

## REAL WAGE BILL: UPDATE AND INFLATION EFFECT

- In this report, we have updated our estimates for the “expanded” real wage bill in Brazil, a measure that encompasses workers’ salaries, pension contributions, and federal transfers. Since we last reviewed our real wage bill estimates (October 28, 2021), the labor market has continued to improve, driven by the economic reopening following the improvement in sanitary indicators. An important issue that the labor data is showing is a relevant drop in workers’ real incomes. We believe that the inflationary shock has significantly reduced the real income from jobs. In addition, we simulated the impact on the real wage bill of inflation forecasts and the effects of fiscal stimulus (such as the new FGTS withdrawals).
- We updated our real wage bill estimates due to the recent changes in economic outlook, especially the new increase in inflation estimates for 2022 and new fiscal stimulus measures. Fiscal stimuli played a relevant role in more than compensating for the loss of income from work (impacting the wage bill during 2020) and helped the economic recovery. For 2021, inflation ended up implying an even sharper fall in the real wage bill, as well as a reduction in fiscal stimulus. For 2022, we expect that most of the recovery will be related to the real wage bill, yet it is also important to highlight the expansion of the new welfare program budget (BRL89 billion).
- We observed that the “expanded” real wage bill showed an 8.0% drop in 2021 (from our previous estimate of a 5.8% decline), indicating considerable impacts from the reduction in benefits payments at the end of the series (especially the high inflation). In 2021, the reduction amounted to BRL42.6 billion. For 2022, we expect a 3.2% increase (BRL125 billion), driven by the labor market recovery, the increase in the new welfare program (from BRL35 billion in *Bolsa Família* to BRL89 billion) and the inflation adjustments to pension benefits. Also new to this update is that we have included our growth estimates for 2023 and 2024 of 1.0% and 1.8%, respectively, in the base case. This forecast is consistent with our outlook for economic activity, in which Household Consumption is expected to grow 0.8% in 2022, remain stable in 2023 and grow 1.5% in 2024.
- Using our base-case scenario, we tested the sensitivity of the 2022 “expanded” real wage bill to variations in inflation. Higher inflation affects the real wage bill by reducing the real growth in average income. Our baseline assumes 7.8% inflation for the 2022 IPCA, which is compatible with 0.6% growth in average real income. We simulated scenarios with 5.0% and 9.0% for the IPCA, which generated 1.7% and -0.3% variations in real average income, respectively. As for the “expanded” real wage bill, we expect a range of +2.5% (9% IPCA) to +4.6% (5% IPCA).
- In addition, we estimated elasticities between the real wage bill and Household Consumption, both in the short term and in the long term. We estimate a long-term elasticity close to 1.05, which means that each 1% increase in Real Wage Bill raises Household Consumption by 1.05%. We also note that the models point to a robust recovery during the pandemic (when elasticity jumped to above 1.5), which probably helped the economic activity recovery in 2021. For the coming periods, we believe that elasticity will return to levels closer to its pre-pandemic values (close to 1.0).
- We consider the behavior of the labor market a key factor in our assessment of the recovery in domestic economic activity, and the inflation outlook is directly affecting the estimates. The vaccination rollout was crucial in the recovery of domestic activity and the increase in social mobility; now, we believe the focus will be on inflation convergence.

---

**IMPORTANT DISCLOSURES/CERTIFICATIONS ARE IN THE “IMPORTANT DISCLOSURES” SECTION OF THIS REPORT.**

U.S. investors’ inquiries should be directed to Santander Investment Securities Inc. at (212) 583-4629 / (212) 350-3918.

\* Employed by a non-US affiliate of Santander Investment Securities, Inc. and is not registered/qualified as a research analyst under FINRA rules.

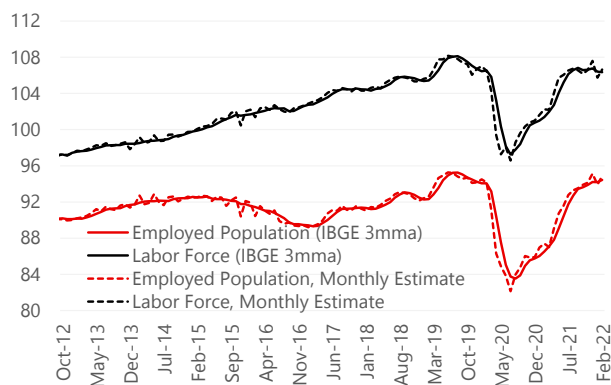


## Labor Market: Brief Overview

Since we last reviewed our real wage bill estimates (October 28, 2021), the labor market has continued to improve, driven by the economic reopening following the improvement in sanitary indicators. Although the Omicron variant of COVID-19 represented a minor setback to this recovery in January, employment has returned to pre-pandemic levels, and the labor force is only 200k short of returning to the February 2020 level.

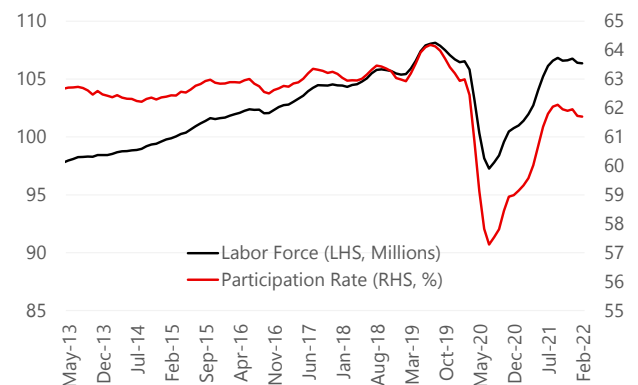
The participation rate, on the other hand, has stagnated at historically low levels since 4Q21, mainly due to the stability in the labor force in this period. We believe that the Omicron outbreak was also responsible for this behavior, as the labor force fell significantly in January, according to our monthly estimate of the series (the PNAD survey is based on 3-month moving averages). In our view, the labor force should resume growth soon, as the Omicron outbreak had a relatively short duration. Furthermore, the labor force has a positive long-term growth rate, and the historical series indicate that stagnation periods tend to be temporary even when considering that population growth is slowly decreasing. Therefore, we still expect the unemployment rate to rise throughout 2022, as the participation rate slowly returns to pre-crisis levels and the effects of the economic reopening fade. Furthermore, the effects of the monetary tightening should impact the labor market from 2H22 on, in our view.

