BIS OXFORD ECONOMICS

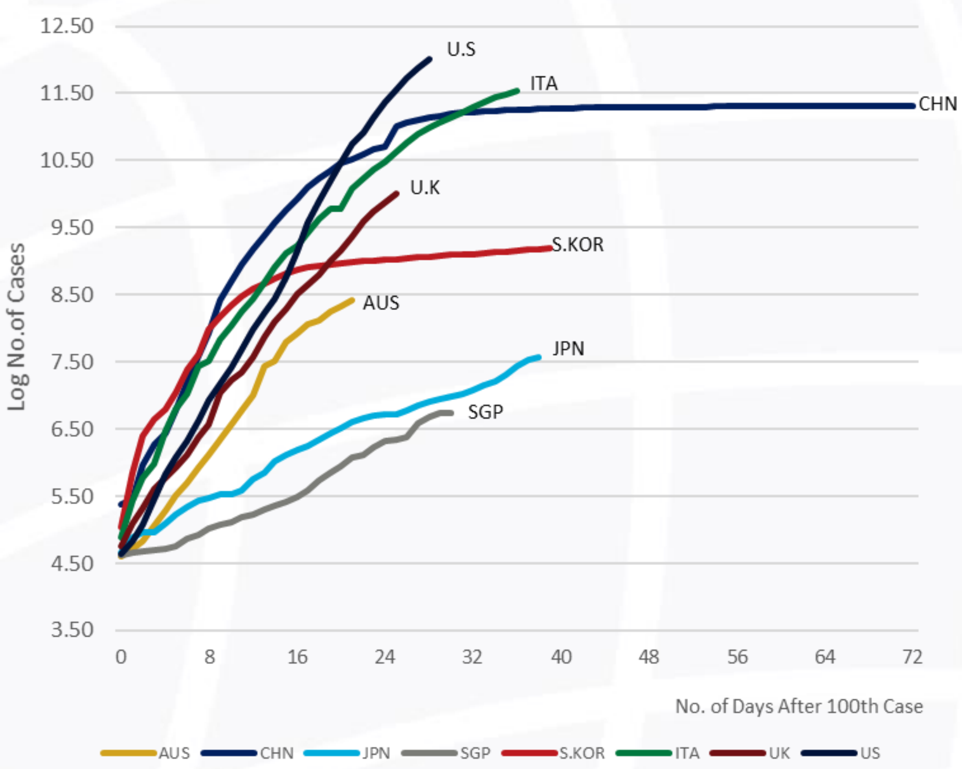
MACROECONOMIC CENTRAL SCENARIO AND DOWNSIDE SCENARIO FORECAST

PREPARED FOR THE AUSTRALIAN ENERGY MARKET OPERATOR

07 April 2020

CORONAVIRUS (COVID-19) CASE DEVELOPMENT

Fig 1. No of cases by days since 100th case



Source: European CDC – Situation Update Worldwide (1st April, 2020)

- China (the epicentre of the initial outbreak) and South Korea were the first to record cases of COVID-19. The respective governments responded swiftly with immediate lock-down.
- Australia, while not in official lock-down, also moved promptly to close its borders to international travel, as cases reached its shores, in an effort to contain the outbreak.
- Domestic travel and activity has since been reduced to essential services only. Social distancing requirement have also been put in place. Consequently the near term economic outlook is shaping up to look similar to a lock-down scenario.
- While an economic downturn seems imminent, the biggest uncertainties remain the depth of the downturn and the time to recovery. This will largely be underpinned by the successful containment of the COVID-19 outbreak and the trajectory that this takes.
- Given China and South Korea lead in examples of countries with lock-down, that appear to have successfully contained the cases, we benchmark to their case trajectory and the economic impacts for our near term macroeconomic update for Australia.

CENTRAL SCENARIO: ASSUMPTIONS & RESULTS

CENTRAL SCENARIO: KEY ASSUMPTIONS

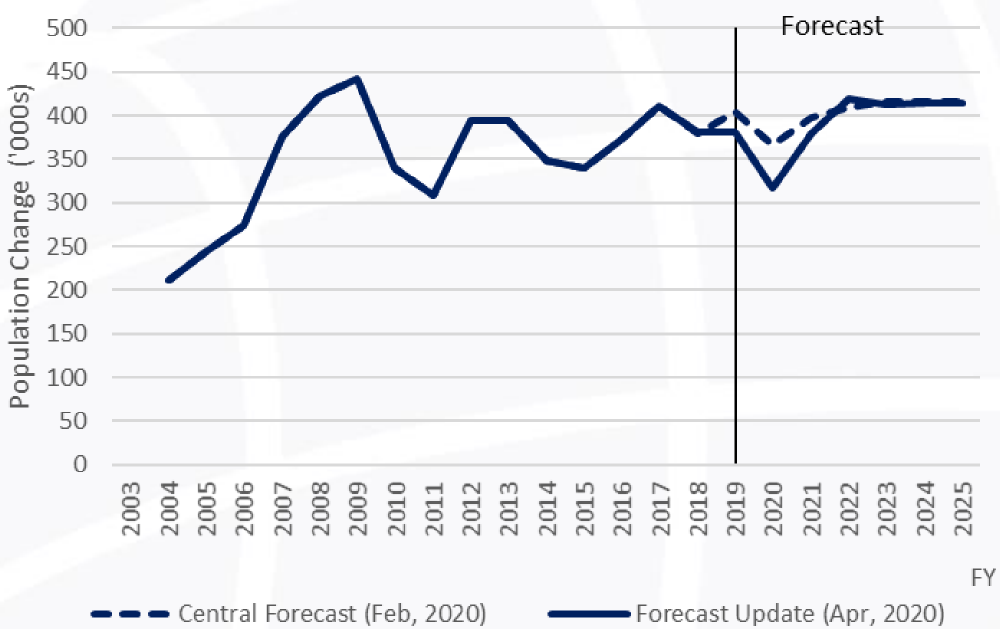
- After a period of relatively rapid increase, growth in new COVID-19 cases in Australia is assumed to slow, as the travel restrictions and social distancing measures slow the rate of transmission.
- The baseline assumes that the severe restrictions on activity that are currently in place are maintained until the end of Q2 2020. After this some relaxing is allowed (although the majority of restrictions remain in place throughout Q3 and possibly beyond), with rigorous testing and quarantining measures used to contain any outbreaks that occur to prevent the health system from being overrun.
- International borders will remain closed to international travel for some time longer, to avoid re-importing the disease. Long term, a significant proportion of the population need to be vaccinated (and potentially re-vaccinated) to permanently prevent outbreaks.

