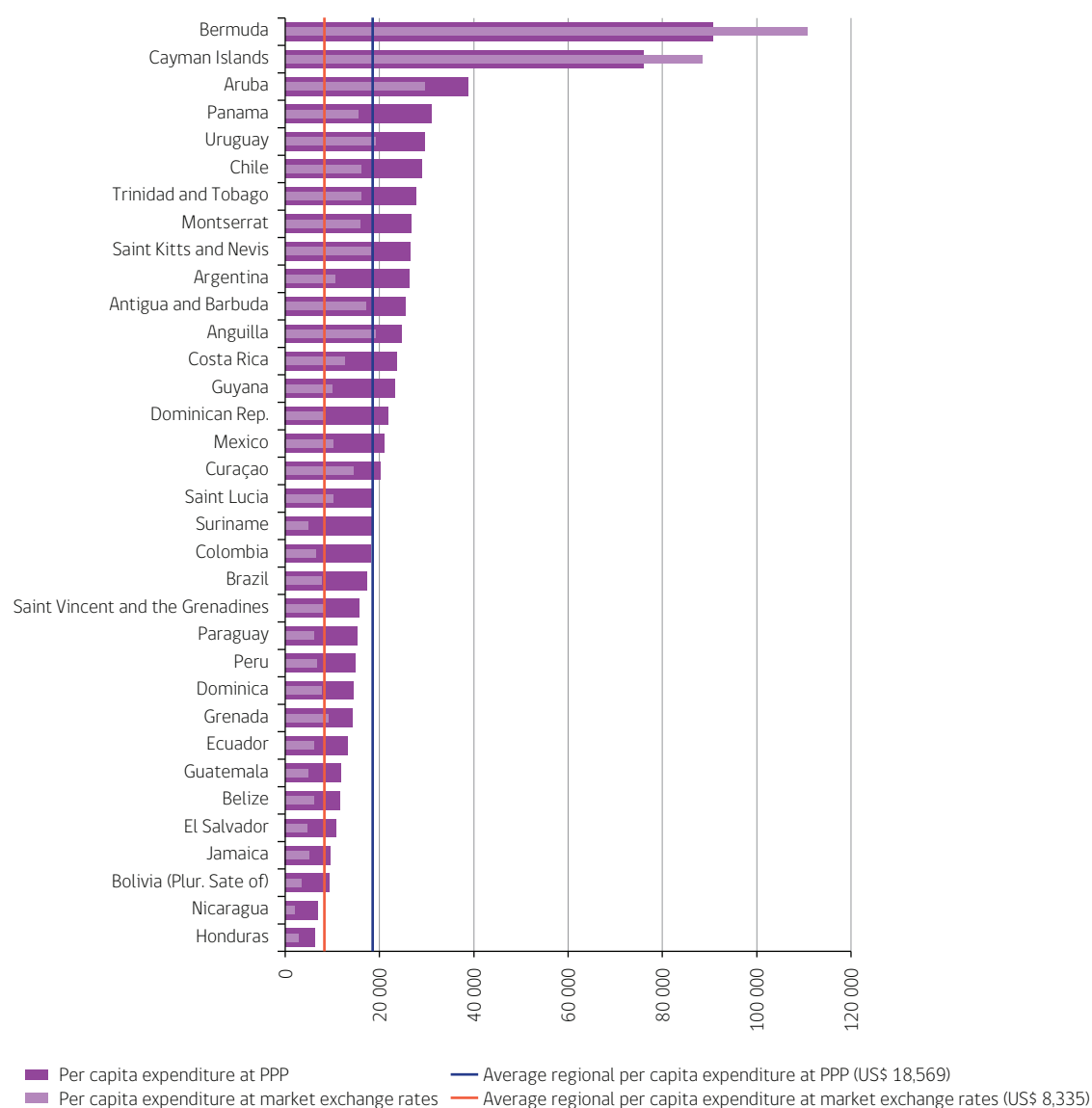


Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of the results of the ICP 2021 cycle available in the World Bank database and CEPALSTAT.

