

Global Strategy Views



February 23, 2011

Emerging Markets' Secular Investment Thesis Meets Mounting Inflation Pressures: Risk or Opportunity?

Over the past several months, global investors have shifted their primary focus away from the lingering solvency questions afflicting the periphery of Europe to mounting inflation pressures, fueled primarily by rising energy and food commodity prices, impacting especially emerging market countries. Specifically, there is a growing cross-section of the international investor base that is questioning the accompanying risks to the secular investment thesis for emerging markets. Arguably, such concerns are evidenced most eloquently in the sudden shift in global asset allocators' sentiment on emerging markets within a short period of weeks – as seen in the latest monthly Merrill Lynch global investor survey.

This article outlines some of the dynamics conditioning the inflation debate as regards the effects on the emerging markets medium- and long-term investment outlook. Our conclusion is that listed markets, especially equities, discount a majority of the risks associated with mounting inflation pressures. It follows from this conclusion that the current juncture represents an attractive opportunity for global asset allocators to raise exposure to the asset class for multiple reasons: attractive relative valuations, superior and highly visible earnings growth outlook, and under-owned status.

Recent Inflation Dynamics and Potential Macro and Market Implications

The acceleration of headline inflation throughout the emerging markets world these past two quarters is cause for concern on four principal grounds (Table 1). First, one of the key drivers behind the recent inflation acceleration, the spike in agriculture commodity prices, shows few signs of abating (Figure 1). Second, the acceleration of headline inflation comes at a time when traditional indicators of slack (output gap) are small. Third, the spike in inflation pressures comes at a time when monetary policy conditions have been lax throughout much of the emerging markets (Table 1). Fourth, the current high inflation episode arguably represents the most significant test for emerging market countries' central banks that have embraced inflation targeting rules over the past ten to fifteen years.

Table 1. Inflation and Interest Rates in Selected Emerging Market Countries

| Countries | Headline Inflation YoY % | Change in M1 YoY % | Nominal Policy Rate % |
|--------------|-----------------------------|-----------------------|-----------------------|
| Brazil | 5.91 | 11.95 | 11.25 |
| China | 4.60 | 13.60 | 6.06 |
| India | 9.47 | 13.60 | 6.50 |
| Korea | 4.10 | 12.90 | 2.75 |
| Malaysia | 2.20 | 11.68 | 2.75 |
| Mexico | 4.40 | 13.50 | 4.50 |
| Russia | 9.60 | 25.45 | 3.00 |
| Taiwan | 1.25 | 8.99 | 1.625 |
| Thailand | 3.03 | 10.89 | 2.25 |
| South Africa | 3.70 | 6.96 | 5.50 |
| Turkey | 4.90 | 18.81 | 6.25 |

Source: Bloomberg

Year II Issue #3

By Carlos Asilis, Ph.D., with assistance from Darshan Bhatt, CFA

Please refer to page 9 of this report for important disclosures, analyst certifications and additional information. Itaú BBA does and seeks to do business with Companies covered in this research report. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should not consider this report as the sole factor in making their investment decision.

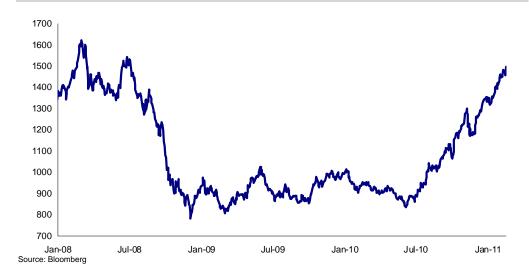
Read this report in:

- 2 min: Front Page
- 30 min: Full





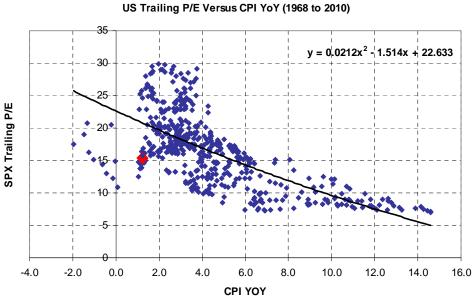
Figure 1. Rogers Agriculture Total Return Index



From a market perspective, the current inflation acceleration period is of material importance owing to two principal considerations:

- First, historical market relationships offer a distinct inverse relationship between equity valuation multiples and inflation rate levels (Figure 2), so that a sustained rise in the inflation rate correlates with a compression in equity earnings multiples, one of the main drivers of equities' total return performance.
- Second, historical economic relationships offer a clear inverse relationship between high inflation and economic growth rates, through the erosion of household incomes' purchasing power brought about by high inflation and also through the economic deceleration brought about by tightening monetary policy conditions, the traditional policy response to mounting inflation pressures. Moreover, economic growth responds adversely to a pick-up in the rate of inflation through the corresponding rise in risk premium. The latter springs from the strong historical correlation between inflation rate levels and inflation volatility in turn, higher inflation volatility levels feed directly into higher risk premium (partly as a result of the lower efficiency of the economy's price vector to properly signal resource misallocations at the factor and output market levels).

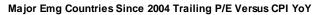
Figure 2-A. High Inflation Correlates With Compression in Equity Valuation Multiples: USA

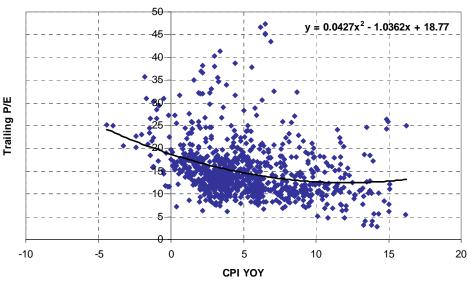


Source: Bloomberg



Figure 2-B. High Inflation Correlates With Compression in Equity Valuation Multiples: Emerging Markets





Source: Bloomberg

The above considerations raise several important questions for global investors in their asset allocation decisions vis-à-vis emerging market equities, including:

How persistent is the recent high inflation episode likely to prove?

What are the likely policy responses to be chosen by central banks in forestalling an acceleration of inflation from current levels?

What are the likely macroeconomic and market implications from the current inflation scare period?

We share our stance on these issues in the balance of this report.

Inflation Acceleration in Emerging Markets Unlikely to Sustain Itself Beyond Middle of 2011

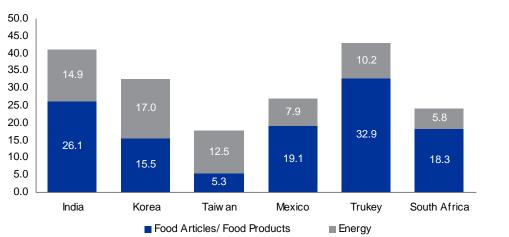
In our view, the recent acceleration of inflation experienced by most emerging market countries is unlikely to sustain itself beyond the middle of the year. This view reflects the traditional lead-lag relationship between agriculture commodity prices and food inflation, as well as the role of year-ago base levels in headline inflation for emerging markets, as a group.

