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# Anchor Report: Latin America - High hopes, low growth

## Potential growth to depend on pro-market policies, now more than ever

- Potential growth in LatAm fell since the Global Financial Crisis due to lack of structural reforms, deteriorating demographics, low investment levels and the end of the super cycle in commodity prices.
- Slightly higher potential growth is a possibility in the next five years, mainly as we expect improved conditions in Brazil and a slight upward trend in Mexico, the region's two biggest economies. However, we expect potential growth to be lower in Chile, Colombia and Peru.
- We highlight that a pick-up in potential growth would still likely leave LatAm growth below other comparable EM groups.
- Importantly, the incoming Trump presidency in the US is a downside risk factor, but not evenly distributed among the region's economies. Mexico, naturally, stands as the most exposed economy. However, all economies could suffer in a scenario of tighter financial conditions.
- Commodity prices could also be an important risk factor for both cyclical and potential growth, with strong influences on different growth components. With below-the-highs commodity prices, the region does not seem to be en route for strong recovery back to pre-Global Financial Crisis levels.
- In this environment, probability of recession stands out as particularly relevant going forward. We see a moderately high probability of recession in early 2017 in Brazil, Colombia and Chile - with Mexico still dependent on Trump policies.

**18 January 2017**


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Production Complete: 2017-01-18 21:27 UTC

# Executive Summary



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# LatAm: Accounting for Growth

*The deceleration of GDP growth in LatAm in the past few years has been caused by various factors, both internal and external, that suggest potential growth has declined (in some cases meaningfully) across the board. We deconstruct potential growth into contributions from capital, labor and total factor productivity (TFP) to gauge how growth drivers have affected this trend and analyze the possible macro strategy implications.*

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## Introduction

In this piece, we take a panoramic view on growth in Latin America (LatAm). We focus on how GDP growth has evolved over time and compare it with global GDP trends. In addition, we delve into the sources of potential growth using a well-known 'accounting' basis approach to allocate it between labor, capital and total factor productivity (aka TFP, which describes how efficiently inputs in production are utilized). Specifically, we provide answers to the following questions:

**How has potential growth in the region been evolving?**

**How does this growth compare in LatAm vis à vis other regions in the world?**

**What does it mean in terms of macro strategy implications?**

But before we go any further, we define the concept of *potential output* as "the level of output consistent with stable inflation (no inflationary or deflationary pressures)" [1].

## How has Potential GDP Growth in the Region been Evolving?

Potential growth in LatAm seems to be converging to a level marginally lower than the pre-commodity boom years at around 2.6% y-o-y. The main culprit behind the decline in potential growth is the fall in TFP. We divide our sample into three different periods to identify those times with regard to global commodity prices in the past 20-plus years and with special reference to the Global Financial Crisis (GFC):

1992–01 – the initial interval, before the commodity boom;

2002–08 – the high commodity price period before the GFC and

2009–15 – the post GFC period until now.

**Fig. 1: LatAm – Potential GDP Growth and its Components**

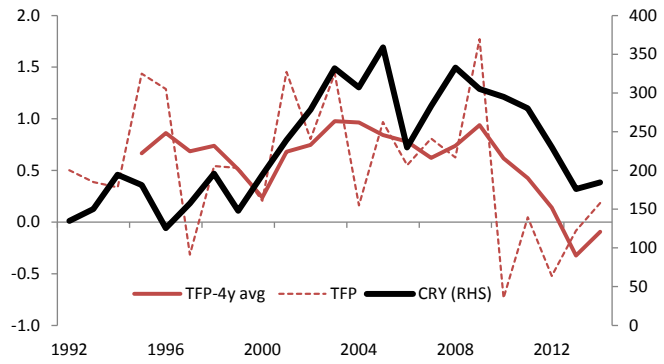
| | Potential GDP growth | Capital | Labor | TFP |
|---|---|---|---|---|
| 1992 - 2001 | 3.0 | 1.4 | 0.9 | 0.7 |
| 2002 - 2008 | 3.5 | 1.3 | 1.4 | 0.8 |
| 2009 - 2015 | 2.6 | 1.5 | 1.0 | 0.1 |

Source: Penn World Table, IMF and Nomura

LatAm is one of the largest producers of commodities in the world (e.g., as a proportion of total world production it produces 50% of soy beans, 40% of copper, and 15% of iron ore; source: US Geological Survey 2016). Unsurprisingly, LatAm's highest growth period (2002-08) was during the commodity boom when it was expanding at 3.5% y-o-y (see Figure 1). This period of growth was best captured by *The Economist's* iconic cover of the Christ of Corcovado taking off like a rocket (14 November 2009).

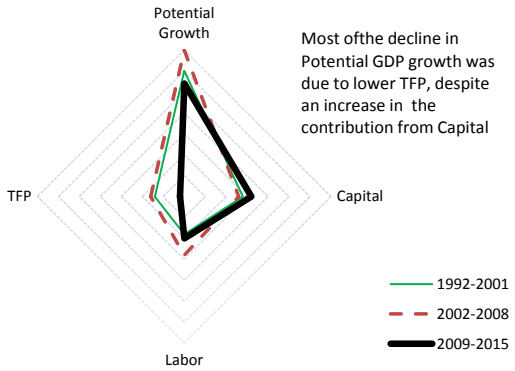
1 "Where Are We Headed? Perspective on Potential Output". World Economic Outlook: Uneven Growth-Short and Long-Term Factors, IMF, April 2015.

**Fig. 2: LatAm – TFP and Commodity Prices Index (CRY)**




Source: Source: Penn World Table, IMF and Nomura

**Fig. 3: LatAm – Potential Growth and its Components**




Source: Penn World Table, IMF and Nomura

The combination of a normalization of commodity prices in the post-GFC crisis (2009-15) period has translated into lower growth rates. Since 2009, LatAm appears to be growing at a pace that is below even that of the pre-commodity boom. The decline in growth can be mainly explained by lower TFP despite a higher contribution from capital.

Capital has been increasing in terms of its contribution to potential growth for the past three decades and since 2009 it is yielding around 1.5%. Contribution from labor at 1.0% is higher than it was before the commodity boom at 0.9% but lower than during the commodity boom. We believe the strong demographic trends explain the strong current contribution of growth of about 1.0%.

## How does Potential Growth in LatAm compare with other Regions in the World?

**Fig. 4: Potential GDP Growth and Components in Different Regions**

| | | Potential GDP growth | Capital | Labor | TFP |
|---|---|---|---|---|---|
| **1992 - 2001** | Advanced | 2.9 | 1.5 | 0.5 | 0.9 |
| | EM | 4.3 | 1.9 | 0.9 | 1.5 |
| | EM ex-China/ex-LatAm | 3.9 | 1.6 | 0.8 | 1.5 |
| | **LatAm** | **3.0** | **1.4** | **0.9** | **0.7** |
| **2002 - 2008** | Advanced | 2.1 | 0.9 | 0.6 | 0.6 |
| | EM | 6.3 | 2.4 | 1.2 | 2.7 |
| | EM ex-China/ex-LatAm | 5.3 | 2.0 | 1.1 | 2.2 |
| | **LatAm** | **3.5** | **1.3** | **1.4** | **0.8** |
| **2009 - 2014** | Advanced | 1.3 | 0.6 | 0.3 | 0.4 |
| | EM | 5.5 | 2.9 | 0.8 | 1.8 |
| | EM ex-China/ex-LatAm | 4.9 | 2.1 | 0.8 | 2.0 |
| | **LatAm** | **2.7** | **1.6** | **1.0** | **0.1** |

Source: Penn World Table, IMF and Nomura

LatAm seems to have grown at a higher pace than the advanced economies, but lower than other EM economies. Even excluding China from EM, we find that LatAm's potential GDP growth ranks among the lowest in EM.

TFP seems to be the big differentiator between LatAm and the rest of the world as it has tended to be smaller even during the commodity boom years. Since 2009, it has collapsed to marginally positive from 0.8% during the commodity boom, while in EM-excluding China LatAm is nearly 2.0%. In the advanced economies, TFP's contribution tends to range between 0.4% and 0.9%.

**Fig. 5: Potential GDP Growth and its Components in Different Regions**


Source: Penn World Table, IMF and Nomura

Capital's contribution to growth has been steadily rising in LatAm, but it is smaller than in EM even if we exclude China. On the positive side, historically capital's contribution to growth in LatAm often tends to be bigger than in the advanced economies. Labor's contribution to potential growth often tends to be larger and more resilient in LatAm than in other regions of the world.

## What does a Low Growth Environment mean in terms of Macro Strategy Implications?

The LatAm region's potential growth rate seems unlikely to speed up dramatically in the coming year or so unless there is a positive external shock (e.g., a sudden increase in the terms of trade). At the risk of over-simplifying a complex discussion, we suggest some potential general strategy implications that stem from a low growth environment:

1. **Countries that implement structural reforms will likely be rewarded**. At varying success rates among the LatAm countries, there has been an improvement in the region's political and macroeconomic framework during the past few decades that includes strengthening democratic institutions, implementing inflation-targeting regimes, increasing savings, opening the LatAm economies to trade, reducing poverty levels, floating exchange rates, and strengthening free press.

   Going forward, countries that implement reforms to improve the rule of law, business environment, educational levels, and infrastructure while reducing the informal economy and enhancing female labor participation are likely to be rewarded by FDI and portfolio inflows (see "Latin America and the Caribbean: Are Chills Here to Stay?" IMF October 2016).

2. **Debt-to-GDP should continue to rise**. Low growth rates without a marked change on tax and government spending policies will likely translate into a gradual increase in debt-to-GDP ratios. Consequently, we think the likelihood of consensus rating downgrades will rise and external debt yields spreads over US Treasuries should widen.

3. **The exchange rate is likely to remain the main shock absorber**. In our opinion, a low-growth environment without any positive macro or micro economic change could indicate that the first line of defense to absorb shocks will remain the exchange rate. In our opinion this will remain the case, even if real and nominal exchange rates have already sunk significantly.

4. **Low rates environment could be the norm, not the exception**. We believe low growth will push nominal and real rates lower. There are two broad implications from a low rate environment:

   a. When in doubt, receive rates. Whenever there is a shock to inflation or inflation expectations that forces the central bank to engage in tightening, it could be a good general policy to jump into the 'receiver trade' early rather than late.
   b. When in doubt, expect steeper curves. While the actual shape of the curve will also depend on the risk premium in the long end of the curve, low rates in the short end should generally be a constant force towards steeper curves. The combination of low rates in the short end of the curve coupled with a de-compression of risk premium in global rates will likely exacerbate the push towards steeper curves.

# Appendix

For an estimate of potential growth and contribution from each growth component (labor, capital and total factor productivity) in the different groups of countries, we used various sets of databases, from the IMF, Penn World Table and local statistics agencies.

The initial step was to calculate the weights of each country in their specific groups, by using estimates of nominal current USD GDP per country in a given year. Potential GDP in each economy is calculated by using the HP-filter applied to the GDP series which was started in 1980. The potential growth presented in each period in the tables (Figures 1-4) is the average for that specific time interval.

The decomposition of potential growth found above in Figure 1 into labor, capital and TFP follows a traditional production function accounting framework. We use data for employment as an approximation for potential employment growth in every country on a given year. Labor is weighted with a 0.6 co-efficient in all economies. We follow the same mechanism by using data for capital stock to calculate the contribution of capital, with a 0.4 co-efficient in all economies. TFP is found as the residual, by subtracting both capital and labor contributions from the initial estimate of potential growth.

Also on the labor, capital and TFP growth calculations, country weights are used to estimate the overall regional/group result – as done with potential GDP.

In this exercise, we do not implement a model to estimate potential GDP growth that explicitly takes into account inflation (with the respect to the target) and unemployment (with respect to NAIRU). Conversely, we use a Hodrick-Prescott filter and assume that, on the average of time intervals that we present, our analysis will approach an economy in a state of full capacity[2]. In other sections of this report, we individually estimate each potential GDP growth component, with specific assumptions for their behaviors.

2 For a full discussion on how to explicitly take into account inflation and unemployment while modeling potential GDP, see “IMF (April 2015). World Economic Outlook. IMF, page 71.”

# Potential Growth Ahead

*In this report, we break down potential growth by component in each of the region's major economies. We also evaluate the outlook for potential growth in each country in a challenging environment of less-supportive demographic trends, low investment levels and the need to promote productivity gains. We study the specific characteristics of the most market-integrated economies in LatAm and the outlook for the variables that are likely to determine future potential growth. We highlight that there is some heterogeneity among the region's economies going forward, though structural constraints generally limit higher potential growth in the next five years.*

## A Little Room to Grow

In this section, we examine the labor, capital and total factor productivity components of potential growth in each of LatAm's most market-integrated (Brazil, Mexico, Chile, Colombia and Peru) countries. We also explore the underlying variables behind these components, gauging how they may react in the next five years.

**Potential growth in the most market-integrated countries in the region has decreased following the financial crisis – as to be expected. Going forward, there are structural limits to higher potential growth in the next five years across the board, but there is also heterogeneity among the economies.**

**In general, we expect lower potential growth in Chile, Colombia and Peru (though from a high base), somewhat stable potential growth in Brazil and higher potential growth in Mexico (though, here we add the disclaimer that US policy in a Trump administration can change that scenario).**

In this sense, there could be a slight pick-up in regional (GDP-weighted) potential growth if its two biggest economies show some improvement (from low starting points). However, we highlight three important points: 1) there is a meaningful statistical impact, because in 2014-16 Brazil was growing significantly below potential. We note that in a non-GDP weighted approach, according to our estimates, regional potential growth should fall slightly in 2017-21; 2) as mentioned above, Mexico's potential growth outlook is heavily affected by US economic policy in a Trump administration and 3) the region will still have significantly lower potential growth than in boom years.

**Fig. 1: Estimates of Potential Growth and Components in LatAm (% y-o-y)**

| Period | Country | Potential GDP | Capital | Labor | TFP |
|---|---|---|---|---|---|
| 2002 - 2008 | Brazil | 3.7% | 0.9% | 1.7% | 1.1% |
| | Mexico | 2.4% | 1.5% | 1.3% | -0.4% |
| | Chile | 5.0% | 2.9% | 1.8% | 0.3% |
| | Colombia | 4.7% | 1.7% | 2.1% | 0.9% |
| | Peru | 5.3% | 1.4% | 1.5% | 2.4% |
| 2009 - 2016 | Brazil | 2.1% | 1.3% | 0.6% | 0.2% |
| | Mexico | 2.3% | 1.4% | 1.3% | -0.4% |
| | Chile | 3.5% | 2.8% | 1.5% | -0.8% |
| | Colombia | 4.0% | 2.1% | 1.7% | 0.2% |
| | Peru | 5.0% | 2.1% | 1.2% | 1.7% |
| 2017 - 2021 | **Brazil** | **2.2%** | **1.3%** | **0.5%** | **0.4%** |
| | **Mexico** | **2.6%** | **1.7%** | **0.9%** | **0.0%** |
| | **Chile** | **3.0%** | **2.1%** | **0.7%** | **0.2%** |
| | **Colombia** | **3.2%** | **1.8%** | **0.8%** | **0.6%** |
| | **Peru** | **3.7%** | **1.8%** | **0.9%** | **1.0%** |

Source: Nomura, Penn World Tables, National Statistics Agencies

To put potential growth into context we look at two different periods (2002-08, which was marked by rising commodity prices and 2009-16, which was seen as the post-financial crisis period), and the comparison between these periods suggests the main drivers of the downward trend in potential growth between 2002-08 and 2009-16 were falls in labor and total factor productivity (TFP) contributions.

On a country-by-country basis, Brazil stands out (negatively) as the economy with the largest drop in potential GDP growth from one period to another – a fact that is amplified by the country's significant underperformance in the past three years, marked by the very deep recession of 2015-16. Mexico's economy seems to be the least impacted and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this may be explained by its position as the more manufacturing-based country in the group, which naturally benefitted less from rising commodity prices.

To varying degrees, Chile, Colombia and Peru generally follow a similar trend of lower potential growth – in line with, among other things, their significant exposure to commodity prices – driven by significant drops in both labor and TFP contributions.

## We Ain't That Young Anymore: Labor Contributes Less

**We think the labor component (one variable that has worsened potential growth in the past few years) will increasingly contribute less to the region as the population ages – a process that is happening rather quickly. This should lead to labor making a smaller contribution to potential growth in the next five years across the board.**

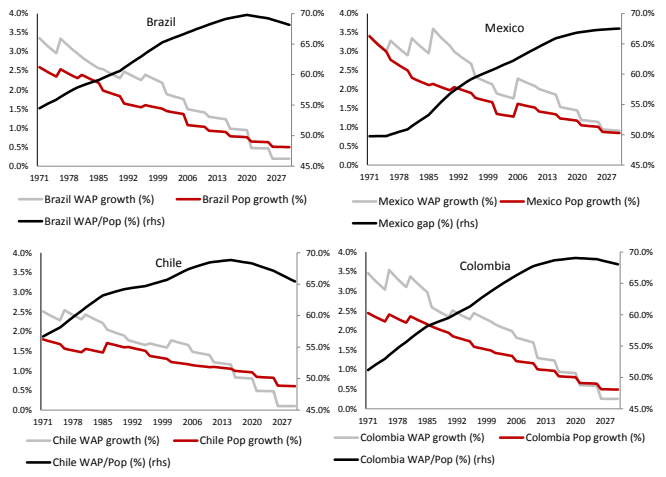
The median age in the five economies analyzed here has risen from 24.9 years in 2000 to 30 currently – and this ageing is likely to continue, with the median age increasing to 35.9 by 2030. For context, in 2000 the median age in these five countries was 69% of the median age in high-income countries – a ratio that is now 76% and is expected to rise to 84% by 2030.