One indicator that can be used to approximate material “well-being” in an economy is per capita GDP, although it should be noted that this average per capita value does not deal with the issue of income distribution within each economy. Figure 3 compares per capita GDP in nominal terms (based on market exchange rates) and real terms (based on PPP) for the 34 economies participating in the 2021 cycle. Regional average GDP in PPP terms was US\$ 18,569, below the world average of US\$ 20,271, while the nominal regional average was US\$ 8,335, well below per capita GDP measured in PPP. Per capita GDP was higher when measured in PPP than at market exchange rates in all the economies of the region but two, Bermuda and the Cayman Islands. Figure 3. Belize: total primary energy production from fossil fuels, 2005–2020.

» Figure 3. Latin America and the Caribbean: (34 countries): per capita GDP in PPP and at market exchange rates, 2021

(Dollars)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of the results of the ICP 2021 cycle available in the World Bank database and CEPALSTAT.

On the basis of PPP data, per capita GDP was above the world average in 16 of the region's 34 countries, while a large number of Caribbean countries, such as Bermuda, the Cayman Islands, Aruba, Trinidad and Tobago and Montserrat, had per capita GDP above the regional average. In Latin America, Panama, Uruguay, Chile, Argentina, Costa Rica, the Dominican Republic and Mexico had per capita GDP above the regional average.

The ICP results also allow GDP data to be broken down by expenditure components. Within the analytical groupings of the ICP, one variable calculated is actual final consumption, which aggregates the individual consumption expenditures of households, government and non-profit institutions serving households. Figure 4 shows the per capita expenditure index in dollars measured in PPP and at market exchange rates for the main expenditure components, by country and subregion of Latin America and the Caribbean.

» **Figure 4: Latin America and the Caribbean (34 countries): per capita expenditure indices and main components in PPP and at market exchange rates, 2021**

(World average = 100)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of the results of the ICP 2021 cycle available in the World Bank database and CEPALSTAT.

It can be seen that, in the vast majority of cases, the per capita expenditure index values based on PPP are higher than the values based on the exchange rate for the components presented, which are GDP, actual individual consumption, general government final consumption and gross fixed capital formation.

If attention is turned to the real expenditure index series based on PPP, the Latin American economies with a per capita expenditure index score above the world average were Panama (152), Uruguay (146), Chile (142), Argentina (130), Costa Rica (117), the Dominican Republic (108) and Mexico (104). In the case of the Caribbean, this was the case with the Cayman Islands (374), Aruba (191), Trinidad and Tobago (136), Montserrat (131), Saint Kitts and Nevis (131), Antigua and Barbuda (126), Anguilla (121) and Guyana (114).

In contrast, the economies with the lowest per capita expenditure index scores in Latin America (below the world average) were Honduras (31), the Plurinational State of Bolivia (34) and Nicaragua (46). In the Caribbean, the countries were Jamaica (47) and Belize (57).

As mentioned, one of the indicators calculated for the ICP is actual individual consumption by households, a macroeconomic aggregate that is even closer than per capita GDP to the definition of material well-being. Figure 4 shows that the situation relative to the world average was better when per capita actual individual consumption expenditure was measured in PPP, with the region exceeding the world average by 6.9%. In Latin America, 8 of the subregion's 17 countries had an index value above 100, while 12 of the 17 countries in the Caribbean exceeded the world average. In the Latin America region, the highest index values were in Uruguay and Chile, with scores of 159 in both cases, and Argentina (150), while the highest values in the Caribbean were in Bermuda (346), the Cayman Islands (292) and Aruba (188). At the other extreme, the countries with the lowest values were Nicaragua (42), Honduras (45) and the Plurinational State of Bolivia (59) in Latin America and Jamaica (62), Belize (63) and Suriname (89) in the Caribbean.