From our perspective, it is central to recognize that inflation acceleration episodes are fueled by the combination of three dynamics: cost-push, demand-pull and inflation expectations (through acceleration of velocity of circulation of money). Examining the recent acceleration of inflation through such a prism, we characterize the current episode as being fueled primarily by cost-push dynamics, primarily linked to raw material (mostly food-related) commodities. We further characterize such cost-push conditions as transitory in nature. Of course, our view is subject to important risks discussed further below.

We attribute the current inflation acceleration period to cost-push dynamics based largely on (1) the outsized contribution of food and energy, especially food, in most of the large emerging market countries' CPI baskets (see Figure 3), and (2) the almost unprecedented supply shocks impacting world agriculture markets owing to one of the most challenging weather seasons in over 60 years for significant regions of the world – as witnessed by the traumatic effects on crops affected by droughts and floods, from Argentina to Russia and Australia (see Table 2).



Figure 3. Combined Food-Energy Percentage CPI Weightings for Selection of EM Countries (in Percentage Points)



Source: OECD, Government of India, Statistics Korea, Taiwan Directorate General and Statistics South Africa

Table 2. Recent Chronology of Salient Weather-Related Disruptions to Food Supply

| Month | Event |
|--------|--|
| Mar-10 | Heavy rains saw much of south western and central Queensland undergo major flooding. |
| May-10 | One of the hottest seasons on record was seen in India, where at least 250 people perished from the heat wave. |
| May-10 | The hottest temperature ever recorded in Asia was reached in Mohenjodaro, in Pakistan, at 53.7 degrees centigrade, and nine cities in Pakistan saw temperature over 50 degrees centigrade. |
| Jun-10 | The 2010 South China Floods killed 542 and more than 72.97 million people in 22 provinces were affected. |
| Jul-10 | Record-breaking rainfall in Northwest Pakistan led to the worst floods since 1928, resulting in 1,400 dead and affecting thousands. |
| Sep-10 | Hundreds of wildfires fed by relentless drought forced Brazilian authorities to place 15 of 26 states under environmental emergency. |
| Sep-10 | Heavy rains and floods in the state of Victoria in Australia. |
| Oct-10 | Severe flooding in Western Africa leaving 680,000 homeless and destroying 300,000 acres of crops and 81,000 livestock. |
| Nov-10 | Flooding in Thailand resulted in the stranding of thousands of citizens. |
| Nov-10 | Severe cold and snow storms affect parts of Europe with Trondheim, Norway's 3rd largest city, experiencing its coldest November since 1788. |
| Dec-10 | Severe snowstorms in the USA and UK affected ground transportation and air travel for days. |
| Dec-10 | Floods in Western Australia, caused by record-breaking rainfall that amounted to over 6,000% of monthly mean in four days. |
| Dec-10 | A series of floods hit Queensland, Australia, on December 2010, where 3/4th of the state was declared a disaster zone. |

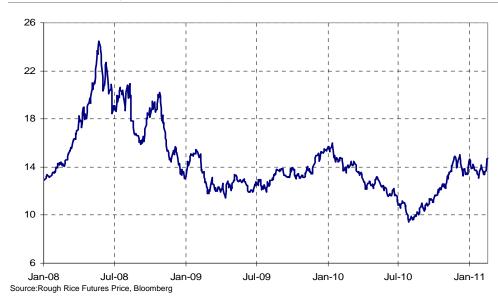
Source: Itau Global Strategy

That supply-side conditions have exerted a central role in the escalation of food and thereby overall headline inflation in emerging market countries is illustrated by the observation that not all food staples have undergone massive price escalations these past several months – for example, the price of rice, a key food staple unaffected by similar supply disruptions, has remained stable versus levels prevailing 1, 2 and 3 years ago (Figure 4). As for most of the other food staples, the contraction of supply due to extraordinarily challenging weather conditions has resulted in the massive drawdown of world inventory levels. In turn, even by simple inspection, most of the variance in food price inflation can be explained by short-term swings in inventory conditions.

On the dynamics of ensuing periods witnessing similar supply-side-driven commodity price spikes, history teaches us that mean reversion in food prices is the rule, as opposed to the exception. Of course, supply elasticities are a lot smaller than long-term elasticities, a reason behind our earlier assessment that further near-term price escalation cannot be ruled out. In fact, we believe the potential for further short-term escalation of agriculture commodity prices has risen measurably on the back of the historic socio-political events unfolding in Egypt and the rest of the Middle East. Specifically, we believe that authoritarian regimes around the world, in response to the developments in Egypt and other Middle Eastern countries, are likely to be seeking the purchase (not only spot markets but also through forward) of large stocks of agriculture commodities. Thus, over the short term, the developments in Egypt and the Middle East should be perceived as propagation mechanisms beyond the traditional speculative push experienced in technically-driven commodity price surges.



Figure 4. Rice, a Staple Unaffected by Weather-Related Supply Disruptions, Has Not Participated in the Agriculture Commodity Price Escalation



Evidently, the above discussion does not render irrelevant the role of structural demand factors supporting the agriculture commodity price outlook - far from it. We include ourselves among those who pencil in sustained increases in food demand over the coming years and decades. To differ from such a view would amount to ignoring the body of evidence that has accumulated over decades, and even centuries, documenting the relationship between per-capita food consumption and household income growth as well as rising urbanization trends - with these dynamics depicting the current conditions facing some of the world's most populated places e.g., India and China.

In the above discussion, however, it is important to acknowledge that to hold a bullish outlook on structural or secular food demand conditions is not synonymous to holding a bullish outlook on food prices relative to overall CPI inflation. This is because agriculture represents a renewable commodity group into which private capital has the ability to invest over time and thereby seek the exploitation of excess rents (beyond the competitive cost of capital). It is precisely these dynamics that account for the much larger long-term supply price elasticities as compared to the short-term when parabolic rises and declines do occur and cannot be prevented from occurring. It is especially important for investors to remind themselves of these dynamics during times of euphoria, as now, when herd behavior and opportunistic speculation at a time of supply-side-driven price spikes amplifies price behavior and thereby price expectations.

