

NAIRU estimates and potential GDP

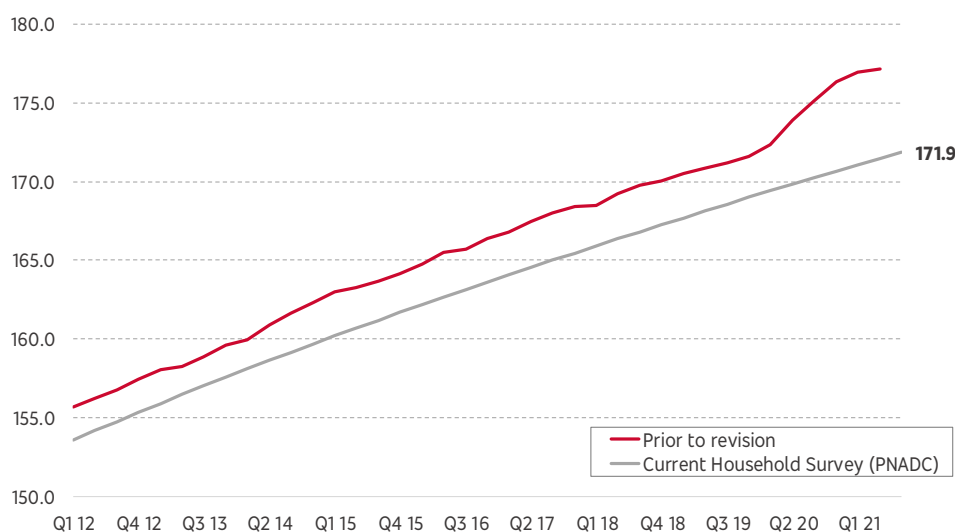
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Recently, IBGE conducted a significant review of the main employment and income variables since 2012. These reviews support a new assessment of where we are in the economic cycle. We estimate that NAIRU is at 10% today, i.e., the unemployment rate is still 2.6 p.p. above the level at which service inflation would be pressured by a heated job market.

The idea behind the reviews was to mitigate some sample bias and the IBGE did that by weighing microdata by age group and gender. New information includes a reduction in the absolute number of the Working Age Population¹, an increase in the Economically Active Population² and the Employed Population³, in addition to an increase in the total hours worked since 2012.

Chart 1: Review of Working Age Population in Brazil.

In millions.



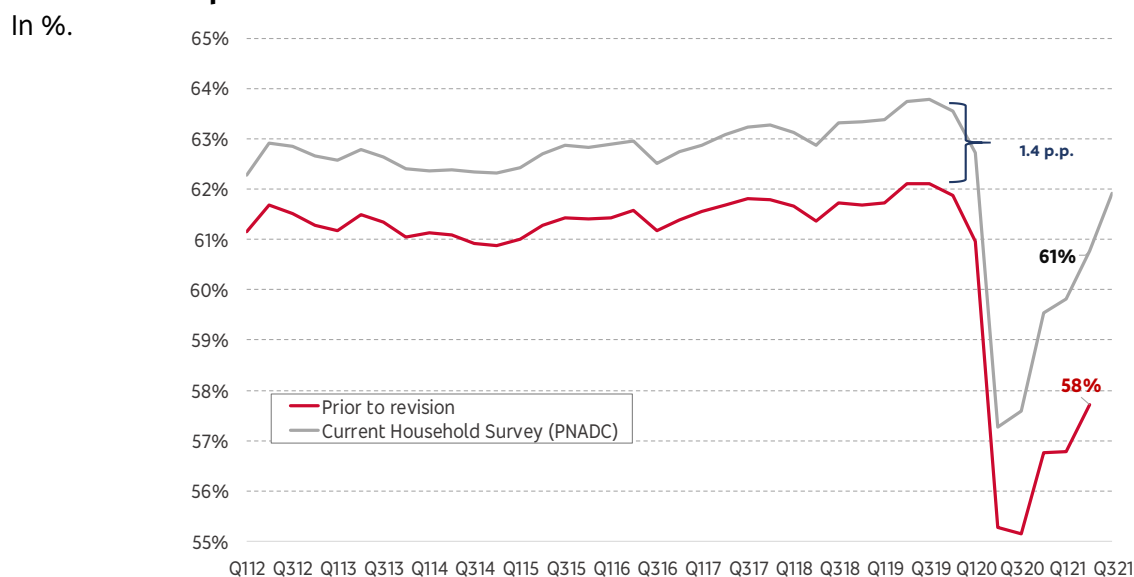
Source: IBGE, Bradesco

The Working Age population shrank by 2.5 million, on average, between 2012 and 2019. During the pandemic, the difference between the series reached 5 million people. Meanwhile, the unemployment rate did not see any major monthly changes. This result is explained by the similar reviews for both the Economically Active and Employed population, with an increase in the number of registered workers.

