REAL WAGE BILL: STRUCTURAL ESTIMATE AND RECENT UPWARD SURPRISES

Gabriel Couto* and Ítalo Franca*
macro.brasil@santander.com.br
+5511 3553 7424

- In this report, our main objective is to estimate the structural "expanded" real wage bill and update our short-term outlook. In our estimation, growth in the expanded wage bill is 1.4% per year in the long term, considering certain hypotheses for the employment and fiscal benefits numbers. This value is consistent with our estimate of 1.5% for long-term potential GDP, considering that we also estimate the elasticity between the wage bill and household consumption as close to 1.05.

- The labor market has shown signs of resilience in recent months, with a positive performance in labor data and in tax collection related to employment. In this context, the real wage bill has shown a significant recovery, mainly after the recovery of activity to pre-pandemic levels observed in 2021-22 and after the first disinflation phase since mid-2022 led double-digit inflation to drop to close to 4% in YoY readings. These factors resulted in real income gains since 4Q21, when real income reached levels close to the low of the series. Although we still expect the labor market to decelerate ahead, owing to the effects of the monetary cycle, the persistence of a lower participation rate is likely to support a more favorable performance of the labor market than we initially expected.

- We have also updated our short-term estimates for the "expanded" real wage bill, a measure that encompasses workers' salaries, pension contributions, and federal transfers. In addition to the 2023 and 2024 figures, we added projections for 2025, as well as estimates for the long-term behavior of this variable, based on assumptions for each of its components separately — a structural estimate for the variable. We also revised the historical series, updating deflators and government transfers data, which caused slight changes in the observed growth for the "expanded" real wage bill in past years. We also explore the impact of the increase in fiscal stimulus and social benefits.

- We are still seeing an overheated labor market, as the unemployment rate has remained at its lowest levels since mid-2015 (8.2%, seasonally adjusted), still largely influenced by a lower participation rate (labor supply). We recently revised our labor market scenario, as we now assume that the participation rate will remain below its pre-pandemic historical average (~63%) at least until 2025. We now estimate an average unemployment rate of 8.2% in 2023 (previously: 9.2%), and 9.3% for both 2024 and 2025 (previously: 10.1% for both). Further, we now forecast that the unemployment rate is likely to remain below the structural level (NAIRU ~9.5% by 2024) until 2024. As we now consider a tight labor market for longer, we revised our 2023 "expanded" real wage bill growth forecast to 3.9% (previously: 3.1%). We project 0.9% and 1.4% for 2024 and 2025, respectively (previously: 1.0% and 1.6%, respectively).

In this report, our main objective is to estimate the performance of the structural real wage bill over the long term. In our estimation, growth in the expanded wage bill is 1.4% per year in the long term. This value is consistent with our estimate of long-term potential GDP of 1.5%, considering that we also estimate the elasticity between the wage bill and household consumption as close to 1.05.

In the first section of this report, we will explore how the labor market has evolved recently, as well as the stronger recovery in the wage bill (without fiscal transfers). We have seen a strong recovery at the margin, driven by the recent deceleration in inflation and a more robust than expected recovery in the labor market. In the second section, we explore income transfers, mainly the numbers for the *Bolsa Familia* (welfare) program, whose budget increased to BRL175 billion in 2023. Recall that before the pandemic, the social program budget was around BRL30 billion; this rose to ~BRL90 billion last year with the increase in the average benefit. In the

final section, we discuss our updated scenario for the expanded real wage bill in the short term, followed by details on the structural estimates and our long-term hypotheses for employment and fiscal benefits numbers.

Labor Market: Brief Overview

In our view, the labor market continues to show signs of resilience, as it remains in overheated territory. We see a tight job market at least until 2024.

The labor market saw a robust improvement throughout 2022, with the unemployment rate reaching multi-year lows and falling into territory below our estimate for the NAIRU (~9.5%). This also led to a quick recovery for real wages, not only due to a tight labor market, but also influenced by a significant inflation deceleration in 2H22. Although some of these factors remain in 2023, we expect greater moderation for the labor market and wages throughout the rest of the year. Recent labor market data already show a substantial deceleration in real wages in the initial months of 2023. Following tighter financial conditions and a slowdown in domestic economic activity, we expect the unemployment rate to increase in 2H23 and converge to levels closer to the NAIRU in 2024. A labor market that is closer to equilibrium also implies reduced wage pressures. Finally, we do not expect a deceleration in inflation like the one observed in 2022.

In May, formal employment posted a +0.1% MoM sa variation, while informal employment had a +0.5% MoM sa variation. This result led the formalization rate to 57.8% (sa), below the April level (57.9%). After six months of decreases, informal employment once again posted growth at the margin in February through May. The services sector was the highlight of job creation in May, with the exception of the transportation segment, which showed a contraction compared to April. Agriculture also contributed negatively to employment in May, as manufacturing, retail and construction remained close to stability at the margin. In our view, more cycle-sensitive sectors tend to signal deceleration or stability in employment ahead, due to tight financial conditions.

Figure 1 – Unemployment Rate and the NAIRU (sa)
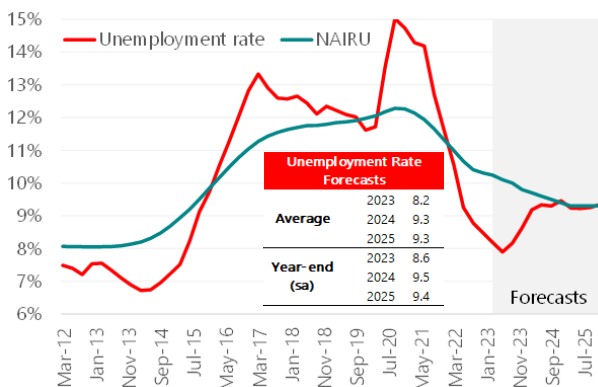
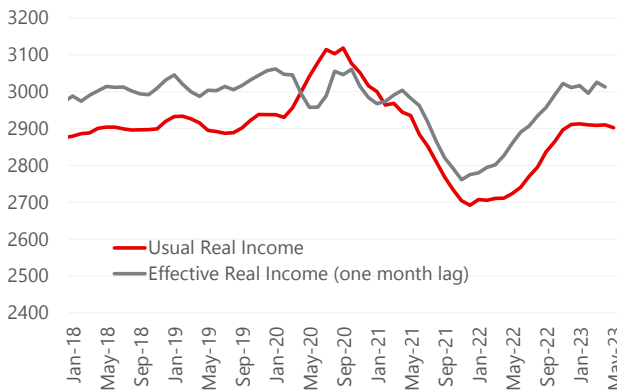Sources: IBGE, Santander.