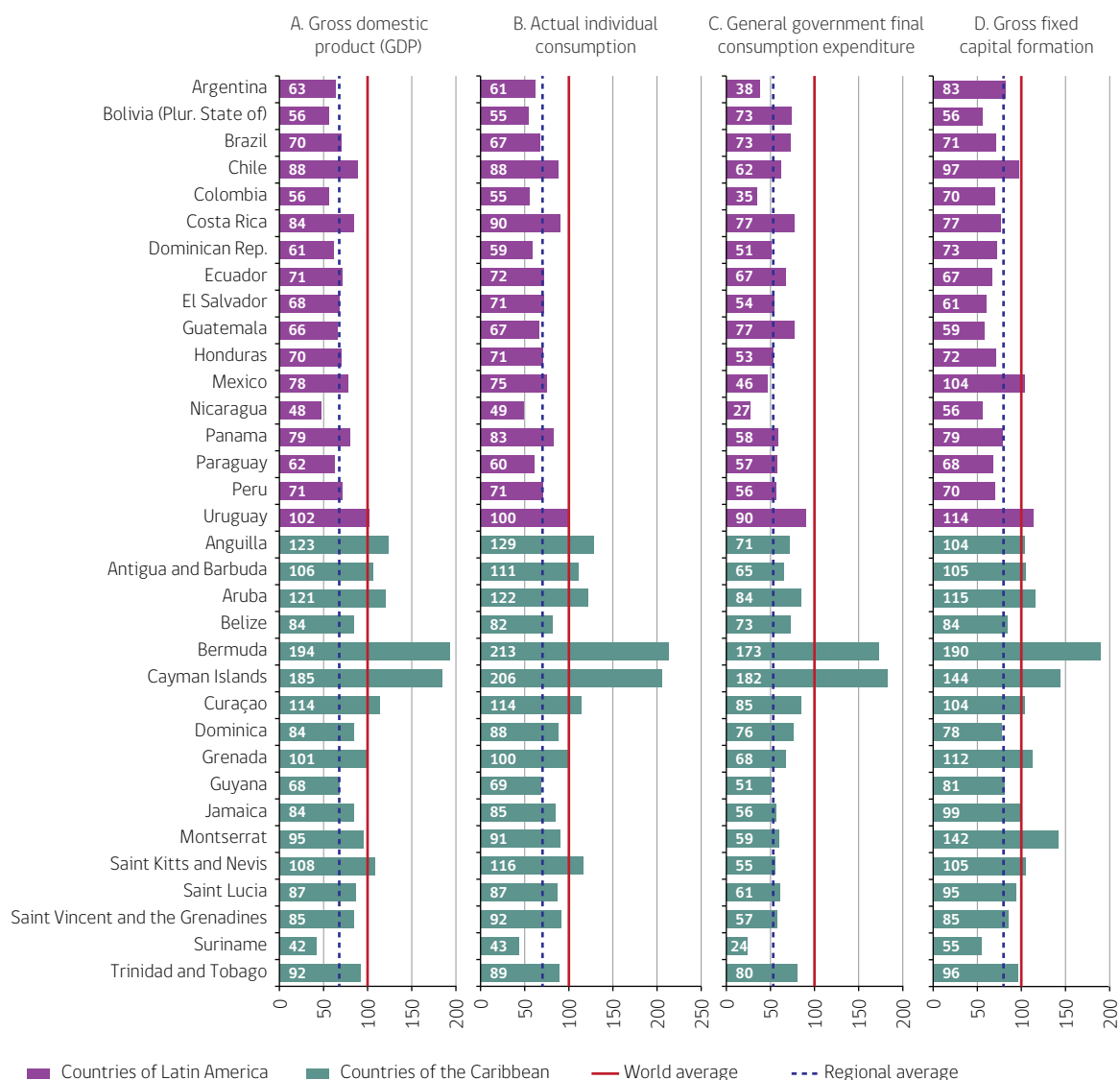
In the case of per capita government expenditure, 22 of the 34 countries in the region exceeded the world average as measured in PPP. The countries with the highest government expenditure per capita were Argentina (203), Chile (177), Panama (168) and Uruguay (159) in Latin America and Montserrat (608), Bermuda (372), Aruba (367) and Saint Kitts and Nevis (362) in the Caribbean. In contrast, the countries with the lowest per capita government expenditure index values relative to the world average were Guatemala (33), Honduras (35) and Plurinational State of Bolivia (40).