**Figure 1 – Employment and Labor Force (sa)**



Sources: IBGE, Santander.

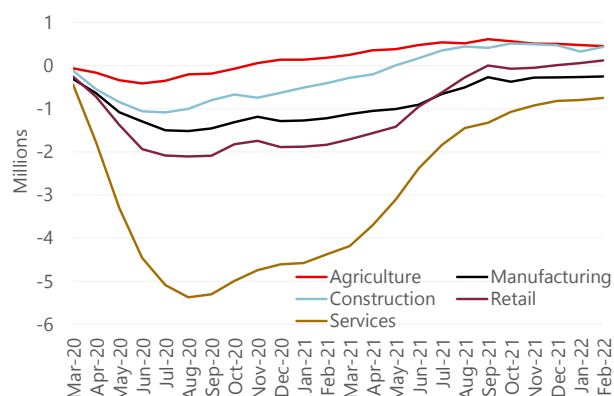
**Figure 2 – Labor Force and Participation Rate**



Sources: IBGE, Santander.

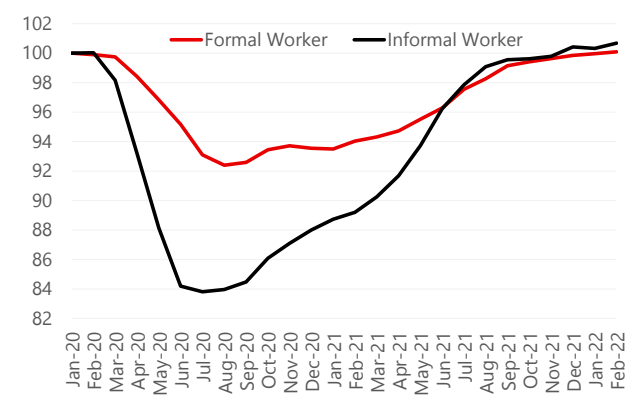
The main contributions to 4Q21 and 1Q22 employment growth came from services, still benefiting from the reopening process. The accumulated job losses in the services sector since the beginning of the pandemic are now below 1.0 million. After reaching pre-pandemic levels, formal employment has decelerated and is now closer to its long-term growth trend.

**Figure 3 – Post-Pandemic Accum. Job Losses (sa)**



Sources: IBGE, Santander.

**Figure 4 – Employment by Position (sa, Jan-20=100)**



Sources: IBGE, Santander.

Among the headwinds faced by the labor market, we highlight the end of the formal employment program (BEm), that continues to affect the data. In the CAGED survey, the layoffs series renewed its recent highs in seasonally adjusted terms. Each month, fewer workers are included in the program's temporary job guarantee

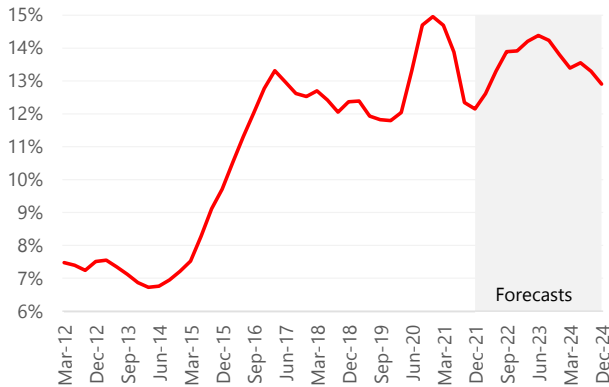


as the waiver periods for layoffs of the program’s beneficiaries gradually expire. The Ministry of Labor estimates that there will be workers under this guarantee until April.

During the pandemic we observed a decoupling of labor market indicators. In our view, after methodological problems in both surveys, CAGED and PNAD have converged. As the BEm program ended, the gap to core economic activity indicators has also closed.

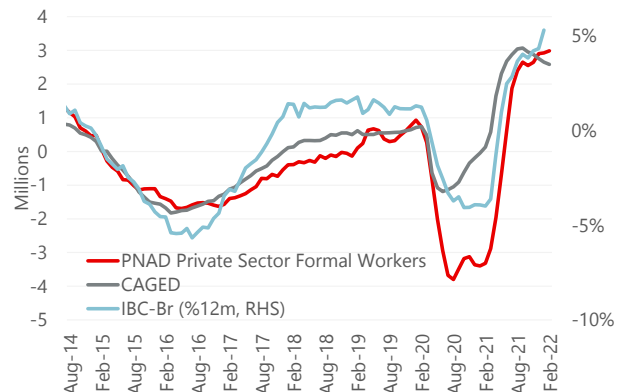
We expect some softening in the recovery in formal employment as measured by CAGED, as well as slower growth in the employed population measured by PNAD. We estimate an average unemployment rate of 13.3% in 2022 and 14.0% in 2023, but we acknowledge that the risks are skewed to the downside, especially if the participation rate fails to recover.

**Figure 5 – Unemployment Rate Trajectory (sa)**



Sources: IBGE, Santander.

**Figure 6 – Net Job Creation and IBC-Br (12m)**

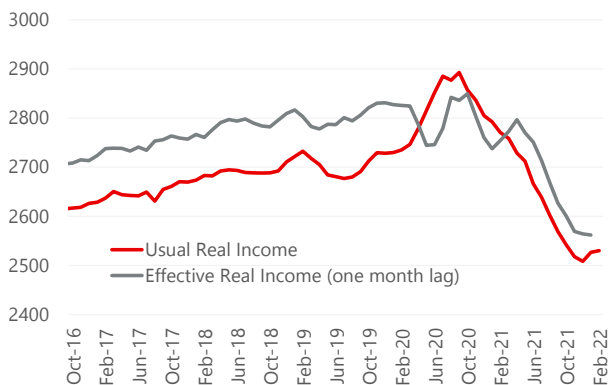


Sources: IBGE, Santander.

