

CONJONCTURE

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Getting to a low carbon economy

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Raymond Van der Putten

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In its report “Global Warming of 1.5°C” published on October 2018, the Intergovernmental Panel on Climate Change (IPCC), the UN organisation for climate analysis, warns that the earth is quickly warming up.¹ The increase in global mean surface temperature (GMST) since the period 1850-1900 is likely to be in the range between 0.75°C and 0.99°C in the decade 2006-2015.

In general, land surfaces warm up considerably faster than sea surfaces. Temperature extremes greater than GMST are already experienced in many land regions. The organisation attributes the increase in GMST with high confidence to past and ongoing emissions of greenhouse gases in the atmosphere. Global temperatures are rising currently by around 0.2°C per decade. The IPCC expects that at this speed global warming could reach 1.5°C by 2030 and 3-4°C by the end of the century.

The report emphasises the importance of limiting global warming to 1.5°C compared to 2°C, as the economic consequences of climate change should be more limited and would allow greater opportunities for adaptation.

Nevertheless, the consequences of an increase by 1.5°C could already be substantial. Because of an increase of sea levels in the range between 0.26 and 0.77 meter by 2100, low lying coastal areas are likely to be flooded and some small islands could completely disappear. This is 0.1meter less than in the 2°C scenario, implying that 10 million fewer people would be exposed to related risks. Biodiversity might be impacted, including species loss. Poverty is expected to rise in particular among people dependent on agriculture and activities in coastal areas. Some of it is already visible, such as the increase in weather extremes. Whereas several regions experience repeatedly heavy precipitations, other areas have been confronted with an increase in the frequency of droughts.

At the Conference of Parties in 2015 (COP21) held in December 2015 in Paris, 196 parties (195 States plus the European Union) concluded that global warming should be limited to 2°C and efforts should continue to limit global warming to 1.5°C. These objectives were confirmed at the COP24 in December 2018 in the Polish city of Katowice, but without adopting the necessary measures to achieve it.

The conference failed to endorse the IPCC report “Global Warming of 1.5°C” because of opposition from four oil-producing nations, the United

States, Saudi Arabia, Russia and Kuwait. Important decisions, such as setting procedures for tightening of climate objectives and the long promised mobilisation of USD 100 billion financial support per year for climate adaption and mitigation projects in the developing countries were once again delayed to the next COP, to be held in Chili. The COP24 only succeeded at the last moment in accepting rules on measuring, reporting and verifying carbon emissions.

CO₂ emissions under different scenarios

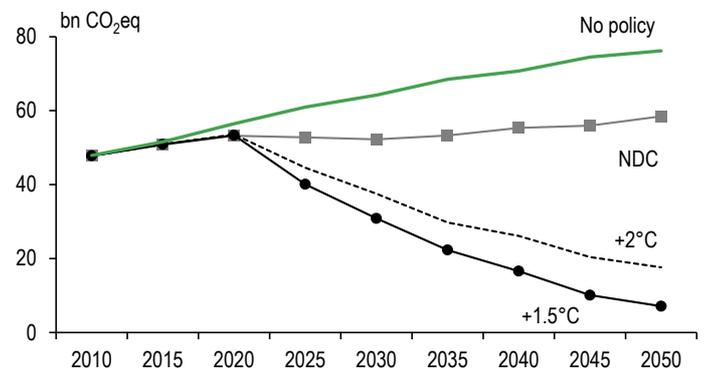


Chart 1

Source: McCollum (2018), BNP Paribas

Stepping-up and redirecting energy investment

The IPCC report underlines that achieving the transformation to a low carbon emission world requires major shifts in investment patterns away from fossil fuel investment toward renewal energy sources. Such a movement, albeit still modest, can already be observed.

In 2017, investment in low-carbon sources – including renewables and nuclear – reached more than 70% of total power plant investment from less than 50% a decade ago. Nevertheless, energy investment is on a declining trend, largely due to less investment in the power sector as a result of falling prices in particular for solar PV, which represents 8% of total energy investment. Solar PV projects commissioned in 2017 cost nearly 15% less per megawatt of capacity than in 2016 due to technology improvements and deployment in lower-cost regions, even

¹ <https://www.ipcc.ch/sr15/>



as capacity additions rose to record levels. In addition, fewer additions of coal, hydro, and nuclear power capacity were made.

Nevertheless, much of world's power generation continues to depend on fossil fuels. The share of fossil fuels, including thermal power generation, in total energy supply investment rose for the first time since 2014 to 59%. The sharp drop in investment in coal-fired power and coal supply was offset by heavy investment in the oil and gas industry, in particular in the US. This is not only related to the shale sector, but also to the downstream oil and gas industry. For the first time in recent decades, the US was the largest recipient of investment in petrochemicals.²

Current policies to reduce greenhouse gas emissions are insufficient to keep global warming below the 2°C. Model simulations show that the national climate objectives, or Nationally Determined Contributions (NDC) submitted before the COP21 in Paris, are rather timid compared to a no-policy scenario³ (chart 1).

Annual energy investment is set to be increased to USD 2.586 trillion per annum compared with USD 2.481 trillion in the base line. Moreover greenhouse gas emissions in the NDC scenario are likely to increase, albeit less than in a no-policy scenario. In order to limit global warming to 2°C or even 1.5°C, greenhouse gas emissions should start to decline around 2020. In the 1.5°C scenario, they should be close to zero by 2050. This requires much more investment in sustainable energy infrastructure. In the 1.5°C scenario energy investment has to be increased by more than one third compared to the NDC scenario to USD 3.183 trillion per year.

The IPEE report shows several pathways for achieving the low carbon objectives. The mitigation strategies combine three crucial elements. First, the power sector needs rapidly to be restructured to avoid further locking into fossil fuel capacities, and increase the capacity of renewable energy sources such as solar and wind. In the NDC scenario, the share of renewable energy sources in total electricity is projected to increase from just over 30% in 2015 to around 70% by 2050. In the 1.5°C and 2°C scenarios, the power sector will be almost fully decarbonised by 2050 (chart 2). Second, energy efficiency has to be improved and the electrification in industry, transportation, and residential and commercial real estate stepped up. In the scenarios, energy efficiency, measured by the ratio between economic output to energy input, compared to the base run improves in all sectors. Even though in these scenarios GDP in purchase power parity (PPP) would increase by a factor of 3.3 from 2010 to 2050, final energy use hardly increases in the 1.5°C scenario (chart 3). Moreover, in the 2°C and 1.5°C scenario, the share of electricity in final energy use increases from 19% to 37% and 46%, respectively (chart 4). As electricity would be almost completely decarbonised in both scenarios, this would have a considerable impact on CO₂ emissions. Finally, CO₂ removal technologies have to be developed and upscaled. In the 1.5°C scenario,

virtually all residual CO₂ emissions are removed by equipping fossil fuel installation with Carbon Capture and Storage or by Land Use and Soil Carbon Sequestration.