On a country-by-country basis, Mexico and Peru (the two youngest countries in the group), are likely to show the most favorable trends, with their median ages likely to remain below-average into 2030. Chile stands out for easily continuing to be the oldest population, but we highlight that Colombia's economy is the one among these countries ageing at the fastest pace in the next 15 or so years. Brazil's will also stay an older-than-average country in LatAm.

### Demographic Dividend

Looking into the demographic numbers, there are indications that the favorable contribution of labor to GDP growth is decreasing. One way to evaluate the demographic dividend – i.e., the benefits to economic growth derived from a certain stage in a country's demographic transition – is to look at the pace of growth of the working age population in comparison with the pace of growth of the total population. The idea is that during the most favorable years of demographic dividend, the working age population will rise as a proportion of the total population, implying a growing percentage of people in the productive part of the economy in comparison with the non-productive part.

**Fig. 2: Working Age Population Growth x Population Growth**




Source: Nomura, UN (Note: Working Age is defined as 15-64)

**Fig. 3: Median Age in LatAm**

| Median Age Years | 2000 | 2015 | 2030 |
|---|---|---|---|
| Brazil | 25.2 | 31.3 | 37.4 |
| Mexico | 22.7 | 27.4 | 33.1 |
| Chile | 29.4 | 34.4 | 40.1 |
| Colombia | 24.4 | 30 | 36.4 |
| Peru | 22.8 | 27.5 | 32.4 |
| High Income | 36 | 39.7 | 42.9 |
| LatAm 5 Average | 24.9 | 30.1 | 35.9 |
| **LatAm 5/High Income** | **69.2%** | **75.9%** | **83.6%** |

Source: Nomura, UN, ILO, National Statistics Agencies

While Latin America is still a somewhat young region, the period of the working age population outgrowing the total population is nearing an end in many of the economies we focus on here. In Brazil, Chile and Colombia, the working age population will grow less than that of the total population in the early 2020s. In Mexico and Peru, this will only take place in the 2030s.

The working age population will continue to grow for a longer time, but at a slower pace across the board. After 1.5% average annual growth in these five economies in the last 10 years, the expansion in the working age population will likely decelerate to around 0.7% from 2020 to 2030 – clearly an important drag on potential GDP growth.

### Unemployment

The other main variables affecting labor's portion of potential growth are related to: 1) developments in the non-accelerating inflation rate unemployment (NAIRU) and 2) labor market participation rates.

In general, NAIRU levels seem to be falling across the region – though at different paces. Brazil, once again, stands out as the exception, as the recent significant rise in the unemployment rate (which rose from 6.5% in 2014 to 11.8% currently) and the poor combination of above-target inflation and a deep recession, suggest a higher NAIRU.

On labor force participation rates, we argue that most countries seem to be near their historical averages, with limited room for meaningful changes in the next five years. We highlight, however, that the female labor participation rate could rise, but LatAm is still below more developed countries. In particular, Mexico and Chile's female participation rates are below the regional average and if these rates were to rise, this could bode well for potential growth – particularly in Chile, which has a much older population than that of Mexico.

### Estimating Labor's Contribution

For the purposes of estimating labor's contribution to potential GDP in the future, we use the UN's estimates of the working age population and make assumptions for both the NAIRU and participation rates for each specific country. We assume that the participation rates will follow historical averages and that the NAIRU rates will follow their recent trends – with the exception of Brazil, where we assume an unchanged (instead of rising) unemployment rate.

As expected, we find that labor's contribution to potential growth will be smaller in the next five years in all of the five countries – driven basically by a deceleration in the growth rate of the working age population. The Mexican and Peruvian economies will, according to our estimates, receive the biggest impulse from labor, while Chile and Brazil will receive the smallest contribution.

**Fig. 4: Estimated Labor's Contribution to Potential Growth (% y-o-y)**

| Period | Country | Labor |
|---|---|---|
| 2002 - 2008 | Brazil | 1.7% |
| | Mexico | 1.3% |
| | Chile | 1.8% |
| | Colombia | 2.1% |
| | Peru | 1.5% |
| 2009 - 2016 | Brazil | 0.6% |
| | Mexico | 1.3% |
| | Chile | 1.5% |
| | Colombia | 1.7% |
| | Peru | 1.2% |
| **2017 - 2021** | **Brazil** | **0.5%** |
| | **Mexico** | **0.9%** |
| | **Chile** | **0.7%** |
| | **Colombia** | **0.8%** |
| | **Peru** | **0.9%** |

Source: Nomura, Penn World Tables, National Statistics Agencies

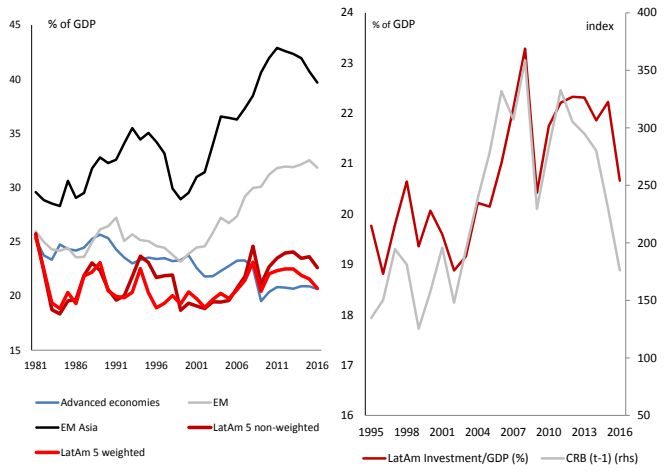
## Show a Little Faith: Can We Invest in Ourselves?

**On the capital side, LatAm continues to suffer from chronically low investment that constrains capital stock accumulation. In the past 35 years, other EM economies (particularly Asia) have significantly increased the gap in the investment/GDP measure with LatAm – a trend that is in line with LatAm's low savings environment.**

Capital is still likely to remain the biggest contributor to potential growth, but should only rise in Mexico – rather falling or stable in all of the other four LatAm economies.

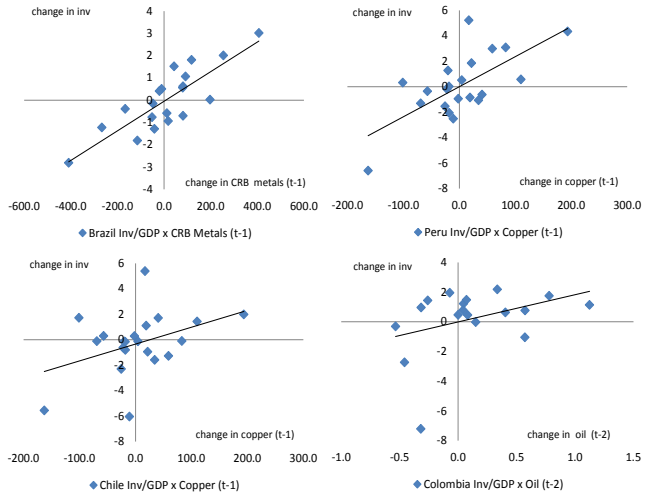
Rising commodity prices, in the past, have boosted investment in LatAm. We do not expect commodity prices to return to 2002-08 levels in the next five years. Instead, we use the futures markets for guidance on the behavior of commodity prices and, from there, investment in LatAm.

**Fig. 5: Investment Against Other Regions and Commodity Price Index (CRB)**




Source: Nomura, IMF

**Fig. 6: Investment vs Main Commodities**




Source: Nomura, IMF, Bloomberg

Additional sources of support for investment, such as very low interest rates globally, are likely to become less favorable in the medium term, hampering a significant increase in investment in the region.

To estimate the growth of capital stock in the future, we use the relationship between investment/GDP and the price of the main commodities in each country. We then use assumptions on the behavior of these commodities to estimate the level of investment/GDP in each economy for the next five years and, from there, to estimate the contribution of capital to potential growth.

We also make assumptions based on recent policy developments that we believe may influence investment levels in coming years – such as Mexico's extensive recent reforms, which we believe will facilitate higher investment/GDP rates in the country in the next five years.

With this estimation method, Mexico, Chile, Colombia and Peru's capital contribution to potential growth is likely to be the highest in the next five years – though only Mexico shows a rise from 2008-16.

**Fig. 7: Estimated Capital Contribution to Potential Growth (% y-o-y)**

| Period | Country | Capital |
|---|---|---|
| 2002 - 2008 | Brazil | 0.9% |
| | Mexico | 1.5% |
| | Chile | 2.9% |
| | Colombia | 1.7% |
| | Peru | 1.4% |
| 2009 - 2016 | Brazil | 1.3% |
| | Mexico | 1.4% |
| | Chile | 2.8% |
| | Colombia | 2.1% |
| | Peru | 2.1% |
| **2017 - 2021** | **Brazil** | **1.3%** |
| | **Mexico** | **1.7%** |
| | **Chile** | **2.1%** |
| | **Colombia** | **1.8%** |
| | **Peru** | **1.8%** |

Source: Nomura, Penn World Tables, National Statistics Agencies

## Where Can TFP Take Us From Here?

**On this front, we argue the political environment and the quality of policy making are key for all of the five countries. In general terms, we assume that TFP will partly recover (in 2017-21) from the drop that has taken place since the financial crisis – increasing in comparison with 2009-16, but not back to the 2002-08 boom years.**

Estimating TFP growth is a difficult task and we do not resort to any type of econometric model to do so, nor do we go into the specific characteristics of all determinants of TFP growth that are usually mentioned in literature. Instead, we focus on the behavior of TFP growth in the two periods since 2002 and evaluate the idiosyncrasies of each country that we find more relevant going forward.

**In this sense, we highlight TFP growth determinants related to FDI, trade, financial system development, infrastructure, deregulation and privatization, which are more likely to advance in most LatAm economies in 2017-21.** This is the case in an environment marked by either adequate or improving policy quality in most economies. **However, despite the likelihood of improvement in comparison with the lackluster 2009-16 period, TFP in LatAm is likely to continue to face key obstacles in the near term, constraining its growth**.

Areas in which the region has historically been lagging usually require very long-term initiatives to improve – which has not happened in the past. For example, improvement in areas such as healthcare, education and violence control (key weaknesses in most of the region's economies) is unlikely to occur quickly enough to affect 2017-21 potential growth.

For context, LatAm has consistently been in the unfavorable end of global education surveys (such as the PISA OECD survey, in which all countries in the region fall in the "below-average" category) and murder rates (Brazil, Colombia and Mexico are among the world's 30 most violent countries measured by murders per 100,000 inhabitants. Source: UN) – and there is unlikely to be a break in those trends in the near future.

We also point out that the macroeconomic conditions in which TFP-focused policies are implemented are relevant for determining the degree of success of said policies. Therefore, we also focus on the specific conditions of each individual economy going forward.

**Fig. 8: Estimated TFP Growth Contribution to Potential Growth**

| Period | Country | TFP |
|---|---|---|
| 2002 - 2008 | Brazil | 1.1% |
| | Mexico | -0.4% |
| | Chile | 0.3% |
| | Colombia | 0.9% |
| | Peru | 2.4% |
| 2009 - 2016 | Brazil | 0.2% |
| | Mexico | -0.4% |
| | Chile | -0.8% |
| | Colombia | 0.2% |
| | Peru | 1.7% |
| 2017 - 2021 | **Brazil** | **0.4%** |
| | **Mexico** | **0.0%** |
| | **Chile** | **0.2%** |
| | **Colombia** | **0.6%** |
| | **Peru** | **1.0%** |

Source: Nomura, Penn World Tables, National Statistics Agencies

### Politics and Policy

Politics and the direction of policy are also important guides for TFP growth in the future. From a purely political point of view, in some of its most relevant governments LatAm has moved to the right/market-friendly policies (at the margin) in the past two years. Brazil, Peru and Argentina have all moved from a more leftist to a more centrist administration in their latest government changes and, in general, center-right forces seem to be gathering more strength across the region –a shift from the recent past.

We refrain from making any ideological positioning statement. However, it seems that these governments could be more inclined to assuming a more market-friendly stance that could bode well for productivity gains down the road – albeit we recognize that has never been strong in LatAm.

### Country specific

On a country-by-country basis, **Brazil**'s economy experienced the biggest drop in potential growth between 2002-08 and 2009-16. Poor policy-making, particularly starting

in the middle part of 2009-16, certainly contributed to the country's underperformance. Going forward, we think there is good reason to expect some improvement, albeit subtle.

The new government's economic agenda is based on fiscal reform, but there have been (initial) measures on the microeconomic and business environment fronts. The current agenda includes the privatization of transportation and energy-related projects in 2017. The government has also announced a series of actions by the BCB aimed at enhancing financial conditions, cheapening credit and modernizing financial legislation, the reversal of Petrobras' required status as operator of all pre-salt oil fields, a series of small adjustments made to legislation and taxation of companies and a law increasing corporate governance standards in SOEs. Further action on bankruptcy legislation, pension fund governance and regulatory agencies could also be approved this year.

Even if the steps are in the right direction, these are initial measures and there is a considerable gap between policy intentions and the actual economic impact. This, combined with still weak economic fundamentals restricts TFP expansion. **In this sense, while we recognize that Brazil's TFP growth is likely to improve from the 2009-16 period, we do not believe it is set to approach the 2002-08 highs.**

Finally, from a purely political perspective, the 2018 presidential elections remain a source of risk. Political analysts will point to the fact that the ongoing corruption investigations have made several recently-strong candidates either unviable or carry big electoral question marks, making way for outside politicians with less well-known stances on economic matters.

Later in this report (Growth Under Unfavorable Terms of Trade) we will approach country-specific potential growth based, exclusively, on our expectations for terms of trade in each economy, not taking into account internal specificities. In that exercise, we reach a somewhat lower estimate for Brazil's potential growth (around 1.5% y-o-y). Among the reasons for that result, we highlight that Brazil's internal improvement in policy and macroeconomic conditions is an important part of its growth outlook going forward, which we take into account here, but not in our terms-of-trade framework.

In **Mexico** the 2018 Presidential election will be pivotal for the continuation of pro-market reforms supported by the current administration (PRI party). The current administration passed and started to execute reforms to liberalize the energy sector, to improve the quality and to promote competition in the telecommunications sector. These reforms have yielded more than $50bn in the energy sector (over the next decade) so far from the private, domestic and international companies. The telecommunications reforms have reduced the price of internet and mobile phone services dramatically. The education reforms have reduced the power of unions to influence these reforms, if continued, will likely support growth on productivity.

However, the big question is if the hard-left party Morena and its candidate Andres Manuel Lopez Obrador (AMLO) win the June 2018 Presidential election will these reforms be scaled down? The current government is very unpopular, plagued by corruption accusations, low economic growth, MXN depreciation and potentially rising inflation. While we agree that the current administration's unpopularity could reduce the chances of the PRI winning the 2018 election, it is not clear to us that AMLO will be the main beneficiary. The other opposition party, the center-right PAN party, which has a larger political structure across the country, has also a decent chance of benefiting from the unpopular administration. In sum, it is too early to say whether Mexico will 'brake left' in political terms.

After four years of a more center/left ruling Chile is likely to swing towards a center-right government in 2018, in our view. Such a change is likely as the current center-left government has introduced a reform agenda (taxes, education, labor, constitution, etc) which has not been well received by voters and the private sector. In fact, Bachelet's reform agenda has added uncertainty to the private sector's investment plans amid an already challenging economic environment following the downward trend in copper prices.

Even if center-right/pro-market government restores confidence in 2018, there are key roadblocks for potential growth. In particular, voters will likely continue pressuring for an extension of the social safety net that could sub-optimize the use of fiscal resources which otherwise could be used to programs aimed at boosting competitiveness and productivity. For instance, there is growing pressure for the government to pay the bill (at least partially) for pensions. Current economic and social policies that were born

under the Pinochet era are viewed as no longer relevant because they were not implemented within a democratic framework. It seems unavoidable for future governments to continue to expanding the social safety net while minimizing collateral impact on the fiscal side, in our view. It is also important to keep in mind that under such a framework, the new government will be in charge of approving a Constitution which has started to be debated under Bachelet's government (see Chile: Constitutional Blues, May 27 2015).

Over the coming decade, our base case is for Colombia to keep center-right governments in power. Therefore, we do not expect any change in economic policy management (for good or for bad) coming from the political side. It is important to highlight that Colombia is a country in which the political pendulum has remained on the right side for long time (in contrast to the majority of LatAm peers). The reason behind such an atypical political behavior is the strong popular rejection toward leftist guerrillas.

The key question going forward is how likely is it for a leftist party to arrive to power once the guerrillas disappear after the peace process was concluded. While the peace removes an important obstacle for the ultra-left parties to compete politically, we believe that the likelihood that they win an election is low in the coming decade. We believe that voters will keep its center-right bias as they will remain cautious about any connection between well-established leftist politicians and the agenda supported by guerrilla members-turned politicians. Besides politics, it is important to mention that potential growth would be positively benefited by the ambitious infrastructure program currently under development (7% of GDP), which is aimed at closing the infrastructure gap the country is facing.

In Peru, the accession of Pedro Pablo Kuczynski (PPK) constituted the return of a center-right/pro-market government to power after five years of leftist Ollanta Humala. The drop in copper prices, coupled with the lack of a clear economic agenda and corruption scandals, produced low growth and low approval ratings for the Humala's government. PPK, who is almost 80 years old, is perceived as a competent and technocrat not looking for short-term political gains. He has not expressed an intention to start a political movement. Based on our observations, he seems interested in sowing the seeds of pro-market policies with an aim at improving economic growth in the medium/long term.