Figure 2 – Unemployment Rate
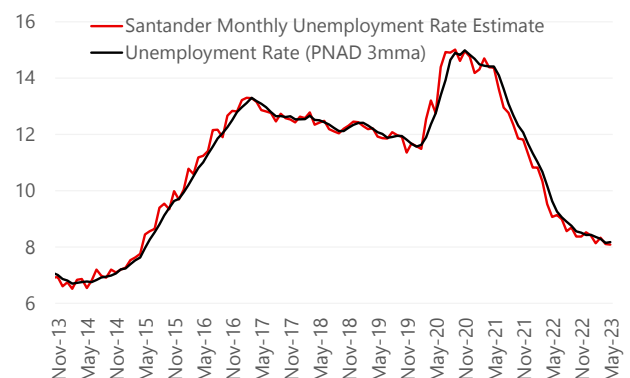
Sources: IBGE, Santander.

In this scenario, the real wage bill rose 7.9% YoY in the three-month period ended in May, decelerating from the 9.6% YoY registered in April. May's figure is also below the peak variation of +13% YoY recorded in November 2022. This continues to be a notably strong pace, showing signs of an overheated labor market, after a sequence of double-digit expansions between October of last year and March of this year. The May PNAD (employment) data continued to show an overheated job market, but with signs of stabilization at the margin. We still evaluate that the unemployment rate remains at low levels due more to a reduction in the participation rate than due to employment growth. After a strong recovery in 2H22, real wages show some signs of deceleration at the margin, but still with indications of an overheated job market. We expect the deceleration in the labor market to resume ahead, but the continued low participation rate implies downside risk to our unemployment rate projections.
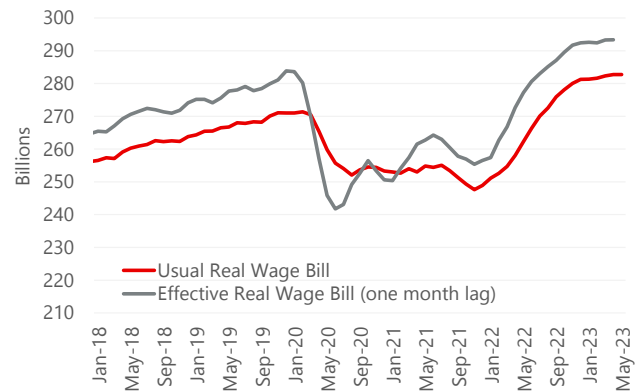
Figure 3. Average Real Income (BRL, sa)

Sources: IBGE, Santander.

Figure 4. Real Wage Bill (BRL, sa)

Sources: IBGE, Santander.

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. This effect has been more persistent than we expected initially. We believe that the pandemic was partially responsible for this performance, as the size of the labor force fell significantly. While participation registered a recovery from the pandemic from 2Q20 to 2Q22, it has fallen once again from 3Q22 onward. In a scenario in which the participation rate remained high, the unemployment rate would still be around 10% and labor market pressures could have been lower.

One explanation is that the massive expansion of welfare programs, starting with the emergency aid in the pandemic, followed by the introduction of a permanent social program (*Auxilio Brasil/Bolsa Familia*), could lead to lower participation in labor markets. We believe that these programs could have an impact, but there are probably other factors. For example, another possible explanation for low participation is the movement of young people when entering the labor market. Young people of school age may be choosing to enter the workforce later, thus holding back the total participation rate to the same level observed in the pandemic. We also see retirement data as a possible factor, as retirements declined during the pandemic and now are starting to pick up again.

The labor market participation rate in May was 61.8% (sa), above the April level (61.7%). If the participation rate were fixed at 63% (pre-pandemic historical average), we calculate that the seasonally adjusted unemployment rate would have been 9.9% in May (compared to 8.2% in the current reading with official numbers).

Figure 5 – Employment and Labor Force (sa)
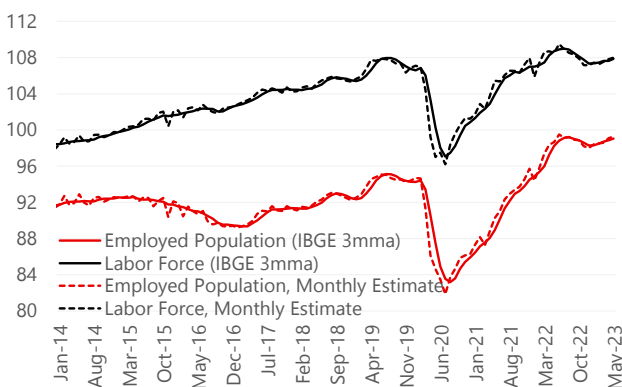
Sources: IBGE, Santander.