An important issue that the labor data is showing is a relevant drop in workers’ real incomes. We believe that the inflationary shock has significantly reduced the real income from jobs. At the margin, considering that the 12-month inflation (although still elevated) is currently hovering between 10-11%, the real income indicators showed a slight improvement, after reaching the all-time low of the series (since 2012).

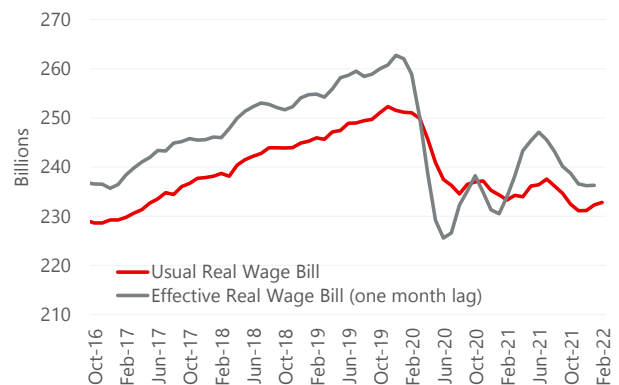
The effective real wage bill posted a 0.0% MoM-sa variation in January (data lagged one month relative to other PNAD series), breaking a string of six consecutive declines, while the usual real wage bill increased 0.2% MoM-sa in February. The two series are 8.7% and 7.3% below their pre-crisis marks, respectively. The average real income showed a +0.2% MoM-sa variation, the second consecutive increase. We expect real income to gradually recover as inflation slowly decelerates. As this inflation effect is a key element to the real wage bill figures, we will simulate some impact on the labor income and also on the fiscal transfers.

**Figure 7 – Average Real Income (sa)**



Sources: IBGE, Santander.

**Figure 8 – Real Wage Bill (sa)**



Sources: IBGE, Santander.



## The “Expanded” Real Wage Bill: An Update and Expanding the Horizon

In this section, our objective is to provide an update on the “expanded” (including social benefits) real wage bill (total wages from work) that was explored in our report *Real Wage Bill – Outlook and Simulations* (October 18, 2021). [See the link below<sup>1</sup>](#).

The main points in our update are to discuss: (i) the release of the 2021 full data and its impacts on the estimates; (ii) more inflationary pressures, affecting both labor income and the series deflator; (iii) the fiscal transfers that the government announced, especially the release of resources from the severance indemnity fund (FGTS), which could reach between BRL25-30 billion.

Our indicator of the “expanded” real wage bill is the product of the employed population and the real effective average income from work. We seasonally adjust the employment series (published in the PNAD survey), adding government benefits, also seasonally adjusted (i.e., pensions, unemployment insurance, and entitlements such as pension benefits—BPC and welfare transfers from the government such as *Bolsa Família*, FGTS, the Emergency Aid, etc.).

We updated our real wage bill estimates due to the recent changes in economic outlook, especially the new recent increase in inflation estimates for 2022 and the new fiscal stimulus measures. We have already highlighted that fiscal stimuli played a relevant role in more than compensating for the loss of income from work (impacting the wage bill during 2020) and helped the economic recovery. In 2020, the positive contribution of fiscal stimuli to the wage bill was 9.4 p.p., while labor income had a negative contribution of 6.2 p.p. For 2021, as we have shown, inflation ended up implying an even sharper fall in values, as well as a reduction in fiscal stimulus. The reduction in the fiscal part contributed negatively 8.5 p.p. last year. For 2022, we expect that most of the recovery will be related to the real wage bill, yet it is also important to highlight the expansion of the new welfare program budget (BRL89 billion).

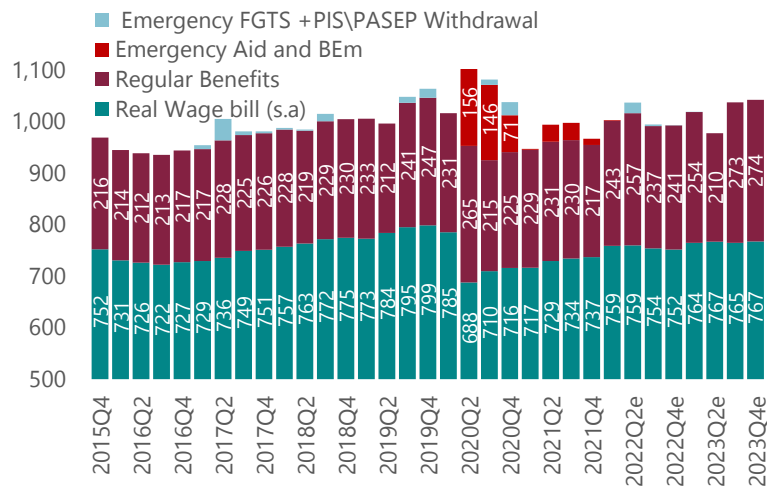
For 2022 onwards, we continue to expect a gradual recovery in total labor income, especially with the expected cooling of inflation, which plays an important role in this process. As we have shown, earnings from work have reached historic lows with this more persistent inflation shock. If our forecast is confirmed, the total real wage bill will reach 2019 levels only in 2024. The values of 4Q23 are close to the values of the beginning of 2019. Also, we would like to highlight some stimulus measures recently adopted by the government in 2022.

First, the government has again anticipated the pension bonus payments from the fourth quarter to the second quarter. For the year, this change is neutral for full-year results, as it just changes the payments date. According to the Federal Government, the measure will inject around BRL56.7 billion into the economy. Around 30.5 million INSS beneficiaries will be covered with this anticipation of the fourth quarter bonus.

The second was the release of funds from FGTS (Severance Indemnity Fund) accounts, limited to BRL1,000 per worker (PM 1,105/2022), the measure could amount to around BRL25 to 30 billion in total. We explore this measure in the next section.

---

<sup>1</sup> Santander Brazil - “*Real Wage Bill – Outlook and Simulations*” – October 18, 2021 – Available on: <https://bit.ly/Std-special-101821>


**Figure 9 – “Expanded” Real Wage Bill and Social Benefits (in real terms, BRL billion)**


Sources: National Treasury, IBGE, Ministry of Economy, and Santander.