CENTRAL SCENARIO ASSUMPTIONS: ECONOMIC ACTIVITY

- Following the gradual removal of restrictions, economic activity is also expected to normalise. The RBA is assumed to maintain very accommodating monetary settings for quite some time, with the cash rate not expected to rise until 2023. Further fiscal support, in the form of a growth package, is also assumed – this will be vital to kick-starting the economy after the shutdown.
- In spite of fiscal stimulus through the shut-down period, some domestic businesses will not survive the downturn. Over time, the employment and activity associated with these resources is recovered, but there is a loss in cumulative income (output)
- This is particularly true in the travel and tourism sectors. The restrictions on international travel movements are assumed to remain in place for quite some time, until testing and other protocols can be put in place to ensure the disease is not re-imported. Beyond this, consumer preferences are likely to shift, with reduced demand for travel all other things equal. Levels of activity eventually recover, but there is a significant loss of activity in the long run.

CENTRAL SCENARIO RESULTS: POPULATION

Fig 2. Population change outlook

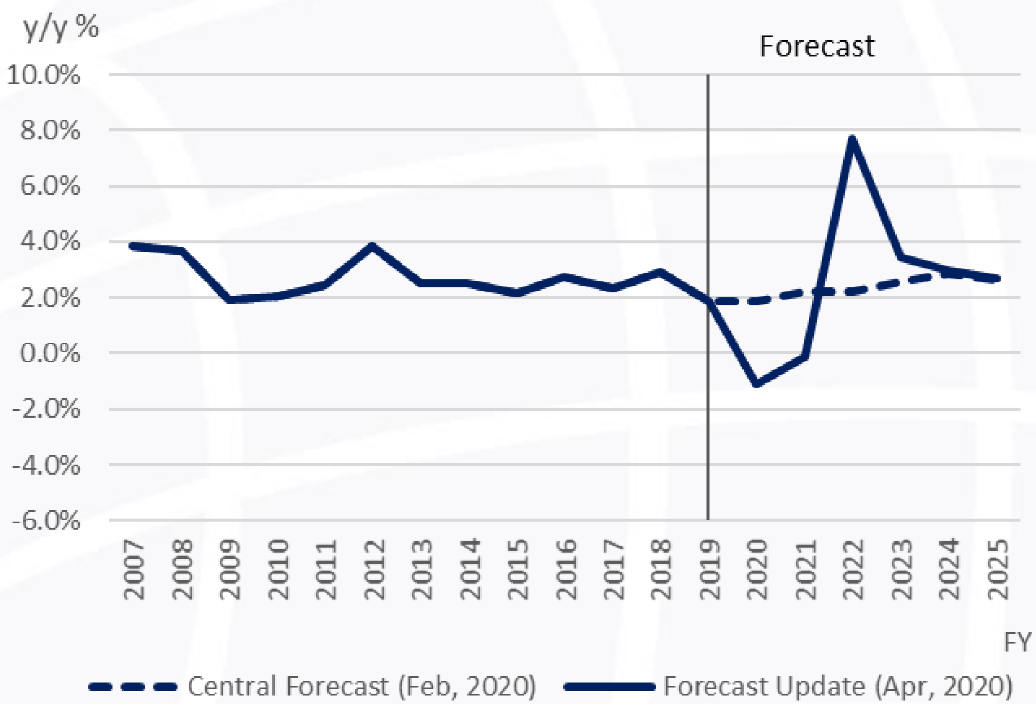


Source: Haver Analytics/ BIS Oxford Economics

- The restrictions on international movements (and our expectation that they will not be lifted in the near term) have prompted us to revise our projections for net overseas migration (NOM) and as a result total population.
- We now expect NOM to be significantly lower in FY20 and FY21. The main driver of this change is an expectation that some of the overseas students who weren't able to travel to Australia before the start of the 2020 academic year (or who travelled home before the travel restrictions were put in place) choose not to return to complete their studies. As a result there is a permanent long run loss to the level of the population, although this change is relatively small.
- At the state level, we are also anticipating that net interstate migration (NIM) flows move back towards zero – in the current environment the economic drivers of NIM are absent, and on a practical note it is now very hard to travel around the country. This change primarily impacts NSW (as a positive, NIM is less negative) and QLD (as a negative, NIM is less positive).