In the case of per capita gross fixed capital formation, the region performed worse than on the variables discussed above. Only 14 of the 34 countries in the region exceeded the world average for this expenditure. In Latin America, the highest index values for per capita gross fixed capital formation, and the only ones to exceed the world average, were those of Panama (161), Chile (114) and the Dominican Republic (108), while in the Caribbean they were those of the Cayman Islands (253), Bermuda (230) and Saint Kitts and Nevis (213). The countries with the lowest per capita expenditure relative to the world average included Nicaragua (25), Honduras (26) and the Plurinational State of Bolivia (29) in Latin America, and Suriname (31), Belize (43) and Grenada (59) in the Caribbean subregion.

As noted earlier, the differences in measures of GDP and its components when expressed in PPP as opposed to market exchange rates are due to price differentials between economies. Figure 5 shows the results of the spatial price measure called the **price level index (PLI)**, which serves to compare different price levels across economies for the same period relative to the world average benchmark index value of 100, i.e. it shows how prices varied between different countries in 2021. For this analysis, the PLIs of the main GDP aggregates are described using the expenditure approach.

» Figure 5. Latin America and the Caribbean (34 countries): price level indices for GDP and its components, 2021

(World average = 100)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of the results of the ICP 2021 cycle available in the World Bank database and CEPALSTAT

As can be seen, the region's PLI for GDP was 71, which means that regional prices were 29% below the world average. All Latin American countries except Uruguay (102) had a PLI below the world average. The countries with the highest PLIs included Chile (88), Costa Rica (84), Panama (79) and Mexico (78). Economies such as Nicaragua (48), Colombia (56) and the Plurinational State of Bolivia (56) had the lowest prices in the region.

In the Caribbean, economies such as Bermuda (194), the Cayman Islands (185) and Anguilla (123) had the highest PLIs, while Suriname (42), Guyana (68) and Jamaica (84) were the economies with the lowest prices in the subregion.

Where actual consumption expenditure by households is concerned, the average PLI for the region was 69, i.e. prices associated with this consumption were 31% lower than the world average, with only 10 of the 34 countries in the region having price levels above the world average. The countries with the highest PLIs in Latin America were Uruguay (100), Costa Rica (90) and Chile (88), while in the Caribbean the highest PLIs were in Bermuda (213),

the Cayman Islands (206) and Anguilla (129). The countries with the lowest price levels for this component were Suriname (43), Guyana (69) and Belize (82).