We estimate the “expanded” wage bill rose 3.1% adjusted for inflation (+3.7% in our last review in October 2021) for full year 2020 compared to 2019. This means an increase of BRL28.6 billion in 2020, with the fiscal stimulus playing an important role in offsetting the reduction in labor income. The high inflation in 2021 led us to increase our 2020 estimate in real terms and the new data adjustments. For 2021, we observed that the expanded measure shows an 8.0% drop (from a fall of 5.8% previously), reflecting the reduction in benefits payments at the end of the series, the revision of the statistical series, and especially the inflation impact. In 2021, the reduction was BRL42.6 billion. For 2022, we expect a 3.2% increase (BRL125 billion), driven by the labor market recovery, the increase in the new welfare program (from BRL35 billion in *Bolsa Familia* to BRL89 billion) and the inflation adjustments to pension benefits.

Also new to this update is that we have included our growth estimates for 2023 and 2024 of 1.0% and 1.8%, respectively, in the base case. This forecast is consistent with our outlook for economic activity, in which Household Consumption is expected to grow 0.8% in 2022, remain stable in 2023 and grow 1.5% in 2024.

**Figure 10 – Annual Growth in “Expanded” Real Wage Bill (average% in the period)**

	2020	2021	2022(E)	2023(E)	2024(E)
Expanded Real Wage Bill (Low Inflation)			+4.6%	+2.2%	+2.8%
Expanded Real Wage Bill (Baseline Inflation)	+3.1%	-8.0%	+3.2%	+1.0%	+1.8%
Expanded Real Wage Bill (High Inflation)			+2.5%	-1.0%	+0.4%

Sources: National Treasury, IBGE, Ministry of Economy, and Santander.

In Figure 11, we present the inflation assumptions that we used to estimate the “expanded” wage bill. It is worth remembering that inflation directly affects real earnings and also the correction of social security benefits. For social security benefits, they are linked to the readjustment of the minimum wage, which must be adjusted at least by the inflation of the previous year, to maintain purchasing power. So, if inflation rises even more this year, the benefits end up increasing for the next year.



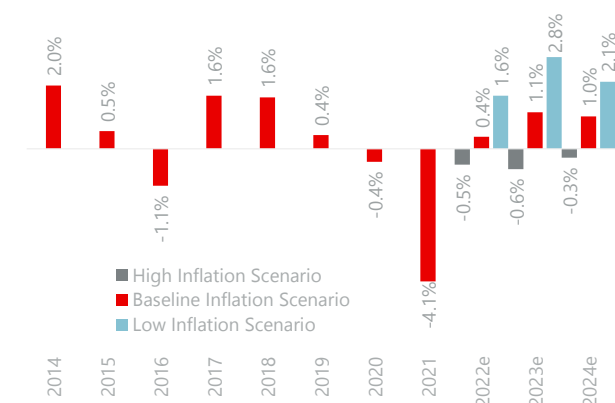
Figure 11 – Inflation Scenario (IPCA)

	2020	2021	2022(E)	2023(E)	2024(E)
Low Inflation			5.0%	2.5%	2.0%
Baseline Inflation	4.5%	10.1%	7.9%	4.0%	3.0%
High Inflation			9.0%	5.0%	4.0%

Sources: IBGE and Santander.

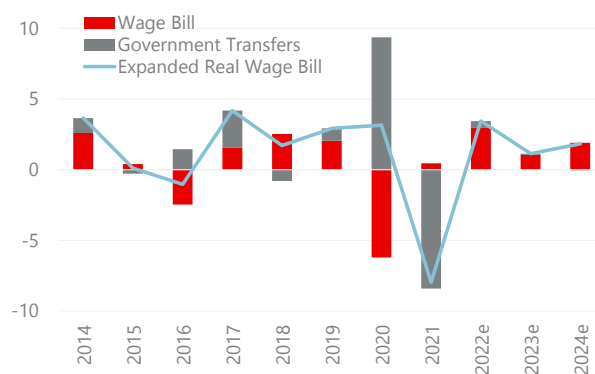
Using our base-case scenario, we tested the sensitivity of the 2022 “expanded” real wage bill to variations in inflation. Higher inflation affects the real wage bill by reducing the real growth in average income. Our baseline scenario assumes 7.8% inflation for the 2022 IPCA (our current tracking), which is compatible with 0.6% growth in average real income. We simulated scenarios with 5.0% and 9.0% for the IPCA, which generated 1.7% and -0.3% variations in real average income, respectively. As for the “expanded” real wage bill, we expect a range of +2.5% (9% IPCA) to +4.6% (5% IPCA).

Figure 12 – Real Average Income (% Full Year)



Sources: IBGE, Santander.

Figure 13 – Contributions to Full-Year Growth (%)



Sources: National Treasury, IBGE, Ministry of Economy, and Santander.

## Fiscal Stimulus – An Overview

During the pandemic outbreak the government added massive fiscal stimulus to mitigate the effects of the pandemic, mainly through income transfers. The measures accounted for about 10% and 2% of our total expanded real income measure in 2020 and 2021 respectively.

The government introduced the Emergency Aid program to contain the effects of the pandemic. The initial value per beneficiary during the first four months of the program was BRL600 per month, and the program reached 68 million people at its peak. After September 2020 the aid was reduced to BRL300 monthly and to about 48 million people by its end in December 2020 as the pandemic eased. The total expenditures for Emergency Aid in 2020 were BRL293 billion (3.9% of GDP) out of a budget of BRL322 billion (91% executed). The lower actual expenditure versus the amount budgeted was due to a reduction in the number of beneficiaries at the end of 2020. For 2021, after the pandemic’s resurgence in 1Q21, the government reintroduced the program after the approval of the *PEC Emergencial* in March, before the 2021 budget had been approved. The *PEC Emergencial* set a total budget of BRL44 billion (“extra-cap”), but with the worsening of the pandemic the government added a new extraordinary credit of BRL20 billion that extended the aid until October 2021.