**Figure 6 – Labor Force and Participation Rate**
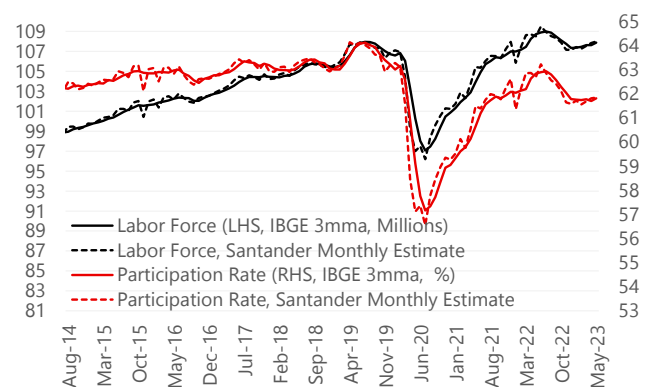
Sources: IBGE, Santander.

However, the phenomenon is not just local, which somewhat undermines the argument that the increase in *Bolsa Família* benefits is the only factor responsible for the recent decline in labor participation. We also observed that cash transfers reached unprecedented levels of coverage, but unevenly so across countries and largely concentrated in the early phase of the pandemic. In Latin America and globally, labor market data has shown behavior like that of Brazil. In Brazil, we have seen similar movements in most regions — a recovery after the pandemic and then more recently a decline in labor participation. Only in the Midwest region of Brazil has the labor participation data become more stable.
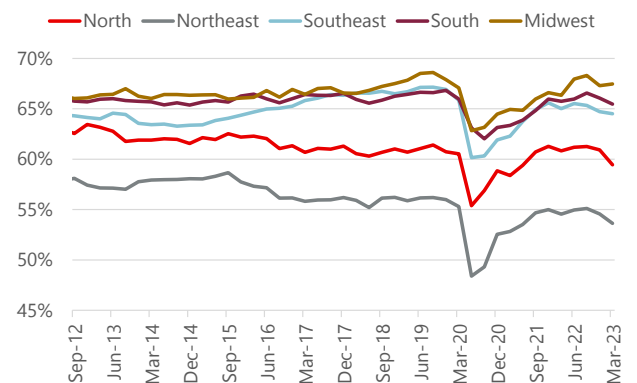
Figure 7 – Participation Rate
(% of total population ages 15+)
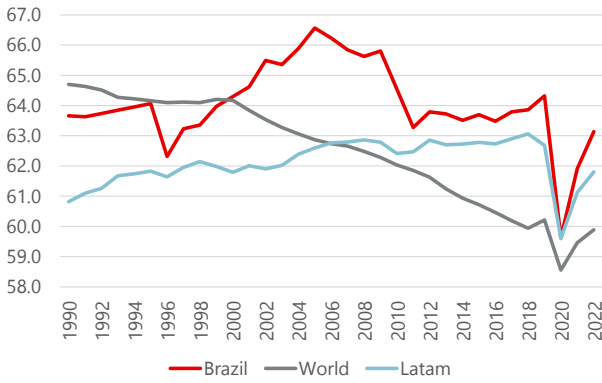

Sources: World Bank, Santander.

Figure 8 – Participation Rate by Region


Sources: IBGE, Santander.

Considering age, we see that initially older people returned to the job market in fewer numbers after the pandemic. Lately, however, even younger people's participation rate has decreased, showing that the smaller labor supply is consistent among all age groups. This is possibly related to the post-pandemic labor market reorganization and the increase in transfers, and these effects will continue to be seen from now on, in our view.

Figure 9 – Participation Rate by Age (vs. Pre-Pandemic)
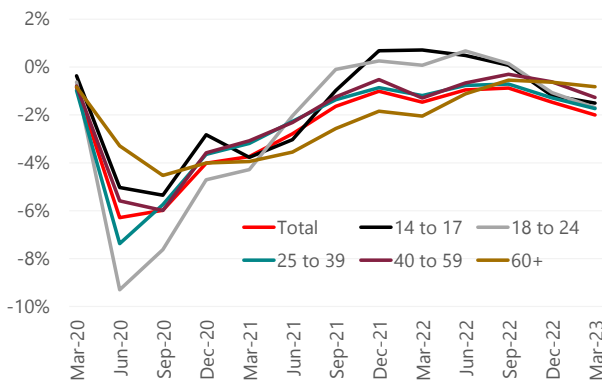
Sources: IBGE, Santander.

Figure 10 – Participation Rate by Age Group
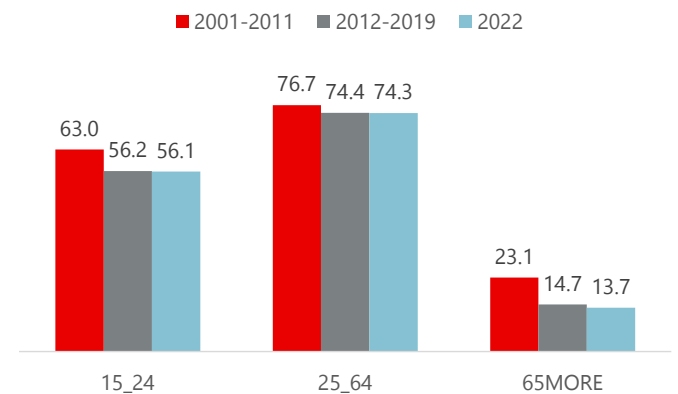
Sources: OECD, Santander.

The main contributions to 4Q22 and 1Q23 employment growth came from services, still benefiting from the reopening and also from the real wage bill recovery (allowing people to spend more on services). The increase in welfare program spending, and a reduction in the savings rate seen during the pandemic, also played a role in the services sector recovery, in our view. The accumulated jobs created in the services sector since the beginning of the pandemic are now more than 1.0 million higher than the pre-pandemic levels. After reaching pre-pandemic levels, formal employment has decelerated and is now closer to its long-term growth rate.

Figure 11. Post-Pandemic Accumulated Job Variation (sa)
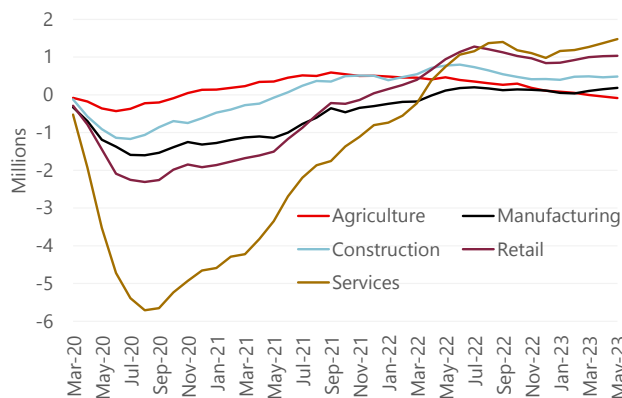
Sources: IBGE, Santander.