CENTRAL SCENARIO RESULTS: GROSS DOMESTIC PRODUCT

Fig 3. Y%Y Growth in Gross Domestic Product outlook

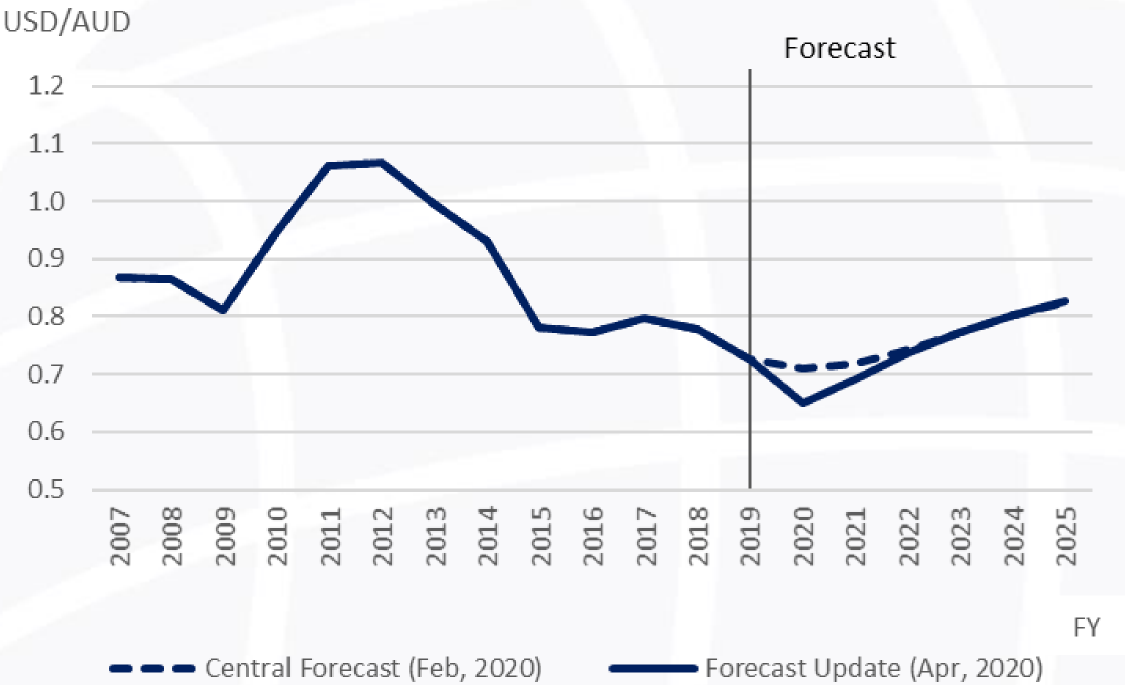


Source: Haver Analytics/BIS Oxford Economics

- GDP to contract by around 2% in FY20
- Foreign trade will be severely hit from the immediate travel bans – particularly for exports and imports of services (e.g. tourism and education).
- With over 170 countries with COVID-19 cases (as at 1st April), external momentum for goods will also be significantly hampered. But expected stimulus in China will provide support to commodities exports.
- Domestically, consumption will see an immediate slump as spending on non-essential services drops away. Businesses are also assumed to reduce their investment sharply, given the worsening environment.
- The majority of the private sector will feel the impact of the downturn. Customer-facing services will see the largest falls, but B2B sectors will feel the impact indirectly, as will manufacturing.
- NSW, VIC and QLD are the most impacted relative to baseline, while the importance of mining in WA will provide some relative protection (although output is still expected to decline).

CENTRAL SCENARIO RESULTS: EXCHANGE RATE

Fig 4. USD/AUD exchange rate outlook



Source: Haver Analytics/ BIS Oxford Economics

- As COVID-19 cases continue to develop, the uncertainty surrounding the economic ramifications have crept into the financial markets and set off a move by investor out of risk bearing assets to more 'safe haven' assets such as Japanese Yen, US Dollar, government bonds and gold.
- This has seen the US dollar appreciate sharply and a depreciation in other countries against the greenback.
- Moreover, the AUD has seen a typical flight out, with the currency often sold off in times of financial stress. Typically these moves are associated with concerns about the outlook for commodity prices (and the impact these have on the domestic economy). Although oil and gas prices have fallen sharply, iron ore and coal prices have held up relatively well (along with other commodities such as gold), which will lift revenues for producers.
- Over the medium term, the resolution of the pandemic and return to normal conditions is expected to trigger a recovery in the AUD; the Federal Reserve and the RBA are expected to normalise interest rates over a similar time horizon, which will limit upward pressure from a narrowing of the interest rate gap.

DOWNSIDE SCENARIO: ASSUMPTIONS & RESULTS

DOWNSIDE SCENARIO: KEY ASSUMPTIONS

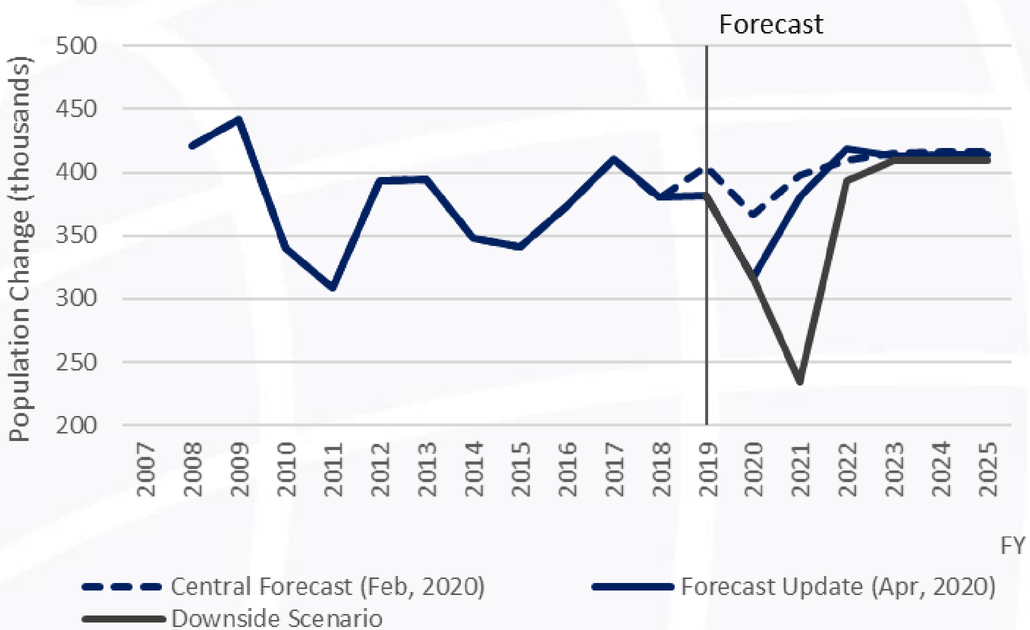
- In addition to the central scenario update, and recognising that there is considerable uncertainty (and potential downside risk) to the new projections, we have produced an alternative severe 'downside scenario' that considers what the economic pathway would look like if it takes longer to contain COVID-19 and the lock-down is extended for a greater (extreme) period.
- Referencing modelling released by the *MRC Centre for Global Infectious Disease Analysis (Imperial College London)*, we assume that it is not possible to contain the virus without maintaining severe restrictions on activity. These are assumed to extend for 15-18 months (until mid-2021), at which time a vaccine is ready to be administered to the general public.
- Until then, to slow down the virus spread and manage hospital capacity constraints, intermittent, extensive lock downs continue to be enforced around the world when clusters of new cases erupt – despite their best efforts at containment, the authorities are unable to prevent the spread of the virus without strict social distancing.