- 1) Age 14 and over.
- 2) Workforce.
- 3) Number of people working.

However, the high participation rate changed the estimated level of labor slack in the Brazilian economy. The IBGE noted that the drop in Working Age population occurred due to a recalculation of the population out of the workforce, which does not count as potential workforce. In fact, several neutral unemployment rate (NAIRU⁴) readings considered an average participation rate that was 1.4 p.p. lower than that mentioned in the current review. Our interpretation of these reviews is that there is now a smaller number of people who can work, while the number of people who have been working in recent years is higher than before. Everything else remaining the same, for the same level of GDP, Brazil has used the workforce more intensively in recent years, according to new information from the IBGE.

Chart 2: Participation Rate



Source: IBGE, Bradesco

Brazil's unemployment rate slowed down considerably in the last two quarters, as the economy reopened and the informal job market mounted a recovery. The unemployment rate for September, at 12.6%, is still 1.0 p.p. higher than pre-pandemic levels. With the economy still fragile, inertia in job market makes the economic recovery more gradual. If we add the fact that the business environment in Brazil for hiring – compared to other countries⁵ – is still challenging, even after the 2017 labor reform, we expect more moderate job growth.

Given these facts, we estimated the NAIRU using the 2017 European Commission⁶ methodology, which considers the level of wages to estimate which unemployment would not increase service inflation, using a Philips curve model. Our estimates show neutral unemployment at 10%, with a plausibility range of 0.5%. Therefore, our job market is still about 2.6 p.p. above a level that would put pressure on service and wage inflation.

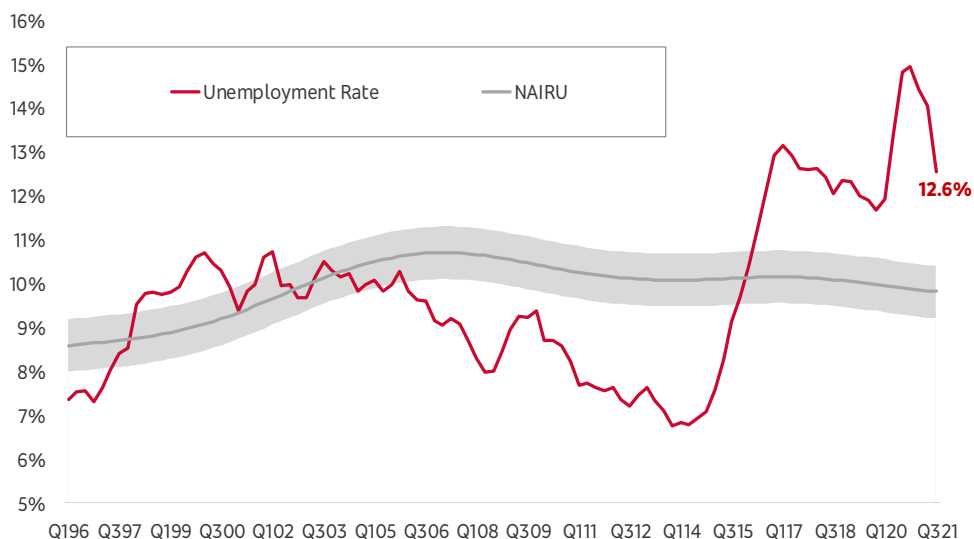
4) Non-Accelerating Inflation Rate of Unemployment. Unobservable variable used to estimate the neutral rate of unemployment in an economy, that is, one that does not accelerate inflation.