On August 9, 2021, the government submitted to Congress a provisional measure to create a new welfare program titled *Auxílio Brasil*, to replace the *Bolsa Família* program. The total budget expected for the program is BRL89 billion in the 2022 Budget, with the fiscal space opened by *PEC dos Precatórios*, which created a sub-cap for judicial claim and changed the constitutional spending cap indexation to open a fiscal space of BRL113 billion. The monthly benefit is currently at BRL409 per month. Half of the benefit value is permanent (*Bolsa Família* inflation-adjusted benefit) and the other is a temporary stimulus that was introduced in the end of 4Q21. The government still needs to find a permanent source of financing this ~BRL200 additional fiscal



transfer in order to comply with the fiscal responsibility law for 2023 onward. Thus, theoretically, the government needs another waiver for the fiscal rule to continue with the program in 2023 or to obtain a permanent source of funding. The total outlays for the government transfers (considering also *Bolsa Família* and *Auxílio Brasil* payments) were BRL85.9 billion (1.0% of GDP) in 2021.

Figure 14 – Fiscal Stimulus to mitigate the pandemic-effects

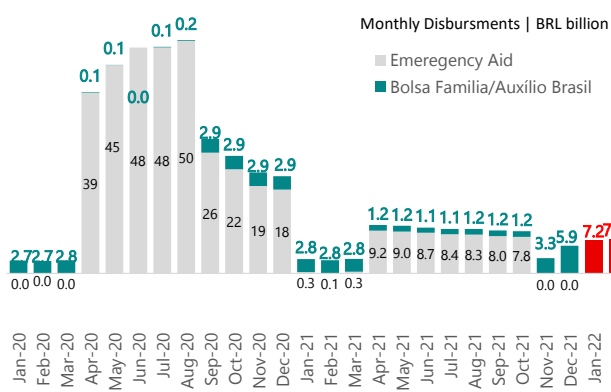
In BRL billion - Accumulated	2020			2021			2022		
	Dec-20	Total Budget	Executed	Dec-21	Total Budget	Executed	Mar-22	Total Budget	Executed
Bem - Employment program (MP 935)	33.5	51.5	65.0%	7.7	10.7	71.5%	0.0	0.2	0.0%
Expansion of Bolsa Família (MP 929)	0.4	0.4	100.0%	-	-	-	-	-	-
Emergency Aid (MP 937)	293.1	322.0	91.0%	60.7	63.9	94.9%	2.8	5.7	50.3%
Transfers to regional governments (MP 939)	78.3	79.2	98.8%	-	-	-	-	-	-
Credit for payroll (MP 943)	6.8	6.8	100.0%	-	-	-	-	-	-
Energy Sector (MP 950)	0.9	0.9	100.0%	-	-	-	-	-	-
Ministry of Health and others	42.7	50.8	84.0%	25.8	43.2	59.7%	6.6	10.5	63.1%
Guarantees for credit measures for SME (MP 977)	58.1	58.1	100.0%	5.0	5.0	100.0%	-	-	-
Financing of Tourism Infrastructure (MP 963)	3.1	5.0	61.6%	0.6	1.3	42.3%	-	0.7	-
Emergency Credit Program - "Maquininhas"	5.0	10.0	50.0%	-	-	-	-	-	-
Vaccine Acquisition	2.2	20.0	11.1%	21.8	26.2	83.4%	2.9	10	28.7%
<b>Accumulated Total</b>	<b>524.0</b>	<b>604.7</b>	<b>86.7%</b>	<b>121.4</b>	<b>150.2</b>	<b>80.8%</b>	<b>12.4</b>	<b>27.1</b>	<b>45.6%</b>

Updated until 4/11/2022

Sources: National Treasury, Ministry of Economy, and Santander.

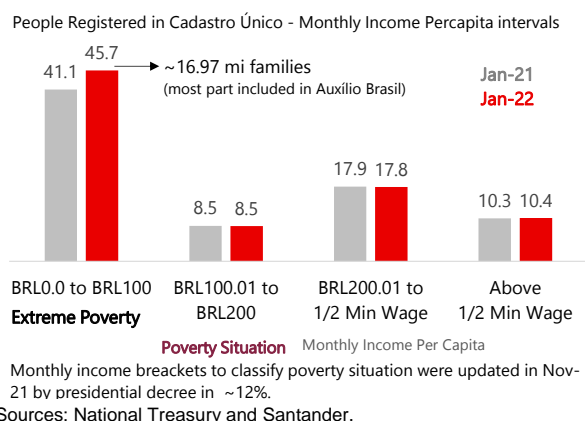
In Figure 16 we show the number of people in the *Cadastro Único*, a government registry database. We see an increase in the number of families classified as being in "extreme poverty," and in our view, the recent price shock effect (inflation reached more than 10% in 12 months) could further increase the number of people in this condition. It is worth noting that the poverty and extreme poverty classification ranges were updated in November 2021, increasing the values by ~12% on average (e.g., the extreme poverty maximum rose from BRL89 to BRL100 in monthly income).

Figure 15 – Welfare Transfers from the Gov.



Sources: National Treasury and Santander.

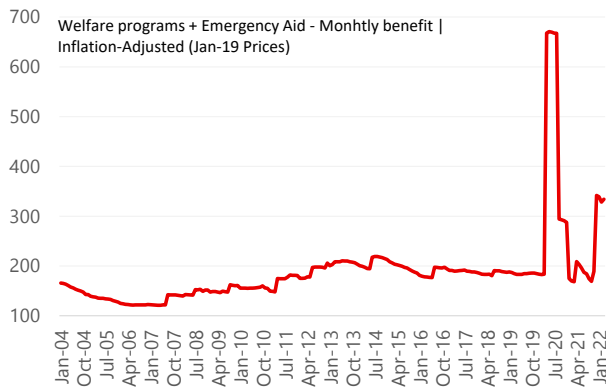
Figure 16 – Cadastro Único: Gov. Registry Database



As we showed, monthly expenses for the welfare program reached BRL7.4 billion in February, in the month the total number of families reached 18 million, increasing from 14 million in the former program *Bolsa Família*. In Figure 17 we show the values of the welfare program corrected for inflation, with prices from January 2019. We can see that the values reached about BRL200 per month since 2013. During the pandemic, with the temporary migration to emergency aid, the values overcame BRL600 a month. Now, since the introduction of the Brazilian aid that started paying BRL400 monthly since January 2022, the amount at Jan-19 prices is around BRL330 per month. Even so, if the average benefit of 2019 (pre-pandemic period) is compared to the period, the values are 80% higher.