Electricity capacity from renouvelable sources

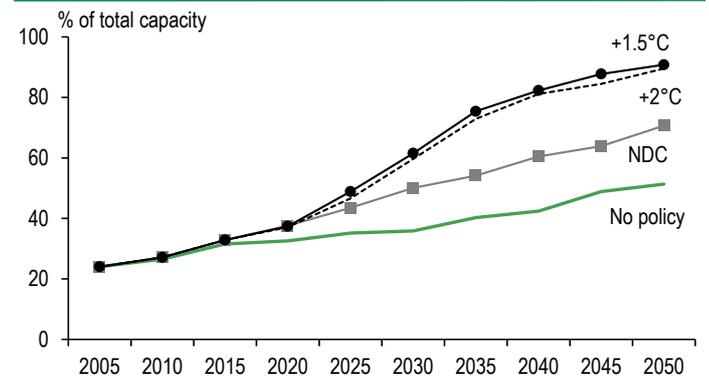


Chart 2

Source: McCollum (2018), BNP Paribas

Energy use virtually stable in a +1.5° C scenario

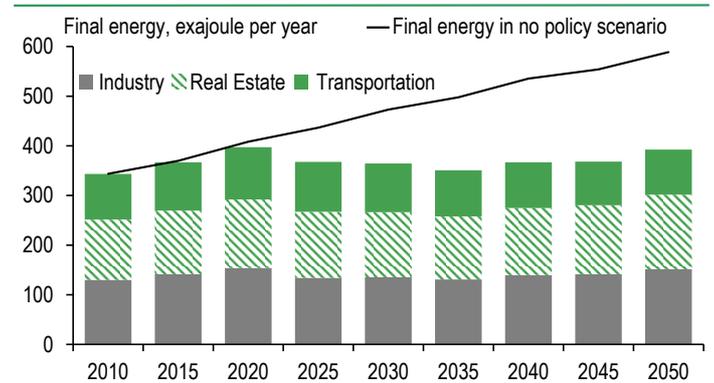


Chart 3

Source: McCollum (2018), BNP Paribas

Getting to low carbon pathways

In the scenarios, carbon prices are the main policy instrument to get the economy on the low carbon pathway. By increasing the price for fossil fuels, the carbon tax should make carbon-intensive production and consumption more expensive and create incentives for economic actors to turn to low carbon alternatives. For example, instead of constructing coal-based power stations, one could consider the construction of wind farms. The (tax) receipts obtained in this way could not only be used to

pay for the necessary investment related to climate adaption but also to lower other taxes, such as income taxes. The macroeconomic effects should be close to neutral.

² IEA, 2018, *World Energy Investment 2018*, Paris.

³ The model simulations are made by six global integrated assessment models. They are reported in McCollum, David L., *et al.* "Energy investment needs for fulfilling the Paris Agreement and achieving the Sustainable Development Goals." *Nature Energy* (2018): 1. In this study, we only use the averages of the six models. The results are summarised in Table 1 at the end of the article.



The carbon tax level used in the simulation models is determined by the policy goal.⁴ These vary substantially across models and scenarios and their value increases with the mitigation effort (chart 5). In the 2°C scenario, carbon prices range from USD 33 to 186 (2010) per tonne CO₂ in 2030. In the 1.5°C scenario, they would be in the band between 110 and 475 USD (2010). For comparison, the Report of the High-Level Commission on Carbon Prices projects a price between USD 40 and USD 80/tCO₂ by 2020 and between USD 50 and USD 100/tCO₂ by 2030 to be consistent with the Paris objectives.⁵

Unfortunately, carbon or green taxes are not extensively used worldwide. Less than 20% of current global greenhouse gases are covered by carbon prices, and most prices are well below USD 40-USD 60 per tonne of CO₂, the level recommended by the High-Level Commission on Carbon Prices for 2017. The situation is only slowly improving. According to the OECD, the carbon pricing gap, which compares actual carbon prices and real climate costs estimated at EUR 30 per tonne of CO₂, was 76.5% in 2018, only slightly lower than the 79.5% gap reported in 2015.⁶ The carbon emission price gap is lowest for road transport (21%) and highest for industry (91%).

A different approach is needed

Simulations show that current pollution abatement policies are not sufficient for keeping global warming below 2°C. Moreover, the IPCC study shows that it would be much better if global warming would be limited to only 1.5°C. However, it is uncertain how investment flows can be increased and redirected to low carbon alternatives.

Although early signs of climate change have already appeared, many actors still deny the urgency for immediate action, as for most of them the catastrophic impacts will be felt well beyond the traditional planning horizons. As long as climate change does not seem a very pressing problem, it is very tempting to become free-riders and let the coming generations make most of the effort in cutting back greenhouse gases. The danger is that we get locked in a high carbon scenario, from which it is very costly to leave. Bank of England's governor Mark Carney called it "the tragedy of the horizons".⁷

Normally, governments should have a responsibility in overcoming such market failures through developing policies and appropriate regulatory environment. The COP is an effort to combat climate change at a supranational level.

For the corporate sector, the signing of the Paris climate deal was a signal to include the transition to a low carbon society in the business plans. Companies have started using an internal price of carbon for their business operations and investment decisions.

Since Mark Carney's speech, financial institutions have also become more aware of the risk of climate change for their operations. Institutional investors, such as investors and pension funds, increasingly incorporate environmental, social, and governance (ESG) factors into their investment analysis. It is one of the factors behind the surging demand for green bonds.⁸ In France, article 173 of the energy transition law imposes extensive climate change-related reporting for asset owners and asset managers. The objective is to reduce the carbon footprint of the institutional investors. In the UK, the Bank of England has suggested the risk arising from climate change should form part of its annual stress tests for banks in 2019.

Share of electricity in final* energy increases in a +1.5°C scenario

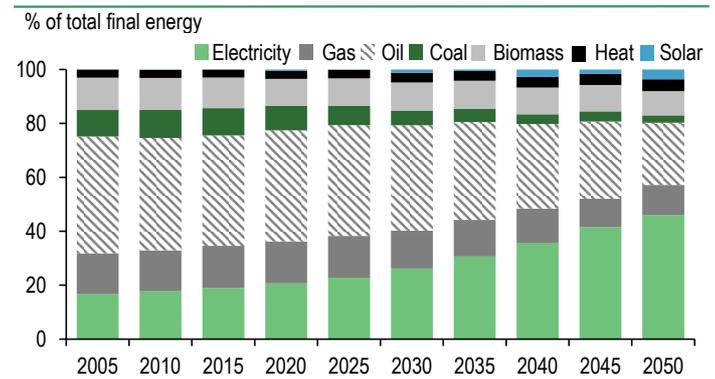


Chart 4 Source: McCollum (2018), BNP Paribas

Final energy consumption is the total energy consumed by end users, such as households, industry and agriculture. It excludes energy used by the energy sector (ex. processed fuel in power plants).