DOWNSIDE SCENARIO: KEY ASSUMPTIONS

- As a result, economic activity contracts by much more than in the baseline, as many firms are forced into bankruptcy as a result of the extended restrictions. This is despite aggressive fiscal and monetary policy responses; the support packages announced and incorporated into the baseline projections are assumed to be extended in the scenario.
- In the long run, activity is permanently lower. The restriction on the international movement of people results in a level shift down in the population, and the bankruptcy of firms and extended periods of unemployment for some workers erodes the economy's productive potential, weighing on output in the long run.

DOWNSIDE SCENARIO RESULTS: POPULATION

Fig 5. Population change outlook

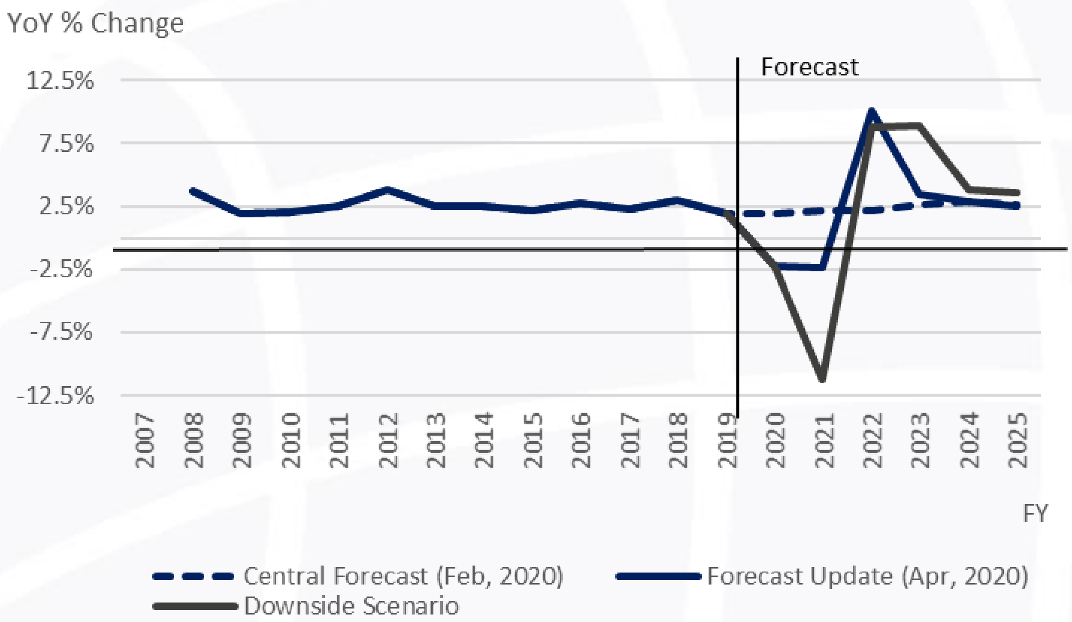


Source: Haver Analytics/ BIS Oxford Economics

- In the downside scenario, international borders remain closed for longer. This in turn leads to a sharp fall in overseas migration flows in the near term.
- The drag on net overseas migration will be deeper and longer lasting than in the central scenario.
- As border controls are lifted, we expect a gradual recovery in NOM. However, significant permanent job losses in some sectors within the downside scenario will mean that less overseas job seekers will be attracted and cumulative NOM does not return to pre-COVID-19 levels.
- Consequently, there will be a permanent loss in population growth over the long-term and this will also dictate long run labour market outcomes, consumption, investment needs and ultimately economic growth.
- In relative terms, the impact is greatest on NSW and VIC, which accrue the greatest share of net overseas migration, while the smaller states are relatively less exposed.

DOWNSIDE SCENARIO RESULTS: GROSS DOMESTIC PRODUCT

Fig 6. Gross Domestic Product YoY growth

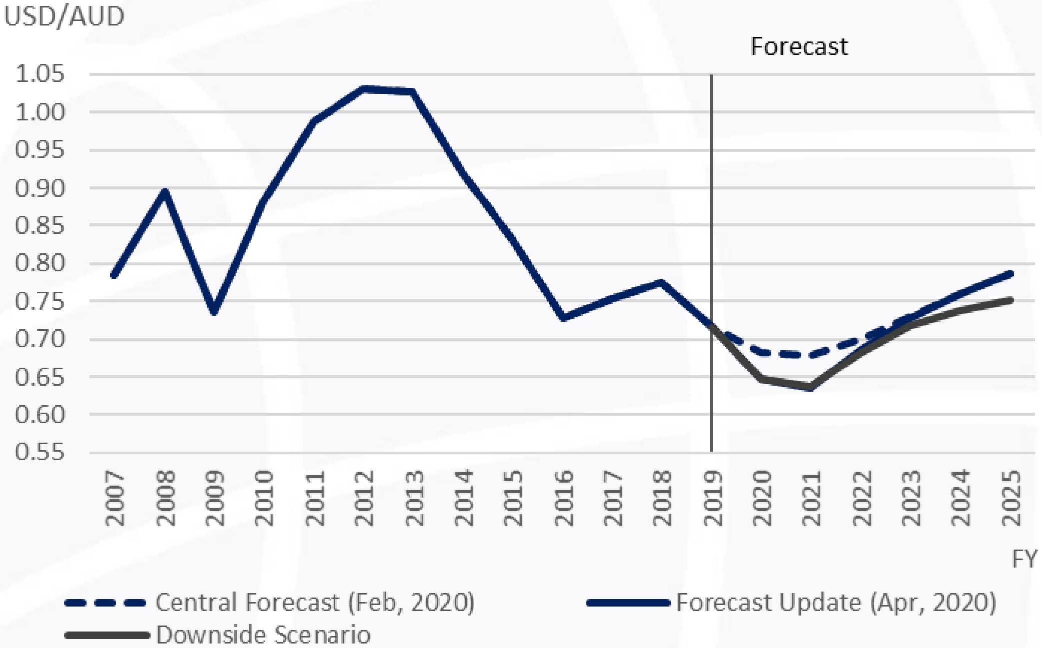


Source: Haver Analytics/ BIS Oxford Economics

- With the base scenario assuming that the severe restrictions on activity are maintained until June 2020, the projected growth rate for FY20 is broadly the same. But the need maintain the restrictions until mid-2021 results in the economy taking a second leg down, with an 11.2% pts contraction in FY21.
- Despite government and central bank support packages, more jobs losses will ensue and an increasing number of firms enter insolvency. wages will remain depressed for longer. Consumption falls sharply in FY20 and FY21, as the direct impact of limits on activity are amplified by the loss of income and confidence.
- Investment will also have a deeper and longer contraction. We expect government investment will lead the rebound, driving recovery post lock-down, as government inject fiscal stimulus focussed on kick-starting the economy from FY22 onwards.
- Overseas trade, particularly for services, will take a longer time to regain momentum after the lock-down is lifted, as globally we expect people will remain cautious and it will take some time before they are travelling overseas for business or leisure.