Figure 12. Employed Population Growth in May-22
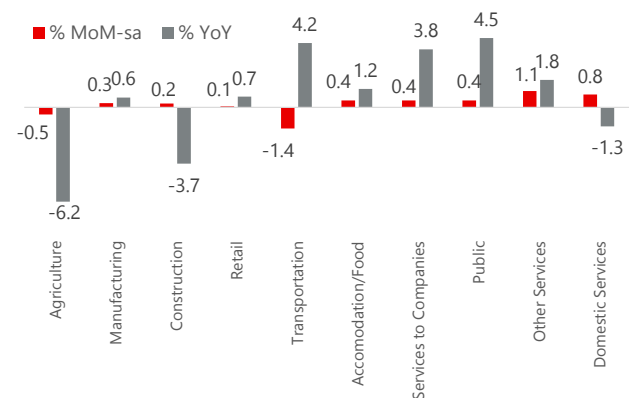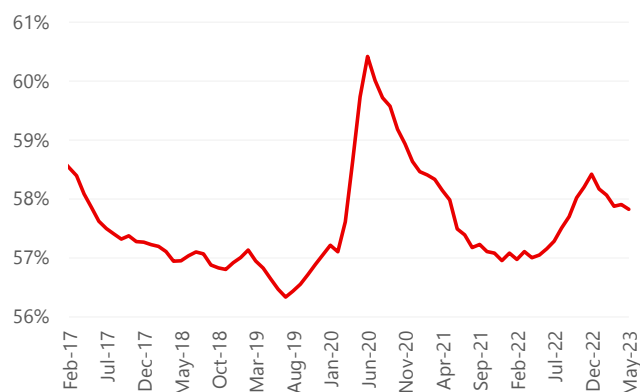

Sources: IBGE, Santander.

Formal employment posted a +0.1% MoM-sa variation, while informal employment had a +0.7% MoM-sa variation. This result led the formalization rate to 57.9% (sa), below the February 2023 level (58.1%). After six months of declines, informal employment grew at the margin in January through March.

Figure 13. Employed Population (sa, Jan-20=100)
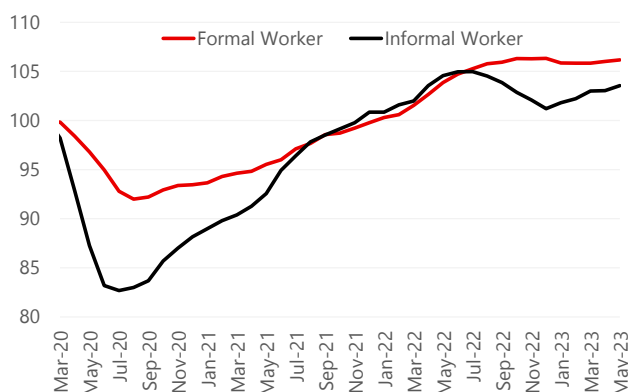
Sources: IBGE, Santander.

Figure 14. Formalization Rate (sa)

Sources: IBGE, Santander.

In our view, the latest labor market surveys (from April) continue to show a likely overheated job market. We still believe that the unemployment rate remains low due more to a reduction in the participation rate than due to employment growth. We expect the deceleration in the labor market to resume, but a continued low participation rate and April's CAGED data imply a relatively low unemployment rate, which could remain at single-digit levels throughout 2023 and 2024, per our forecast.

Figure 15 – Unemployment Rate Trajectory (sa)

	2020	2021	2022	2023e	2024e
Unemployment Rate *					
Average	13.8	13.2	9.3	8.2	9.3
End of Period (s.a.)	14.8	11.7	8.4	8.6	9.5
Unemployed Population **					
Average	13.8	13.9	10.0	8.9	10.3
End of Period	15.0	12.5	9.2	9.4	10.5

* in %
** in Millions

Sources: IBGE, Santander.

Figure 16 – Net Job Creation and IBC-Br (12m)
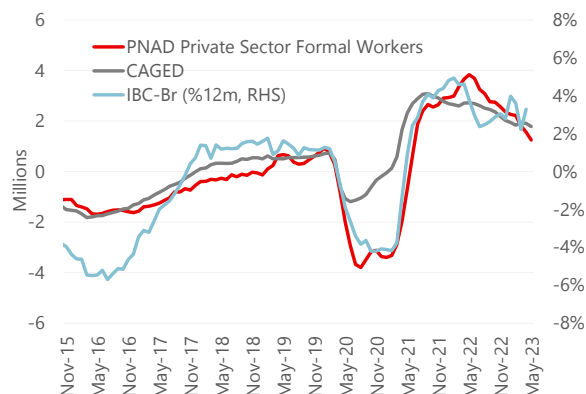
Sources: IBGE, Ministry of Labor, Santander.

Fiscal Stimulus – An Overview

Fiscal transfers have increased since the pandemic, with the *Bolsa Familia* program reaching a budget of BRL 175 billion in 2023 (we believe that the final outlays will be closer to BRL165 billion), after disbursements of BRL89 billion in 2022 and vs. a budget of BRL35 billion before the pandemic. Therefore, we estimate that fiscal stimuli amounted to almost 1.0% of GDP in 2023, mainly with the approval of the PEC of Transition (approved in December to allow the expansion of the welfare program) that allowed for an increase in public spending.

In addition, during 2Q23 some other fiscal measures were effective, in our view: the real increase in minimum wage (+1.5%), the rise in public servants' wages (+9%), and the anticipation of the bonus (13th payment) added to the pension benefit.