Carbon prices

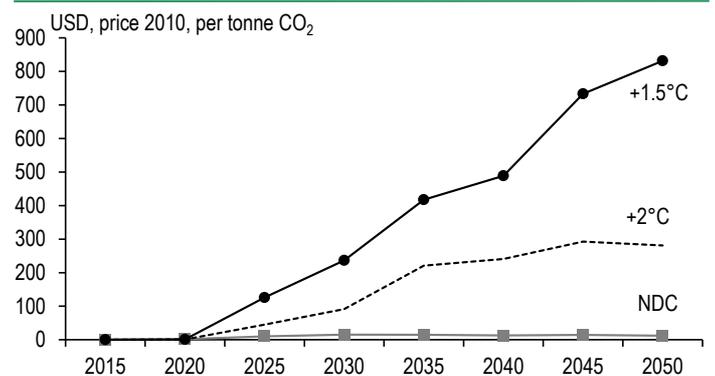


Chart 5 Source: McCollum (2018), BNP Paribas

Nevertheless, in general, progress in designing and implementing the necessary rules and regulations to achieve the Paris goals is very slow as not all governments share the same long-term vision. Some are held back by commercial interests. Fossil fuel supply and thermal power investment are increasingly dominated by state-owned enterprises.

⁴ It differs from the social costs of carbon, a concept used in cost-benefit analysis. This is the total net damages, monetised and discounted of the release of one extra metric tonne of CO₂.

⁵ Stiglitz, J.E. and N. Stern (2017), Report of the High-Level Commission on Carbon Prices.

⁶ OECD, 2018, *Effective Carbon Rates 2018*, Paris.

⁷ Speech by Mr Mark Carney, Governor of the Bank of England and Chairman of the Financial Stability Board, at Lloyd's of London, London, 29 September 2015.

⁸ Raymond Van der Putten, 2015, *Climate change: An unprecedented investment and financing challenge*, BNP Paribas Conjoncture, October.



Moreover, the electorate might not be convinced of the necessity of taking active measures in particular if these are costly and may affect their lifestyles. The US government is leaving the Paris climate agreement as a substantial part of its voters doubts the veracity of climate change and fear that it could put US industry at a disadvantage.

Finally, reducing global emissions by fixing national objectives has turned out to be very complicated. A global quantitative target is easily translated in a global price target, as to each quantitative objective a shadow price – i.e. the optimal carbon price – is associated.⁹

The difficulty is that a global quantitative target is not easily translated into individual targets for each country. In the negotiations, each country has an incentive to keep the NDC as low as possible. In this approach it is easy to become a free-rider. The result is a set of about 200 individual quantitative targets which do not add up to the global objective.

From an economic view, a price target, or an environmental tax, is preferable to a quantity target. It is accordance to the principle that individuals and firms should pay the full marginal costs of the emission of carbon. Once the global price is set, all countries are free to design policies to achieve the carbon price and to recycle the proceeds of the tax. However, the implementation of a sufficiently high carbon price is rather problematic. One of the problems is that increases in carbon prices, or more generally in fuel prices, might result in redistribution problems and are often resisted. Users cannot change quickly to cheaper alternatives without incurring heavy costs. In addition, carbon tax hikes may disadvantage disproportionately rural populations that do not have access to good public transport. Lastly, for the tax payer, the link between carbon taxes and climate objectives is not always clear. These taxes could be perceived as just another way to finance the budget.

In 2018, a modest increase in French carbon taxes triggered off heavy street protests which forced the government in reversing the measure. Voters in Washington State also recently rejected a carbon tax. In this case, the tax would have been devoted to renewable energy projects and helping negatively affected workers. In order to gain the support from the trade unions, large industrial facilities would have been exempted. The full force of the measure would have fallen on oil refiners. In this context, it is not surprising that the refiners spent heavily to defeat the ballot proposal.

A solution could be the better framing of climate policy. Recently, George Shultz and Ted Halstead have proposed the so-called 'Carbon Dividends Plan'.¹⁰ The idea is quite simple. A carbon fee will be levied and the proceeds, the so-called dividend, should be returned directly to tax payers through equal lump-sum rebates. They argue that such a programme would be very popular in the US as over two-thirds of American households would be financial winners, as they receive more in dividend payments than they would pay in increased energy prices. As the wealthier households tend to pollute more in absolute terms,

they would face the highest costs. According to the authors, the bottom income deciles would experience the greatest net gains.

A yet unsolved problem is the so-called 'carbon leakage'. Carbon tax hikes, might induce enterprises to move their most polluting activities to countries with less strict environmental legislation. This would have a negative effect on industrial activity while at the same time hardly reducing global emissions. To solve the problem, William D. Nordhaus, the 2018 Nobel laureate in Economic Sciences suggests that countries could form coalitions, the so-called 'climate clubs'.¹¹ These groups agree on a carbon price emitted within their borders. This could be done either by a domestic carbon tax or a trade-and-cap system.

The coalition would impose tariffs at their borders on imports from the rest of the world, both to incentivise other countries to join and as a mean to restricting carbon leakage. Exporters to countries which do not apply a carbon tax would receive a rebate. Two options are possible to determine the size of the tariffs. A first approach is to set tariffs in relation to the carbon contents of imports. Such a tariff would remedy a competition distortion caused by the fact that producers outside the coalition would not be affected by the carbon tax. Some precedents suggest that such tariffs would be legal under WTO rules.¹² But there is a practical problem. It is impossible to work out the carbon contents of every import and some approximations are required. For this reason, Professor Dieter Helm suggests to concentrate on a small number of energy-intensive industries, such as steel and chemicals.¹³ Nordhaus is in favour of the second approach, a uniform border tax. The advantage is that such a tax is simple to implement. Moreover, by setting the tax rate sufficiently high, countries have a financial incentive to join the coalition. Both options are likely to be legally challenged. It might require a change in international law to make such import taxes legal.

The major flaw of the COP and the Paris climate deal is that the process is rather non-committal. Countries can leave the deal without incurring sanctions, they are for the moment free to formulate their own objectives and there are no sanctions if these objectives are not met. Nordhaus concludes his above mentioned AEA lecture by noting that *"without sanctions, there is no stable climate coalition other than the non-cooperative and low abatement coalition."* By contrast, *"an international climate treaty that combines target carbon pricing and trade sanctions can induce substantial abatement"*.¹⁴

Completed on 24 January 2019
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⁹ Raymond Van der Putten, 2011, *Climate change policy after Cancún*, BNP Paribas Conjoncture, September 2011, page 21.

¹⁰ George P. Shultz and Ted Halstead, 2018, *The Dividend Advantage*, The Climate Leadership Council.

¹¹ William Nordhaus, 2014, *Climate Clubs: Designing a Mechanism to Overcome Free-riding in International Climate Policy*, Presidential Address to the American Economic Association, 4 January 2014, published in *American Economic Review* 2015, 105(44): 1339-1770.

¹² Joseph Stiglitz, 2006, *A New Agenda for Global Warming*, *The Economist*' Voice 3(7).

¹³ Dieter Helm, 2010, *A Carbon Border Tax Can Curb Climate Change*, *Financial Times*, 5 September.