PPK's party holds a minority of seats in Congress, which could be a problem for implementing his economic agenda. However, PPK's government is perceived as having good access to Congress. Also PPK and the Fujimorismo block in congress (which holds the majority of seats) are aligned ideologically and will likely promote similar economic policies. For instance, both agree on the need to provide a fiscal boost to the economy through infrastructure development. A good example of the political equilibrium described above is the approval of the legislative faculties requested by PPK from Congress. Congress, with the help of the Fujimorismo, gave PPK powers to legislate on taxation and security issues for 90 days. Finally, the Fujimorismo will likely collaborate with PPK's government to ensure a successful agenda and promote the continuation of center-right policies in the next presidential term.

Our base case is for a successful PPK government, which could be translated into a continuation of center-right government in the 2021election. This pro-market agenda, which include an important boost to infrastructure development, could support potential GDP growth over time, in our view

# LatAm: GDP growth under unfavorable terms of trade

*In this report, we study the relationship between terms-of-trade shocks and economic growth in LatAm – from both a short-term cyclical and long-term structural perspective. We gauge which economies (and growth components) are more susceptible to terms-of-trade fluctuations and how they could behave from here, while also evaluating the potential impact on neutral monetary policy rate levels.*

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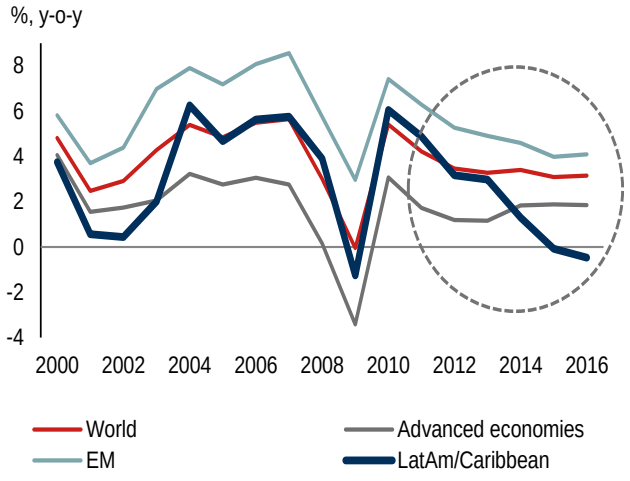
## Will Potential Growth Pick Up?

The drop in commodity prices and the cooling of the main LatAm economies have been key drivers of policy decisions and asset prices in the past few years. Although the topic has been at the center of debate in both the market and policy circles, there are questions that remain unanswered and are paramount to investors**. In particular, it is not completely clear what the final impact of the commodity price collapse** (e.g., the CRB commodity index is down more than 30% over the past two years) **will be on long-term growth and the implications for monetary policy in the years to come.**

We have constructed a simple but relevant framework in an attempt to answer such questions for the largest Latin American economies**. We think the collapse in commodity prices will continue to put downward pressure on long-term growth in Colombia and Peru. In the cases of Brazil and Chile, the fall in long-term growth seems to have bottomed and we could see a moderate recovery in the years to come, albeit at levels meaningfully lower than those during the commodities boom.** Finally, Mexico is a special case as we did not find strong evidence that links the commodity cycle with long-term growth.

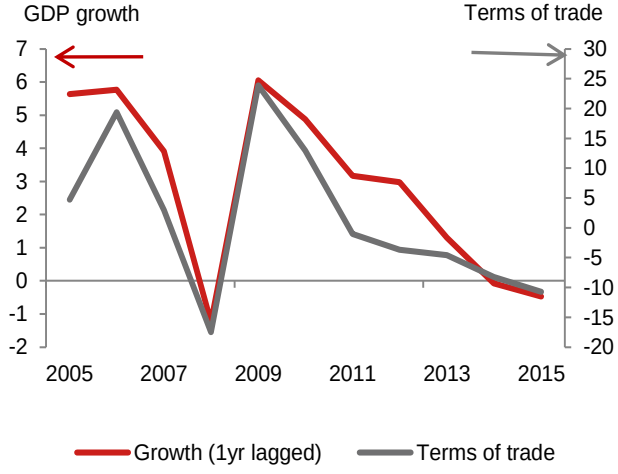
**We found that the adjustment to lower levels of potential growth could imply falling neutral rates (even if marginally) across the region.**

**Fig. 1: Economic growth by category (%, y-o-y)**




Source: IMF and Nomura Global Economics

**Fig. 2: LatAm terms of trade and GDP growth (%, y-o-y)**




Source: IMF and Haver

## Terms of trade and the short-term cycle

**Before jumping into our core exercise of measuring the impact of the commodity cycle on long-term growth, we take an intermediate step to find the cyclical, or short-term, impact of terms-of-trade fluctuations on the different countries.** To do so, we modeled the cycle of each country's economic growth using as explanatory variables some of the key channels through which the commodities boom filtered down to the economies: terms of trade, capital inflows and credit flows. The increase in commodity prices generated significant increases in terms of trade, as well as generous flows of foreign capital into both commodity and non-commodity sectors. At the same

time, the LatAm economies saw strong credit growth that supported investment and household consumption expansion.

Our model is aimed at explaining the deviation from trend aggregate variables (GDP, investment and household consumption) as a function of the deviation from trend of the key triggers that sparked the upside cycle during the boom years. The following is the general structure of the model:

$$Log\left(\frac{GDP}{GDP\ trend}\right) = \beta_1 * Log\left(\frac{Credit}{Credit\ trend}\right) + \beta_2 * Log\left(\frac{K\ inflows}{K\ inflows\ trend}\right) + \beta_3 * Log\left(\frac{Terms\ of\ Trade}{Terms\ of\ Trade\ trend}\right)$$

**The results suggest that Brazil and Mexico are the countries where terms of trade have played the most important role in the cycle of the past few years (Figure 3).** The result for Mexico is striking for two reasons: first, it is the country with the largest industrial base in the region and consequently the least dependent on natural resources production; and confirming this, we found that there is not a strong relationship between the trend in the terms of trade and its long-term growth. Nevertheless, the results suggest that positive commodity shocks often find a way to filter through to Mexico's economy and influence its short-term economic fluctuations – more fiscal freedom, which in the past has been derived from higher oil prices, seems a possible explanation for the cyclical improvement. Chile, Peru and Colombia's short-term cycles seem to have had similar exposure to this environment.

**Fig. 3: Model of economic cycle determinants – elasticities from the model**

| | GDP | | | | | Investment | | | | | Household Consumption | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Brazil | Mexico | Chile | Colombia | Peru | Brazil | Mexico | Chile | Colombia | Peru | Brazil | Mexico | Chile | Colombia | Peru |
| Terms of Trade | 0.17 | 0.17 | 0.08 | 0.05 | 0.08 | 0.43 | 0.33 | 0.25 | 0.13 | 0.37 | 0.10 | 0.24 | 0.08 | 0.08 | 0.01 |
| Capital Inflows | 0.01 | 0.00* | 0.03 | 0.02 | 0.02 | 0.01 | 0.01* | 0.12 | 0.06 | 0.09 | 0.01 | 0.00* | 0.02 | 0.00* | 0.01 |
| Total Credit | 0.03 | 0.03 | 0.02 | 0.01 | 0.01 | 0.07 | 0.05 | 0.01* | 0.03 | 0.06 | 0.03 | 0.04 | 0.02 | 0.01 | 0.00* |

*Denote that the variable is not significant at 10%.

**Co-efficients denote elasticities. For instance a 1% deviation in Chile's terms of trade implies a 0.08% deviation of GDP from its trend. Source: Nomura Global Economics

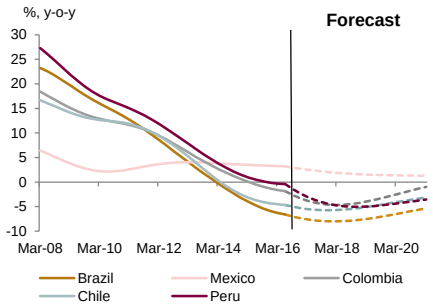
## Terms of trade, imports of capital goods and long-term growth

**Perhaps more important than the pure cyclical effect of a terms-of-trade shock is the lasting consequences that affect long-term growth: what are the main channels through which such a connection happens? To what extent does a boom/bust in the terms of trade mean an increase/decrease in long-term growth?**

**The key channel through which terms of trade affect long-term growth is via the ability of the country to accumulate capital stock.** In fact, during periods of strong terms of trade, there is a significant ability to sustain investment expansion as the economy can rely on ample external financing due to the export boom. **Such a relationship becomes clear when part of an external bonanza usually translates into heavy imports of capital goods, which end up boosting investment processes.**

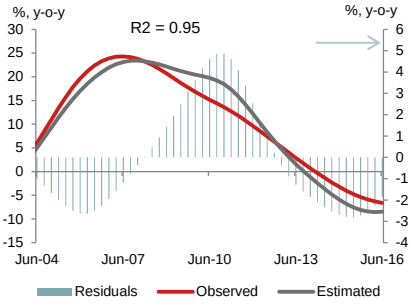
Figures 4-9 show the relationship between the terms of trade (represented by the price of the principal commodity export of the country) and import of capital goods. Specifically, the charts show the fit of a simple model in which the annual change of the long-term trend of capital goods imports is explained by the annual change of the long-term trend in the price of the country's main commodity export. **As can be seen, the trend in capital goods imports can be solely explained by the trend in such commodity export prices** (see the Appendix for further details on the models specification).

**Fig. 4: Import of capital goods (trend forecast) (%, y-o-y)**



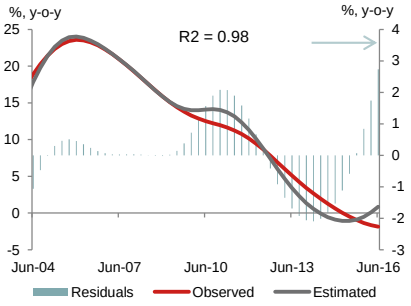

Source: Nomura Global Economics estimates

**Fig. 5: Brazil: Import of capital goods trend model (%, y-o-y)**



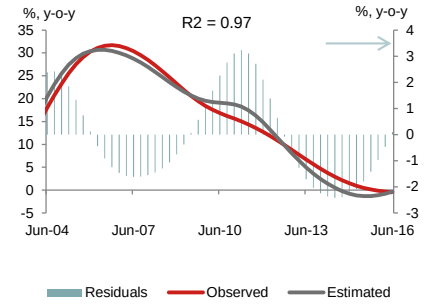

Source: Nomura Global Economics estimates

**Fig. 6: Colombia: Import of capital goods trend model (%, y-o-y)**



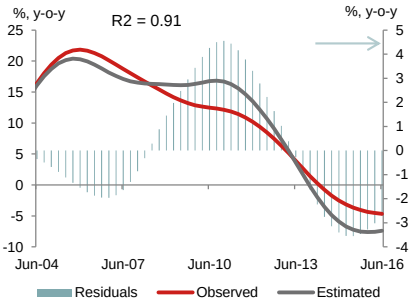

Source: Nomura Global Economics estimates

**Fig. 7: Peru: Import of capital goods trend model (%, y-o-y)**



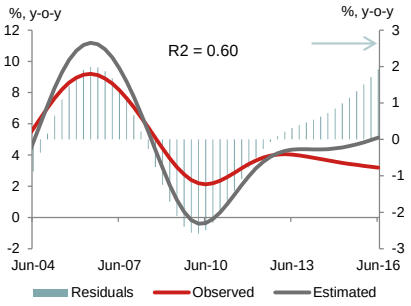

Source: Nomura Global Economics estimates

**Fig. 8: Chile: Import of capital goods trend model (%, y-o-y)**




Source: Nomura Global Economics estimates

**Fig. 9: Mexico: Import of capital goods trend model (%, y-o-y)**




Source: Nomura Global Economics estimates

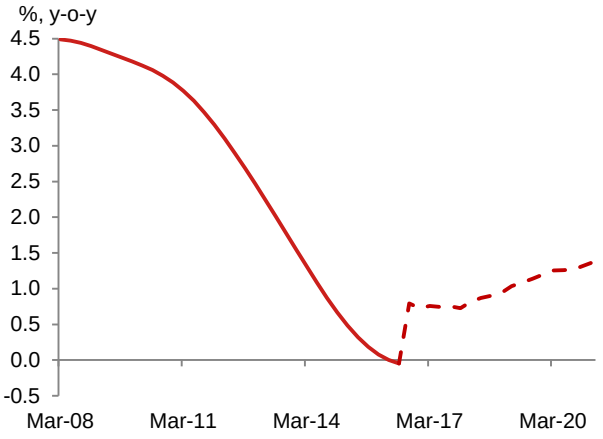
**A second step to gauge how terms of trade affect long-term growth is to test how the ability to import capital goods translates into higher trend growth.** To test this we also use a model in which we explain the annual change in trend growth as a function of the annual change in the trend of imports of capital goods**. In line with our expectations, the model has strong explanatory power in commodity-dependent countries such as Brazil, Colombia, Chile and Peru. As mentioned in the previous section, the fit of the model is low for Mexico, reflecting the fact that, in contrast with the other LatAm economies, long-term growth there is more closely tied to factors such as industrial sector productivity.**

**Based on our previous estimates, we also explored the likely path of trend growth for the different LatAm countries** (Figures 10 and 11). To arrive at such a forecast we used as an input the current futures prices of commodities in the market. While we do not see these results as definitive indications of potential growth in these economies, we do believe they offer an additional framework/tool to evaluate this topic.

**We found that in Colombia's case, long-term growth continues to fall to 2.9% y-o-y by 2021. Peru follows a similar pattern, reaching 3.6% y-o-y by 2021, while in Chile the downtrend is almost over and long-term growth begins to rise (albeit marginally) from 2017.** On the back of the low fit of the growth trend models in the Mexican case we decided to exclude it from the forecast exercise.

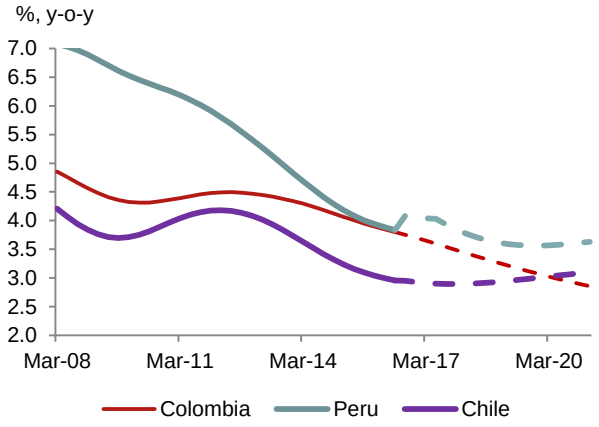
**Finally, in Brazil, the model suggests that long-term growth moves ahead with a form of floor at 1% y-o-y, trending towards 2.0% y-o-y.** Following a long period of poor policy-making trend growth in Brazil has fallen significantly in recent years for both domestic and external reasons. Negative growth in recent years lowers the estimates of trend growth, as shown in our exercise, which focuses on externally determined variables. In Brazil's favor, we highlight that domestic improvements can go a long way in improving conditions for long-term growth despite unsupportive external factors. As we mentioned before, in this exercise we reach a slightly lower growth level for Brazil in 2017-21, which can be explained by the fact that here we only take into account external forces, and not Brazil's (likely improving, in our view) macroeconomic conditions.

**Fig. 10: Brazil: GDP trend growth forecast (%, y-o-y)**




Source: Nomura Global Economics estimates

**Fig. 11: Rest of LatAm: GDP trend growth forecast (%, y-o-y)**




Source: Nomura Global Economics estimates

## Monetary policy implications

Using our previous estimates of trend growth we calculate a monetary policy path using a Taylor rule with the final objective of extracting a neutral nominal policy rate (see the Appendix for a detailed explanation of our procedure). **In line with our expectations**, **we find that, even if only marginally in some cases, lower potential growth does translate into lower neutral policy rates** (Figure 12). Here, we do not use proxies for global interest rates (e.g., fed funds rates), a variable that is commonly used in such exercises and that has generally trended down in the period we examined.

**Lower long-term growth tends to put pressure on the whole structure of interest rates in the economy not only through lower neutral policy rates but also through the balance of savings/investment in the economy and therefore the equilibrium interest rate.**

A lower neutral policy rate estimate suggests the potential for central banks to adopt lower rates in the future than in the recent past (especially in periods of particularly beneficial terms of trade). **Here it is important to highlight the possibility that the easing cycles tend not to go as deep as possibly initially thought, given that lower long-term growth translates into smaller output gaps and therefore more cautious central banks try to avoid sparking inflationary pressures.**

Finally, we highlight that the reduction in the neutral rate is consistent across countries, although there is ample room for domestic idiosyncrasies to alter individual results. Here, for instance, we point out Brazil and the potential impact of fiscal reform (or lack thereof) on the country's neutral interest rate behavior in the future (see Brazil: Where is The Neutral Rate? 1 August 2016).

**Fig. 12: Nominal Neutral Monetary Policy Rate estimations (%)**

| | Estimate of Current Neutral Rate (%) | Estimate of Neutral Rate at Peak of Commodity Prices (%) | Estimate of Future Neutral Rate (%) (2020/2021)* |
|---|---|---|---|
| **Brazil** | 10.50 | 11.30 | 8.40 |
| **Chile** | 3.80 | 4.10 | 3.40 |
| **Colombia** | 4.50 | 5.90 | 3.80 |
| **Peru** | 3.90 | 4.60 | 3.90 |

Note; *We assume the inflation gap is zero by 2018 in all countries. Source: Nomura Global Economics

# Appendix

## Import of capital goods trend models:

The following are models that show the relationship between long-term commodity prices and long-term import of capital goods. For forecasting purposes we included the dependent variable with one quarter lag as an explanatory variable.