5) Economic freedom index, labor legislation category: <https://www.heritage.org/index>

6) <https://publications.jrc.ec.europa.eu/repository/handle/JRC108620>

Chart 3: Neutral Unemployment Rate (NAIRU)

In % of Economically Active Population



Source: IBGE, Bradesco

With informal employment making up 40.6% of Brazil's job market⁷, productivity per worker is a significant growth limiting factor. Third-quarter GDP fell 0.1% and, compared to the G-20 countries, the Brazilian economy is in 10th place in recovering to its pre-pandemic level. In addition, the country had already faced a sharp slowdown in growth just three years before the start of the pandemic. The destruction of added value caused by the recession of 2014-2016 left a negative legacy, with high unemployment and low investment rates. Therefore, our starting point before the pandemic was even lower than that of several economies around the world, indicating that recovery should not have been so slow after the shock. One of the reasons for this dynamic is our low productivity.

The usual GDP revisions show that growth in 2017-2019 was only 1.4%, with inflation under control but a weak job market. What current productivity data suggest is that we are at a similar point in our economic cycle to three years ago, but with a higher debt/GDP ratio, rising current inflation and contractionary monetary policy.

7) Household Survey (PNADC) through September.

8) Labor Productivity = (GDP in Added Value)/(Number of hours actually worked*PO)

Chart 4: Labor Productivity

In constant BRL and GDP/IBGE seasonal adjustment.

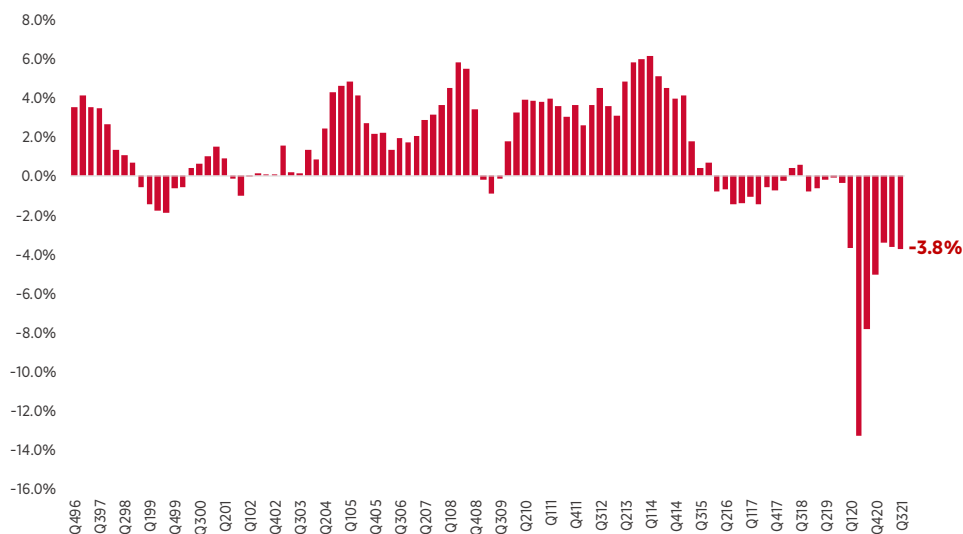


Source: IBGE, Bradesco

To sum up this information, we calculated Brazil's short-term GDP, which we currently estimate to be approximately 1.5%. For this estimate, we used the typical function-production method, revised labor factor numbers from the IBGE and data for the capital factor published by IPEA, FGV, among others. As we move towards structural reforms for the Brazilian economy, it is plausible to suppose that we are approaching production factors that raise the potential GDP to 2.0%.

Chart 5: Output Gap

Difference between Potential GDP and Actual GDP, in %.



Source: Miscellaneous, Bradesco

Thus, we estimate the output gap to be -3.8% by Q3 2021. Prior to incorporating the GDP and Household Survey revisions, our gap was -5.1% in Q2 2021. With the revised data, that number changed to -3.6%, reflecting our diagnosis that our Total Factor Productivity (PTF) was slightly below our previous estimates. This conclusion has some consistency when we note that services inflation accelerated more than the previous gap suggested between 2017 and 2019. The relationship between the gap and inflation was damaged during the pandemic, in which shocks, temporary income transfer policies and industry-specific issues played a relevant role in determining price movements.

In any case, as well as the NAIRU estimate, potential GDP is considered an unobservable variable in the economy and its estimate is constantly being improved. Its values change over time and due to economic circumstances, the business environment and institutions. The key fact is that these measures show that a productivity agenda is the only one capable of accelerating Brazil's potential growth in the coming years.

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