¹⁴ Nordhaus (2014), op. cit. page 1368



Growth and energy projections (investment, capacity, consumption) 2020 to 2050

<i>Average annual growth 2020-2050 (%)</i>	No policy	NDC	2°C	1.5°C
World				
Population	0.6	0.6	0.6	0.6
GDP	2.7	2.7	2.6	2.6
Investment	1.7	1.8	2.5	2.9
- of which in low carbon	1.9	2.4	4.9	5.6
Final energy	1.2	1.1	0.3	-0.1
- of which electricity	2.3	2.2	2.2	2.6
Renewable energy capacity as % of total electricity capacity in 2050	37.1	55.9	76.6	86.5
CO ₂ emissions in 2050 as % of no-policy scenario	-	-23.2	-82.3	-99.0
Africa and Middle East				
Population	1.5	1.5	1.5	1.5
GDP	4.4	4.4	4.2	4.1
Investment	3.0	3.3	3.8	4.6
- of which in low carbon	5.2	5.4	10.1	12.0
Final energy	2.2	2.2	1.1	0.8
- of which electricity	3.9	3.9	4.1	4.6
Renewal energy as % of total electricity capacity in 2050	27.2	31.0	58.0	75.7
CO ₂ emissions in 2050 as % of no-policy scenario	-	-4.0	-80.8	-86.9
Asia (excl. Middle East, Japan, and former Soviet Union states)				
Population	0.4	0.4	0.4	0.4
GDP	4.0	4.0	3.9	3.9
Investment	1.7	1.8	2.9	3.5
- of which in low carbon	1.0	3.2	5.9	6.6
Final energy	1.6	1.5	0.6	0.4
- of which electricity	2.8	2.7	2.6	3.0
Renewal energy as % of total electricity capacity in 2050	35.3	56.4	86.2	97.2
CO ₂ emissions in 2050 as % of no-policy scenario	-	-22.8	-83.5	-97.0
Latin America				
Population	0.5	0.5	0.5	0.5
GDP	3.1	3.1	3.0	2.9
Investment	2.6	2.6	2.8	3.0
- of which in low carbon	2.3	2.6	5.6	6.1
Final energy	1.5	1.4	0.7	0.6
- of which electricity	2.6	2.5	2.9	3.4
Renewal energy as % of total electricity capacity in 2050	51.6	60.0	66.1	67.7
CO ₂ emissions in 2050 as % of no-policy scenario	-	-32.0	-100.6	-130.5
OECD(1990) & European Union				
Population	0.3	0.3	0.3	0.3
GDP	1.7	1.7	1.6	1.6
Investment	1.3	1.7	2.4	2.9
- of which in low carbon	1.6	2.6	4.9	5.4
Final energy	0.5	0.4	-0.3	-0.6
- of which electricity	1.2	1.2	1.5	2.1
Renewal energy as % of total electricity capacity in 2050	40.6	61.8	71.4	85.1
CO ₂ emissions in 2050 as % of no-policy scenario	-	-36.6	-79.5	-101.0
Russian Federation & other ex-Soviet Union states				
Population	0.0	0.0	0.0	0.0
GDP	2.8	2.8	2.6	2.5
Investment	2.4	2.6	2.1	2.1
- of which in low carbon	2.5	2.6	6.5	7.2
Final energy	0.8	1.7	-0.4	-0.9
- of which electricity	1.8	2.8	1.4	1.8
Renewal energy as % of total electricity capacity in 2050	24.7	35.4	65.1	78.5
CO ₂ emissions in 2050 as % of no-policy scenario	-	-5.1	-85.2	-102.1

Table 1

Source: McCollum (2018), calculations BNP Paribas



Mexico: Mixed sentiments

Hélène Drouot

The election of Mexico's new president, Andres Manuel Lopez Obrador, raises numerous questions. Although the new president and his team enjoy strong popular support, investors are worried about the policies he is proposing for the next six years. Some of the proposals do not seem to be compatible with his promise to maintain fiscal discipline, central bank independence and economic pragmatism in general. Several existing reforms are being called into question, notably in the energy sector. Given Mexico's strong economic fundamentals, these contradictions are unlikely to have much of a short-term impact. In the medium term, in contrast, the big risk is that they could jeopardise the government's capacity to maintain fiscal discipline, keep the energy sector afloat and preserve investor confidence.

Barely six months after his election as president of Mexico, Andrés Manuel López Obrador's first actions are already raising numerous questions. AMLO, as he is commonly known, was elected on 1 July 2018, but even before he was sworn in on 1 December 2018, his administration made several radical decisions, including the launch of a vast anti-corruption campaign, a referendum on the construction of an airport near Mexico City, which resulted in the project being scrapped, and the cancellation of several initiatives introduced by the previous government, notably energy sector reform. He also raised the minimum wage and announced several measures to reduce inequality. While affirming his intentions to respect his campaign promises concerning economic policy, AMLO and his team also reiterated their commitment to maintaining the central bank's independence, presented a budget that complies with the fiscal discipline seen in recent years and signed a new trade agreement with the United States and Canada.

In general, Mexico benefits from solid macroeconomic and financial fundamentals, but the country is still vulnerable to a change of investor sentiment. The political upheaval triggered by AMLO's election and the lack of clarity concerning his economic policy proposals have left investors dubious.

Although consumer stimulus packages and the anti-corruption fight will continue to ensure strong popular support for the government, investors' loss of confidence and the lack of clarity over economic policies is eroding short-term growth prospects. The government's credibility has been eroded when it comes to meeting its commitments, notably in terms of fiscal discipline. Uncertainty also shrouds the future of energy sector reform, which has played a key role in the country's political life in recent years. Fortunately, the country's external vulnerability is relatively low.

The political environment

On 1 July 2018, Andrés Manuel López Obrador, head of the left-wing Morena party (National Regeneration Movement), largely won Mexico's presidential election with more than 53% of the vote. AMLO, as he is commonly known, was sworn in on 1 December 2018 for a 6-year non-renewable term.

A coalition comprised of the Morena party and several small left-wing parties won the legislative elections held on the same day, winning majorities in both the House of Representatives and the Senate. When the parliamentary session opened in early September, the coalition had strengthened its position, with a total of 310 deputies and 69 senators (out of a total of 500 and 128, respectively). This is the first time since 1997 that a coalition has won absolute majorities in both houses. Moreover, the opposition is fragmented and the next elections (provincial and local) will not be held until 2021, which leaves the ruling coalition a lot of manoeuvring room to implement reforms.

Mayor of Mexico City from 2000 to 2005, and then the anti-establishment candidate defeated in the presidential elections of 2006 and 2012, the victories by AMLO and his Morena party were no small feat. The political alternative they proposed won strong popular support and reflects the clear rejection of Mexico's two traditional parties, which have shared power for almost a century. The Institutional Revolutionary Party (PRI), which was created after the 1910 revolution and became the centre-right party in the mid-1980s, has governed the country from 1929 to 2000, and then from 2012 to 1 December 2018. The conservative National Action Party (PAN) ruled Mexico from 2000 to 2012.



AMLO largely owes his electoral success to his promise to fight corruption and insecurity, even though similar promises have been made by all of the candidates elected since the mid-1980s. All of the reforms implemented so far have failed, and inequality has worsened. Felipe Calderon (PAN member elected in 2006) launched a drug war that flopped, while Enrique Peña Nieto (PRI member elected in 2012) transferred law enforcement to the military, which proved to be ineffective. Their mandates were marred by corruption scandals, collusion between law enforcement agencies and drug dealers, and repression of the press and opposition leaders, which fuelled the fierce rejection of the two traditional parties. On Transparency International's corruption perception index (CPI)¹, Mexico's ranking has deteriorated continuously since the early 2000s (chart 1).