A cursory examination of implied agriculture price dynamics, embedded in commodity forward curves, is of interest as a means to ascertain the degree to which commodity markets agree with our above discussion. Table 3 summarizes the implied 12-month forward price changes (rises or declines) for some of the key commodities comprising the agriculture commodities group. Interestingly, the agriculture commodity forward markets project significant corrections in some of the fastest rising commodity groups (soybeans, corn and sugar) while projecting modest rises in rice and wheat, well within the confines of average annual trend growth rate of household disposable personal income in the world's largest emerging market countries.

Table 3. Forward Market Implied Future Price Changes for Selected Agriculture Commodities

| | Spot Price | 1 Yr Forward Price | 1 Yr Forward Price % Change |
|---------|------------|--------------------|--------------------------------|
| Crude | 89.29 | 99.10 | 11.0% |
| Wheat | 822.25 | 909.25 | 10.6% |
| Rice | 14.75 | 15.96 | 8.2% |
| Soybean | 1,368.00 | 1,257.50 | -8.1% |
| Corn | 709.75 | 552.50 | -22.2% |
| Sugar | 31.02 | 19.36 | -37.6% |

Note: Rice Forward price is based on 6 month forward futures

Source: Bloomberg

Even if our view proves accurate and agriculture commodity price inflation abates in the coming months, the risk of pass-through from headline to core inflation remains. The risk potential is directly intertwined with the role of inflation expectations. In turn, these issues are in the realm of monetary policy and are discussed immediately below. For reference purposes, Table 4 summarizes current core and headline inflation readings for selected emerging market countries.



Table 4. Summary Headline and Core CPI Indices for Selected Emerging Market Countries

| Countries | Headline Inflation YoY % | Core CPI YoY % | Note on Core Index Measure |
|-----------|-----------------------------|-------------------|----------------------------|
| China | 4.60 | 2.60 | China CPI Non Food YoY |
| Korea | 4.10 | 2.40 | Korea CPI Ex Food YoY |
| Mexico | 4.40 | 3.27 | |
| Taiwan | 1.25 | 0.81 | |
| Thailand | 3.03 | 1.34 | Thailand CPI non Food YoY |
| Turkey | 4.90 | 3.18 | |

Source: Bloomberg

Role of Inflation Expectations and Central Bank Policy: Market Implications

As regards the role of inflation expectations, we believe the record is clear. Inflation expectations have not fueled the recent inflation spike. As example of such assertion's validity, we point to Table 5 which encapsulates the stability of consensus inflation expectations one year ahead (available for some countries, such as Brazil) as well as the absence of government yield curve steepening dynamics, typical of instances in which central bank's anti-inflation credentials fall into question by the markets. An additional example of the continued stability of medium-term inflation expectations during the past several months is found in the stability of intermediate and long-term nominal government bond yields for the largest emerging market countries.

The above notwithstanding, inflation expectations are highly relevant from investors' perspective, owing to the monetary policy considerations stemming from an unwinding of expectations, a lingering prospect owing to the persistent pressures on headline inflation that are likely to persist well into the year's second quarter from year-ago comparison effects as well as lagged effects from price rises in raw agriculture commodity prices. Specifically, should inflation expectations rise in response to a further sustained acceleration of headline inflation, notwithstanding that such acceleration be supply-side driven, central banks may find themselves forced to respond in tandem. They would do so by tightening monetary and credit conditions. In the process, central banks may bring about a sharp slowdown in economic and thereby earnings activity, with detrimental implications for equity and risk markets.

In our view, under a hypothetical scenario in which inflation expectations become unhinged, emerging market central banks are unlikely to tighten aggressively, owing to two important considerations: first, central banks would show a distinct displeasure with the collateral effect of an aggressive policy rate hike, for these would result in a faster acceleration of short-term foreign capital inflows, an undesirable dynamic for most emerging market central bankers; and second, emerging market economies' far larger interest rate sensitivity, compared with years ago, owing to those countries' far larger financial sector deepening levels. An additional consideration reinforcing our viewpoint is that of developing countries' governments' far greater inclination to resort to fiscal policy as a tool to contain food and energy inflation pressures. The track record is clear in this regard, including recent actions taken by governments (especially in Asia, e.g.: India, Indonesia and Taiwan) as well as actions taken during the 1997-98 Asia crisis period.

Inflation expectations play an important role in central bank policy owing to the implications of inflation expectations on wage and overall price-setting mechanisms throughout the economy. Specifically, once inflation expectations are perceived by the market to have risen over a sufficient period of time (measured in quarters, not weeks), monetary policy will have been perceived by the markets as ratifying or validating the higher inflation levels, thereby unleashing a further escalation of upside price pressures.

Central banks resist allowing such pernicious inflation mechanisms to take hold, regardless of the source for such expectations' spiraling dynamics. The central bank mantra is well entrenched globally, especially in the so-called central bank era that started in the early 1980s under Volcker's US Federal Reserve. Central banks' staunch defense of low inflation regimes is anchored in the large body of empirical evidence documenting the strong nexus between low inflation and high economic growth – with important exceptions, such as Japan's since 1990, for reasons specific to that country's demographic and highly distorted savings-investment transmission mechanism.



Table 5. Summary of Proxy Inflation Expectations for Selected Emerging Market Countries

| Country | Jun-10 | Sep-10 | Dec-10 | Current |
|--------------|--------|--------|--------|---------|
| Brazil | 5.64 | 5.20 | 5.61 | 5.82 |
| India | 1.95 | 1.12 | 0.57 | 0.32 |
| China | 0.75 | 0.76 | 0.34 | 0.62 |
| Russia | 2.19 | 2.10 | 2.32 | 2.39 |
| Taiwan | 0.75 | 0.62 | 0.38 | 0.26 |
| Korea | 1.35 | 0.90 | 1.19 | 1.00 |
| Mexico | 1.37 | 0.77 | 1.53 | 1.82 |
| South Africa | NA | 0.26 | 0.57 | 0.66 |

Source: Bloomberg

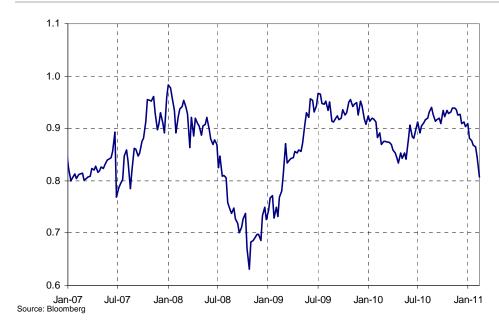
Note: The data for Brazil is a survey of 12 month forward inflation expectations, the data for India, China, Russia, Korea and Mexico is the spread between 5 year and 1 year nominal government yields, the data for Taiwan is the spread between 5 year and 2 year nominal government yields and the data for South Africa is the spread between 5 year and 3 year nominal government yields.