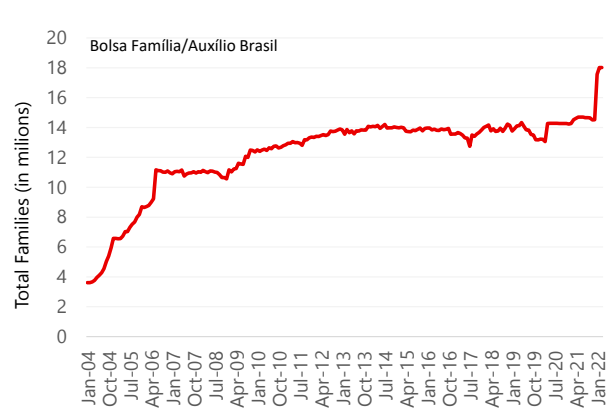


**Figure 17 – Monthly Benefit Real Value**



Sources: *Min da Cidadania* and Santander.

**Figure 18 – Number of Families – Welfare Program**

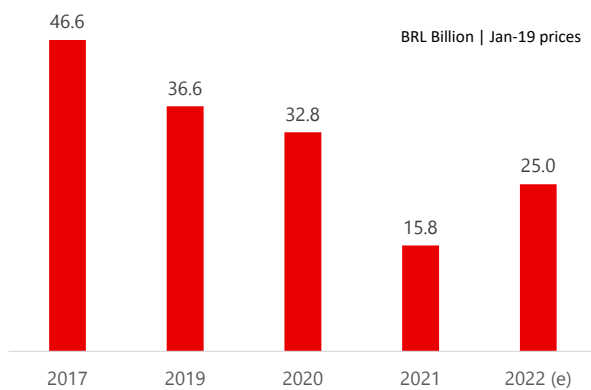


Sources: *Min da Cidadania* and Santander.

We now return to the fiscal stimulus issue in 2022. The government has authorized the withdrawal of up to BRL1,000 from the FGTS as of April 20. This measure is like the ones adopted since 2017 to stimulate the economy. According to the government, this new measure will reach almost 42 million people. Withdrawals of FGTS funds can be made between April 20 and December 15. We believe that this measure will add BRL25 billion in stimulus in 2022. In Figure 19, we show the total amount of this fiscal measure since 2017, showing a decline when considering the inflation-adjusted data.

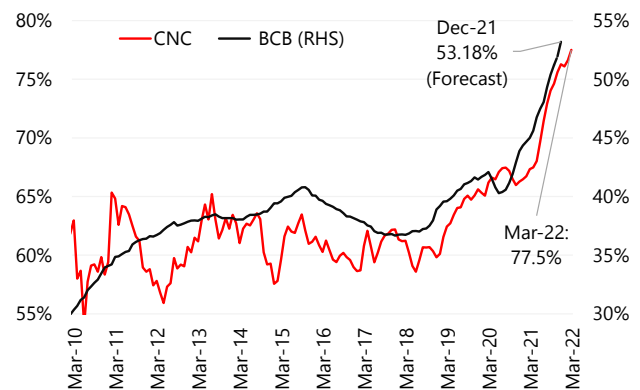
We estimate that FGTS withdrawals will add 0.6 p.p. to the growth of the “expanded” real wage bill. However, compared to our last projection of 3.3% growth for the real wage bill, the increase in our inflation forecast from 6.0% to 7.8% practically nullified the expected growth from FGTS withdrawals. In other words, the 1.5 p.p. increase in inflation should offset the effect of the fiscal stimulus. Another relevant point is that the fiscal measure can be used by workers to reduce household indebtedness, which has been increasing in the recent periods (see Figure 20). The December data for the BCB series is our forecast for the month, the original series end in November 2021.

**Figure 19 – FGTS funds workers withdrawn**



Sources: Caixa, MCM and Santander.

**Figure 20 – Extended household Indebtedness (%)**



Sources: BCB and Santander.

In Figure 21, we show the effects in the real wage bill by changing both the FGTS and inflation scenarios. While fiscal stimuli play an important role, inflation has a much greater impact on the economy's total income.





Figure 21 – Inflation Scenario and the Real Wage Bill

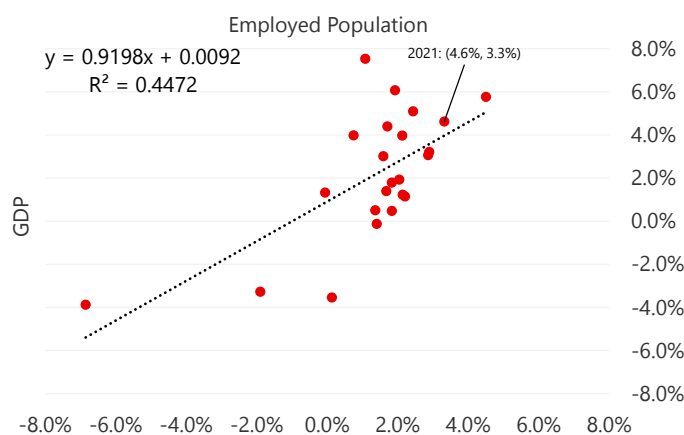
	2020	2021	2022(E) - IPCA Simulation		
			5.0%	7.9%	9.0%
Real Wage Bill (No Fiscal Stimulus)	-8.1%	+0.6%	+5.1%	+3.9%	+3.0%
Real Wage Bill (Fiscal Stimulus, no FGTS Withdraws)	+3.1%	-8.0%	+4.0%	+2.8%	+1.9%
Real Wage Bill (Fiscal Stimulus, with FGTS Withdraws)			+4.6%	+3.2%	+2.5%

Sources: National Treasury, IBGE, Ministry of Economy, Santander.