During the campaign, AMLO and his team proposed a "fourth transformation"², which has proved to be a large-scale project that goes far beyond the fight against corruption and insecurity. The idea behind this "transformation" is to complete the country's modernisation through proposals to overhaul the State and the institutional framework. It promotes "equitable economic growth, which is essential for reducing inequality, extreme poverty and insecurity." One key proposal, "becarios si, sicarios no", would give scholarships to the 2.3 million Mexican youth who are neither students nor employed. The measure would be accompanied by a minimum wage increase, starting in 2019 for companies located along the US-Mexican border, and then for all companies by 2024. The transition team proposed to raise the minimum wage to 101 pesos (MXN) per day (USD 5.3). Currently, Mexico's minimum wage is MXN 88 (USD 4.6) per day.

Generally speaking, the transformation is built around several priorities, one of which is to reduce the country's external dependence, particularly with the United States, by accelerating export diversification and supporting the agricultural sector, in order to increase food self-sufficiency. Guaranteed prices would be set for certain farm products.

Although these measures have not been spelled out in detail yet, it will be hard to meet all of their objectives simultaneously within the course of a single term, and without triggering budget overruns. This raises questions about the social and economic policy that will actually be followed during the legislative session. A priori it will be hard to reconcile all these different goals at the same time.

¹ The CPI index ranks 180 countries and territories according to their perceived level of corruption in the public sector based on the assessments of private and public sector experts.

² The "fourth transformation" is a term chosen by AMLO to designate the fourth development phase of the Mexican Republic. The first three transformations were Mexico's independence in the early 19th century, the Madero presidency, which launched the country's modernisation following the revolution of 1910, and the Lazaro Cardenas presidency from 1934 to 1940, which continued the country's modernisation by developing infrastructure, industry, education and public healthcare.

Corruption perception index

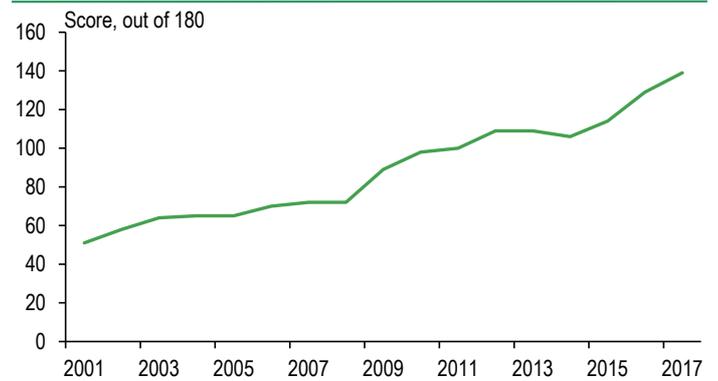


Chart 1

Source: Transparency International

The transition period raises the first doubts

The July-to-December transition period was marked by several contradictory signals. Immediately after his election, AMLO softened his positions and announced that he intended to adopt a "pragmatic" economic policy. He pledged to respect the central bank's independence, fiscal discipline and the trade agreements signed by the country. To prove this point, AMLO and his transition team lent their support to Enrique Peña Nieto during trade negotiations, even though he previously opposed the North American Free Trade Agreement (NAFTA) and the opening of Mexican trade. He approved the signing of the Canada-United States-Mexico Agreement (CUSMA) on 30 November 2018, the new trade agreement that replaces NAFTA.

At the same time, however, he began to push through several campaign promises. A referendum was held in late October on construction of Mexico City's new airport, which resulted in the project being cancelled, even though the financing was already in place and nearly a third of the airport had already been built. According to AMLO, such projects are natural sources of corruption and embezzlement. He sees the cancelation of the airport project in its existing form as the first sign of the country's fight against corruption.

AMLO also announced that referendums would be held frequently over the course of his mandate. He wants to modify the constitution to expand the scope of referendums, notably to include fiscal issues, which raises fears about budget overruns and respecting fiscal discipline.

Lastly, in early November, the Morena party presented a new measure to the Senate to provide a very strict framework for banking commissions. A week later, Morena withdrew the draft bill, and AMLO pledged not to reform the economic and financial sectors for at least the first 3 years of his presidential term.



During the transition period, investor sentiment towards the new administration eroded rapidly. Equity and bond indexes plunged at the end of October, and the Fitch rating agency gave Mexico's sovereign rating a negative watch. These trends reflect growing fears about the risk of budget overruns, but also about the future of reforms adopted by the previous government, notably the energy sector reform.

No clear policy lines since taking power

Since his inauguration on 1 December, AMLO has begun making contradictory signals again. He first affirmed that his goal was to end "neo-liberalism" and "cronyism", which for him were synonymous with corruption, of confusing economic and political power, and in the end, greater inequality. He also pointed out the failure of the previous administration's reforms, particularly in fighting corruption and the energy sector reform.

At the same time, however, AMLO announced that he would not prosecute former leaders for corruption. In terms of security, he plans to make the militarisation of public security forces part of the constitution, which counters his claims to give priority to defending human rights.

AMLO says he will carry out a "peaceful transformation, ordered, but profound and even radical". Yet his project presentation suggests a presidency characterised by a significant increase in federal power, and especially in the role of the president.

The government presented a list of 100 economic proposals. These closely follow his campaign promises, including overhauling the healthcare system (which is to resemble "a Scandinavian healthcare system" by the end of his presidency), constructing 100 new universities, doubling the amount of retirement pensions, and the announcement of several large-scale infrastructure projects to improve the country's attractiveness and competitiveness (construction of two new refineries, the upgrading of existing refineries, and the construction of the Maya train to promote tourism). He also presented a new proposal to reform the energy sector. All these proposals are to be financed by a "government austerity" programme, symbolised by the sale of the presidential aircraft on inauguration day, and by the savings generated from fighting corruption.

At the same time, AMLO also renewed his pledge to respect the central bank's independence and to maintain a sufficiently high primary surplus to stabilise the public debt at current levels (47.6% of GDP in 2017).

In early January, AMLO changed course again, this time closing several pipelines (to prevent the theft of fuel) and ensuring direct distribution of petrol by the State. Despite broad popular support, this measure triggered petrol supply shortages in several regions. Worse, it further eroded investor sentiment.

Exchange rate & equity market trends since 2018

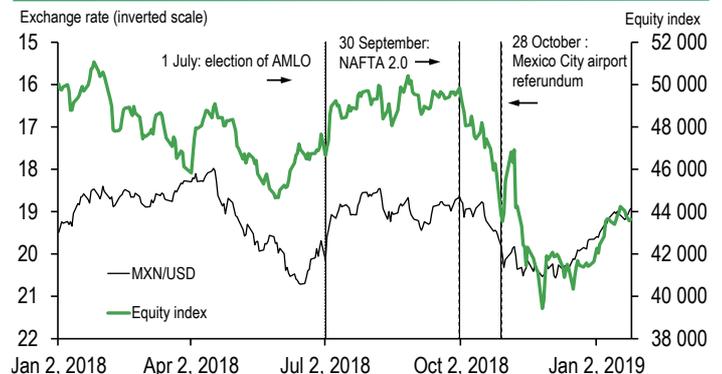


Chart 2

Source: Mexican Stock Exchange, Central Bank of Mexico

What about growth prospects?