Current Bout of Inflation Concerns: A Golden Opportunity to Raise EM Allocations Based on Valuations, Growth Potential, Under-Ownership Status, and Disinflationary Effects From Globalization

From our perspective, the current bout of inflation in emerging market countries represents a golden opportunity for global asset allocators to raise exposure to the asset class. Our view is based on the following observations:

Attractive relative valuations: The four month long period of relative underperformance between emerging and developed equity markets has resulted in the cheapening of emerging markets' relative valuations to the low end of a multi-year range (Figure 5).

Figure 5. MSCI Emerging Markets Trailing P/E Ratio Relative to S&P 500 (Times)



Superior earnings growth outlook: By all accounts, including official ones, such as estimates published by the International Monetary Fund, emerging market countries' medium- and long-term economic growth potential lies in the vicinity of 3 to 4 times larger than developed countries' potential. If we were to apply standard GDP to earnings growth multipliers to these economic growth differentials and also account for emerging market currencies' strong revaluation outlook versus developed country peers, the implications for official and also private sector economic growth estimates on earnings growth would correspond to differentials in the vicinity of 5 to 6 times, at least.

EM's stand-alone earnings multiple compression potential appears rather limited from current levels: Our discussion above reflects our expectation of continued upward rise in headline inflation through much of this year's second quarter. Figure 2B illustrates the market's discounting of a further rise in headline inflation by 100 basis points. Specifically, emerging markets' current 14 times trailing P/E multiple is consistent with a further runup in headline inflation of at least 100 basis points.

Emerging market equities' under-owned status: Emerging market equities, even before the recent period of relative underperformance of developed market peers, represented a heavily underweight asset class on account of (a) the difference between emerging markets' vastly stronger economic and earnings growth fundamentals, (b) attractive relative valuations, (c) potential for secular currency strength versus developed country peers and (d)



the disparity between emerging markets' vastly smaller share of global stock market capitalization when compared with emerging market countries' current share of global GDP, especially on a purchasing power basis. The recent period of underperformance has pushed the asset class' under-owned status to even more significant levels, as witnessed by the latest release of Merrill Lynch's monthly global investor survey.

Secular disinflationary dynamics stemming from globalization and liberalization trends: From a longer-term perspective, it is important to remember the distinctly powerful disinflationary dynamics permeating most emerging market countries on account of (a) globalization, which allows for the more effective capture of gains from trade versus prior periods of trade protectionism and limited communication; (b) liberalization, through the presence of deeper competitive interactions resulting from economic liberalization and deregulation taking place throughout most emerging market countries.

Disinflationary dynamics stemming from services' heavier weighting in overall CPI indices as urbanization trends take hold and countries' prosperity levels rise: Finally, it is also important to acknowledge that as countries become more prosperous, a declining share of household budgets are allocated to the consumption of goods, and so a larger share is allocated to service areas. Services are largely non-tradable in nature and thereby far more responsive to monetary policy actions. Moreover, service inflation is far more predictable and stable than goods inflation. This is partly the result of the statistical observation that goods inflation is far more responsive to productivity growth and also far more volatile, as goods inflation includes energy and food.

Carlos Asilis is currently the CIO at Glovista Investments. In the past, he has served as Global Strategist on the proprietary trading desks at Banco Santander (Madrid) and on the emerging markets fixed income proprietary trading desk of CSFB (New York), and he was Global Macro Trading Strategist at VegaPlus (New York). Carlos has also served as Chief US and Chief Emerging Markets Equity Strategist at JPMorgan Chase (New York) and Chief Emerging Markets FX Strategist at Merrill Lynch (New York). Prior to his tenure in the financial industry, Carlos served in the early 1990s at the International Monetary Fund (Washington DC) as the principal research economist with economic surveillance responsibilities for the Russian Federation and China, among other responsibilities. Prior to his tenure at the Fund, Carlos taught pure and applied economics at Georgetown, the University of Chicago and the Stockholm School of Economics. He holds Ph.D. and M.A. degrees in Economics from the University of Chicago and a BSE (honors) degree in Finance and Economics from the Wharton School. He sits on several external global investment committees, including that of ICICI Bank (Mumbai, India).

Itaú Global Strategy Views - Recent Issues:

- Issue #2, Carlos Asilis, November 25, 2010
 "China as Focal Point in Ongoing Global Rebalancing: Risks and Opportunities"
- Issue #1, Carlos Asilis, September 15, 2010
 "Deflation Risks in the Developed World: Broad Global Macro and Market Implications"



DISCLAIMER

Itaú BBA is a brand name of Itaú Corretora de Valores S.A.

Ratings: Definitions, Dispersion and Banking Relationships

| Ratings (1) | Definition (2) | Coverage (3) | Banking Relationship (4) |
|----------------|---|--------------|-----------------------------|
| Outperform | The analyst expects the stock to perform better than the market average. | 48% | 36% |
| Market Perform | The analyst expects the stock to perform in line with the market average. | 43% | 33% |
| Underperform | The analyst expects the stock to perform below the market average. | 9% | 7% |

- 1. The ratings used herein (Outperform, Market Perform and Underperform), for purposes of the ratings distribution disclosure requirements of FINRA and the NYSE, correspond most closely, respectively, to Buy, Hold and Sell.
- 2. Ratings reflect the analyst's assessment of the stock price performance in the medium term compared with the market average. Recommendations will be valid until the analyst changes the rating, which may happen as a result of news or simply due to a change in the stock price (there is not a defined time horizon). Companies are grouped, according to their similarities, into sectors. The sectors are: (i) Banking & Financial Services, (ii) Consumer Goods & Retail + Food & Beverage, (iii) Healthcare + Education, (iv) Steel & Mining + Pulp & Paper, (v) Oil, Gas & Petrochemicals + Agribusiness, (vi) Real Estate, (vii) Telecommunications, Media and Technology, (viii) Transportation, Industrials and Logistics, (ix) Utilities, and (x) Equity Strategy.
- 3. Percentage of companies under coverage by Itaú Corretora de Valores S.A. within this rating category.
- 4. Percentage of companies within this rating category for which Itaú Unibanco S.A. or any of its affiliated companies provided investment banking services within the past 12 (twelve) months, or may provide investment banking services during the next 3 (three) months.