DOWNSIDE SCENARIO RESULTS: FOREIGN EXCHANGE RATE

Fig 7. Foreign exchange rate outlook (USD/AUD)



Source: Haver Analytics/ BIS Oxford Economics

- In the near term, the need for all countries to extend lockdown periods and severely curtail activity results in limited further downward pressure on the AUD. This largely reflects the deterioration in all country's fundamentals.
- We expect in the downside scenario, central banks around the world will continue to floor policy rates and practice quantitative easing for longer, in an effort to maintain credit flow amidst this subdued economic environment.
- Over the medium term, as economic activity recovers, central banks around the world resume rate normalisation, but at a very slow, gradual pace; it is likely that it would take until the end of the 2020s before the cash rate reached its new terminal rate.
- While rate normalisation will be further delayed in the downside scenario, as in the case of the central scenario, Federal Reserve and the RBA are expected to normalise interest rates at a similar pace, limiting upward pressure from a narrowing of the interest rate gap. Over the long run, the deterioration of the growth environment leads to a small depreciation (relative to the baseline projection).

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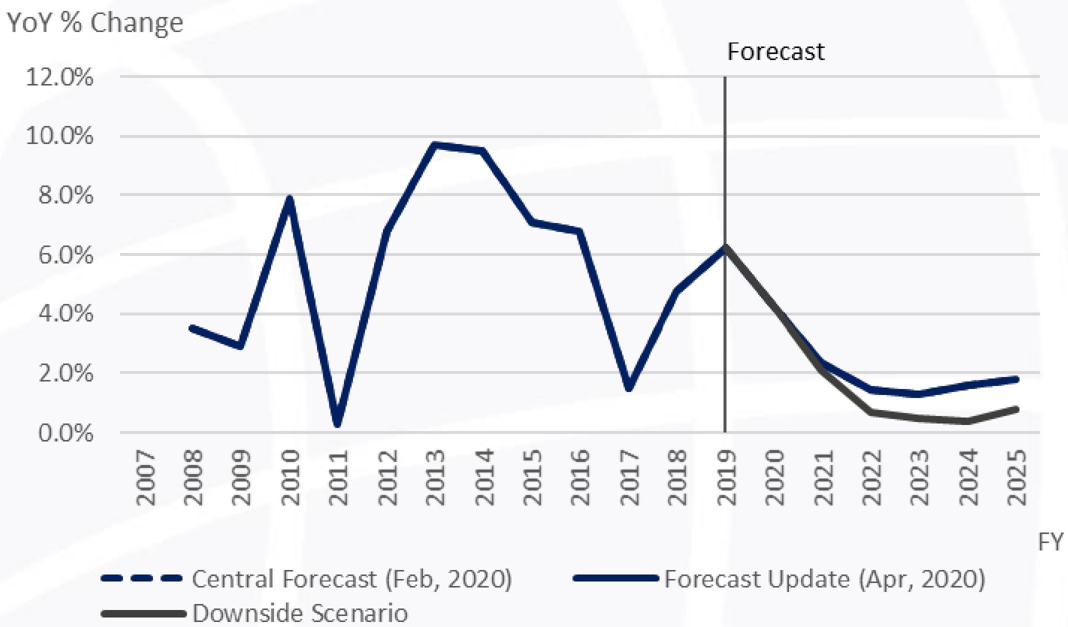
DOWNSIDE SCENARIO RESULTS: MINING GVA