Mexico's strong economic fundamentals will facilitate the implementation of the president's programme. The vast reforms launched in 2014³ have bolstered the economy's resilience to external shocks. The IMF now estimates Mexico's potential growth rate at 3-4% a year, compared to average growth of only 2.3% a year between 2003 and 2013.

Since 2015, inflation and the unemployment rate have held at low levels and real wages have risen, despite falling commodity prices, tense relations with the United States and a series of natural disasters (see table 1).

Real GDP

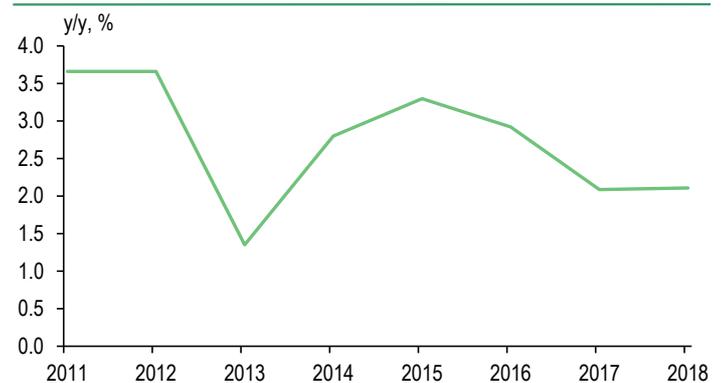


Chart 3

Source: EIA, IMF, Fed, INEGI

³ Reforms were launched in energy, competition, telecommunications, taxation, the labour market, education and financial services, with the goal of boosting growth to 5% a year.



Greater resilience to external shocks

Change (%)	Q2 2000 – Q3 2002	Q2 2008 – Q2 2009	Q2 2014 – Q1 2016
Oil prices (WTI)	-17.7	-42.9	-65.6
US industrial output	-4.8	-15.5	-2.9
Mexican industrial output	-9.5	-10.6	0.3
Employment in Mexico	1.7	-0.6	3.0

Table 1

Source: EIA, IMF, Fed, INEGI

Monetary policy is deemed to be credible. The public deficit and debt have been reduced in recent years and fiscal revenues are less dependent on the oil business. The strong performance of non-oil exports (combined with the inflow of remittances from workers abroad) has helped reduce the current account deficit to a moderate level. Despite major portfolio investment flows, the country still has a solid external position (in terms of both solvency and liquidity).

Yet growth figures have deteriorated recently. Worries about renegotiating the trade agreement with the United States and uncertainty over the presidential election strained investment and private consumption in 2017, and public investment was scaled back under the fiscal austerity plan introduced by the previous government. Real GDP slowed to 2%, from 2.9% in 2016. As a result, growth is barely expected to surpass 2% in 2018, despite more buoyant private consumption. Moreover, growth is not expected to accelerate again before 2021, according to the latest IMF estimates.

Private consumption will continue to be the main growth engine, bolstered by a very dynamic labour market, the previous government's social policies and remittances from workers abroad. Yet these factors will not offset the cancellation of the Mexico City airport project nor investors' loss of confidence, which is bound to strain private investment. Even if the infrastructure projects are launched as promised, and the public-private partnerships actually work, it will take time to set them up, which means they are unlikely to have an impact on growth in 2019. The renewed confidence reported after the elections has been squandered (chart 4).

Although growth is slowing, it will also be important to monitor the central bank's capacity to contain inflationary pressures in the quarters ahead. The Board of Governors raised the key policy rate to 8.25% in December, the highest level in more than 10 years. Inflationary pressures, which have been present since the elimination of energy price subsidies in early 2017, are likely to persist at least through the first half of 2019, driven by January's minimum wage increase, as well as higher prices for petrol, fruit and vegetables.

External conditions will also be less favourable. The trade deficit will probably widen slightly further, mainly due to the sluggish US manufacturing sector and ongoing trade tensions with the United States, despite the signing of CUSMA. The new trade agreement still has to be ratified by each of the three member countries, which will take some time, straining investment and FDI in 2019, at least during the first half of the year.

Investor sentiment



Chart 4

Source: Banxico

Inflation & the central bank's key policy rate

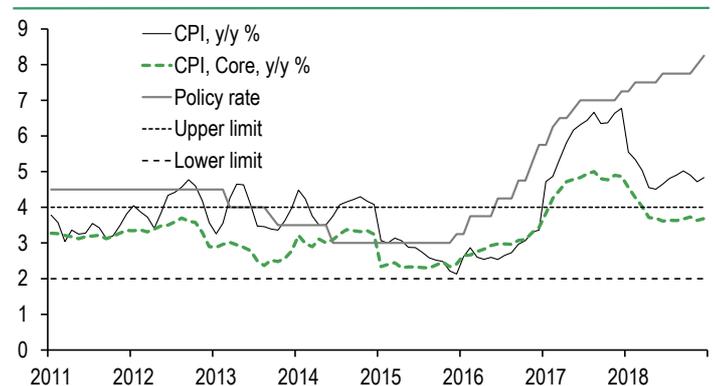


Chart 5

Source: Banxico



What about the future of energy sector reform?

Introduced in 2013 and 2014, the previous government's energy sector reform ended a 75-year monopoly in the country's oil and gas sector. The main goal of the reform was to promote an open, competitive market between public and private companies throughout the sector, in the upstream, intermediary and downstream segments. The strategy consisted of opening the capital of the two state-owned companies (Pemex, the national oil company, and CFE, the electricity utility) and attracting private investment. A core part of the reform was an auction system to attribute oil fields to private companies. More than a hundred contracts have been signed since 2015.

After several failed attempts since the 1990s, this reform was considered to be a success. Yet the downturn in commodity prices in 2014 severely handicapped its implementation. The budgets of the two state-owned companies, Pemex and CFE, were scaled back sharply and their debt has swollen significantly since 2015. Blocks were not auctioned to private investors (including non-residents) until 2016, and continued in 2017 and 2018. Altogether, the previous administration hoped to attract USD 200 bn in oil sector investment over 20 years, and to boost production levels to more than 3 million barrels a day.

Production continued to plunge, dropping from 3.5 million barrels a day in 2005 to less than 2 million barrels today (see charts 6 and 7). Faced with a shortage of investment, the sector was unable to develop the necessary production capacity to offset the decline in oil production at Cantarell, Mexico's largest oil field.

Yet the previous government's commitment played a key role in the auctions' success and in lifting investor confidence, notably among foreign investors. This is why AMLO's proposals have raised so much concern since his presidential campaign was launched.

AMLO affirmed that when it comes to energy, his priority is national sovereignty. His intentions still need to be spelled out in detail, but on the whole, they mark a step backwards, with the exception of the development of renewable energy. AMLO intends to cancel the reform in its current form, provide greater financial support for the two state-owned companies (Pemex and CFE), and limit the stakes of both foreign and domestic private investors in the sector.