**Fig. 13: Brazil: Import of capital goods trend model**

Sample: 2000Q4 - 2016Q2

| **Dependent variable:** | **Import of capital goods trend (%, y-o-y)** | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| CRB metal index trend (%, y-o-y, 8Q lagged) | 0.90 | 25.95 | 0.00 |
| Adjusted R2 | 0.95 | Durbin-Watson* | 0.03 |
| Std Error of regression | 2.32 | | |

*The estimation was autocorrelation corrected **We found evidence of co-integration between the variables. Source: Nomura Global Economics

**Fig. 14: Colombia: Import of capital goods trend model**

Sample: 2003Q4 - 2016Q2

| **Dependent variable:** | **Import of capital goods trend (%, y-o-y)** | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| C | 5.74 | 11.31 | 0.00 |
| Oil price trend (%, y-o-y, 6Q lagged) | 0.74 | 27.00 | 0.00 |
| Adjusted R2 | 0.98 | Durbin-Watson* | 0.10 |
| Std Error of regression | 1.26 | | |

*The estimation was autocorrelation corrected **We found evidence of co-integration between the variables. Source: Nomura Global Economics

**Fig. 15: Chile: Import of capital goods trend model**

Sample: 2003Q4 - 2016Q2

| **Dependent variable:** | **Import of capital goods trend (%, y-o-y)** | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| C | 3.81 | 3.48 | 0.00 |
| Copper price trend (%, y-o-y, 6Q lagged) | 0.59 | 12.72 | 0.00 |
| Adjusted R2 | 0.91 | Durbin-Watson* | 0.03 |
| Std Error of regression | 2.55 | | |

* The estimation was autocorrelation corrected **We found evidence of co-integration between the variables. Source: Nomura Global Economics

**Fig. 16: Peru: Import of capital goods trend model**

Sample: 2003Q4 - 2016Q2

| **Dependent variable:** | **Import of capital goods trend (%, y-o-y)** | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| C | 5.62 | 7.72 | 0.00 |
| Copper price trend (%, y-o-y, 9Q lagged) | 0.82 | 25.49 | 0.00 |
| Adjusted R2 | 0.97 | Durbin-Watson* | 0.05 |
| Std Error of regression | 1.80 | | |

* The estimation was autocorrelation corrected **We found evidence of co-integration between the variables. Source: Nomura Global Economics

**Fig. 17: Mexico: Import of capital goods trend model**

Sample: 2003Q4 - 2016Q2

| Dependent variable: | Import of capital goods trend (%, y-o-y) | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| C | 3.50 | 7.68 | 0.00 |
| Oil price trend (%, y-o-y, 6Q lagged) | 0.16 | 4.73 | 0.00 |
| Adjusted R2 | 0.59 | Durbin-Watson* | 0.04 |
| Std Error of regression | 1.43 | | |

* The estimation was autocorrelation corrected **We found evidence of co-integration between the variables. Source: Nomura Global Economics

## GDP trend models:

**Fig. 18: Brazil: GDP trend model**

Sample: 2003Q4 - 2016Q2

| Dependent variable: | GDP trend (%, y-o-y) | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| C | 1.61 | 0.23 | 0.00 |
| Import Capital goods trend (%, y-o-y, 8Q lag) | 0.03 | 0.01 | 0.00 |
| Import Capital goods trend (%, y-o-y) | 0.13 | 0.01 | 0.00 |
| Dummy Political Crisis | -0.80 | 0.28 | 0.01 |
| Adjusted R2 | 0.98 | Durbin-Watson* | 0.34 |
| Std Error of regression | 0.20 | | |

* The estimation was autocorrelation corrected **We found evidence of co-integration between the variables. Source: Nomura Global Economics

**Fig. 19: Colombia: GDP trend model**

Sample: 2004Q4 - 2016Q2

| Dependent variable: | Import of capital goods trend (%, y-o-y) | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| C | 3.93 | 75.42 | 0.00 |
| Import Capital goods trend (%, y-o-y, 3Q lag) | 0.05 | 11.70 | 0.00 |
| Adjusted R2 | 0.86 | Durbin-Watson* | 0.05 |
| Std Error of regression | 0.14 | | |

* The estimation was autocorrelation corrected **We found evidence of co-integration between the variables. Source: Nomura Global Economics

**Fig. 20: Chile: GDP trend model**

Sample: 2004Q4 - 2016Q2

| Dependent variable: | Import of capital goods trend (%, y-o-y) | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| C | 3.35 | 34.83 | 0.00 |
| Import Capital goods trend (%, y-o-y) | 0.08 | 6.18 | 0.00 |
| Adjusted R2 | 0.69 | Durbin-Watson* | 0.03 |
| Std Error of regression | 0.46 | | |

* The estimation was autocorrelation corrected **We found evidence of co-integration between the variables. Source: Nomura Global Economics

**Fig. 21: Peru: GDP trend model**

Sample: 2003Q4 - 2016Q2

| Dependent variable: | Import of capital goods trend (%, y-o-y) | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| C | 4.07 | 32.16 | 0.00 |
| Import Capital goods trend (%, y-o-y, 4Q lag) | 0.10 | 17.52 | 0.00 |
| Adjusted R2 | 0.96 | Durbin-Watson* | 0.04 |
| Std Error of regression | 0.21 | | |

* The estimation was autocorrelation corrected **We found evidence of co-integration between the variables. Source: Nomura Global Economics

**Fig. 22: Mexico: GDP trend model**

Sample: 2003Q4 - 2016Q2

| Dependent variable: | GDP trend (%, y-o-y) | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| C | 2.02 | 11.78 | 0.00 |
| Import Capital goods trend (%, y-o-y, 4Q lag) | 0.07 | 3.09 | 0.00 |
| Adjusted R2 | 0.25 | Durbin-Watson* | 0.03 |
| Std Error of regression | 0.27 | | |

* The estimation was autocorrelation corrected **We found evidence of co-integration between the variables. Source: Nomura Global Economics

## Taylor rule estimations:

We estimated the neutral interest rate in each country by using the potential growth that we found from our terms-of-trade framework, as an assumption. We use a specific formulation of the Taylor rule (and our estimate of trend growth to calculate an output gap). For the subsequent period (Q3 2016 to Q4 2021) we use our estimates of future potential growth and the co-efficients from the initial Taylor rule to derive an interest rate. Importantly, in the second period, we assume that inflation slowly converges to target.

The following is the Taylor rule specification that we used:

$$Rate_t = \beta_1 * Rate_{t-1} + (1 - \beta_1) * (\beta_2 + \beta_3 * inflation\ gap_t + \beta_4 * output\ gap_t)$$

**Fig. 23: Brazil Taylor Rule Estimation**

Sample:2003Q2 2016Q2

| Dependent variable: | Monetary Policy Rate | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| β1 | 0.87 | 22.00 | 0.00 |
| β2 | 0.10 | 6.27 | 0.00 |
| β3 | 1.17 | 0.92 | 0.36 |
| β4 | 1.26 | 1.25 | 0.22 |
| Adjusted R2 | 0.91 | Durbin-Watson* | 0.98 |
| Std Error of regression | 0.01 | | |

* The estimation was autocorrelation corrected. Source: Nomura Global Economics

**Fig. 24: Colombia Taylor Rule Estimation**

Sample: 2003Q3 2016Q2

| Dependent variable: | Monetary Policy Rate | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| β1 | 0.83 | 16.75 | 0.00 |
| β2 | 0.04 | 7.27 | 0.00 |
| β3 | 3.17 | 3.33 | 0.00 |
| β4 | 1.11 | 2.61 | 0.01 |
| Adjusted R2 | 0.92 | Durbin-Watson* | 0.63 |
| Std Error of regression | 0.01 | | |

* The estimation was autocorrelation corrected. Source: Nomura Global Economics

**Fig. 25: Chile Taylor Rule Estimation**

Sample2007Q1 2016Q12

| Dependent variable: | Monetary Policy Rate | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| $\beta_1$ | 0.33 | 2.82 | 0.01 |
| $\beta_2$ | 0.04 | 18.52 | 0.00 |
| $\beta_3$ | 1.30 | 3.61 | 0.00 |
| $\beta_4$ | 0.77 | 6.06 | 0.00 |
| Adjusted R2 | 0.83 | Durbin-Watson* | 1.45 |
| Std Error of regression | 0.00 | | |

* The estimation was autocorrelation corrected. Source: Nomura Global Economics

**Fig. 26: Peru Taylor Rule Estimation**

Sample:2004Q1 2016Q2

| Dependent variable: | Monetary Policy Rate | | |
|---|---|---|---|
| **Independent variables:** | Coefficient | t-Stat | P-value |
| $\beta_1$ | 0.01 | 5.55 | 0.00 |
| $\beta_2$ | 0.04 | 13.62 | 0.00 |
| $\beta_3$ | -0.01 | -0.06 | 0.95 |
| $\beta_4$ | 0.77 | 3.17 | 0.00 |
| Adjusted R2 | 0.77 | Durbin-Watson* | 0.78 |
| Std Error of regression | 0.55 | | |

* The estimation was autocorrelation corrected. Source: Nomura Global Economics

# LatAm: Tracking recession probabilities

## Potential growth to depend on pro-market policies, now more than ever

*Global growth has been slowing since the Global Financial Crisis (GFC). Even if we exclude the US, the GFC's epicenter, there has been a slowdown in global long-term growth. This severe slowdown has many negative ramifications. In this note, we explore the increased probability of a recession as defined by two consecutive quarterly GDP contractions.*

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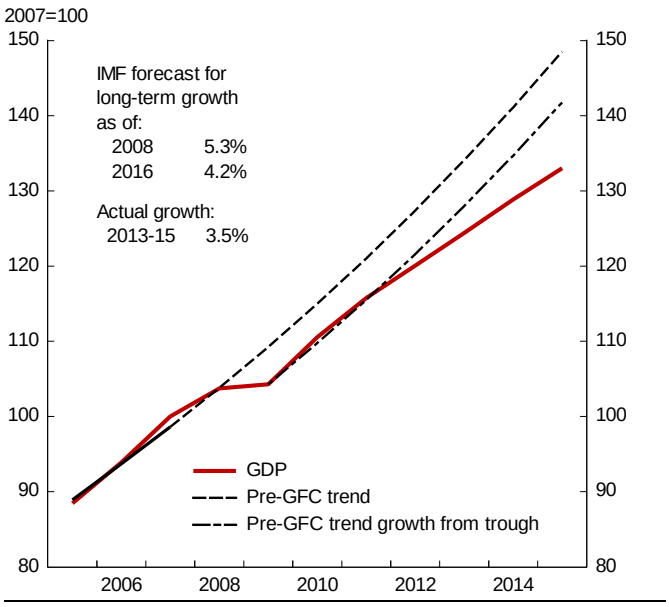
### Global and LatAm GDP growth trends declining

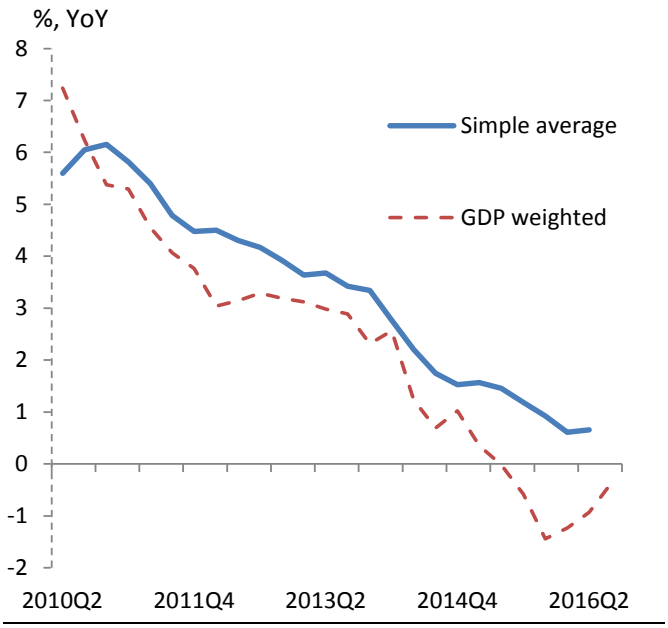
In Latin America specifically, GDP growth has been decreasing over the last six years (Figure 2). A simple arithmetic average of growth in the five largest economies in the region (Brazil, Chile, Colombia, Mexico and Peru) show a marked deceleration to below 1% y-o-y in Q3 2016 from slightly above 6% y-o-y in Q2 2010. If we were to weight the growth rates by the size of the economies, the deceleration would be even more pronounced because of the size of Brazil's economy and the fact it has been in recession since early 2015.

**Fig. 1: GDP growth trend – Excluding the US economy**




Source: IMF WEO Database and Nomura Economics

**Fig. 2: Latin America – GDP growth, y-o-y %**




Source: Haver and Nomura Economics

### Dangerously close to zero growth

One important issue with growth in Latin America falling to near zero is that it can now more easily dip into recession. For this reason, we believe it is now more important to track the probability of a recession than it was before the GFC.

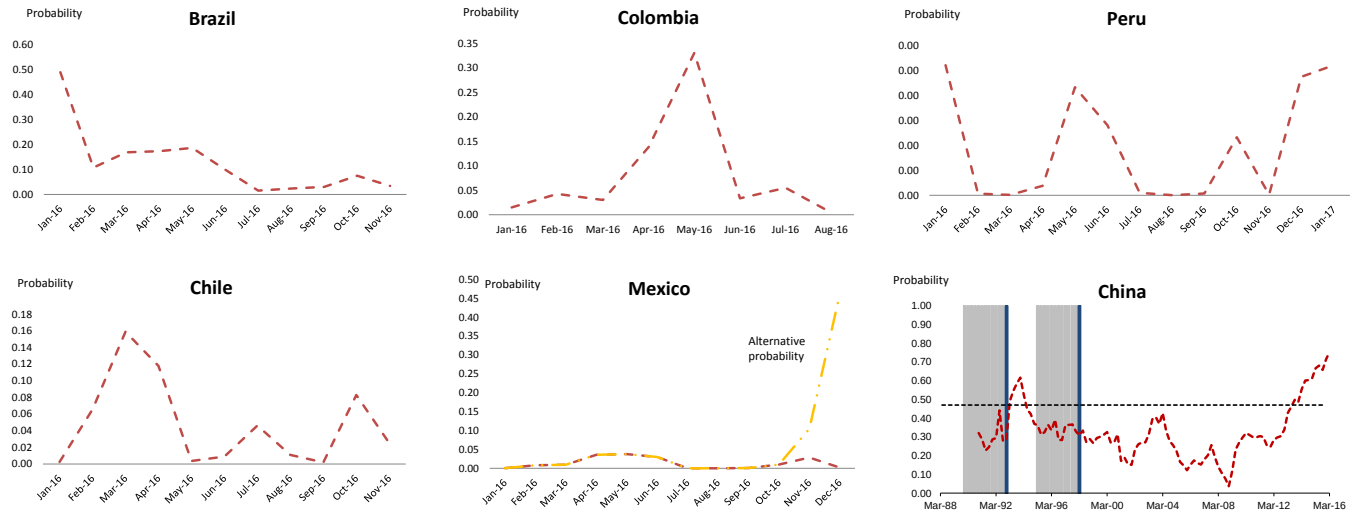
We have developed a probit model that uses mainly market prices as inputs to predict the probability of recession with a 12-month lead. Specifically, the inputs include changes in the exchange rate, the stock market, CDS, the steepness of the curve, commodity prices, the policy rate in real terms and, in some cases, surveys of consumer/business sentiment (see Appendix for a full explanation of the model).

When we first released our model, it assigned a less-than-20% probability of a recession by August 2017 in the five economies we track closely: Brazil, Chile, Colombia, Mexico and Peru (link). However, in the most recent update for Brazil, Chile and Colombia the

probability of recession seems to have increased to between 20% and 40% in H1 2017, but this probability trends lower towards end-2017. Our model also assigns a very low probability of a recession in Peru by the end of 2017. Mexico's probability of recession appears to be low early in 2017, but could accelerate towards Q4 2017.

We highlight the impact of three trends that contribute to lowering the probability of a recession 12 months from now: 1) a compression in CDS spreads; 2) a rebound in metal prices and 3) higher oil prices. However, these trends could reverse if China's economy fails to avoid a hard landing.

**Fig. 3: LatAm – Probability of recession 12 months ahead**




Source: Nomura Economics.
Note: These graphs show the probability of recession with a 12-month lead. For instance, the first data point in the Brazil graph indicates the probability of recession in January 2017 with information in January 2016 and the last data point shows the probability of a recession in August 2017 with inflation in August 2016.
In the case of Mexico, the orange line reflects a hypothetical scenario, where CDS spread widening in late 2016 was significantly larger than actual.
Note: China: Probability of a crisis in next 12 quarters (please see Asia's maturing financial cycle, 19 July 2016).

## Country-by-country discussion

Looking at the results of the model on a country-by-country basis, there are some interesting points to highlight.

First, the country for which the probability of recession has a clear positive slope is Colombia. Although the probability remains low, the trend is consistent with the fact that Colombia is still going through a downward growth adjustment after the terms-of-trade shock that began in mid-2014. Recent activity data suggest that markets will need to lower their 2017 growth expectations. We believe Colombia's 2017 GDP growth will hover around 2.0%.

By contrast, the recession probability slope for Brazil is negative (i.e., it is high in early 2017, but moderates towards the end of the year). In Brazil's case, there is evidence that the country will return to positive growth in 2017 – although we recognize a recovery is likely to be a very modest and starting from a very low point after two years of deep recession with GDP growth below -3% y-o-y. The internal factors that could hamper this (very modest and cyclical) recovery and lead to a continued recession are well known at this point: a lack of political coordination to enable pension reform would hurt confidence and constrain monetary policy easing, delaying an investment pick-up at a time in which the outlook for consumption is likely to remain bleak amid high unemployment.