Relevant Information

- 1. This report has been prepared by Mr. Carlos Asilis as a consultant to Itaú Corretora de Valores S.A. ("Itaú BBA"), a subsidiary of Itaú Unibanco S.A., and distributed by Itaú BBA or one of its affiliates (altogether, "Itaú Unibanco Group"). Itaú BBA is the brand name used by Itaú Corretora de Valores S.A., by its affiliated or by other companies of the Itaú Unibanco Group. This report is being distributed (i) in the United States by Itaú BBA USA Securities Inc., a FINRA/SIPC member firm; (ii) in the United Kingdom and Europe by Itau BBA UK Securities Limited, regulated by the Financial Services Authority (FSA). Details about the extent of its authorization and regulation by the FSA are available on request; and (iii) in Hong Kong by Itaú Asia Securities Limited, licensed in Hong Kong by the Securities and Futures Commission for Type 1 (dealing in securities) regulated activity (altogether, "Itaú Group"). This report is provided for informational purposes only and does not constitute or should not be construed as an offer to buy or sell or solicitation of an offer to buy or sell any financial instrument or to participate in any particular trading strategy in any jurisdiction. The information herein is believed to be reliable as of the date in which this report was issued and has been obtained from public sources believed to be reliable. Itaú Group does not make any representation or warranty, express or implied, as to the completeness, reliability or accuracy of such information, nor is this report intended to be a complete statement or summary of the securities, markets or developments referred to herein. Opinions, estimates, and projections expressed herein constitute the current judgment of the analyst responsible for the substance of this report as of the date in which it report was issued and are therefore subject to change without notice. Prices and availability of financial instruments are indicative only and subject to change without notice. Itaú Group has no obligation to update, modify or amend this
- 2. This report has been prepared by Mr. Carlos Asilis, who hereby certifies that the views expressed herein accurately and exclusively reflect his personal views and opinions about any and all of the subject matter discussed and that this report was prepared by Mr. Asilis independently and autonomously, including from Itaú BBA. The views expressed herein do not necessarily reflect the views of Itaú BBA, its subsidiaries and affiliates. Because personal views of analysts may differ from one another, Itaú BBA, its subsidiaries and affiliates may have issued or may issue reports that are inconsistent with, and/or reach different conclusions from, the information presented herein. Mr. Asilis is not registered and/or qualified as research analyst with the NYSE or FINRA, and is not associated with Itaú BBA USA Securities Inc. and, therefore, may not be subject to Rule 2711 restrictions on communications with a subject company, public appearances and trading securities held by a research analyst account.
- 3. The financial instruments discussed in this report may not be suitable for all investors. This report does not take into account the investment objectives, financial situation or particular needs of any particular investor. Investors should obtain independent financial advice based on their own particular circumstances before making an investment decision based on the information contained herein. If a financial instrument is denominated in a currency other than an investor's currency, a change in exchange rates may adversely affect the price or value of, or the income derived from, the financial instrument, and the reader of this report assumes any currency risk. Income from financial instruments may vary and its price or value, either directly or indirectly, may rise or fall. Past performance is not necessarily indicative of future results, and no representation or warranty, express or implied, is made herein regarding future performances. Itaú Group does not accept any liability whatsoever for any direct or consequential loss arising from any use of this report or its content.
- 4. This report may not be reproduced or redistributed to any other person, in whole or in part, for any purpose, without the prior written consent of Itaú Corretora de Valores S.A. ("Itaú BBA"). Additional information relative to the financial instruments discussed in this report is available upon request.

Additional Note to U.S. Investors: Itau BBA USA Securities Inc. accepts responsibility for the content of this report. Any US investor receiving this report and wishing to effect any transaction in any security discussed herein should do so with Itau BBA USA Securities Inc. at 767 Fifth Avenue, 50th Floor, New York, NY 10153 Please refer to the Contact Page for additional contact information.

Additional Note to U.K. and European Investors: Itau Corretora de Valores S.A. (Itau BBA), a subsidiary of Itaú Unibanco S.A., is distributing this report to investors who are Eligible Counterparties and Professional Clients, pursuant to FSA rules and regulations. If you do not, or cease to, fall within the definition of Eligible Counterparty or Professional Client, you should not rely upon the information contained herein and should notify Itau BBA UK Securities Limited immediately. The information contained herein does not apply to, and should not be relied upon by retail customers.

Additional Note to Asia Investors: This report is distributed in Hong Kong by Itaú Asia Securities Limited, which is licensed in Hong Kong by the Securities and Futures Commission for Type 1 (dealing in securities) regulated activity. Itaú Asia



Securities Limited accepts all regulatory responsibility for the content of this report. In Hong Kong, any investors wishing to purchase or otherwise deal in the securities covered in this report should contact Itaú Asia Securities Limited at 29th Floor, Two IFC, 8 Finance Street – Central, Hong Kong.

Additional Note for the Middle East: This report is distributed by Itaú Middle East Securities Limited. Related financial products or services are only available to wholesale clients with liquid assets of over \$1 million and who have sufficient financial experience and understanding to participate in financial markets in a wholesale jurisdiction. Itaú Middle East Securities Limited is regulated by the Dubai Financial Services Authority (DFSA). In the Middle East, any investors wishing to purchase or otherwise deal in the securities covered in this report should contact Itaú Middle East Securities Limited, at Al Fattan Currency House, Suite 305, Level 3, DIFC, PO Box 65703, Dubai, United Arab Emirates.

Additional Note for Japan: This report is distributed in Japan by Itaú Asia Securities Limited – Tokyo Branch, Registration Number (FIEO) 2154, Director, Kanto Local Finance Bureau, Association: Japan Securities Dealers Association.

Questions, suggestions and complaints, talk to you Investment Advisor: If necessary, contact our Client Service Center: 4004-3131* (capital and metropolitan areas) or 0800 722 3131 (other locations) during business hours, from 9:00 a.m. to 8:00 p.m., Brasilia time. If you wish to re-evaluate the presented solution, after utilizing these channels, talk to Itaú's Corporate Complaints Office: 0800 570 0011 (on business days from 9 A.M. to 6 P.M. Brasilia time) or Caixa Postal 67.600, São Paulo-SP, CEP 03162-971.