We expect the fiscal impulse to become more neutral from 2H23 onward. However, in this context, we see that household income increased as a result of transfers. These benefits already represent more than half of the average cost of the basic food basket (named *Cesta Básica* in Brazil), as well as 54% of the current minimum wage (BRL1,320 per month).
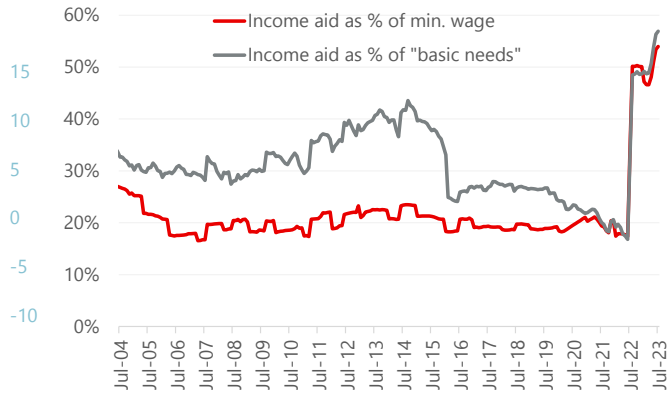
Figure 17 – Fiscal and Monetary Impulses vs. Activity
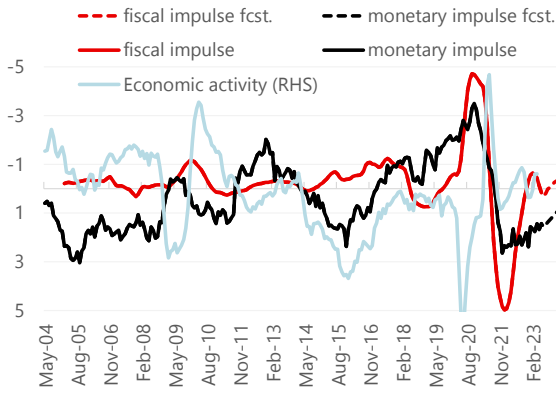
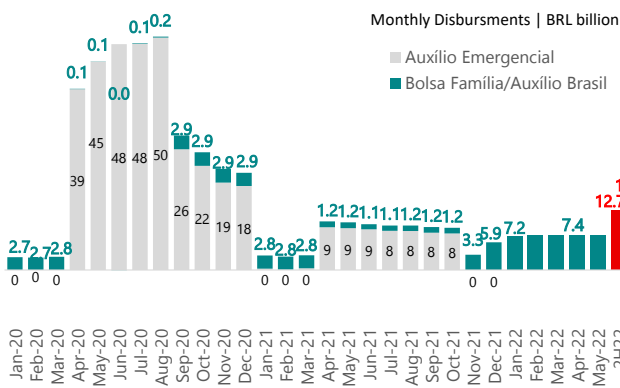Sources: BCB, National Treasury, Santander estimates

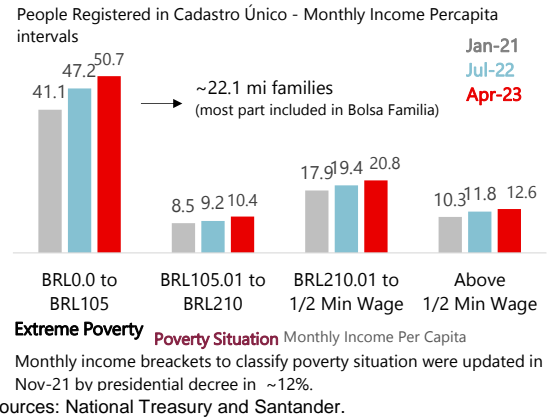**Figure 18 – Welfare Program Comparison**

Sources: BCB and Santander.

In May, the average amount disbursed throughout the country via *Bolsa Família* was the highest ever. It totaled a BRL672.5 average monthly benefit, above the BRL670 recorded in April, considering the increase in the number of families receiving the transfers. We estimate this amount could reach BRL715 per month in June. Effective in June, the federal government released an additional amount of BRL50 per month for families with children between 7 and 18 years of age. The extra BRL50 also applies to pregnant women. The program is currently reaching 5,570 municipalities in the country, and the total amount disbursed by the federal government amounted to BRL14.1 billion in May: the highest in the history of the income transfer program. Since its relaunch in March, *Bolsa Família* has added more than 1 million families. These are people who previously did not meet the requirements to be on the list but who are now eligible. Between March and April, a total of 808,000 families were added. In May, another 200,000 were added.

Figure 19 – Welfare Transfers from the Government

Sources: National Treasury and Santander.

Figure 20 – *Cadastro Único:* Gov. Registry Database

Monthly income breackets to classify poverty situation were updated in Nov-21 by presidential decree in ~12%.

Sources: National Treasury and Santander.

In Figure 21, which shows an update on the average amount of the benefit adjusted for inflation, we can see the recent jump in the average. The graph already considers the expected increase for June, with a benefit exceeding BRL710 per month. The number of families has hovered around 21-22 million recently, being stable in this range in the last few months. The government has begun to try to reduce the number of beneficiaries, removing those with incorrect registrations or who do not meet the requirements to receive the benefits, but on the other hand, there has been greater pressure from potential beneficiaries to enter the program (almost 500k families are currently in the queue to enter the welfare program).
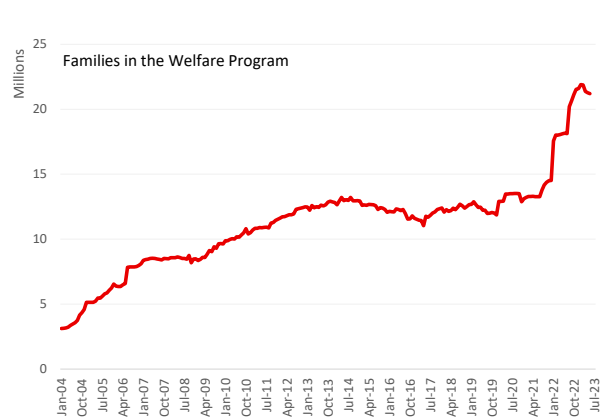
Figure 21 – Monthly Benefit Real Value

Monthly Average Benfit | Inflation-Adjusted (Jun-23 prices)
Welfare Program + Emergency aid (Pandemic)
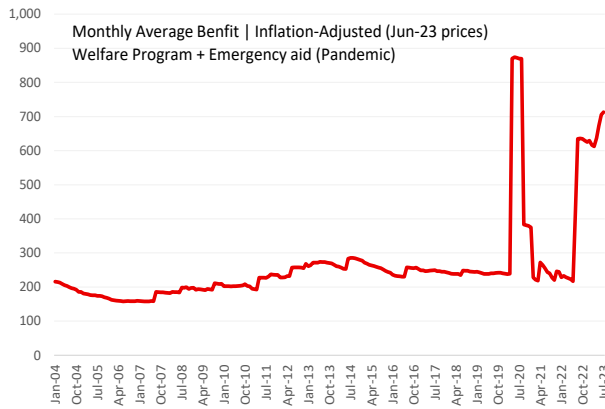
Sources: *Min da Cidadania* and Santander.