In Mexico, the probability of recession seems low throughout 2017. GDP growth in 2016 was marked by resilient private consumption, which accounts for more than two-thirds of total GDP. Private consumption will likely remain the main engine of growth in 2017. However, the model maybe unable to show the true probability of recession as it imposes a restriction of 12-month lags on the explanatory variables. Also, the model might not capture the fact that a weaker MXN might not be able to support growth in the future if the US delivers protectionist policies. Indeed, the impact of potentially negative-to-Mexico policies of the Trump administration could increase the probability of recession. For example if Mexico CDS were to widen at the same pace as they did after

the US election, the model would project an increase in the probability of recession to above 40% by end-2017 (the orange line is the “Alternative probability” in the Probability of Recession-Mexico graph).

Finally, in the case of Chile, there appears to be an increasing probability of a technical recession in Q1 2017. This should not come as a surprise, as Chile has already experienced a quarter of contraction (-0.4% q-o-q in Q2 2016), reflecting the weak cyclical nature of the economy. In Peru, two key factors have led to a downtrend in the probability of a recession: First, growth has been boosted by copper exports as copper mines that have been under construction over the past five years have started producing. This should provide a cushion for sluggish internal demand. Second, there is renewed optimism from a new, pro-market and technocratic government that has promised to introduce a meaningful fiscal impulse to the economy via lower taxes and an increase in infrastructure spending.

## Extracting information from prices

Our model uses asset market prices to derive a probability of recession with a 12-month lead. While higher (lower) CDS and lower (higher) steepness of the curve systematically signal a higher (lower) probability of recession in the future, changes in FX affect the probability of recession differently depending on the country. In the case of Brazil, an appreciation of BRL signals a lower probability of recession, perhaps because financial conditions are loosening, which would support the economy. Also a cheaper USD (relative to BRL) would support imports of capital investment goods into Brazil that would strengthen future growth. However, in Chile, Colombia, Mexico and Peru, weaker FX currently lowers the probability of a recession in the future. This perhaps indicates that a weaker real effective exchange rate would favor the growth of net exports.

## Conclusion

In sum, these models help extract information about future GDP growth from current asset prices. Our models assign a 20%-40% probability to a recession in Brazil, Chile, and Colombia in early 2017. However, the probability of a recession seems to be falling in by year-end. Peru has a low probability of recession throughout 2017. The model signals a low probability of recession for Mexico. However, the model does not capture the impact of potential Trump policies, which could increase the probability of recession towards the end of 2017. We plan to update these models periodically and publish our findings whenever we encounter material changes in the probability of a recession. We believe these types of models are a valuable addition to the analytical tool box and can help guide market participants in the decision-making process.

# Appendix

A few years ago, we released a report describing Financial Conditions Indexes in Latin America (see *When Prices Determine Fundamentals*, 2 July 2013). In this report, we used a very similar method in that we re-expressed the variables as z-scores within six-month moving samples. However, here, the dependent variable is '1' for a recession and '0' for when the economy is growing. We updated our model to incorporate the Q3 2017 GDP date on the dependent variables. On the explanatory variables we included data up to December 2016. In addition, we modified the probit model for Peru by including oil prices and excluding the stock market index as it yielded a better fit. Finally, we highlight that the sample data start in the early 2000s and therefore probit models have limited samples of recessions. The variables enter the models with lags of at least 12 months. The results of these probit models are below:

**Fig. 4: Probit model results for Brazil, Chile and Colombia**

| Brazil | Coefficie | Std Error | Prob. |
|---|---|---|---|
| Constant | -0.823 | 0.135 | 0.000 |
| Stock market | 0.218 | 0.119 | 0.069 |
| BRL | 0.409 | 0.114 | 0.000 |
| CDS | 0.327 | 0.114 | 0.004 |
| Curve-slope | -0.501 | 0.118 | 0.000 |
| Consumer Confidence | -0.357 | 0.120 | 0.003 |
| | | | |
| McFadden R-squared | 0.22 | | |

| Chile | Coefficie | Std Error | Prob. |
|---|---|---|---|
| Constant | -1.573 | 0.225 | 0.000 |
| CLP | -0.940 | 0.209 | 0.000 |
| Copper | -0.381 | 0.164 | 0.020 |
| CDS | 0.576 | 0.171 | 0.001 |
| Real Rate | -0.369 | 0.163 | 0.024 |
| Consumer Confidence | -0.319 | 0.178 | 0.073 |
| | | | |
| McFadden R-squared | 0.36 | | |

| Colombia | Coefficie | Std Error | Prob. |
|---|---|---|---|
| Constant | -1.905 | 0.312 | 0.000 |
| COP | -0.622 | 0.232 | 0.007 |
| Oil | -0.351 | 0.194 | 0.070 |
| CDS | 0.342 | 0.200 | 0.087 |
| Real Rate | 0.487 | 0.210 | 0.020 |
| Consumer Confidence | -0.426 | 0.208 | 0.040 |
| | | | |
| McFadden R-squared | 0.23 | | |

Source: Nomura.

**Fig. 5: Probit model results for Mexico and Peru**

| Mexico | Coefficie | Std Error | Prob. |
|---|---|---|---|
| Constant | -1.971 | 0.334 | 0.000 |
| Stock market | 0.098 | 0.217 | 0.652 |
| MXN | -0.514 | 0.216 | 0.017 |
| Oil | 0.605 | 0.232 | 0.009 |
| Real Rate | -0.583 | 0.222 | 0.009 |
| CDS | 1.150 | 0.289 | 0.000 |
| Curve-slope | -0.428 | 0.196 | 0.029 |
| | | | |
| McFadden R-squared | 0.37 | | |

| Peru | Coefficie | Std Error | Prob. |
|---|---|---|---|
| Constant | -2.222 | 0.404 | 0.000 |
| PEN | -0.421 | 0.257 | 0.102 |
| CDS | 0.495 | 0.168 | 0.003 |
| CRB-Metal | -0.596 | 0.224 | 0.008 |
| Oil | 0.623 | 0.188 | 0.001 |
| | | | |
| McFadden R-squared | 0.27 | | |

Source: Nomura

# Trumping LatAm: Macro Risks Under New Normal

*In our view, Mexico is likely to be the biggest loser from President-elect Donald Trump's potential policies. However, a serious disruption in US-Mexico trade also seems unlikely, precisely given the high level of integration between the two countries. The rest of LatAm could be impacted via a tightening of financial conditions.*

After Mr Trump's surprising victory, we think it is safe to assume that the new administration will implement policies that increase government spending, reduce taxes, limit immigration and increase protectionism. However, it may also safe to assume that there is a significant amount of uncertainty over how far the upcoming administration will go in terms of implementing these policies.

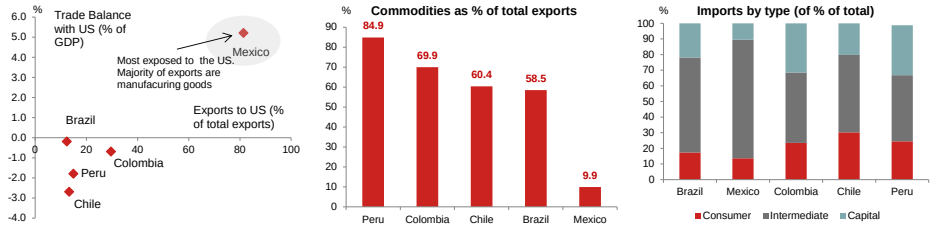
In other words, although there is some clarity about the direction of policies, there is uncertainty about the magnitude in terms of execution. Nomura's US economics team updated its views on the US economy by boosting growth forecasts for late 2017 and 2018. However, the team emphasized that the negative effects of trade and immigration are likely to start to take over and reduce growth in late 2018 and beyond.

The main channel for impact in LatAm would be through tighter financial conditions (through higher key asset prices, including external and domestic interest rates and weaker currencies). However, the trade channel could potentially have impacts on the real sector, particularly in Mexico.

In our opinion, a pragmatic Trump approach to policies that is not significantly disruptive to the status quo will only alter these asset prices marginally and thus the impact on LatAm should be small. However, an extreme implementation of Trump's policies that results in higher US Fed rates and 10-year Treasury yields may trigger capital outflows from LatAm and thus significant FX depreciation.

Regardless of the end version of Trump's policies, in this note we focus on the vulnerabilities and strengths of each economy in the LatAm region through different links.

**Fig. 1: Trade Summary – Exposure to the US, Commodities and Imports by type (2015)**




Source: Haver, Nomura, and US Census

## The Current Account Link

Mexico is the country most exposed to protectionist policies expected by the Trump administration, based on the President-elect's statements made during his campaign. Mexico's current account deficit used to be around 1.5% of GDP (average of the past 10 years), but it has doubled since 2015 as oil production has plummeted. Mexican exports account for around 30% of GDP in 2015 (source: Inegi) and are comprised mostly of manufacturing goods to the US after the North America Free Trade Agreement (NAFTA) was signed in 1994.

However, there are strong arguments to believe the threat of completely abandoning NAFTA is unlikely to fully materialize. These arguments include the high level of integration between the US, Mexico and Canada in the supply chain for manufactured goods, that 40 cents on the dollar of US imports from Mexico have US content (source: "US-Mexico Economic Relations, Trends, Issues, and implications" Congressional Research Service, 4 November 2016), and that US exports to Mexico are sizable (US$235bn in 2015 according to the US Census). Finally, the Mexican government recently opened up the energy sector (oil/electricity/gasoline/gas), which was not part of

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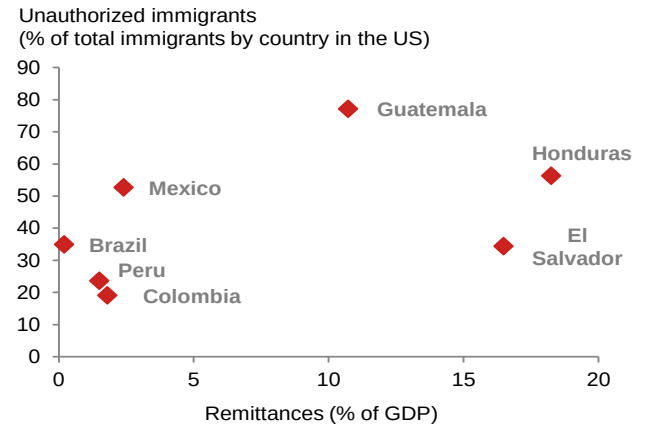
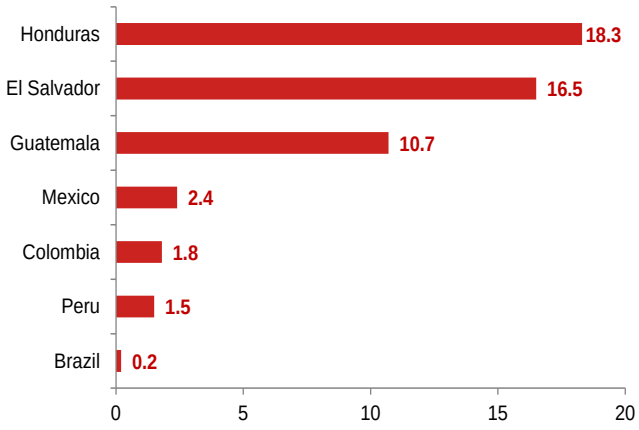
NAFTA, to foreign investment. This sector represents a potentially very profitable opportunity for US companies, in our view.

**Fig. 2: Unauthorized immigrants and Remittances**




Source: Haver, Migration Policy Institute, and Nomura

**Fig. 3: Worker Remittances (% of GDP)**




Source: Haver

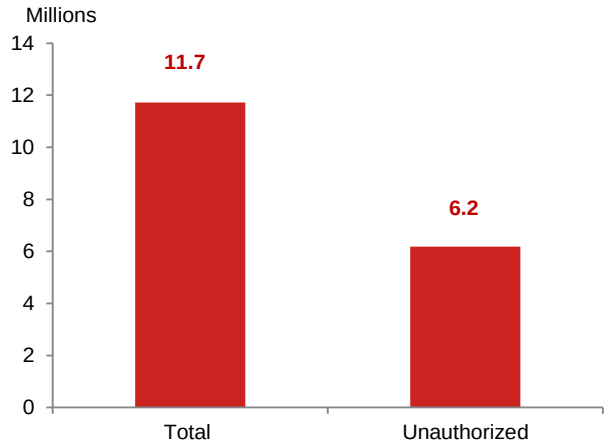
There are 11mn illegal aliens in the US and 56% of these illegal aliens are from Mexico (as of end-2014; Migration Policy Institute). Both illegal and legal Mexico-born aliens in the US send almost 2.5% of GDP in remittances every year, which are key to keeping a lid on the current account deficit. In sum, Mexico is vulnerable to protectionist and anti-immigration policies from the upcoming administration policies.

**Fig. 4: Estimated Unauthorized Immigrant Share of Labor Force, by state, 2014**


Source: Pew Research Center

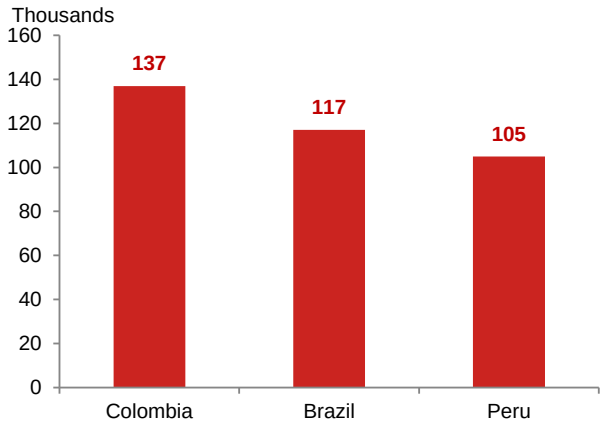
Colombia's high current account deficit (approximately 5% by end-2016) and the fact that remittances amount for 1.8% of GDP would indicate, in our view, that the country is similarly exposed to protectionist and anti-immigration policies. However, only 28% of Colombian exports end up in the US. In addition, only 19% of Colombia-born immigrants in the US are illegal, which makes remittances less vulnerable to anti-immigration policies. Therefore, we believe Colombia would not be as exposed to policies from the Trump administration as Mexico.

**Fig. 5: Mexican Population in the US**




Source: Migration Policy Institute

**Fig. 6: Unauthorized Workers in the US**



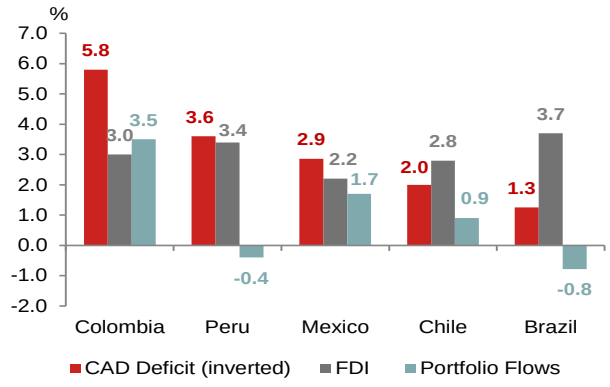

Source: Migration Policy Institute

Finally, it is important to mention that metal-exporting countries such as Brazil, Chile and Peru could actually benefit from infrastructure projects in the US if it leads to a sustained increase in copper and iron ore prices.

## The Financial Account Link

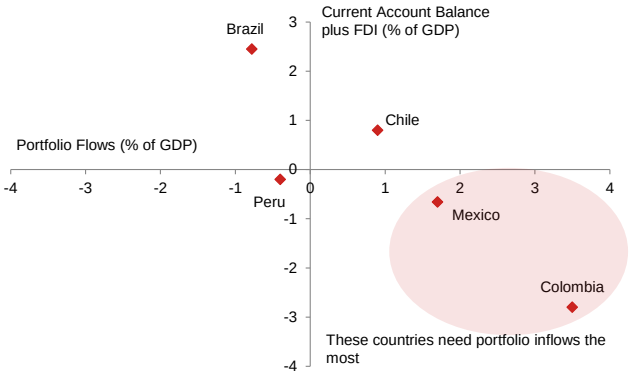
Mexico and Colombia are particularly sensitive to disruptions in portfolio and FDI inflows. Colombia's wide current account deficit requires large amounts in FDI and portfolio inflows to finance it. Portfolio inflows could suffer if US Treasury yields continue to rise or if global risk aversion increases. FDI (particularly oils) has suffered a meaningful downward adjustment following the fall in oil prices and we do not expect any recovery soon. Therefore, Colombia seems particularly vulnerable to a tightening in financial conditions that include higher rates in the US as this could limit portfolio inflows (or in an extreme case reverse them).