### Real Wage Bill: Macro Impacts and Elasticities

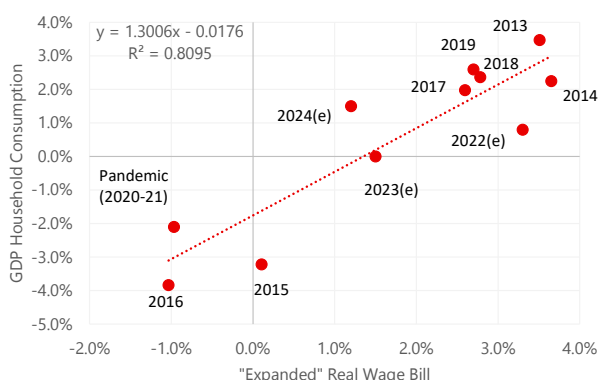
In this section, we explore some relationships between our real wage bill estimates and our overall outlook, as well as the elasticities of changes in macroeconomic fundamentals. We consider the elasticity of the employed population to GDP growth to be close to one (0.92). For the IPCA, we estimate that each 100-bp increase in inflation reduces the real wage bill by around 0.5 p.p. Therefore, considering the change in our inflation forecast since the last review (7.8%, from 6.0%), as well as a lower base in 2021 due to the sharper-than-expected drop in the real wage bill, we reduced our 2022 aggregate-real-wage growth estimate to 3.2% (previously 4.2%).

Figure 22 – Employed Population vs GDP Growth (% Full Year)

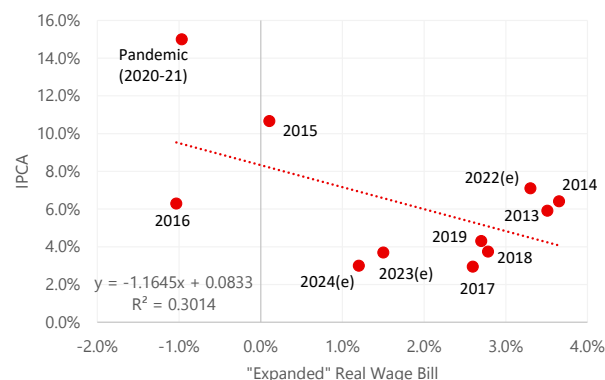


Sources: IBGE, Santander.

Figures 23 and 24 show the relationship between the wage bill and Household Consumption and also with inflation. As the pandemic caused a strong downward swing in 2020, and then a strong recovery subsequently, we chose to analyze the aggregate effect of the pandemic. We also include our projections for 2022-24, in line with our models. We believe that the convergence of inflation to the Central Bank target will be very important for the recovery of the real wage bill and, consequently, of Household Consumption. We note that in periods of higher inflation, such as the pandemic and the 2015-16 recession, income tends to grow less, and consequently GDP is lower.


**Figure 23 – Real Wage Bill x Household Consumption**


Sources: IBGE, BCB, National Treasury and Santander.

**Figure 24 – Real Wage Bill x IPCA Inflation**


Sources: IBGE, BCB, National Treasury and Santander.

In addition, we estimated elasticities (between the real wage bill and Household Consumption) in different time spectra, both in the short term and in the long term. For this, we used data from 2004Q2 to 2021Q4, on a quarterly frequency. The first method used to estimate the long-term elasticity was a “log-log” OLS (Ordinary Least Squares), that is, the natural logarithm of consumption (response variable -  $C_t$ ) being explained by the natural logarithm of the wage bill (explanatory variable -  $W_t$ ). With this type of model, the coefficient of the interest variable is interpreted directly as the elasticity of consumption in relation to the wage bill. Control variables were added: quarterly dummies ( $Q1, Q2, Q3$ ), capturing the seasonality present in the series, a dummy to control the effect of the pandemic -  $D_{covid}$  (this dummy assumes a value equal to one after 2020Q1, and zero otherwise) and a dummy for controlling the political turmoil effect of 2015 -  $D_{2015}$  (this dummy assumes a value equal to one after 2015Q3 and zero otherwise). The second method applied was the DOLS (Dynamic Ordinary Least Squares), it consists of adding to a simple OLS model a lag and a lead of the first difference of the explanatory variable as regressors ( $\log \Delta W_{t-1}$ ;  $\log \Delta W_{t+1}$ ).

#### OLS model:

$$\log C_t = \beta_0 + \beta_1 Q1 + \beta_2 Q2 + \beta_3 Q3 + \beta_4 D_{covid} + \beta_5 D_{2015} + \beta_6 \log W_t + \beta_7 \log(\log W_t \cdot D_{covid}) + \varepsilon_t$$

#### DOLS model:

$$\log C_t = \alpha_0 + \alpha_1 Q1 + \alpha_2 Q2 + \alpha_3 Q3 + \alpha_4 D_{covid} + \alpha_5 D_{2015} + \alpha_6 \log W_t + \alpha_7 \log(\log W_t \cdot D_{covid}) + \alpha_8 \log \Delta W_{t-1} + \alpha_9 \log \Delta W_{t+1} + \varepsilon_t$$

We show the results in Figure 25. Using the models, we estimate long-term elasticity of close to 1.05, which means that each 1% increase in Real Wage Bill raises Household Consumption by 1.05%. We also note that the models point to a robust recovery during the pandemic (when elasticity jumped to above 1.5), which probably helped the economic activity recovery in 2021. For the coming periods, we believe that elasticity will return to levels closer to its pre-pandemic values (close to 1.0).

**Figure 25 – Elasticity Household Consumption in relation to the Real Wage Bill**

Elasticities	Long Term		
	OLS	DOLS	N
Pre-pandemic	1.04 (0.000)*	1.05 (0.000)*	71
During pandemic	1.64 (0.002)*	1.59 (0.000)*	71

Sources: IBGE, Santander.

OLS:  $\beta_6 = 1.04$ ;  $(\beta_6 + \beta_7) = 1.64$  | DOLS:  $\alpha_6 = 1.05$ ;  $(\alpha_6 + \alpha_7) = 1.59$ Inside parentheses = p-value - pre-pandemic ( $\beta_6$ ;  $\alpha_6$ ); during pandemic ( $\beta_7$ ;  $\alpha_7$ ) \* (significant at 1%)



## Conclusion

Finally, we consider the behavior of the labor market a key factor in our assessment of the recovery in domestic economic activity, and the inflation outlook is directly affecting the estimates. The vaccination rollout was crucial in the recovery of domestic activity and the increase in social mobility, now we believe the focus will be on inflation convergence.