Fig 8. Mining GVA YoY growth

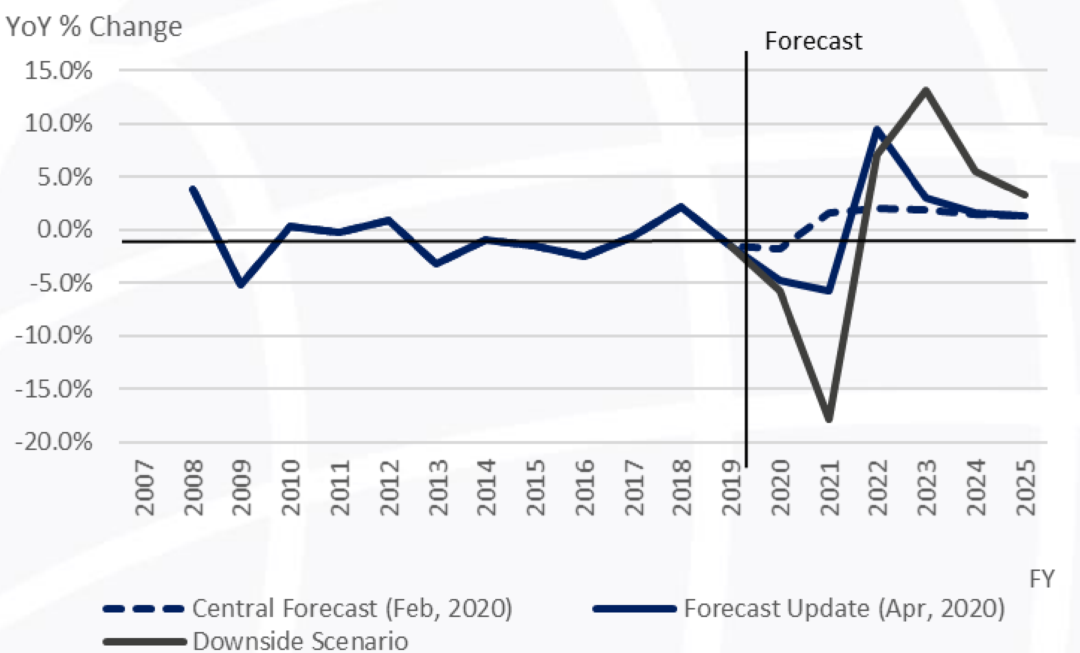


Source: Haver Analytics/ BIS Oxford Economics

- In the central scenario, with the exception of oil, mining related commodity prices are expected to be through the worst of their downturn in H1 2020.
- Iron ore prices have held up, due to supply disruptions in Brazil and Australia while base metals and coal have relatively limited exposure to the new epicentres of the COVID-19 outbreak (US and Europe). Their main source of demand (China) is on the path to recovery, helped by a series of supportive fiscal and monetary policy measures.
- As a result, we expect mining GVA to be relatively resilient to the headwinds from the COVID-19 outbreak going forward, though a wind-down from historical levels will continue as production reaches capacity.
- In the near term, the outlook is similar to the baseline, with China expected to ramp up its stimulus packages in order to maintain some growth through 2020 and into 2021. But over the long run, weaker global demand for commodities (as a result of the negative shock to potential output in a number of economies) begins to weigh on the sector.

DOWNSIDE SCENARIO RESULTS: MANUFACTURING GVA

Fig 9. Manufacturing GVA YoY growth

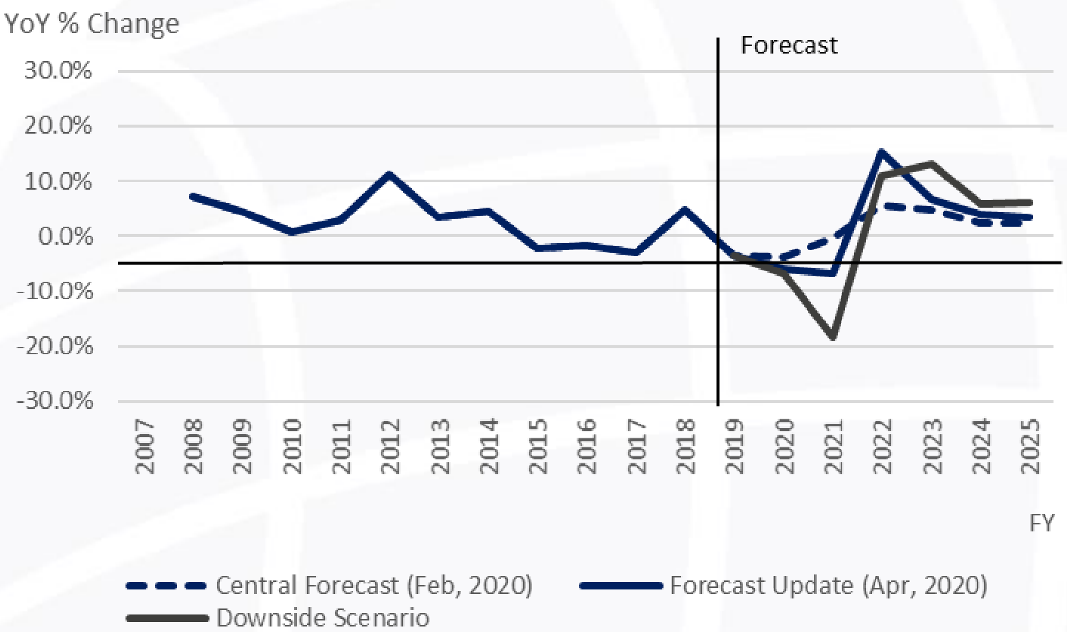


Source: Haver Analytics/ BIS Oxford Economics

- Although supported by food processing and oil refined products, both of which use limited inputs from overseas, manufacturing output still falls sharply in the baseline, contracting by 4.8% in FY20 and 5.7% in FY21. This reflects both supply chain disruption and the weak international environment, with exports of manufactured products set to fall sharply in the near term.
- In the downside scenario, the trade environment becomes even more challenging and supply chains grind to a complete halt, which results in a deeper and much more prolonged downturn. Manufacturing GVA falls by 17.9% in FY21, before the recovery gets underway in FY22. But the extent of the damage to supply chains means that the recovery period lasts for over two years, and there is considerable long run damage to the level of potential output.