**Fig. 7: Current Account Deficit, FDI and Portfolio flows (2015Q3 to 2016Q3) (% of GDP)**




Source: Haver and Nomura

**Fig. 8: Current Account Deficit and Portfolio flows (2015Q3 to 2016Q3)**

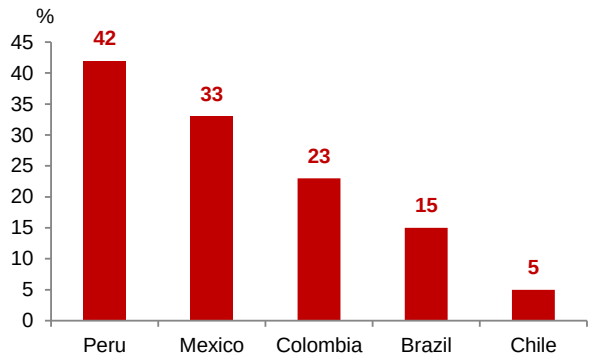



Source: Haver and Nomura

In Mexico, threats to NAFTA could slow or delay FDI. Year-to-date, FDI accounted for 2% of GDP and it is paramount in the financing of the current account deficit. Portfolio inflows, which are also badly needed for the financing of the current account, could suffer due to anti-NAFTA policies, but also in an environment of high US Treasury yields. Further, Mexico is more vulnerable than any country in EM, in our opinion, because it has received more portfolio inflows than other countries since the US Fed implemented quantitative easing policies. Perhaps the only positive for Mexico is its large weighting in local market indexes that are used by bond funds. This implies that there is a significant amount of 'indexed' money that makes portfolio flows sticky.

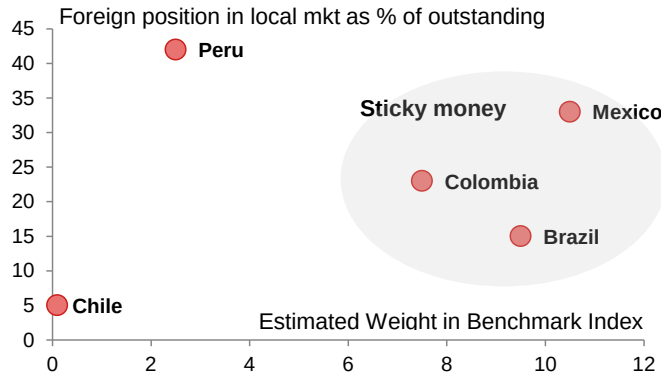
By contrast, Brazil and Chile have impressive FDI inflows that more than compensate for their current account deficits.

**Fig. 9: Position of foreigners in the local government debt markets (% of total outstanding as of Q3 2016)**




Source: Haver, Nomura and Ministries of Finance. IMF

**Fig. 10: Foreign position versus Weight in Benchmark Index**



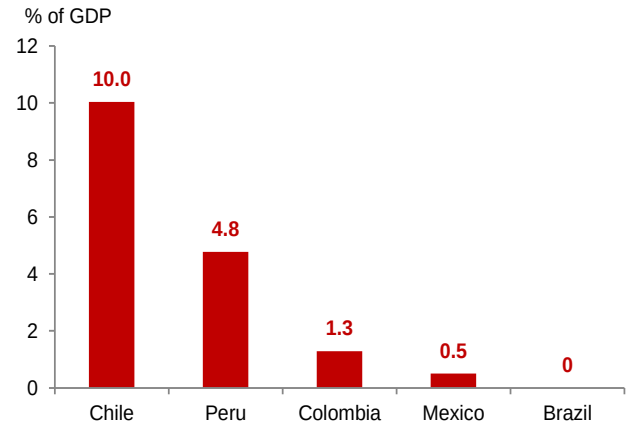

Source: Bloomberg, Haver, Nomura and Ministries of Finance, IMF.

## Fiscal cushion

In general, LatAm's fiscal cushion – which we define as the ability to use fiscal policy to foster growth given headwinds from Trump's policies – is limited. Colombia, Mexico and Brazil have limited (or non-existent) fiscal cushions, but we believe Peru and Chile are in a stronger position.

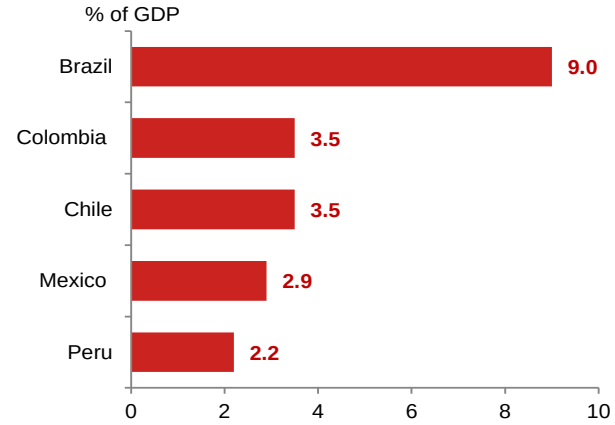
In our view, Mexico has fiscal cushion in the short term, but challenges in the medium term. In the short term, Mexico has some cushion, including potential transfers from Banxico to the finance ministry due to the revaluation of international reserves worth about 2.0-3.0% of GDP (our estimate using assumption of MXN at 20.5 by year-end), savings in its oil stabilization fund worth 0.5% of GDP and has hedged its oil revenues for 2017.

**Fig. 11: Fiscal 'Savings' (% of GDP)***




Source: Ministries of Finance and Nomura
Note: (*) Savings in other sovereign or regional government funds.

**Fig. 12: 2017 Headline Fiscal Deficit Forecast (% of GDP)**




Source: Haver and Nomura

In addition, the government seems committed to a 2017 budget that, for the first time since 2008, includes a primary fiscal surplus. Finally, there also appears to be political will to limit spending at Pemex and simultaneously to support the farm-outs, which allow the state-owned Mexican oil company to form joint ventures with foreign oil companies. Execution remains a risk but, for the first time in many years, at least Pemex's Business Plan recognizes debt stabilization as a target.

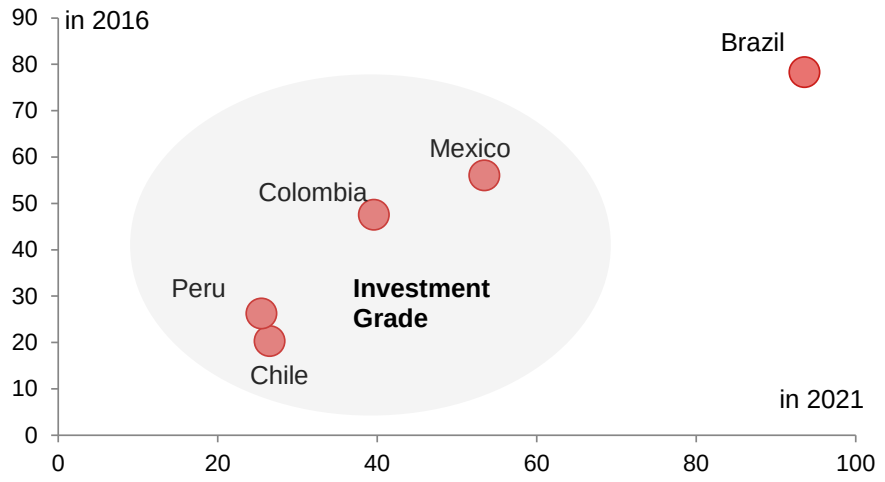
In the medium term we emphasize that debt-to-GDP has been increasing to slightly above 50% from below 40% just four years ago. Also Mexico still relies on oil income for 20% of total fiscal revenues. Further, the negative headwinds from US policies could decrease growth and thus weaken fiscal revenues in the coming years.

In sum, we believe that the combination of headwinds and fiscal cushion will push rating agencies to downgrade Mexico by one notch (possibly in 2017) while retaining its investment grade status, particularly if the government follows fiscal discipline.

In our opinion, Brazil has no room for accommodative fiscal policy at this time, and the uncertainties raised by the US election only amplify the need for the country to undertake deep fiscal reform, which could improve its debt dynamics. Debt-to-GDP has risen from roughly 52% of GDP in 2013, when it started a quick rise to 70% currently – and the combination of very low potential growth, high interest rates and ongoing fiscal deficits would all point to debt/GDP rising into the 80s in the next two years. We think initial steps in the right direction have been taken, such as the partial approval of a law that caps expenditure growth in year T to the inflation rate in year T-1. In addition, the government is also likely to push forward with social security reform – a necessary measure to tackle what now accounts for around 40% of central government primary expenditures.

In this sense, the positive version of the fiscal outlook in Brazil is a combination of: 1) a return to positive economic growth (after two years of a very deep recession) that spurs revenues; 2) a deep interest rate cutting cycle, made possible by lower inflation and inflation expectations and 3) a deep revision of the government's expenditure structure, made possible by the current reform agenda. Even in this scenario, however, debt stabilization may only come a few years down the road, constraining any significant improvement in credit ratings – currently at BB (with negative outlooks) – in the near term.

**Fig. 13: Gross Debt Evolution (% of GDP)**




Source: IMF
Note: IMF's estimate might differ from the estimation of the local Finance Ministries. We use IMF forecasts for consistency across economies

Colombia has very limited fiscal cushion as well. In fact, we could argue that its fiscal position is one of its weaknesses. Its debt-to-GDP ratio is above 40%, but with important fiscal pressures expected due to the fall in oil revenues and the downward adjustment in GDP growth. The government submitted a fiscal reform plan that would raise between 1.5-2.0% of GDP, which would have to be complemented with further reforms on the expenditure side, should the government want to meet its fiscal rule targets. We assign a high probability to rating agencies downgrades of the sovereign in 2017 by one notch to BBB-/Baa3 from the current BBB/Baa2.

Peru's fiscal cushion is ample and we think the new administration will use it. Its debt-to-GDP is low at 20% and the government's stabilization fund amounts to 3% of GDP. The government is moving to lower taxes and increase spending. However, we do not expect rating agencies to lower Peru's rating (A3/BBB+), particularly if the reforms yield a pick up on Total Factor Productivity and thus overall growth. Chile has good fiscal cushion, in our view, although its fiscal position has marginally weakened on the back of economic slowdown. The cushion comes from the sovereign fund worth 8% of GDP and the low gross debt-to-GDP at below 20%. Nevertheless, the current political discussion is moving towards a state that grants more social safety-net benefits which could increase fiscal rigidity in the country.

## Box 1 – NAFTA under Trump

**How can the Mexican government respond to changes proposed by the incoming US administration?**

The position of the Mexican administration has been one of cautious and even borderline timid. One explanation is that the Mexican administration wants to avoid discussion on social media forums, where the issue of trade could potentially be escalated. However, we believe the Mexican government has a clear and defined position in response to likely threats to NAFTA.

In a speech to the Chamber of Exporters in early December, President Peña Nieto outlined that the response to protectionist policies would be to double down on trade: to continue with the Trans Pacific Partnership (TPP) negotiations, to strengthen trade relations with the Pacific Alliance countries (Chile, Colombia and Peru), and to broaden trade relationships with Argentina, Brazil, and Europe.

With respect to the US, we think Mexico would welcome win-win proposals to enhance NAFTA and be more vocal about its position once the new president takes power. One way to understand this is that once the Trump administration assumes power there will be checks and balances within the US government and the discussion will be through official channels. When this happens the position of Mexico (in private and perhaps publicly) will likely be to reject proposals that are a win for the US but a loss for Mexico. In sum, it is likely that once the incoming Trump administration assumes power and formal NAFTA negotiations start, Mexico is likely to propose enhancing NAFTA by parallel agreements that are positive for both Mexico and the US.

**What could the Mexican government offer to the US administration that solidifies trade going forward?**

US election campaign rhetoric with respect to NAFTA was negative, blaming NAFTA for the US trade deficit with Mexico and the loss of jobs in the US manufacturing sector.

The US election's campaign rhetoric highlighted that the US has a trade deficit in goods with Mexico of about $60bn (source: US Census), which is sizable and could paint the trade relationship as one-sided. However, the key aspects that follow shed light on US-Mexico trade relations and suggest that the trade deficit could be smaller than what meets the eye.

Historically, the US has had a trade deficit with Mexico. Former undersecretary of commerce, Luis de la Calle, put it this way: "Mexico is at the 'end' of the assembly line and therefore it is bound to have a surplus with the US. But this deficit only reflects an 'arithmetic' relationship because Mexico first imports intermediate goods from the US (and other countries) with lower value and re-exports the finished product with higher value back to the US." In other words, the US has a trade deficit with Mexico in part because Mexico is exporting a lot of US content back to the US.

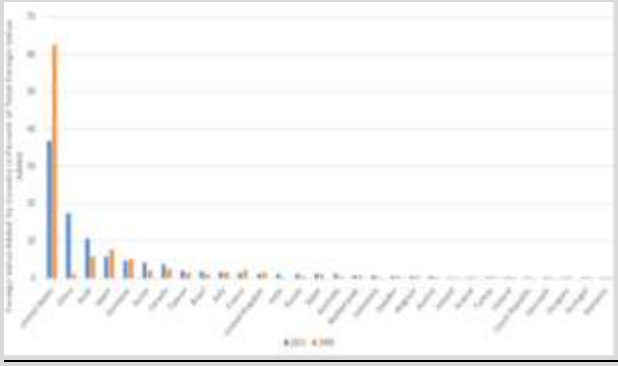
This claim is supported by a recent IMF paper ('The Role of Newly Industrialized Economies in Global Value Chains', Dominik Boddin, October 2016, WP/16/207), which makes the point that common measures of exports and imports are misleading as they do not reflect the value added from countries embedded in them. In Mexico's between 35-40% of exports have foreign value added.

A critic from the incoming US administration that is corroborated by data is that China has increased its exports to the US via Mexico. Indeed, in the same study by the IMF, Dominik Boddin shows that in 1995 more than 60% of the foreign content in Mexican exports came from the US. However in 2011, less than 40% of foreign content came from the US. The reason is that Chinese content in Mexican exports increased exponentially from practically zero in 1995 to almost 20% in 2011. Therefore, the US is likely to ask Mexico to tighten the rules of origin to reduce foreign content from non-NAFTA countries in Mexican exports to the US.

**Fig. 14: Domestic Value Added in Gross Exports (1995-2011)**

Source: IMF. The Role of Newly Industrialized Economies in Global Value Chains. Dominik Boddin.
Note: Y axis reads “Domestic Value Added in Gross Exports in %”.

**Fig. 15: Foreign Value Added in Exports for Mexico (1995-2011)**



Source: IMF. The Role of Newly Industrialized Economies in Global Value Chains. Dominik Boddin.
Note: Y axis reads “Foreign Value Added by Country in percent of total Foreign Value”. 2011 is in blue and 1995 is in yellow. The first two columns from left to right is United States and the second pair of columns is China.

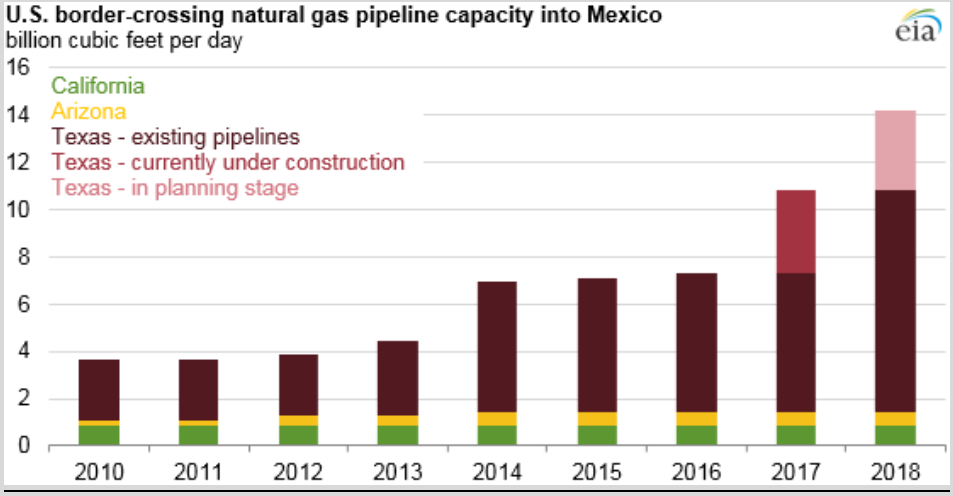
In addition, the US$60bn trade deficit figure in goods, which is commonly cited by the incoming US administration, does not incorporate the services sector. The US had a trade surplus in services with Mexico of $10bn in 2015 (source: US Census). If one incorporates the fact that Mexico re-exports US content back to the US and also if one includes services, the trade deficit is around $20-30bn.

There is room for Mexico to improve trade relations with the US in ways that are very advantageous for both countries. Mexico could request that the US sign a parallel agreement on energy. This agreement would protect US companies’ investment on crude exploration and production, midstream, petrochemicals and electricity. Mexico would gain as it would guarantee access to gasoline and natural gas.

Politically, this might be a positive for the incoming US administration because Mexico became a net importer of oil and its derivatives since 2015 (Mexico imports around half of its consumption of gasoline and natural gas, according to Pemex). If Mexican imports of gasoline, natural gas and other oil derivatives from the US increase significantly, the US deficit with Mexico is likely to shrink. In addition, the main beneficiaries in the US would be states such as Texas, where the Republican party has a strong presence.

For Mexico it would be advantageous to ensure adequate and cheap supply of natural gas for the manufacturing sector. Mexico could import natural gas and gasoline from other places, but it is unlikely to as cheap as that from the US.