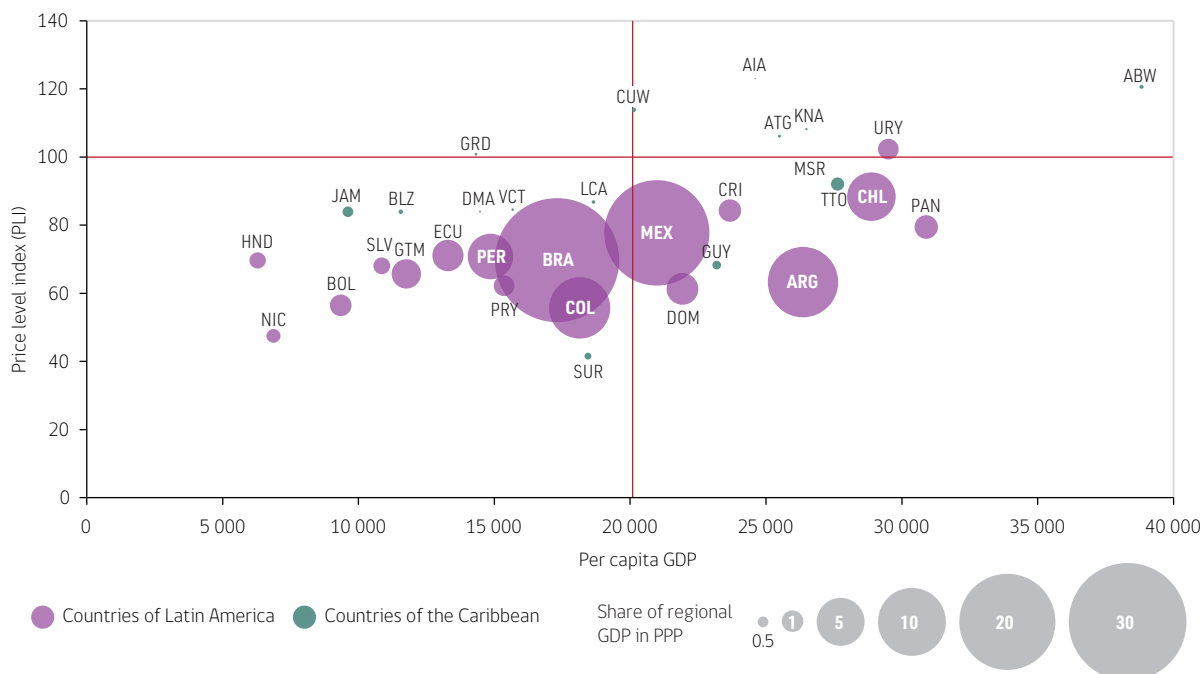
For government final expenditure, the price index reflects remuneration in the sector. This category presented the largest gap between the regional and world averages, with a regional average PLI of 55, meaning that prices in the region were 45% lower than the world average. All countries had prices below the world average except the Cayman Islands (182) and Bermuda (173), where they were well above the world average.

As regards gross fixed capital formation, the PLIs for the acquisition of goods and services, machinery and equipment and construction are described. The investment PLI showed the highest price level among the main macroeconomic aggregates, with a regional average of 81, i.e. 19% below the world average. Of a total of 34 countries in the region, 23 had PLIs below the world average. Prices were below the world average in most Latin American economies, the exceptions being Uruguay and Mexico, where in relative terms they were 14% and 4% above the world average, respectively, while the lowest prices were in Nicaragua and the Plurinational State of Bolivia, in both of which they were 44% below the world average. In the case of the Caribbean, nine countries of the subregion had gross fixed capital formation price levels above the world average, with Bermuda (189), the Cayman Islands (144) and Montserrat (142) having the highest price levels, while Suriname (55), Dominica (78), Guyana (81) and Belize (84) exhibited the lowest PLIs in the subregion.

Figure 6 presents 3 dimensions that illustrate the behaviour of the PLI in relation to per capita GDP as measured in PPP, together with each economy's share of regional GDP in PPP.

» Figure 6. Latin America and the Caribbean (32 countries): GDP price level index versus PPP-based per capita GDP index, by economy, 2021

(Dollars and percentages)



Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of the results of the ICP 2021 cycle available in the World Bank database and CEPALSTAT.

Note: The vertical dashed line shows world average per capita GDP (US\$ 20,271) and the horizontal dashed line shows the world average PLI (100).

The dashed lines dividing the plane of positive values into four quadrants show world average per capita GDP (US\$ 20,271) on the ordinate and the world average PLI (100) on the abscissa.

A positive association is observed between per capita GDP and the PLI: the higher per capita GDP is, the higher the PLI.

The regional values fall into the range of 40 to 125 for the PLI and about US\$ 5,000 to US\$ 40,000 for per capita GDP. Two outlying observations are excluded: Bermuda and the Cayman Islands, which have per capita GDP of US\$ 90,577 and US\$ 75,898, respectively.