DOWNSIDE SCENARIO RESULTS: CONSTRUCTION GVA

Fig 10. Construction YoY growth

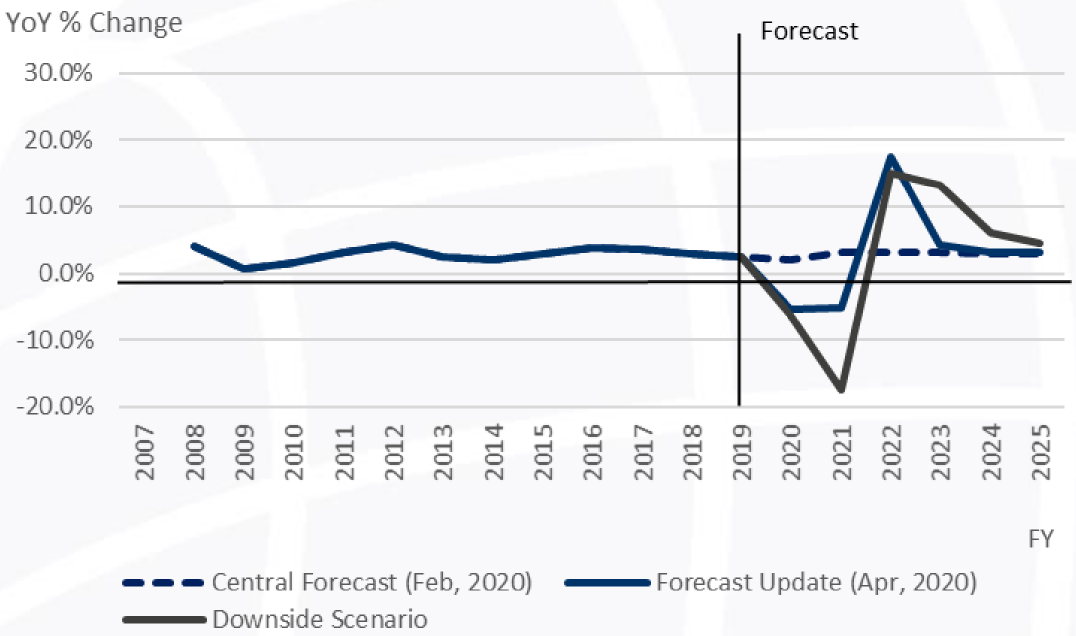


Source: Haver Analytics/ BIS Oxford Economics

- With the restrictions on activity not extending to the construction sector and supply chain disruption not likely to bite until Q3 2020, construction GVA is likely to be close to the central forecast projection from February 2020 (note that this projection assumed a fall in GVA, as a result of the downturn in residential construction activity).
- Moving into FY21 and beyond, the downside scenario sees a marked acceleration in the pace of decline in activity. For residential construction, a combination of weaker overseas migration and restrictions in the housing market significantly reduces demand for new construction.
- Non-residential construction will also lose momentum, with all sectors reining in their capital expenditure plans. Hotels and restaurants, retail facilities and arts facilities are the most exposed, along with higher education.
- In the downside scenario, these headwinds will intensify, resulting in a contraction in Construction GVA by 6.9% in FY20 and 18.2% in FY21.

DOWNSIDE SCENARIO RESULTS: PRIVATE SERVICES GVA

Fig 11. Private Services GVA YoY growth

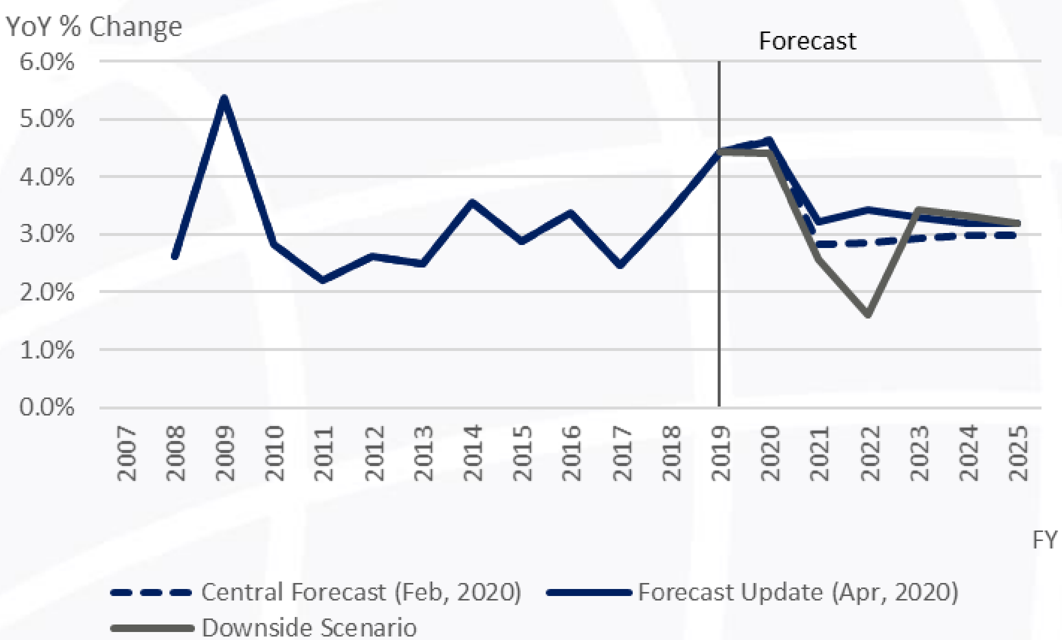


Source: Haver Analytics/ BIS Oxford Economics

- Unlike previous economic cycles, the service sector is extremely exposed to the impacts of the pandemic and public health response. Large parts of the service economy, such as wholesale and retail trade, food and accommodation services, travel, and real estate services have been brought to a near-halt as a result of social distancing.
- In the central scenario, this will result in a 5.4% contraction in FY20 while in the downside scenario the impact will be more profound and longer-lived, resulting in substantial falls in output in FY20 and FY21.
- There will be a strong immediate rebound in growth for private services GVA following the unwinding of the lock-down, as services start back up after being cut back severely during lock-down. But it takes time for activity levels to normalise in the central scenario, partly as a result of the restrictions being lifted gradually and partly as a result of a lingering drag from the downturn. In the downside scenario, the size of the permanent drag is much more pronounced, with all sectors seeing a reduction in activity relative to baseline.