* Cost of a local call.



| | | Equ | ities | | |
|--|--------------------------------------|--|--|--------------------------------------|----------------------------------|
| Christian Egan - CEO | | • | | | |
| • | | | | | |
| Research | 55 44 0070 0004 | | Over 1 O Miles and D. Le O Dever | | |
| Carlos Constantini, CNPI - Head | +55-11-3073-3001 | carlos.constantini@itaubba.com | Steel & Mining + Pulp & Paper Marcos Assumpção, CFA - Sector Head | +55-11-3073-3021 | marcos.assumpcao@itaubba.com |
| Equity Strategy | | | Alexandre Miquel, CFA | +55-11-3073-3021 | alexandre.miguel@itaubba.com |
| Carlos Constantini, CNPI - Head | +55-11-3073-3001 | carlos.constantini@itaubba.com | o . | +55-11-3073-3028 | andre.pinheiro@itaubba.com |
| Susana Salaru, CNPI | +55-11-3073-3009 | susana.salaru@itaubba.com | | | |
| Rodrigo Correa, CNPI | +55-11-3073-3023 | rodrigo.correa@itaubba.com | Telecommunications, Media & Technological | ogy | |
| Pedro Maia, CNPI | +55-11-3073-3065 | pedro.maia@itaubba.com | Carlos Constantini, CNPI - Head | +55-11-3073-3001 | carlos.constantini@itaubba.com |
| Cida Souza, CNPI | +55-11-3073-3038 | cida.souza@itaubba.com | Susana Salaru, CNPI | +55-11-3073-3009 | susana.salaru@itaubba.com |
| | | | Rodrigo Correa, CNPI | +55-11-3073-3023 | rodrigo.correa@itaubba.com |
| Banking & Financial Services | | | Tito Ferraz | +55-11-3073-3066 | tito.ferraz@itaubba.com |
| Regina Longo Sanchez, CNPI - Sector Head | | regina.sanchez@itaubba.com | | | |
| Thiago Bovolenta Batista, CFA | +55-11-3073-3043 | thiago.batista@itaubba.com | Industrials . Transportation 9 I spiritis | | |
| Alexandre Spada, CNPI | +55-11-3073-3004 | alexandre.spada@itaubba.com | Industrials + Transportation & Logistic Renata Faber, CNPI - Sector Head | 152 55 5262 0674 | renata.faber@itaubba.com |
| Consumer Goods & Retail + Food & Bever | 200 | | Filipe Abelha | +52-55-5262-0674 +55-11-3073-3034 | filipe.abelha@itaubba.com |
| Juliana Rozenbaum, CFA - Sector Head | +55-11-3073-3035 | juliana.rozenbaum@itaubba.com | Filipe Abellia | +33-11-3073-3034 | illipe.abelila@ilaubba.com |
| Francine Martins, CNPI | +55-11-3073-3039 | francine.martins@itaubba.com | Utilities | | |
| Renato Salomone, CNPI | +55-11-3073-3062 | | Marcos Severine, CNPI - Sector Head | +55-11-3073-3011 | marcos.severine@itaubba.com |
| Rafael Vignoli | +55-11-3073-3018 | rafael.vignoli@itaubba.com | · | +55-11-3073-3024 | mariana.coelho@itaubba.com |
| · · | | 3 | Marcel Shiomi, CNPI | +55-11-3073-3014 | marcel.shiomi@itaubba.com |
| Healthcare + Education | | | | | |
| Juliana Rozenbaum, CFA - Sector Head | +55-11-3073-3035 | juliana.rozenbaum@itaubba.com | Economics | | |
| Marcio Osako, CFA | +55-11-3073-3040 | | Guilherme da Nobrega, CNPI - Head | +55-11-3708-2715 | gcnobrega@itaubba.com.br |
| Enrico Grimaldi | +55-11-3073-3012 | enrico.grimaldi@itaubba.com | 5 | +55-11-3708-2807 | moreng@itaubba.com.br |
| | | | Luiz Gustavo Cherman | +55-11-3708-2713 | lgcherman@itaubba.com.br |
| Oil, Gas & Petrochemicals + Agribusiness | | | | | |
| Paula Kovarsky, CNPI - Sector Head | +55-11-3073-3027 | paula.kovarsky@itaubba.com | Technical Anglicais | | |
| Diego Mendes, CNPI Giovana Araújo, CNPI | +55-11-3073-3029 +55-11-3073-3036 | diego.mendes@itaubba.com | Marcio Lacerda, CNPI - Head | +55-11-3073-3005 | marcio.lacerda@itaubba.com |
| Ariel Amar | | giovana.araujo@itaubba.com ariel.amar@itaubba.com | | +55-11-3073-3006 | marcello.rossi@itaubba.com |
| AllorAllia | +55-11-3073-3029 | aner.amai @itaubba.com | wardend Nossi, CINFT | 100-11-00/0-0000 | marceno.rossi@itaubba.com |
| Real Estate | | | | | |
| David Lawant, CNPI - Sector Head | +55-11-3073-3037 | david.lawant@itaubba.com | | | |
| Ricardo Lima, CNPI | +55-11-3073-3007 | ricardo.lima@itaubba.com | | | |
| Vivian Salomon | +52-55-5262-0672 | vivian.salomon@itaubba.com | | | |
| Enrico Trotta | +55-11-3073-3064 | enrico.trotta@itaubba.com | | | |
| | | | | | |
| | | | | | |
| - · · · · · · · | | | | | |
| Equity Sales & Trading | | | | | |
| Latin America | | | North America | | |
| Sales - Latin America | | | Sales - North America | | |
| Carlos Maggioli - Head | +55-11-3073-3300 | carlos.maggioli@itaubba.com | | +1-212-710-6766 | adam.cherry@itaubba.com |
| Cecilia Viriato | +55-11-3073-3330 | cecilia.viriato@itaubba.com | • | +1-212-710-6768 | flavia.stingelin@itaubba.com |
| Márcia Sadzevicius | +55-11-3073-3330 | marcia.sadzevicius@itaubba.com | • | +1-212-710-6767 | marcello.spinelli@itaubba.com |
| Pedro H. Rocha Sauma Rodrigo Pace | +55 11 3073-3330 +55-11-3073-3330 | pedro.sauma@itaubba.com | Carina Cassab Carreira | +1-212-710-6790 | carina.carreira@itaubba.com |
| Rodiigo Face | +33-11-3073-3330 | rodrigo.pace@itaubba.com | | | |
| Sales Trading - Latin America | | | Sales Trading - North America | | |
| Eduardo Barone - Head | +55-11-3073-3310 | eduardo.barone@itaubba.com | | +1-212-710-6780 | kevin.hard@itaubba.com |
| Aureo Bernardo | +55-11-3073-3330 | aureo.bernardo@itaubba.com | Eric Krall | +1-212-710-6780 | eric.krall@itaubba.com |
| Carlos Carvalho Lima | +55-11-3073-3310 | carlos.carvalho-lima@itaubba.com | Gustavo Rosa | +1-212-710-6780 | gustavo.rosa@itaubba.com |
| Carlos Faria | +55-11-3073-3310 | carlos.faria@itaubba.com | James Tallarico | +1-212-710-6780 | james.tallarico@itaubba.com |
| Cristiano Soares | +55-11-3073-3330 | cristiano.soares@itaubba.com | Brad Marra | +1-212-710-6780 | brad.marra@itaubba.com |
| Fernando Lasalvia | +55-11-3073-3310 | fernando.lasalvia@itaubba.com | | | |
| Lucas Gonçalves | +55-11-3073-3310 | lucas.goncalves@itaubba.com | | | |
| Sérgio Rocha | +55-11-3073-3330 | sergio.rocha@itaubba.com | | | |
| Thiem Hauenschild | +55-11-3073-3310 | thiem.von@itaubba.com | | | |
| Europe, Middle East & Asia | | | | | |
| Sales - Europe | | | | | |
| Mark Fenton - Head | +44-20-7663-7845 | mark.fenton@itaubba.com | | | |
| André Luiz Dreicon | +44-20-7663-7845 | andre.dreicon@itaubba.com | | | |
| Fabio Faraggi | +44-20-7663-7839 | fabio.faraggi@itaubba.com | | | |
| | | | | | |
| Sales - Japan | | | | | |
| Masayoshi Yazawa | +813-3539-3850 | masayoshi.yazawa@itausecurities.com | | | |
| Gerson Konishi | +813-3539-3852 | gerson.konishi@itausecurities.com | | | |
| Oder Henry | | | | | |
| Sales - Hong Kong | .050 0057 0000 | 10-11 A 10-11 | | | |
| Jack Xu - Head | +852-3657-2388 | jack.xu@itausecurities.com | | | |
| Caio Galvão | +852-3657-2398 | caio.galvao@itausecurities.com | | | |
| | | | | | |
| | | | | | |
| Futures, Derivatives & Stock Lendin | ng | | | | |
| Carlos Maggioli - Head | +55-11-3073-3300 | carlos.maggioli@itaubba.com | Derivatives | | |
| 55 | | - 55 5 5 | Fabiano V. Romano - Head | +55-11-3073-3310 | fabiano.romano@itaubba.com |
| | | | Rafael Americo | +55-11-3073-3310 | rafael.americo@itaubba.com |
| | | | Raphael Lie | +55-11-3073-3310 | raphael.lie@itaubba.com |
| | | | Marcio Caires | +55-11-3073-3310 | marcio.caires@itaubba.com |
| Futures Desk | | | Alexandre Chichorro Lacerda, CFA | +55-11-3073-3310 | alexandre.lacerda@itaubba.com |
| Eduardo Barcellos - Head | +55-11-3073-3320 | eduardo.barcellos@itaubba.com | | | |
| Fabio Herdeiro | +55-11-3073-3320 | fabio.herdeiro@itaubba.com | | | |
| Alan Eira | +55-11-3073-3350 | alan.eira@itaubba.com | | +55-11-3073-3340 | manoel.gimenez-neto@itaubba.com |
| Alexandre Rizzo | +55-11-3073-3350 | alexandre.rizzo@itaubba.com | Haroldo Vasconcellos | +55-11-3073-3340 | haroldo.vasconcellos@itaubba.com |
| Celso Azem | +55-11-3073-3350 | celso.azem@itaubba.com | | | |
| José Dezene | +55-11-3073-3350 | jose.dezene@itaubba.com | _ | | |
| Vinicius Cobo | +55-11-3073-3350 | vinicius.cobo@itaubba.com | | +55-11-3073-3211 | marina.leite@itaubba.com |
| Thierry Decoene | +55-11-3073-3300 | thierry.decoene@itaubba.com | João Victor Caccese | +55-11-3073-3211 | joao.caccese@itaubba.com |
| | | | | | |