Auctions of oil blocks were also halted (the fourth series was to have begun in February 2019). Private companies selected during previous auctions must complete their pledged investments within the next three years or have their blocks withdrawn. Concerning the oil sector in particular, he announced that six existing refineries would be upgraded and a new refinery would be built (construction costs are estimated at

Mexican oil production

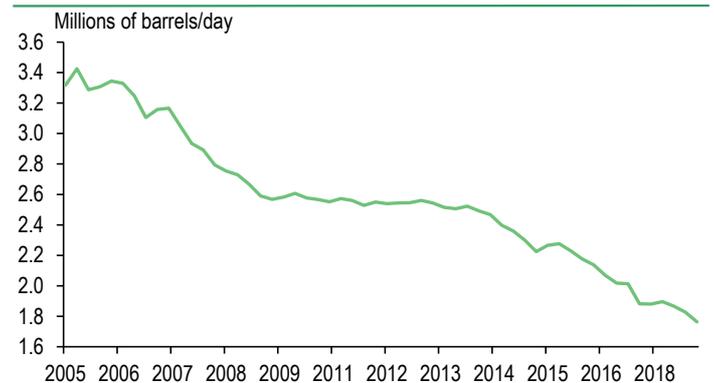


Chart 6

Source: Petroleos Mexicanos

Oil prices

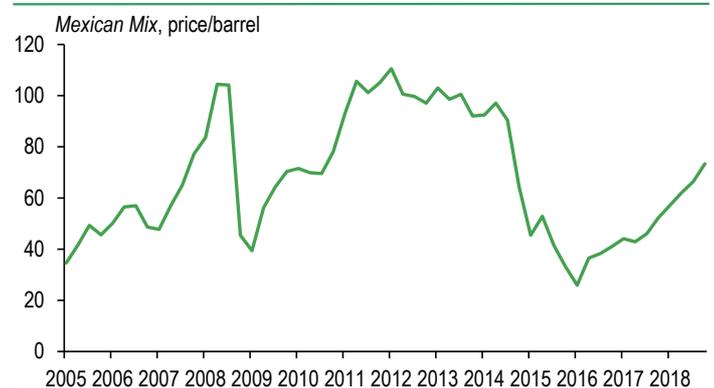


Chart 7

Source: Petroleos Mexicanos

0.7% of GDP). Oil exploration and production would also be stepped up. The goal is to increase production to 2.4 million barrels a day by the end of his mandate in 2024.

The government has relatively little credibility when it comes to implementing all these measures. The majority of these proposals must still be spelled out and financed. The resources needed to implement all the proposed measures are close to 1% of GDP, in addition to the investment already planned in Pemex (see next section).

What are the risks of budget overruns?

Unsurprisingly, the 2019 budget proposal presented on 15 December complies with the fiscal discipline that has been observed in recent years: 1/ the new administration's first budget proposal was largely prepared by the outgoing administration, and 2/ after the turmoil of October and November, the government naturally wanted to be reassuring. Parliament adopted the budget proposal without any major



modifications in the last week of December, and the budget was well received by investors and the rating agencies.

For the year 2019, the government is targeting a primary surplus of 1% of GDP, slightly higher than the 0.7% expected in 2018. The 2019 deficit is projected at 2.5% of GDP, very close to the expected 2018 deficit of 2.4% of GDP. The medium-term outlook calls for the primary surplus to hold at about 1% of GDP through 2024, and the debt ratio to be fairly stable at 45% of GDP.

The government's 2019 targets are based on reasonable assumptions: real GDP growth is estimated at 2%, inflation at 3.4% and the USD/MXN exchange rate at MXN20 (annual average). Even the assumption for oil prices is rather conservative, at USD 55 a barrel.

Revenues will fall, but the decline is expected to be limited (21.1% of GDP in 2019, compared to 21.7% of GDP in 2018). The new administration has pledged not to raise taxes. Moreover, on 31 December the president decreed that more than 40 municipalities near the US border would benefit from a lower VAT rate (to 8%, vs 16% for the rest of the country) and income tax cuts (by two thirds).

Spending will also be cut back to 23.2% in 2019, from 23.7% of GDP in 2018. In keeping with his campaign promises, spending will be increased on AMLO's new list of "priorities" (social welfare spending will increase by the equivalent of 1% of GDP), but to the detriment of other items. Certain ministries will be hit by major budget cuts (for example, -30% for the environment ministry, -29% for industry, -25% for communications & transport, and -9% for the interior ministry). Resources for Pemex and CFE, the two state-owned energy sector companies, will increase by 14% and 8%, respectively (relative to the 2018 budget), mainly to finance capital expenditure.

Lastly, contrary to initial announcements, social spending programmes will no longer be launched simultaneously, but rather one after the other. Some of the announced projects actually englobe existing projects that were financed by the previous government's budget, which explains why they do not engender additional spending.

On the whole, considering the solid macroeconomic fundamentals that the new administration inherited, there seems to be little risk of budget overruns in 2019. The debt profile (47% of GDP in 2017) is favourable, with non-resident holdings of public debt limited to only 30% of the total, a figure that has tended to decline in recent years. Similarly, the share of debt denominated in foreign currencies is also moderate, accounting for about 16% of GDP. The forex risk associated with the depreciation of the peso against the dollar or with a large share of non-resident investors during the rollover of existing debt seems relatively low.

Yet several questions persist in the medium term. First, the previous government already made significant spending cutbacks over the past two years, leaving little manoeuvring room for further cuts.

Public deficit

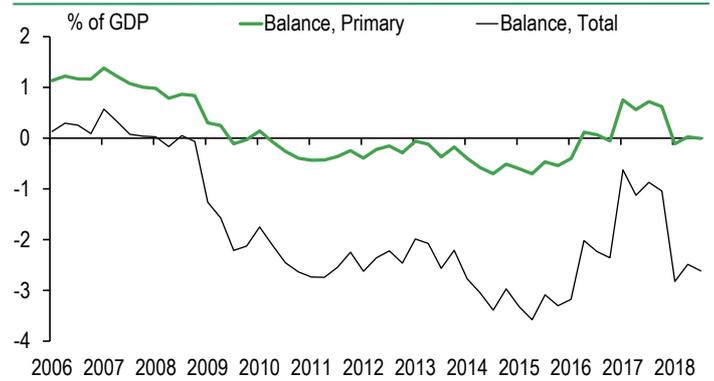


Chart 8

Source : INEGI

Public debt

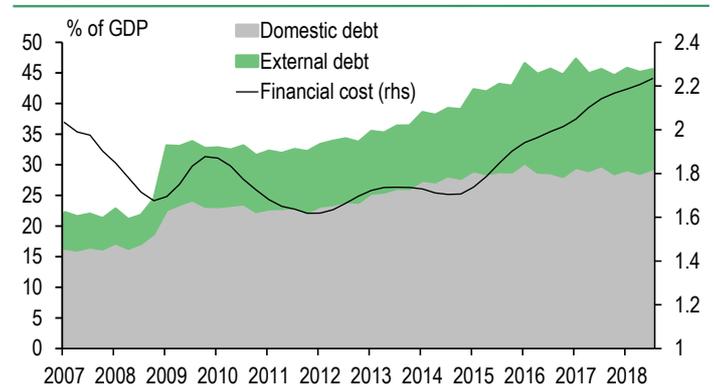


Chart 9

Source : Secretary of Finance & Public Credit

Second, the budget could be strained by several "overlooked" items, such as the costs associated with the cancellation of the Mexico City airport project, the upgrading of Pemex refineries, the installation of hydroelectric power plants, and the conversion of CFE's thermoelectric power plants. Third, the reallocation of spending on behalf of state agencies and state-owned companies in the energy sector creates a major new source of vulnerability for public finances given the capital expenditure necessary to increase production (oil-related revenues still account for nearly 20% of the total).