The upper right quadrant includes economies with price level indices higher than 100 and per capita GDP above US\$ 20,271. Of the eight economies in this category, seven are in the Caribbean (Aruba, Anguilla, Antigua and Barbuda, Bermuda, the Cayman Islands, Curaçao and Saint Kitts and Nevis), while Uruguay is the only Latin American country. This quadrant, which is characterized by high prices and per capita GDP in the region, represents 1.11% of real regional GDP in PPP.

The upper left quadrant represents the most unfavourable scenario for an economy, with prices above the world average and per capita GDP below the world average. This quadrant contains Grenada alone, representing 0.02% of regional GDP in PPP.

The lower left quadrant, containing economies with prices below the world average and per capita GDP that is also below the world average, accounts for the largest number of countries: 16, including 10 in Latin America (Brazil, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay, Peru and the Plurinational State of Bolivia) and 6 in the Caribbean (Belize, Dominica, Jamaica, Saint Lucia, Saint Vincent and the Grenadines and Suriname). This quadrant represents 54.33% of regional GDP in PPP.

The lower right quadrant represents the most favourable scenario, with economies whose prices are below the world average and whose per capita GDP is above the world average. This quadrant includes 6 Latin American countries: Argentina, Chile, Costa Rica, the Dominican Republic, Mexico and Panama. The other three countries, Guyana, Trinidad and Tobago and Montserrat, are part of the Caribbean. This quadrant accounted for 45.54% of regional GDP in PPP.

3. Conclusions

Adjusting expenditure for PPP facilitates direct comparisons between countries and makes it possible to measure the real size of economies by expressing them in a common currency that eliminates the price differentials between them. Likewise, it can be used to construct welfare indicators, such as per capita expenditure, and to compare other aggregates such as those for health, education, housing, government and investment. Household consumption PPPs are the main input for calculating the international poverty line, which is essential to global development efforts around the world. In addition, countries with different rates of economic growth can analyse their per capita price and expenditure levels to better orient their development policies. Thus, PPPs allow benchmarking to be carried out between countries at a global level with granular information, as can be seen in the results of the 2021 cycle for Latin America and the Caribbean.

The implementation of the ICP 2021 cycle in Latin America and the Caribbean involved a major collaborative effort between the 34 participating countries and the ECLAC team, with coordination and technical support provided by the ICP Global Office at the World Bank. It should be noted that the COVID-19 pandemic posed an additional challenge in the implementation of this cycle.

The wealth of results obtained by the ICP and the opportunity to work collaboratively across economies provide a strong motivation to move ahead, and a high level of participation by the countries of the region is expected for the 2024 cycle, which has already begun.

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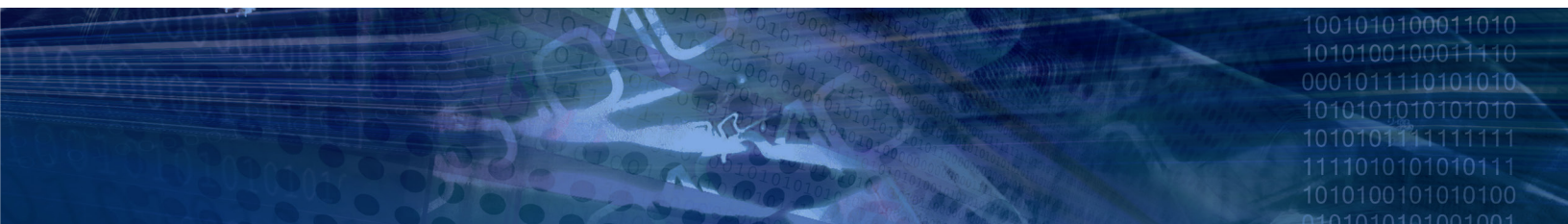
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