Private Banking Desk

| Felipe Beltrami - Head | +55 11 3073-3110 | felipe.beltrami@itaubba.com | Private Banking - Trading Desk | | |
|-------------------------|------------------|------------------------------|--------------------------------|------------------|-------------------------------------|
| | | | Caio Felipe Zanardo Val | +55 11 3073-3292 | caio.val@itaubba.com |
| Private Banking - Sales | | | Edgard Claussen Vilela | +55 11 3073-3291 | edgard.vilela@itaubba.com |
| Lucas Tambellini | +55 11 3073-3110 | lucas.tambellini@itaubba.com | Guilherme Rudge Simões | +55-11-3073-3150 | guilherme.simoes@itaubba.com |
| Marcelo Ferri | +55 11 3073-3110 | marcelo.ferri@itaubba.com | João Gabriel | +55-11-3073-3145 | joao.silvestre@itaubba.com |
| Sergio Fonseca Rosa | +55 11 3073-3110 | sergio.rosa@itaubba.com | João Roberto A. de Souza | +55 11 3073-3298 | joao-afonso.souza@itaubba.com |
| | | | Joseana Requejo Amaral | +55 11 3073-3293 | joseana.amaral@itaubba.com |
| | | | Julio Pimentel Algodoal Neto | +55 11 3073-3210 | julio.algodoal@itaubba.com |
| | | | Luis Fernando Kanashiro | +55 11 3073-3210 | luis.fernando.kanashiro@itaubba.com |
| | | | Marco Antônio Gomes | +55 11 3073-3148 | marco.gomes@itaubba.com |
| | | | Natália Mônaco | +55 11 3073-3297 | natalia.monaco@itaubba.com |
| | | | Nicolas E. Balafas | +55 11 3073-3299 | nicolas.balafas@itaubba.com |
| | | | Patrick Campos de Mello | +55 11 3073-3292 | patrick.mello@itaubba.com |
| | | | Patrick Kalim | +55-11-3073-3145 | patrick.kalim@itaubba.com |
| | | | Pedro Feres | +55-11-3073-3149 | pedro.feres@itaubba.com |
| | | | Ricardo Guntovitch | +55-11-3073-3149 | ricardo.guntovitch@itaubba.com |
| | | | Ricardo Julio Costa | +55 11 3073-3297 | ricardo.costa@itaubba.com |
| | | | Robinson Minetto | +55 11 3073-3290 | robinson.minetto@itaubba.com |
| | | | Sandra Steffen Brianti | +55 11 3073-3297 | sandra.brianti@itaubba.com |
| | | | Thiago de Freitas Ribeiro | +55-11-3073-3290 | thiago.freitas-ribeiro@itaubba.com |

| | Fixed | Income |
|--|-------|--------|
|--|-------|--------|

| Jevandre Anude | Clobal Haad a | f Eivad Incomo |
|----------------|---------------|----------------|