Figure 22 – Number of Families – Welfare Program
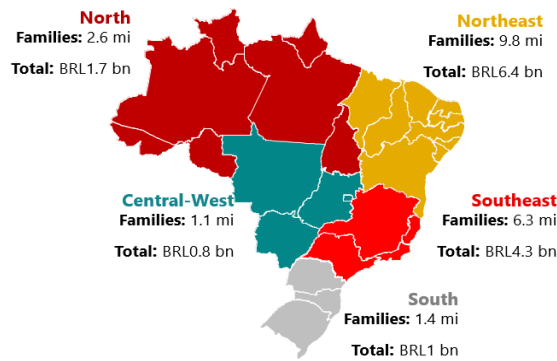

Families in the Welfare Program
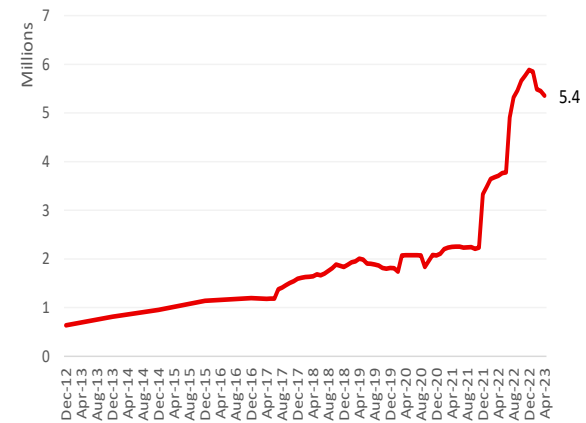
Sources: *Min da Cidadania* and Santander.

Since 2021, we have seen an increase in the number of families with only one person as a beneficiary, and this figure is gradually being reviewed in the government registry.

Figure 23 – Welfare Program - Regional Amounts

North
Families: 2.6 mi
Total: BRL1.7 bn

Northeast
Families: 9.8 mi
Total: BRL6.4 bn

Central-West
Families: 1.1 mi
Total: BRL0.8 bn

Southeast
Families: 6.3 mi
Total: BRL4.3 bn

South
Families: 1.4 mi
Total: BRL1 bn

Sources: *Min da Cidadania* and Santander.

Figure 24 – Single Person - Families

5.4

Sources: *Min da Cidadania* and Santander.

"Expanded Real Wage Bill" — Scenario Update

Considering this scenario, we forecast a deceleration in the "expanded" real wage bill in 2023. Although the figure still points to an expansion above our estimate for long-term growth, we expect the real wage bill deceleration to lead to a significant deceleration in household consumption.

We raised our projections for the "expanded" real wage bill (a statistic that aggregates labor income with government transfers and social programs) in 2023. Once again, we increased our forecast for average real wages, now considering that the labor market will remain tight for longer. We project that the "expanded" real wage bill will grow 3.9%, 0.9%, and 1.4% in 2023, 2024, and 2025, respectively (previously: 3.1%, 1.0%, and 1.6%, respectively). We maintained our estimate for long-term "expanded" real wage bill growth at +1.4%.

Figure 25 – "Expanded" Real Wage Bill (sa)

Emergency FGTS +PIS\PASEP Withdrawal
Emergency Aid and BEm
Regular Benefits
Real Wage bill (s.a)
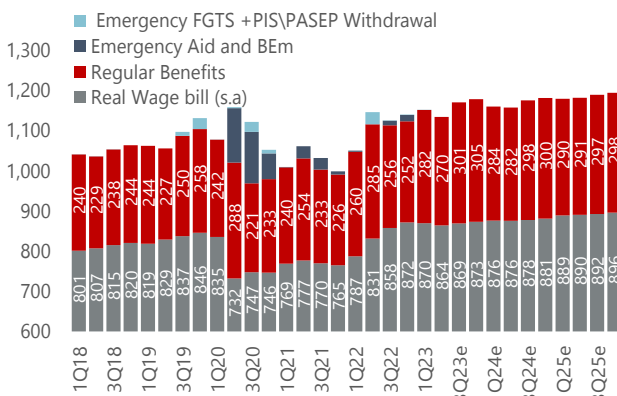
Sources: National Treasury, IBGE, Ministry of Economy, Santander.

Figure 26 – "Expanded" Real Wage Bill (% full year)

	2022	2023(E)	2024(E)	2025(E)
Real Wage Bill	+8.7%	+3.8%	+1.0%	+1.6%
Real Wage Bill (With Government Transfers)	+8.7%	+3.9%	+0.9%	+1.4%

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

Figure 27 – Real Wage Bill x Household Consumption
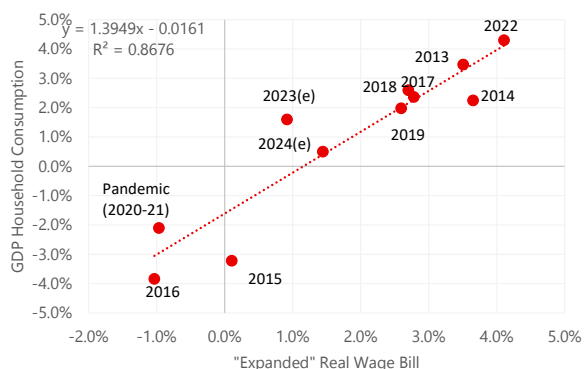
Figure 28 – Real Wage Bill x IPCA Inflation

Sources: IBGE, BCB, National Treasury and Santander.
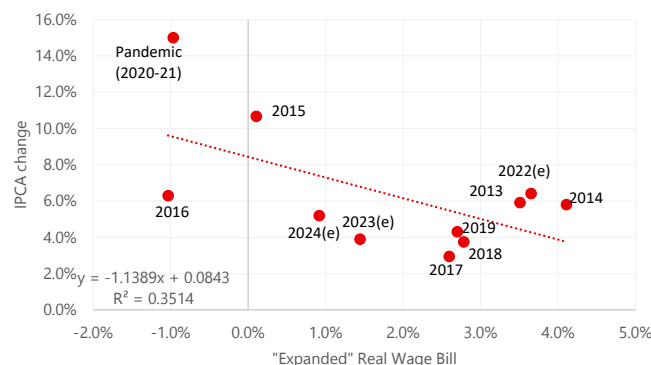
Sources: IBGE, BCB, National Treasury and Santander.