**Fig. 16: New U.S. border-crossing pipelines bring sale gas to more regions in Mexico**




Source: U.S. Energy Information Administration, Natural Gas Pipelines

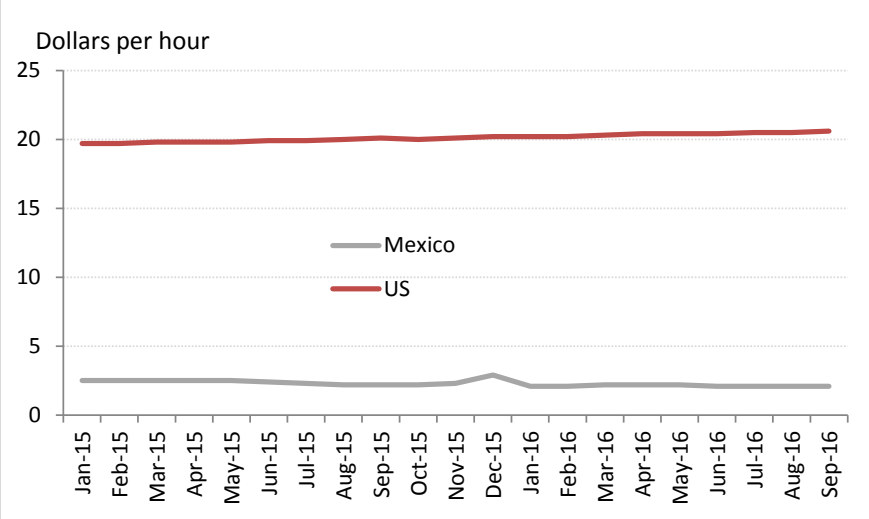
While the Ratchet clause in NAFTA states that all markets that are liberalized, e.g., the energy sector, automatically become part of the treaty. In that sense markets that were not part of the original treaty do not enjoy the same type of legal protection as markets that were part of the original Agreement.

In this regard, a parallel agreement solely on energy will likely provide additional protection for US and Canadian investments over other countries (e.g., Chinese investments). In effect, this agreement could form the basis of an energy-integration policy of North America.

**What happens to the Mexican economy if NAFTA is abandoned?**

It is important to recognize that the lower unit labor costs, the geographic proximity and cultural similarities between Mexico and the US will continue to shape trade relations, with or without NAFTA. In other words, to completely destroy trade and investment relations between the US and Mexico, an unprecedented shift in policy is needed. NAFTA deepened, formalized and organized the trade and investment relations, but the basis for it was independent to the treaty.

**Fig. 17: Mexico and the US: Salary in the Manufacturing Sector (Dollars per hour)**




Source: INEGI

If NAFTA is abandoned, tariffs would reset to the baseline under the WTO. This means that Mexican exports to the US are likely to pay 2.5%, a rate that Mexico could unilaterally decide to match. These changes are likely to reshape trade relations between the countries in terms of the lines of businesses produced in Mexico for exports to the US, but also in terms of the goods that Mexico would be importing from the US, but is unlikely to destroy trade relations.

Abandoning NAFTA would eliminate legal protection included in Chapter 11 in terms of what governments (at the municipality, state and federal levels) can expropriate both in the US and in Mexico. US FDI in Mexico has accumulated around $150bn since 1993. Mexican investment in the US over the same period amounts to US$25bn. Threats to expropriations have not taken place in the past, perhaps partly owing to NAFTA's protection and also partly owing to generally good relations between the two countries, in our view.

# US: Revisiting potential growth

*The US economy looks primed for a major shakeup in 2017. Republicans are likely to put in place expansionary fiscal policies that would boost aggregate demand. In our view, not all of Trump's policies will be positive for growth: Stricter immigration policy and tough trade negotiations and potential sanctions are likely to offset some positive effects of the fiscal stimulus. With the economy at or nearing "full employment", we think the Fed will be forced to act, raising rates at a faster pace than when it was the "only game in town" to keep the economy from "overheating." Our base case calls for expansionary fiscal policy to boost growth in late-2017 and into early 2018. Thereafter, the net effect of diminishing fiscal impetus and headwinds from stricter immigration and disruptive trade policies is a drag on growth. We expect Trump's immigration policies to reduce aggregate supply with little offset from either higher labor force participation or stronger productivity growth. Over a longer horizon, what will matter is how Trump's policies on taxes, spending, trade, immigration and regulation affect aggregate supply.*

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## Estimating Potential Growth

Our forecast for potential growth follows the framework presented in Fleischman and Roberts (2011). Fleischman and Roberts jointly estimate trends for the key building blocks of potential growth, including labor force participation, average weekly hours worked, the natural rate of unemployment, and total factor productivity. The Fleischman-Roberts Model (FRM) forms the supply side of the Federal Reserve staff's FRB/US model. We have re-estimated the version of the FRM that is embedded in FRB/US using updated national income accounts data through 2016Q3. Our forecast assumes that the weak trend in productivity growth will continue over the medium run and demographic factors—largely owing to the aging of the baby boomer generation—should be a drag on the average workweek and the labor force participation rate. **These trends imply potential growth should be around 1.5% over the medium run.**

**Fig. 1: Nomura's Potential Growth Forecast vs Long Term Trends in the Growth of Real GDP, Business Sector Output, Productivity, and Hours Worked**

| | Period Averages | | Estimated Trends | | Nomura |
|---|---|---|---|---|---|
| | 1949-2007 | 2008-16 | 1980-89 | 2016q3 | Forecast |
| **Real GDP** | **3.4** | **1.2** | **3.5** | **1.5** | **1.5** |
| **Business Sector** | | | | | |
| **Real Output** | **3.5** | **1.6** | **3.8** | **1.8** | **1.7** |
| **Output/Hour** | **2.5** | **1.3** | **1.9** | **1.4** | **1.2** |
| Total factor Prod. | 1.4 | 0.5 | 1.0 | 0.8 | 0.5 |
| Capital Deepening | 0.9 | 0.5 | 0.7 | 0.5 | 0.5 |
| Labor Quality | 0.2 | 0.3 | 0.3 | 0.0 | 0.2 |
| **Hours worked** | **1.1** | **0.3** | **1.9** | **0.4** | **0.5** |
| Population | 1.4 | 1.0 | 1.3 | 0.9 | 1.0 |
| Participation rate | 0.2 | -0.5 | 0.4 | -0.5 | -0.2 |
| Workweek | -0.2 | 0.0 | -0.1 | -0.1 | -0.1 |
| Employment rate | 0.0 | 0.0 | 0.2 | 0.2 | 0.0 |

Source: Notes: Quarterly real GDP and its contributions are seasonally-adjusted annualized rates. The unemployment rate is a quarterly average as a percentage of the labor force. Nonfarm payrolls are average monthly changes during the period. Housing starts and other labor market indicators are averages. The annual numbers are annual average growth rates or annual averages. The table reflects data available as of 22 November 2016. Source: Nomura Global Economics, BEA, BLS

## Impact of Trump's policies on Potential Growth

In our view, the success of Trump's policies in raising economic growth and incomes will depend, importantly, on the degree to which those policies boost potential growth. The recent slowdown in potential growth reflects declines in the growth of both labor inputs and productivity.

Looking ahead, we see some scope for strong growth to boost labor force participation. But basic demographic trends – the aging of the "baby-boom" generation and slower growth in the working age population – are likely to keep the rate of growth of hours worked quite low (see Figure 1).

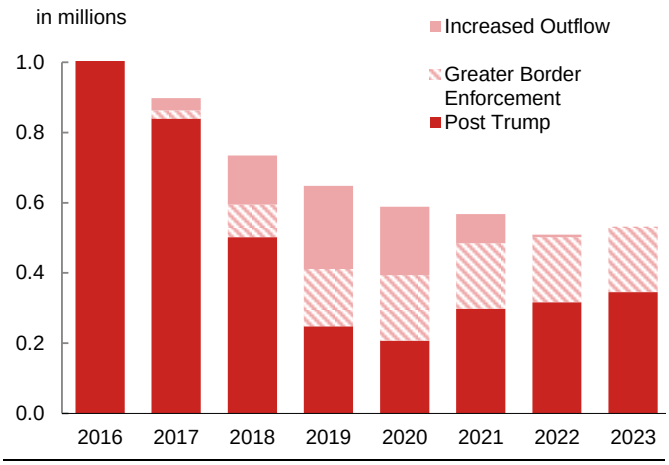
Moreover, the Trump administration's immigration policies are likely to reduce the growth in the working age population and the labor force. All told, we expect the combination of increased outflows (largely through deportations) and improved border enforcement to reduce growth in the working age population by 32% in 2018, 62% in 2019, and 65% in 2020. (See Figure 2)

Two key themes of Trump's policies are tax reform and deregulation. If done well, these policies could increase productivity growth. But the scale of these effects is hard to gauge and history suggests that caution should be in order. The late 1970s and the early 1980s were periods of significant deregulation, started under President Carter and expanded under President Reagan. In addition, the last significant reform of the US corporate tax system was completed in 1986. There is little evidence that deregulation and tax reform increased productivity during this period.

Figure 3 shows the trajectory of multi-factor productivity since 1973. Formal statistical analysis suggests that productivity growth slowed in the early 1970s and it did not accelerate until the mid-1990s. In other words, deregulation and corporate tax reform in the 1980s did not seem to generate any notable acceleration of productivity growth.

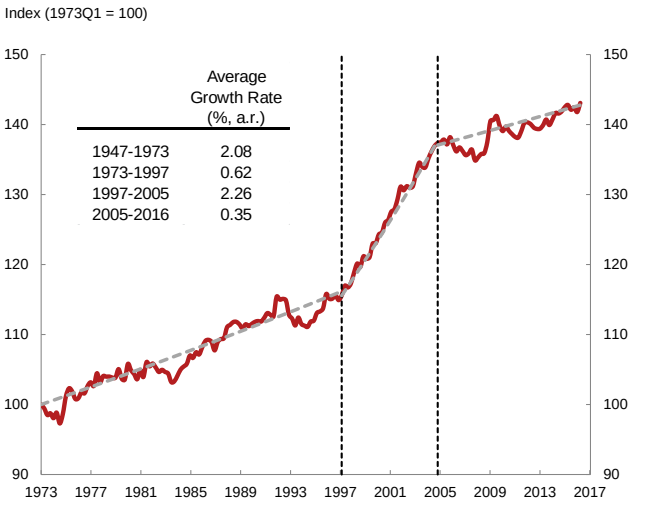
While we accept that Trump's policies may increase productivity growth somewhat, we doubt that these positives effects are large enough to provide a significant counterbalance for the negative effects of Trump's immigration policy on aggregate supply. Consequently, our forecast is based on the judgment that Trump's economic policies will not materially alter potential growth.

**Fig. 2: Growth in the Working Age Population, Pre and Post Trump Policies**




Source: Bureau of Labor Statistics, Census Bureau and Nomura

**Fig. 3: Utilization Adjusted Total Factor Productivity**




Source: John G. Fernald, "A Quarterly, Utilization-Adjusted Series on Total Factor Productivity." FRBSF Working Paper 2012-19 (updated March 2014), Nomura

# China: Potential growth set to moderate

*China's potential growth has been declining, driven by a moderation in the growth of three factors: capital, labor and total factorial productivity (TFP). We estimate that China's potential growth may drop to around 4.5% by 2020.*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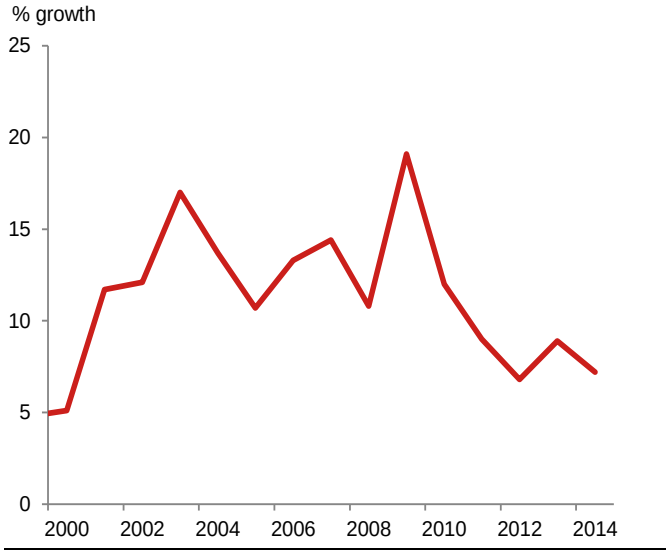
## Rebalancing away from an investment-led economy

China's capital formation is slowing after strong growth in the first decade of this century, which was driven by property and infrastructure investment given China's unique "land financing" model. The rapid growth in property and infrastructure generated strong demand for manufacturing capacity, which led to rapid growth in manufacturing investment as well. In 2010, capital goods accounted for over one-half of China's GDP, pushing the investment-driven growth model to its limit. According to the ministry of industry and information technology, 22 industries suffered severe overcapacity in 2012. **Recently, China's investment growth has shown signs of moderating – in 2014, the real growth in capital formation was just 7.2% compared to a 13.5% average over the last decade** (Figure 1).

## Labor supply not helping either

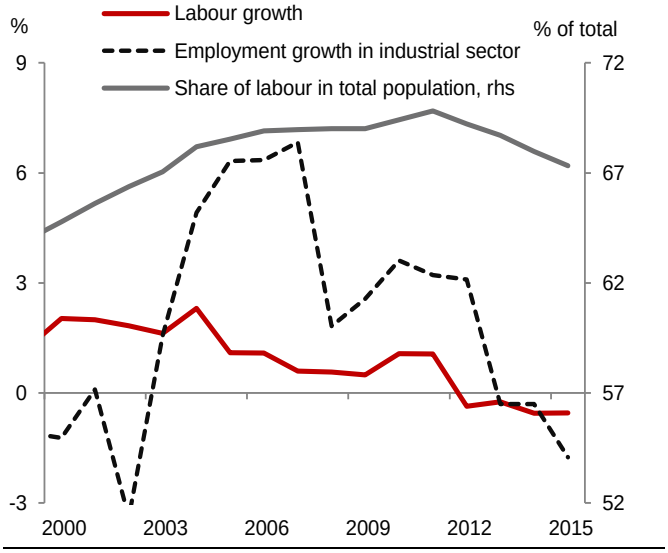
Labor supply growth also been falling, and has been in negative territory since 2012 (Figure 2). Growth in the number of migrant workers has also declined since 2013. As a result, employment in the industrial sector fell in 2013. **The moderation in labor supply means capital has become relatively more abundant, which further weighs on future investment growth.**

**Fig. 1: Growth of gross capital formation**




Source: WIND and Nomura Global Economics

**Fig. 2: Labor supply**

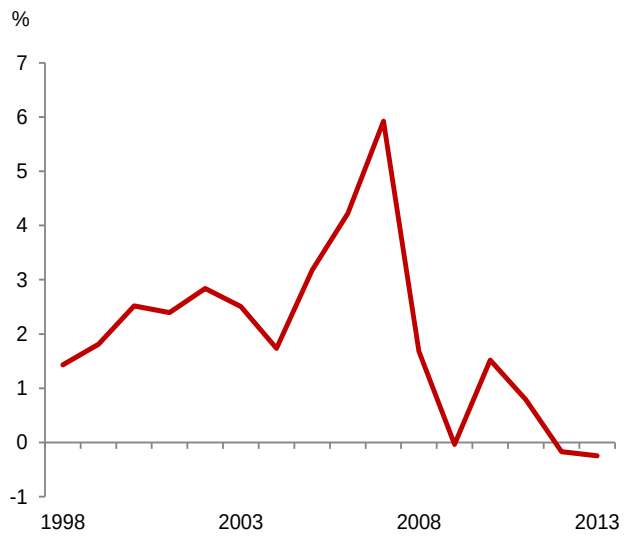



Source: CEIC and Nomura Global Economics

## Negative TFP

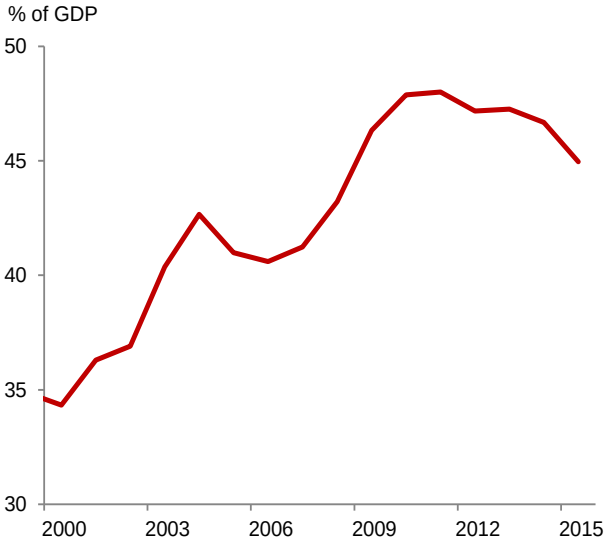
At the same time, growth in TFP has also slowed (TFP; i.e., the efficiency of the way labor and capital are combined in production). **Our estimates using the Solow method show TFP in China has been negative since 2012** (Figure 3). In 2015, for the first time China's Premier acknowledged the need to raise TFP as a key government objective in addressing the National People's Congress. The pace of the decline in China's macro efficiency (measured by TFP growth) since 2007 is rather striking. Moreover, the share of capital formation in GDP (the investment rate) rose by some 6.8 percentage points (pp) between 2007 and 2011 (Figure 4). Rapid investment growth accompanied by worsening efficiency suggests that the capital formation was misallocated during this period.

**Fig. 3: China: estimated TFP (% y-o-y)**




Source: Nomura Global Economics

**Fig. 4: China: Gross capital formation (% of GDP)**




Source: CEIC and Nomura Global Economics

## Potential growth to slow in coming years

Looking ahead, we expect the growth of capital and labor to slow further:

- First, the investment rate remains at a high 45%, which can only be expected to fall as China continues to rebalance its economy away from investment towards consumption and services. A falling investment rate points to a further slowdown in investment growth.
- Second, the share of population below 19 years old has been declining while the share of population aged over 54 has risen in recent years, suggesting that growth of the labor force will also continue to slow.
- Ongoing reforms should raise China's TFP, but it will take time for the effect of these reforms to be fully felt – and right now, parts of the key reform agenda, such as how to deal with state-owned enterprises, fiscal reform and financial reform, remain shrouded in uncertainty. We believe any increase in TFP in the near future will be mild.