In particular, the government's determination to increase capital expenditure at Pemex and CFE could require recurrent capital injections in the two state-owned companies in the years ahead. Moreover, additional resources allocated to the state-owned companies could prove to be too small to halt the decline in production at Pemex and the contraction in oil reserves. Oil production dropped by 9% and 8%, respectively, in 2017 and 2018, and the decline could continue in 2019-2020. Pemex's financial situation is likely to remain (very) fragile in the years ahead, especially if it continues to increase its capital expenditure.



What about the impact on external vulnerability?

Although the Mexican economy boasts solid macroeconomic fundamentals on the whole, the country is still vulnerable to a reversal of investor sentiment. The proposed policies lack clarity, especially concerning the future of the energy sector reform. This could tarnish the country's attractiveness for foreign investors. Consequently, external vulnerability risks increasing during AMLO's mandate.

Nonetheless, Mexico's external vulnerability is not a real source of concern in the short term. Over the past 10 years, the current account deficit (which averaged 1.7% of GDP between 2010 and 2017) was usually covered by FDI inflows (which also averaged 1.7% of GDP between 2010 and 2017). This tendency is expected to continue (chart 10). In the medium term, we expect the current account deficit to level off at about 1.5% of GDP. It will continue to be financed by FDI. Mexico has substantial reserves, roughly USD 175 bn in December 2018 (about 4 months of imports). Even if investor sentiment were to deteriorate rapidly, Mexico has the necessary resources to meet its liabilities.

Since 2008, Mexico has also had access to a Flexible Credit Line (FCL) with the IMF⁴, an immediately available contingent credit facility of nearly USD 88 bn. This credit line provides additional assurance that the country can withstand any shortages of capital flows.

Fears about future trade relations with the United States (the US accounts for nearly 80% of Mexican exports) have eased significantly since the final signing of CUSMA, which ended more than a year of tense relations between the three countries during which the US threatened to definitively withdraw from the trade agreement. The details of the new agreement have not been released yet and it is still difficult to evaluate its impact on Mexico.

The main changes are likely to pertain to the automotive sector. The "rules of origin" were changed: for goods to circulate freely without tariffs, the percentage of a vehicle's components manufactured in North America was increased to 75%, from 62.5% previously. The goal is to

⁴ Flexible credit lines were designed to respond to the financing demands of a country that presents very solid economic policies and a track record for preventing and resolving crises. This instrument was created as part of the reform engaged by the IMF to modify the conditions under which it grants loans to countries which encounter cash flow problems, by adapting to their specific situation and needs. To date, three countries have called on FCL: Colombia, Mexico and Poland (until 2017). None have drawn on the credit lines, but the FCL provides these countries with precious assurance and assistance to strengthen market confidence during periods of growing risks.

Current account deficit & FDI

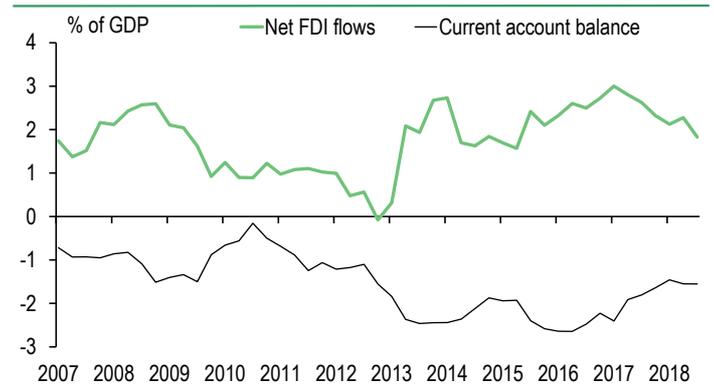


Chart 10

Source: Central Bank of Mexico

Hot money

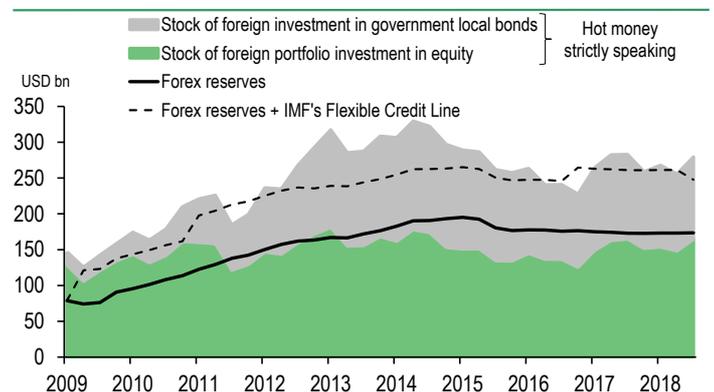


Chart 11

Source: Central Bank of Mexico, IMF

prevent NAFTA's advantages from spreading to products originating in non-member countries, with only minor transformations being made in North America. In the automotive sector, 40% of production must also come from factories that pay a minimum wage of at least USD 16 an hour.

Imposed by the United States, this measure targets Mexico directly so that vehicle assembly can be repatriated to the United States. Yet it might not suffice: vehicles that do not meet this criterion will still be able to enter the US by paying a tariff of 2.5% (based on the World Trade Organisation's most-favoured nation clause). This means it would still be attractive to assemble vehicles in Mexico before exporting them to the US. Moreover, a special clause will partially exempt Mexico and Canada from the punitive tariffs stipulated in article 232, which the US president can call on when invoking "national security" concerns. In practice, this means that Mexico can export a quota of 2.6 million vehicles to the US without risking punitive tariffs. This measure limits the growth potential of Mexico's automotive industry, since total exports to the US accounted for 2.3 million vehicles in 2017.



The final agreement contains a radical change in the “sunset clause” proposed by the United States, which would have “automatically” terminated the trade agreement every five years, if the signing partners are unable to agree on the terms of renewal. In the end, the new treaty will be valid for 16 years and can be revised after six years, a period beyond the Trump presidency, even if he were to win the 2020 elections.

Conclusion

In general, the Mexican economy has solid macroeconomic fundamentals, but the country is still exposed to a change in investor sentiment. AMLO has launched a two-pronged policy, with one part designed to reassure investors (central bank independence; commitments to avoid eroding public finances and to support the free trade agreement, despite campaign promises to the contrary) and the other to uphold his campaign promises (fight corruption, reduce inequality, reform the energy sector), but he will not be able to conduct both over the course of his mandate.

The lack of clarity over energy sector reform raises fears of backtracking, which risk straining public finances and discouraging investors. From a broader perspective, any signs of backtracking could damage the government’s credibility and undermine the country’s attractiveness.

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