In addition, we estimated elasticities (between the real wage bill and household consumption) for different time periods, both in the short term and in the long term. For this, we used data from 2Q04 to 4Q21, on a quarterly frequency. The first method used to estimate 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 (explanator – 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 — $Dcovid$ (this dummy assumes a value equal to one after 2020Q1, and zero otherwise) and a dummy for controlling the political turmoil effect of 2015 — $D2015$ (this dummy assumes a value equal to one after 3Q15 and zero otherwise).The second method applied was the DOLS (Dynamic Ordinary Least Squares), which 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:

$$\log C_t = \beta_0 + \beta_1 Q1 + \beta_2 Q2 + \beta_3 Q3 + \beta_4 Dcovid + \beta_5 D2015 + \beta_6 \log W_t + \beta_7 \log(\log W_t \cdot Dcovid) + \varepsilon_t$$

DOLS model:

$$\log C_t = \alpha_0 + \alpha_1 Q1 + \alpha_2 Q2 + \alpha_3 Q3 + \alpha_4 Dcovid + \alpha_5 D2015 + \alpha_6 \log W_t$$
$$+ \alpha_7 \log(\log W_t \cdot Dcovid) + \alpha_8 \log \Delta W_{t-1} + \alpha_9 \log \Delta W_{t+1} + \varepsilon_t$$

We show the results in Figure 29. Using the models, we estimate long-term elasticity of close to 1.05, which means that each 1% increase in the real wage bill raises household consumption by 1.05%. We also note that the models point to a robust recovery following the pandemic (when elasticity jumped to above 1.5), which probably helped the recovery of economic activity 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 29 – Elasticity of Household Consumption in Relation to the Real Wage Bill

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

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 (β_6; α_6); during pandemic (β_7; α_7)| * (significant at 1%)

Long-Term Growth: Assumptions and Estimates

To estimate a long-term growth rate for the "expanded" real wage bill, we need to project the behavior of three key variables: the employed population, average real wages, and government transfers. For 2026 and beyond, our forecasts consider these long-term trajectories.

Regarding the growth of the employed population, we assume a growth rate of 0.8% per year. This reflects IBGE's forecasts for working-age population expansion until the end of the decade, and our assumptions that, in the long run, both the participation and the unemployment rates will remain stable. This implies equal growth rates for the working-age population, the labor force, and the employed population.

Figure 30 – Employed Population, Annual Average
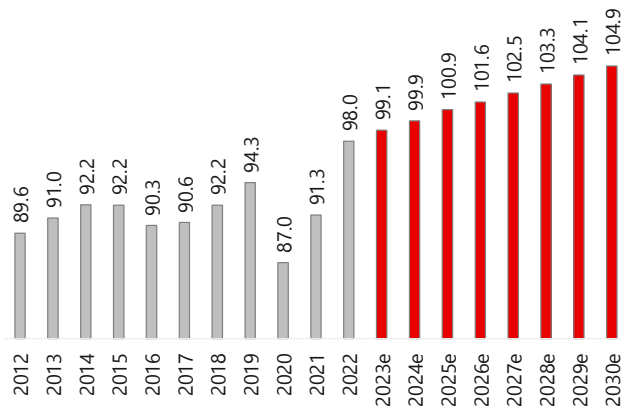
Sources: IBGE, Santander.

Figure 31 – Working-Age Population, Annual Growth
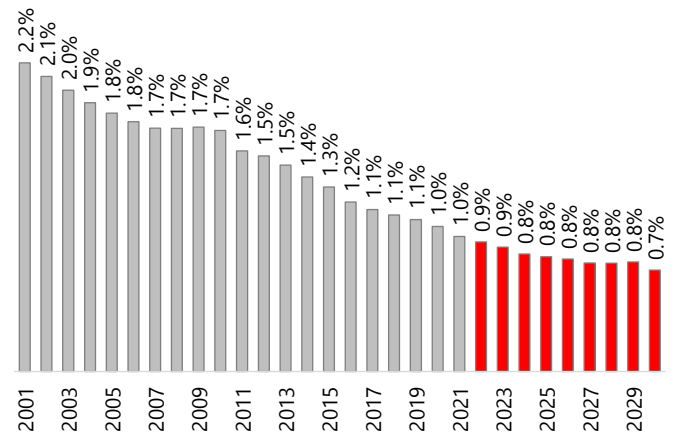
Sources: IBGE, Santander.

For average real wages, we assume the long-term dynamics that follow our hypothesis for productivity growth. We investigated the relationship between labor productivity and real wages in the past couple of decades, which showed a positive, but not perfect, correlation, as labor productivity tends to increase at a slightly faster pace than the rate for real wages. Therefore, as we project long-term productivity growth around 1% per year, we assumed 0.6% annual growth for real wages. We excluded the pandemic period from this analysis, as both series were distorted by the consequences of social distancing measures.

Figure 32 – Wages vs. Productivity, Annual Growth
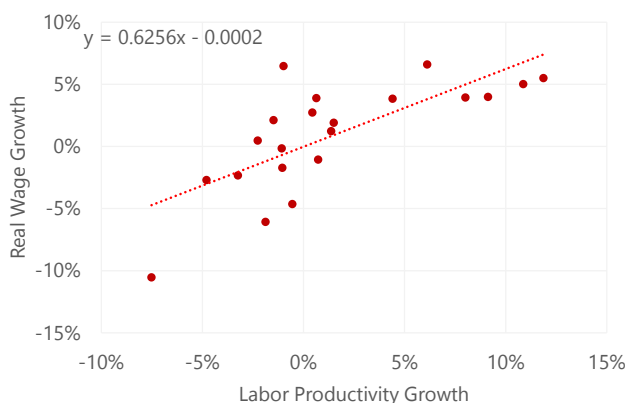
Sources: IBGE, Penn World Table and Santander.