Against a backdrop of slower growth in investment and labor, together with low TFP, we believe China's potential growth will continue to decline until the positive effects of reforms kick in.

## Trump adds uncertainty to China's growth

We believe the Trump presidency will have a negative impact on China's economy. The key transmission channels will be trade and capital flows. As an advocate for trade protectionism, Donald Trump is likely to pursue more aggressive trade policies which will cast a shadow over China's export outlook. Although the importance of the US as an export destination has fallen in recent years, the US remains one of China's major trading partners (the share of direct exports to the US was 18.0% in 2015). If Trump chooses to "resort to more forceful measures than mere negotiation and deal-making" on the trade front, as noted by Alastair Newton (see *Asia Insights - What Trump means for Asia*, 9 November 2016) the large trade surplus China enjoys with the US (USD260bn in 2015, versus its total trade surplus of USD594bn) will be at a risk of shrinking rapidly. Moreover, capital outflows may increase on rising uncertainty from a Trump administration.

The policy response from China is likely to be one of more fiscal stimulus and a flexible exchange rate, in our view. A contraction in external demand would be negative for growth but domestic demand, notably infrastructure investment demand which could be boosted by fiscal stimulus, should be able to fill some of the gap. Overall, we believe the net impact on China should be limited, subtracting around 0.1pp from our current forecast of 6.5% GDP growth in 2017.

# Potential Growth Summary

In this section, we present a quick summary of our estimates of potential growth and its components for a much larger group of countries in the region – and not only the more market-integrated economies – looking into the specifics of each country's growth composition. In addition to the five economies we have already mentioned in previous sections (Brazil, Mexico, Chile, Colombia and Peru), here we also look into Argentina, Bolivia, Costa Rica, the Dominican Republic (DR), Ecuador, El Salvador, Guatemala, Honduras, Jamaica and Paraguay. We also present the IMF's long-term forecasts for these economies as an approximation of potential growth going for the next few years.


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**Fig. 1: Potential Growth in LatAm Summary**

| | 2002 - 2008 | 2009 - 2015 |
|---|---|---|
| **Potential GDP** | 3.4 | 2.6 |
| **Labor** | 1.5 | 1.0 |
| **Capital** | 1.3 | 1.5 |
| **TFP** | 0.6 | 0.1 |

Source: IMF, Penn World Table, Nomura

**Fig. 2: Weights per country within LatAm (%)**

| Weights | 2002 - 2008 | 2009 - 2015 |
|---|---|---|
| **Argentina** | 8.0 | 10.0 |
| **Bolivia** | 0.4 | 0.5 |
| **Brazil** | 35.8 | 45.8 |
| **Chile** | 4.7 | 4.8 |
| **Colombia** | 5.8 | 6.5 |
| **Costa Rica** | 0.9 | 0.8 |
| **DR** | 1.3 | 1.2 |
| **Ecuador** | 1.7 | 1.6 |
| **El Salvador** | 0.7 | 0.5 |
| **Guatemala** | 1.1 | 1.0 |
| **Honduras** | 0.4 | 0.3 |
| **Jamaica** | 0.5 | 0.3 |
| **Mexico** | 35.3 | 22.8 |
| **Paraguay** | 0.4 | 0.5 |
| **Peru** | 3.1 | 3.4 |

Source: IMF, Nomura

**Fig. 3: Argentina (% y-o-y)**

| | 2002 - 2008 | 2009 - 2015 | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 3.5 | 2.6 | 1.7 | 3.3 |
| Capital Stock | 1.1 | 1.6 | | |
| Labor | 2.2 | 0.7 | | |
| TFP | 0.2 | 0.3 | | |

Source: IMF, Penn World Table, Nomura

Argentina is one of the biggest LatAm countries in which potential growth has diminished the most over the past decade. This does not come as a surprise, in our view, given the economic policy mismanagement which affected the different growth components. On the positive side, Argentina is also one of the biggest LatAm economies that could see the greatest increase in potential growth in the coming years.

**Fig. 4: Bolivia (% y-o-y)**

| | 2002 - 2008 | 2009 - 2015 | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 4.1 | 4.8 | 4.4 | 3.5 |
| Capital Stock | 1.1 | 2.4 | | |
| Labor | 1.8 | 1.6 | | |
| TFP | 1.2 | 0.8 | | |

Source: IMF, Penn World Table, Nomura

Bolivia has one of the highest current potential growth rate relative to LatAm peers. Such behavior is supported by an above the region average contribution of the three growth components. Nevertheless, as the strong cycle of capital accumulation starts to moderate, it is likely to see a slowdown in the potential growth rate of the country in the years to come.

**Fig. 5: Brazil (% y-o-y)**

| | 2002 - 2008 | 2009 - 2016* | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 3.7 | 2.1 | 1.1 | 2.0 |
| Capital Stock | 0.9 | 1.3 | | |
| Labor | 1.7 | 0.6 | | |
| TFP | 1.1 | 0.2 | | |

Source: IMF, Penn World Table, Nomura

Brazil's potential growth fell significantly in between 2002-08 and 2009-16, both for external and internal factors. Going forward, we expect the recovery out of the recession to slowly lead the country towards potential growth, which we should be slightly above 2.0% y-o-y in 2017-21.

**Fig. 6: Chile (% y-o-y)**

| | 2002 - 2008 | 2009 - 2016* | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 5.0 | 3.5 | 3.0 | 3.4 |
| Capital Stock | 2.9 | 2.8 | | |
| Labor | 1.8 | 1.5 | | |
| TFP | 0.3 | -0.8 | | |

Source: IMF, Penn World Table, Nomura

Chile has witnessed an important drop in potential growth since the financial crisis in 2008. An important part of such a drop is linked to the end of the commodity boom and its negative effect on investment and capital accumulation capacity. We expect the potential growth to remain close to the current levels in the next few years.

**Fig. 7: Colombia (% y-o-y)**

| | 2002 - 2008 | 2009 - 2016* | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 4.7 | 4.0 | 3.8 | 4.0 |
| Capital Stock | 1.7 | 2.1 | | |
| Labor | 2.1 | 1.3 | | |
| TFP | 0.9 | 0.6 | | |

Source: IMF, Penn World Table, Nomura

Colombia's potential growth has also suffered a meaningful fall after the 2008 financial crisis. Interestingly, according to our growth accounting estimates, a big portion of such a fall is due to a decrease in the labor factor. Going forward, potential growth should remain close to the current levels.

**Fig. 8: Costa Rica (% y-o-y)**

| | 2002 - 2008 | 2009 - 2015 | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 4.7 | 3.9 | 3.9 | 4.0 |
| Capital Stock | 2 | 2.2 | | |
| Labor | 2 | 1.8 | | |
| TFP | 0.7 | -0.1 | | |

Source: IMF, Penn World Table, Nomura

Costa Rica has maintained a solid growth footing, with potential growth above the regional average level, despite a deceleration in all growth components since 2002-08.

**Fig. 9: Dominican Republic (% y-o-y)**

| | 2002 - 2008 | 2009 - 2015 | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 5.2 | 5.2 | 5.1 | 4.5 |
| Capital Stock | 2.1 | 1.9 | | |
| Labor | 1.7 | 1.4 | | |
| TFP | 1.4 | 1.9 | | |

Source: IMF, Penn World Table, Nomura

The Dominican Republic is another country which we think stands out by its high potential growth rate. It is important to highlight the high TFP contribution when compared to the region average. It is also worth highlighting that, according to the IMF estimates, DR's potential growth would suffer only a minor downward adjustment in the years to come.

**Fig. 10: Ecuador (% y-o-y)**

| | 2002 - 2008 | 2009 - 2015 | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 4.1 | 3.2 | 1.2 | 1.5 |
| Capital Stock | 1.8 | 2.3 | | |
| Labor | 1.6 | 1.3 | | |
| TFP | 0.7 | -0.4 | | |

Source: IMF, Penn World Table, Nomura

Ecuador will likely continue to suffer one of the largest declines in potential growth in LatAm. Such a fall does not come as a surprise, given the dependence of Ecuador on oil production/exports and the fact that Ecuador is a dollarized economy maximizing the impact on output of the terms of trade shock.

**Fig. 11: El Salvador (% y-o-y)**

| | 2002 - 2008 | 2009 - 2015 | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 2.2 | 1.7 | 1.9 | 2.0 |
| Capital Stock | 1.6 | 0.9 | | |
| Labor | 0.7 | 0.9 | | |
| TFP | -0.1 | -0.1 | | |

Source: IMF, Penn World Table, Nomura

The economy is growing at 2.0%, which in our view is not enough to meet fiscal and social challenges. Lack of political compromise, violence, emigration and lack of private investment limit growth acceleration. Based on our observations, there seems to be no prospect of a reform agenda to unlock potential growth. However, the government seems en route to signing a program with the IMF, key for fiscal and growth improvement.

**Fig. 12: Guatemala (% y-o-y)**

| | 2002 - 2008 | 2009 - 2015 | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 3.5 | 3.6 | 3.7 | 4.0 |
| Capital Stock | 1.4 | 0.8 | | |
| Labor | 1.6 | 1.2 | | |
| TFP | 0.5 | 1.6 | | |

Source: IMF, Penn World Table, Nomura

We think Guatemala stands out as a country in which potential growth has remained stable after the 2008 financial crisis. Such a performance has been mainly due to the increase in TFP. Likewise, the country stands out as one which may enjoy an increase (albeit marginal) in potential growth over the coming years.

**Fig. 13: Honduras (% y-o-y)**

| | 2002 - 2008 | 2009 - 2015 | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 4.2 | 3.5 | 3.5 | 3.8 |
| Capital Stock | 1.8 | 1 | | |
| Labor | 1.7 | 2 | | |
| TFP | 0.7 | 0.5 | | |

Source: IMF, Penn World Table, Nomura

Honduras showed potential growth slightly above the regional average for both periods on the back of continued strong growth in the labor component. Going forward, conditions seem to allow for a small pick-up close to 4.0% in 2021.

**Fig. 14: Jamaica (% y-o-y)**

| | 2002 - 2008 | 2009 - 2015 | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 0.7 | 0.3 | 1.1 | 2.8 |
| Capital Stock | 0.8 | 0.3 | | |
| Labor | 1.7 | -0.5 | | |
| TFP | -1.8 | 0.5 | | |

Source: IMF, Penn World Table, Nomura

Jamaica's potential growth profile has been extremely poor for the past several years, not only significantly underperforming the region, but also helping lead to several occasions of recession. Going forward, we expect the situation to improve as the country undertakes macro adjustments as a part of its IMF agreement.

**Fig. 15: Mexico (% y-o-y)**

| | 2002 - 2008 | 2009 - 2016* | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 2.4 | 2.3 | 2.5 | 2.9 |
| Capital Stock | 1.5 | 1.4 | | |
| Labor | 1.3 | 1.3 | | |
| TFP | -0.4 | -0.4 | | |

Source: IMF, Penn World Table, Nomura

Mexico's potential GDP rate will likely increase in the coming year, but not as much as we expect when the reforms were approved in 2013. Potential negative headwinds from US incoming administration protectionist policies could also limit a sustained expansion of potential GDP growth.

**Fig. 16: Paraguay (% y-o-y)**

| | 2002 - 2008 | 2009 - 2015 | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 3.1 | 4.8 | 4.5 | 3.8 |
| Capital Stock | 1 | 1.4 | | |
| Labor | 2.2 | 1.1 | | |
| TFP | -0.1 | 2.3 | | |

Source: IMF, Penn World Table, Nomura

Paraguay has sustained strong potential growth despite less-than-stellar support from neighbors, such as Brazil, in recent years. The expected deceleration in potential growth from here will not take the country from an above-regional average position, in our opinion.

**Fig. 17: Peru (% y-o-y)**

| | 2002 - 2008 | 2009 - 2016* | Current | IMF 2021 |
|---|---|---|---|---|
| GDP potential growth estimate | 5.6 | 5.2 | 4.2 | 3.5 |
| Capital Stock | 1.4 | 2.1 | | |
| Labor | 1.5 | 1.2 | | |
| TFP | 2.7 | 1.9 | | |

Source: IMF, Penn World Table, Nomura

Peru was one LatAm country that achieved one of the highest potential growth rates at the beginning of the century. In line with other countries in the region, such potential growth rates are likely to continue to diminish in the coming years as the end of the commodity boom takes a toll on investment and capital accumulation capacity.

# Conclusion: And the winner is…nobody, really

In this report, we explore factors that impact growth beyond short-term data. In that sense, we look for different ways to evaluate growth and focus on the state of potential GDP growth in LatAm, how it compares to other regions such as advanced and emerging economies, and what are its main drivers. In addition, for the most integrated LatAm economies, we project how potential GDP growth is likely to evolve in the coming years. We detail the role of commodity prices and their impact on investment. What happens to growth in LatAm, in the short- and long-term, will be in part dependent on the growth trajectory of the two largest economies in the world (the US and China). Thus, we also explore the path of potential GDP growth for these two economies.

The central ideas we explore in this report follow:

- Potential growth in LatAm converged to a level marginally lower than the pre-commodity boom years (1992-01), at around 2.6% y-o-y after a healthy expansion during the commodity boom years (2002-08) at 3.5%. LatAm seems to have grown at a higher pace than the advanced economies, but lower than other EM economies. Even excluding China from EM, we find that LatAm's potential GDP growth ranks among the lowest in EM. EM excluding China/LatAm expanded (2009-14) at a potential GDP growth of 4.9%. TFP seems to be the big differentiator between LatAm and the rest of the world as it has tended to be smaller even during the commodity boom years.

- We look into the labor, capital and total factor productivity components of potential growth in each of LatAm's most market-integrated countries and forecast how their direction going forward. These countries have faced a decrease in their potential growth following the financial crisis. We estimate potential GDP growth for 2009-16 and 2017-21, respectively, for Brazil (2.1% and 2.2%), Mexico (2.3% and 2.6%), Chile (3.5% and 3.0%), Colombia (4.0% and 3.2%), and Peru (5.0% and 3.7%).

- We find that low commodities prices, through the links with terms of trade and investment, should continue to put downward pressure on long-term growth in Colombia and Peru. With regard to Brazil and Chile, the long-term growth decline seems to have bottomed; we can see a moderate recovery in the years to come. Indeed, we believe that lower commodity prices of the past years impacted long-term growth in the region.

- In Latin America specifically, GDP growth has been decreasing over the past six years. A simple arithmetic average of growth in the five-largest economies in the region (Brazil, Chile, Colombia, Mexico and Peru) show a marked deceleration to below 1% y-o-y in Q3 2016 from slightly above 6% y-o-y in Q2 2010. In Brazil, Chile and Colombia, the probability of recession seems to have increased to between 20-40% in H1 2017. Our model also assigns a very low probability of a recession in Peru by end-2017. Mexico's probability of recession appears to be low early in 2017, but could accelerate towards Q4 2017.

- In LatAm, Mexico is most exposed to protectionist policies we expect from the Trump administration, based on the President-elect's statements made during his campaign. Mexico's current account deficit used to be around 1.5% of GDP (average of the past 10 years), but it has doubled since 2015 as oil production has plummeted. Mexican exports account for around 30% of GDP in 2015 (source: Inegi) and are comprised mostly of manufacturing goods to the US after the North America Free Trade Agreement (NAFTA) was signed in 1994. However, there are strong arguments to believe the threat of completely abandoning NAFTA is unlikely to fully materialize. These arguments include the high level of integration between the US, Mexico and Canada in the supply chain for manufactured goods, that 40 cents on the dollar of US imports from Mexico have US content. All LatAm countries could be impacted via a tightening of financial conditions. For instance, an extreme implementation of


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Trump's policies that results in higher US Fed rates and 10-year Treasury yields may trigger capital outflows from LatAm and thus significant FX depreciation.

- The US plays a pivotal role in terms of commercial, FDI and portfolio flows into LatAm. Thus, we include a section about potential GDP growth dynamics. The US economy looks primed for a major shake-up in 2017. Republicans are likely to put in place expansionary fiscal policies that would boost aggregate demand. In our opinion, it is unlikely that all of President-elect Trump's policies will be positive for growth: Stricter immigration policy and tough trade negotiations and potential sanctions are likely to offset some of the positive effects of the fiscal stimulus. With the economy at or nearing "full employment," the Fed could be forced to act, raising rates at a faster pace than when it was the "only game in town" to keep the economy from "overheating." Our base-case scenario calls for expansionary fiscal policy to boost growth in late-2017 and into early 2018. Thereafter, the net effect of diminishing fiscal impetus and headwinds from stricter immigration and disruptive trade policies is a drag on growth. We expect Mr Trump's immigration policies to reduce aggregate supply with little offset from either higher labor force participation or stronger productivity growth. Over a longer horizon, what is likely to matter is how Trump's policies on taxes, spending, trade, immigration and regulation affect aggregate supply. We estimate US potential GDP growth at 1.5%.

- China has become an important buyer of commodities and increasingly a supplier of manufacturing goods and FDI to LatAm. China's potential growth has been declining for the past years. Further, against a backdrop of slower growth in investment and labor, together with low TFP, we believe China's potential growth will continue to decline until the positive effects of reforms kick in. We estimate that China's potential growth may drop to around 4.5% by 2020. We believe the Trump presidency will have a negative impact on China's economy. We think the key transmission channels will be trade and capital flows. The US remains one of China's major trading partners (the share of direct exports to the US was 18.0% in 2015). The policy response from China is likely to be one of more fiscal stimulus and a flexible exchange rate.

- We present a quick summary of our estimates of potential growth and its components for a much larger group of countries in the region – and not only the more market-integrated economies. In addition to the five economies we mention in previous sections, we also look into Argentina, Bolivia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica and Paraguay.

# Appendix A-1

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