## CONTACTS / IMPORTANT DISCLOSURES

### Brazil Macro Research

Ana Paula Vescovi*	Chief Economist	anavescovi@santander.com.br	5511-3553-8567
Mauricio Oreng*	Head of Macro Research	mauricio.oreng@santander.com.br	5511-3553-5404
Jankiel Santos*	Economist – External Sector	jankiel.santos@santander.com.br	5511-3012-5726
Ítalo Franca*	Economist – Fiscal Policy	italo.franca@santander.com.br	5511-3553-5235
Daniel Karp Vasquez*	Economist – Inflation	daniel.karp@santander.com.br	5511-3553-9828
Tomas Urani*	Economist – Global Economics	tomas.urani@santander.com.br	5511-3553-9520
Lucas Maynard*	Economist – Economic Activity	lucas.maynard.da.silva@santander.com.br	5511-3553-7495
Felipe Kotinda*	Economist – Commodities	felipe.kotinda@santander.com.br	5511-3553-8071
Gabriel Couto*	Economist – Special Projects	gabriel.couto@santander.com.br	5511-3553-8487
Fabiana Moreira*	Economist – Credit	fabiana.de.oliveira@santander.com.br	5511-3553-6120
Gilmar Lima*	Economist – Modeling	gilmar.lima@santander.com.br	5511-3553-6327

### Global Macro Research

Maciej Reluga*	Head Macro, Rates & FX Strategy – CEE	maciej.reluga@santander.pl	48-22-534-1888
Rodrigo Park *	Economist – Argentina	rpark@santander.com.ar	54-11-4341-1272
Ana Paula Vescovi*	Economist – Brazil	anavescovi@santander.com.br	5511-3553-8567
Juan Pablo Cabrera*	Economist – Chile	jcabrera@santander.cl	562-2320-3778
Guillermo Aboumrad*	Economist – Mexico	gjaboumrad@santander.com.mx	5255-5257-8170
Piotr Bielski*	Economist – Poland	piotr.bielski@santander.pl	48-22-534-1888
Mike Moran	Head of Macro Research, US	mike.moran@santander.us	212-350-3500

### Fixed Income Research

Juan Arranz*	Chief Rates & FX Strategist – Argentina	jarranz@santanderrio.com.ar	5411-4341-1065
Mauricio Oreng*	Senior Economist/Strategist – Brazil	mauricio.oreng@santander.com.br	5511-3553-5404
Juan Pablo Cabrera*	Chief Rates & FX Strategist – Chile	jcabrera@santander.cl	562-2320-3778

### Equity Research

Miguel Machado*	Head Equity Research Americas	mmachado@santander.com.mx	5255 5269 2228
Alan Alanis*	Head, Mexico	aalanis@santander.com.mx	5552-5269-2103
Andres Soto	Head, Andean	asoto@santander.us	212-407-0976
Walter Chiavesio*	Head, Argentina	wchiavesio@santanderrio.com.ar	5411-4341-1564
Mariana Cahen Margulies*	Head, Brazil	mmargulies@santander.com.br	5511-3553-1684

### Electronic

Bloomberg  
Reuters

SIEQ <GO>  
Pages SISEMA through SISEMZ

This report has been prepared by Santander Investment Securities Inc. ("SIS"; SIS is a subsidiary of Santander Holdings USA, Inc. which is wholly owned by Banco Santander, S.A. "Santander"), on behalf of itself and its affiliates (collectively, Grupo Santander) and is provided for information purposes only. This document must not be considered as an offer to sell or a solicitation of an offer to buy any relevant securities (i.e., securities mentioned herein or of the same issuer and/or options, warrants, or rights with respect to or interests in any such securities). Any decision by the recipient to buy or to sell should be based on publicly available information on the related security and, where appropriate, should take into account the content of the related prospectus filed with and available from the entity governing the related market and the company issuing the security. This report is issued in Spain by Santander Investment Bolsa, Sociedad de Valores, S.A. ("Santander Investment Bolsa"), and in the United Kingdom by Banco Santander, S.A., London Branch. Santander London is authorized by the Bank of Spain. This report is not being issued to private customers. SIS, Santander London and Santander Investment Bolsa are members of Grupo Santander.

**ANALYST CERTIFICATION:** The following analysts hereby certify that their views about the companies and their securities discussed in this report are accurately expressed, that their recommendations reflect solely and exclusively their personal opinions, and that such opinions were prepared in an independent and autonomous manner, including as regards the institution to which they are linked, and that they have not received and will not receive direct or indirect compensation in exchange for expressing specific recommendations or views in this report, since their compensation and the compensation system applying to Grupo Santander and any of its affiliates is not pegged to the pricing of any of the securities issued by the companies evaluated in the report, or to the income arising from the businesses and financial transactions carried out by Grupo Santander and any of its affiliates: Gabriel Couto\* and Ítalo Franca\*.

\*Employed by a non-US affiliate of Santander Investment Securities Inc. and not registered/qualified as a research analyst under FINRA rules, and is not an associated person of the member firm, and, therefore, may not be subject to the FINRA Rule 2242 and Incorporated NYSE Rule 472 restrictions on communications with a subject company, public appearances, and trading securities held by a research analyst account.

The information contained herein has been compiled from sources believed to be reliable, but, although all reasonable care has been taken to ensure that the information contained herein is not untrue or misleading, we make no representation that it is accurate or complete and it should not be relied upon as such. All opinions and estimates included herein constitute our judgment as at the date of this report and are subject to change without notice.

Any U.S. recipient of this report (other than a registered broker-dealer or a bank acting in a broker-dealer capacity) that would like to effect any transaction in any security discussed herein should contact and place orders in the United States with SIS, which, without in any way limiting the foregoing, accepts responsibility (solely for purposes of and within the meaning of Rule 15a-6 under the U.S. Securities Exchange Act of 1934) for this report and its dissemination in the United States.

© 2022 by Santander Investment Securities Inc. All Rights Reserved.