| | | Sales - North America | | |
|------------------|--|---|---|--|
| +55-11-3073-3049 | ciro.matuo@itaubba.com | Douglas Chen | +1 212 710-6782 | douglas.chen@itaubba.com |
| +55-11-3073-3050 | boanerges.pereira@itaubba.com | Mario Bonilla | +1 212 710-6745 | mario.bonilla@itaubba.com |
| +55-11-3073-3067 | sergio.vailati@itaubba.com | Richard Cascais | +1 212 710-6766 | richard.cascais@itaubba.com |
| | | Sales - Europe | | |
| +55-11-3708-8800 | luis.guido@itaubba.com | Rodolfo Dejon | +44 207 663-7843 | rodolfo.dejon@itaubba.com |
| +55-11-3708-8800 | felipe.almeida@itaubba.com | Rodrigo Malizia | +44 207 663-7843 | rodrigo.malizia@itaubba.com |
| +55-11-3708-8800 | rogerio.cunha@itaubba.com | | | |
| +55-11-3708-8800 | camilla.narciso@itaubba.com | | | |
| +55-11-3708-8800 | johnny.reitzfeld@itaubba.com | Sales - Asia | | |
| | | Gerson Konishi | +813-3539-3852 | gerson.konishi@itausecurities.com |
| +55-11-3708-8800 | andre.kok@itaubba.com | | | |
| +55-11-3708-8800 | luiz.ferraz@itaubba.com | | | |
| +55-11-3708-8800 | renato.delbel@itaubba.com | | | |
| +55-11-3708-8800 | rogerio.queiroz@itaubba.com | | | |
| | +55-11-3073-3050 +55-11-3073-3067 +55-11-3708-8800 +55-11-3708-8800 +55-11-3708-8800 +55-11-3708-8800 +55-11-3708-8800 +55-11-3708-8800 +55-11-3708-8800 +55-11-3708-8800 | +55-11-3073-3050 boanerges.pereira@itaubba.com +55-11-3073-3067 sergio.vailati@itaubba.com +55-11-3708-8800 luis.guido@itaubba.com +55-11-3708-8800 rogerio.cunha@itaubba.com +55-11-3708-8800 camilla.narciso@itaubba.com +55-11-3708-8800 johnny.reitzfeld@itaubba.com +55-11-3708-8800 andre.kok@itaubba.com +55-11-3708-8800 luiz.ferraz@itaubba.com +55-11-3708-8800 renato.delbel@itaubba.com | +55-11-3073-3049 ciro.matuo@itaubba.com Douglas Chen +55-11-3073-3050 boanerges.pereira@itaubba.com Richard Cascais -55-11-3708-8800 luis.guido@itaubba.com Rodrigo Malizia +55-11-3708-8800 felipe.almeida@itaubba.com Rodrigo Malizia -55-11-3708-8800 camilla.narciso@itaubba.com -55-11-3708-8800 johnny.reitzfeld@itaubba.com -55-11-3708-8800 andre.kok@itaubba.com -55-11-3708-8800 luiz.ferraz@itaubba.com -55-11-3708-8800 renato.delbel@itaubba.com -55-11-3708-8800 renato.delbel@itaubba.com | +55-11-3073-3049 ciro.matuo@itaubba.com Douglas Chen +1 212 710-6782 +55-11-3073-3050 boanerges.pereira@itaubba.com Richard Cascais +1 212 710-6745 +55-11-3708-8800 luis.guido@itaubba.com Rodolfo Dejon +44 207 663-7843 +55-11-3708-8800 felipe.almeida@itaubba.com +55-11-3708-8800 camilla.narciso@itaubba.com +55-11-3708-8800 johnny.reitzfeld@itaubba.com Sales - Asia Gerson Konishi +813-3539-3852 +55-11-3708-8800 renato.delbel@itaubba.com |

Alternative Investment Products

| São Paulo | | | Hong Kong | | |
|----------------------|------------------|------------------------------------|------------------------|-----------------|--------------------------------------|
| Marcelo Fatio - Head | +55-11-3073-3505 | marcelo.fatio@itausecurities.com | Jack Xu - Head | +852-3657-2388 | jack.xu@itausecurities.com |
| Lizandro Arnoni | +55-11-3073-3584 | lizandro.arnoni@itausecurities.com | Caio Galvão | +852-3657-2398 | caio.galvao@itausecurities.com |
| | | | Charles Lin | +852-3657-2379 | charles.lin@itausecurities.com |
| New York | | | Eduardo Bernardes | +852-3657-2368 | eduardo.bernardes@itausecurities.com |
| Roger Freitas | +1-212-710-6778 | roger.freitas@itaubba.com | | | |
| London | | | Tokyo | | |
| Mark Fenton - Head | +44-20-7663-7845 | mark.fenton@itaubba.com | Kenichi Noguchi - Head | +81-3-3539-3847 | kenichi.noguchi@itau.com |
| Raquel Franco | +44-207-663-7838 | raquel.f.franco@itausecurities.com | Hiroyuki Shimizu | +81-3-3539-3848 | hiroyuki.shimizu@itausecurities.com |

Dubai

Rainer Schwarz - Head + 971 4 440 8350 rainer.schwarz@itausecurities.com
Fernando Diez Notarnicola + 971 4 440 8355 fernando.notarnicola@itausecurities.com

Itaú Securities' Global Offices

SÃO PAULO

Itaú Corretora de Valores S.A Av. Brigadeiro Faria Lima, 3400 - 10º Andar

São Paulo, SP, Brazil, 04538-132

HONG KONG

Itau Asia Securities Limited

Regulated by the Securities and Futures Commission in Hong Kong 29/F, Two International Finance Centre 8 Finance Street - Central, Hong Kong

NEW YORK

Itau BBA USA Securities Inc. 767 Fifth Avenue, 50th Floor New York, NY 10153

токуо

Itau Asia Securities Limited Tokyo Branch NBF Hibiya Bldg. 12F 1-1-7 Uchisaiwai-cho, Chiyoda-ku Tokyo, 100-0011, Japan

LONDON

Itau BBA UK Securities Limited 6th Floor - 17 Dominion Street London EC2M 2EF

DUBAI

Itau Middle East Securities Limited Al Fattan Currency House (DIFC) 3rd floor – room 305 (P.O. Box: 65703) Dubai, United Arab Emirates

Itaú's Complaints Officer (Ouvidoria Corporativa Itaú) may be contacted at

0800 570 0011 (calls from Brazil), on business days, from 9 a.m. to 6 p.m. (São Paulo, Brazil time) or P.O. BOX 67.600, Zip Code 03162-971.