Figure 33 – Wages vs. Productivity (1998=100)
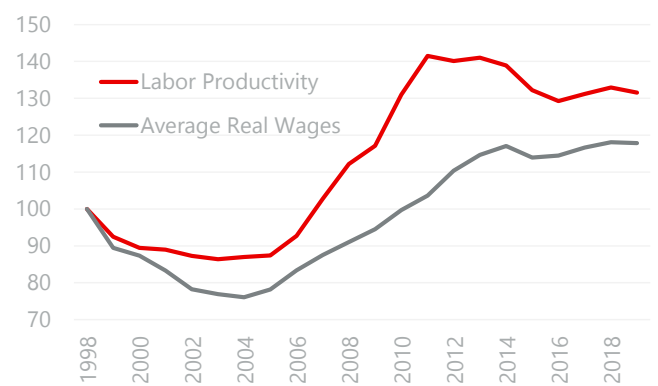
Sources: IBGE, Penn World Table and Santander.

Finally, for government transfers, we assume the real minimum wage increasing by inflation (INPC) plus the average of the last two years of GDP growth. For inflation, we use our baseline scenario and 4.0% in the long term. The main source of benefits is pension benefits, for which we consider the effects of the pension reform that stabilized total benefits at around 8.5% of GDP. We readjust the benefits using the real minimum wage

rule and average real increase rate of 2.0% (new beneficiaries). In our estimate we keep the welfare program stable at BRL165 billion per year (out of a budget of BRL175 billion).

Figure 34 – Government Benefits - % GDP
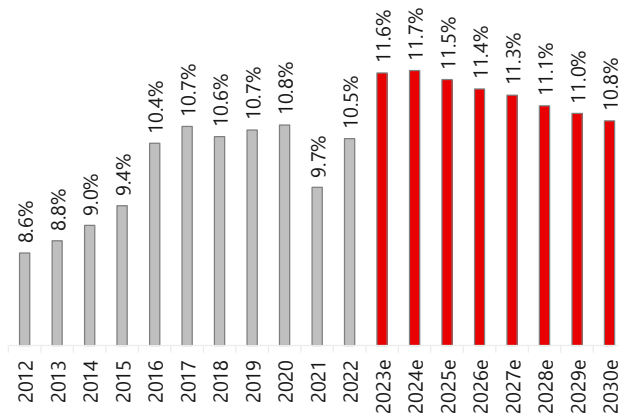
Sources: IBGE, National Treasury.

Figure 35 – Real Wage Bill, Annual Average
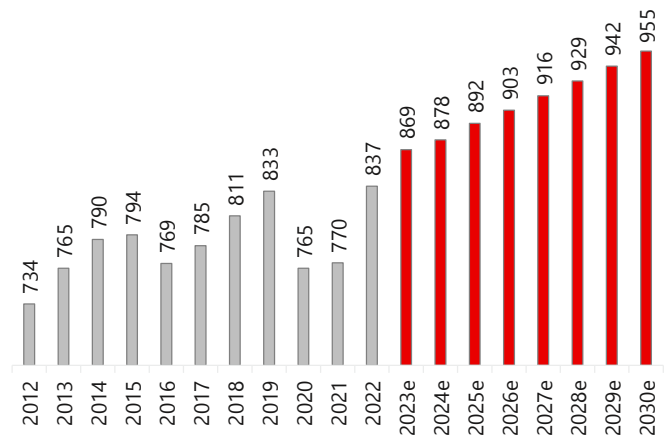
Sources: IBGE, Santander.

Putting all these estimates together, we arrive at 1.4% annual growth for the structural, long-term "expanded" real wage bill. This estimate is close to our number for long-term potential GDP growth, which stands at 1.5% per year.

Figure 36 – "Expanded" Real Wage Bill Scenario
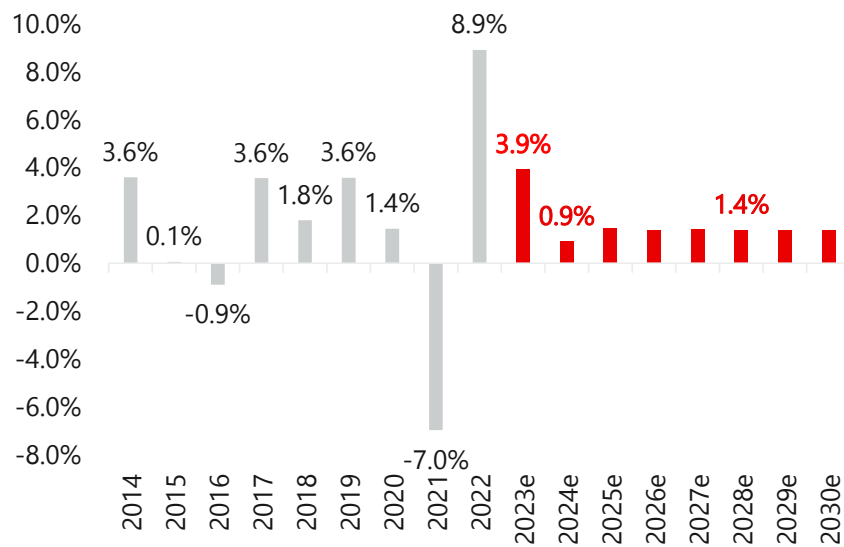
Sources: IBGE, BCB, National Treasury and Santander.

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
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
Henrique Danyi Correia*	Economist – Credit / Monetary Policy	henrique.danyi@santander.com.br	5511-3553-5404
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 Chiarvesio*	Head, Argentina	wchiarvesio@santanderrio.com.ar	5411-4341-1564
Aline de Souza Cardoso*	Head, Brazil	aline.souza.cardoso@santander.com.br	5511-3553-1684

Electronic

Bloomberg	SIEQ <GO>
Reuters	Pages SISEMA through SISEMZ