DOWNSIDE SCENARIO RESULTS: PUBLIC SERVICES GVA

Fig 12. Public Services GVA YoY growth

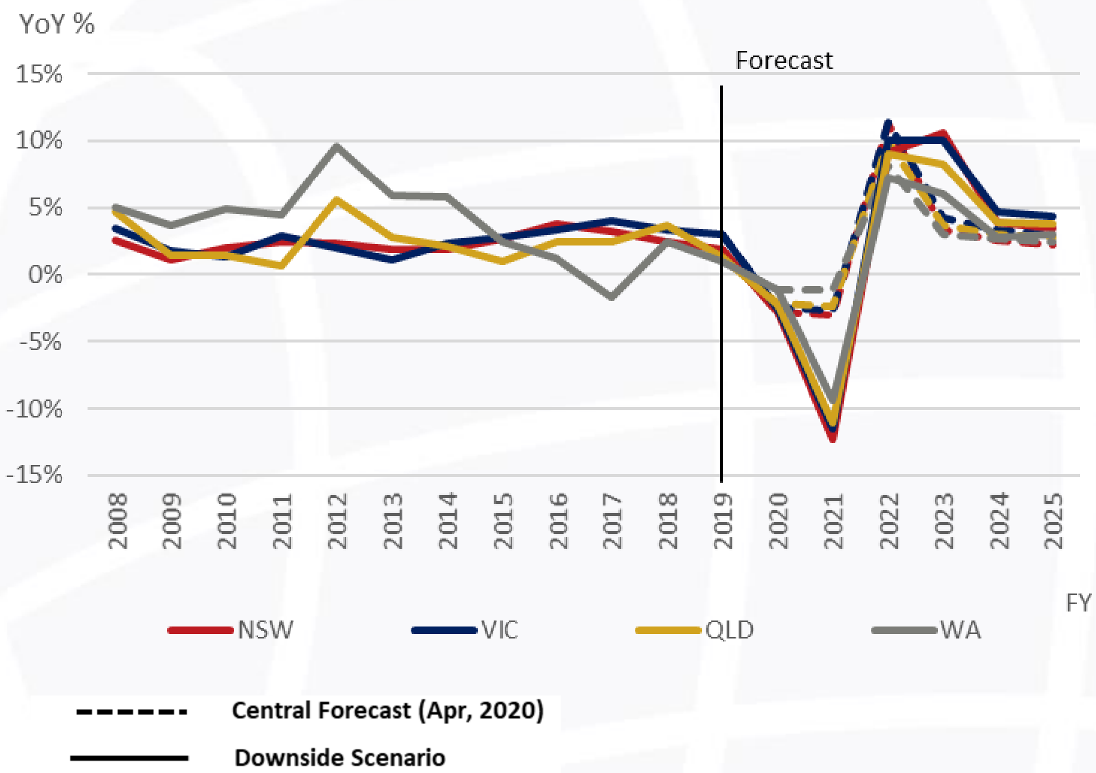


Source: Haver Analytics/ BIS Oxford Economics

- Health, Education and Public Administration are collectively captured as public services.
- COVID-19 has placed heightened demand on our healthcare systems and related sectors as well as public administration (such as Centrelink and other My Gov services).
- Consequently, public services GVA, in contrast to other sectors of the economy, will be higher than the projections prior to COVID-19 outbreak. Therefore, we have revised up our April forecasts compared to the February baseline (although there is some offset from a weaker outlook for students).
- In the downside scenario, the demands on the health care system and public administration services are stretched for a longer period of time. But this is offset by the drag on higher education as a result of international students being (largely) unable to enrol and attend. This results in a sharp fall in the growth rate of public services in FY22, when the drop off in education services combines with a fallback in demand for healthcare services.

DOWNSIDE SCENARIO RESULTS: GROSS STATE PRODUCT (MAJOR STATES)

Fig 13. GSP YoY growth: NSW, VIC, QLD & WA

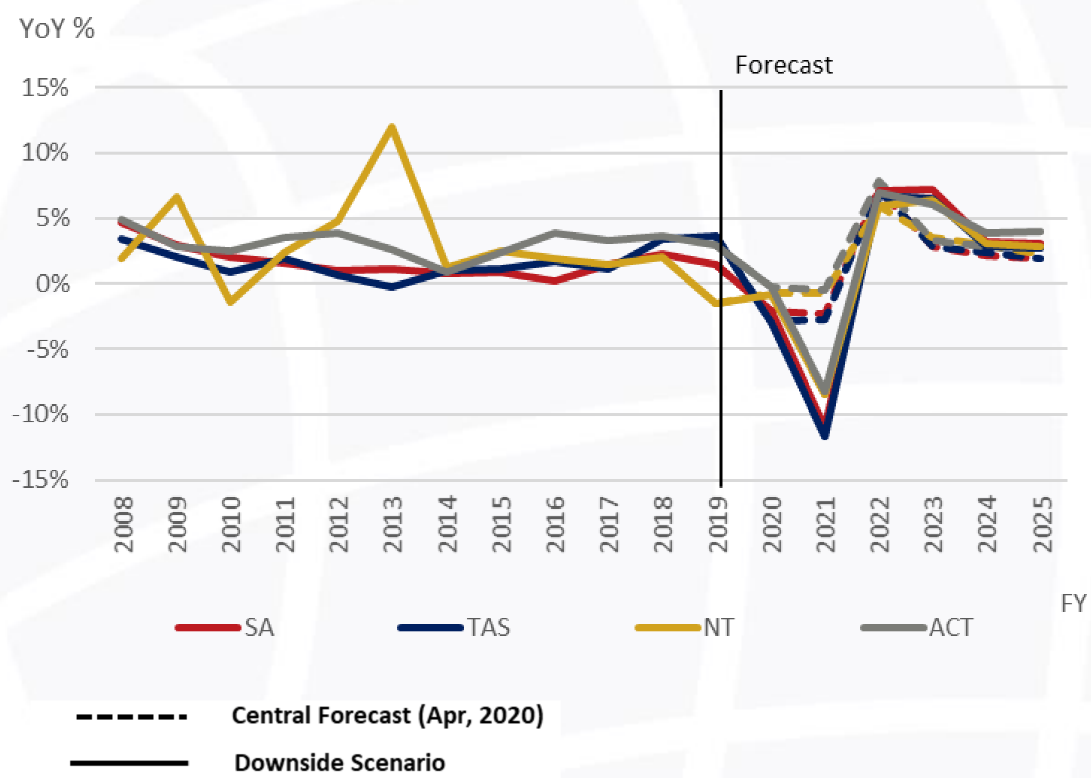


Source: Haver Analytics/ BIS Oxford Economics

- The impact of the lock-down on NOM is more pronounced for NSW & VIC, which accrue the largest number of overseas migrants. This in turn weighs more heavily on GSP in these states than elsewhere (QLD, WA).
- NSW GSP is weighed down further by the downturn in the construction sector, which comprises a significant portion of the states economy.
- For VIC, the downturn in private services places an additional drag on the economy.
- WA faces a more modest downturn in GSP of all the major states. While construction and services weigh on the economy, this is partially offset by the relatively resilient mining sector.
- While QLD performs marginally better than NSW and VIC, supported by its own mining sector, the downturn is deeper than in WA, reflecting the sectors much smaller composition in the state economy.
- Private services and construction face the greatest loss of activity in the downside scenario. Consequently, the worse economic outcomes become more pronounced for the states that make up the largest share of these industries (namely NSW and VIC).

DOWNSIDE SCENARIO RESULTS: GROSS STATE PRODUCT (MINOR STATES)

Fig 14. GSP YoY growth: SA, TAS, NT & ACT



Source: Haver Analytics/ BIS Oxford Economics

- TAS has the sharpest contraction (3% in FY20) in the central scenario, as a result of the state's reliance on tourism and higher education, both of which have been impacted hard by the restrictions on travel. The recovery in these areas will be gradual; these restrictions are likely to be the last ones to be removed, and we expect people will remain cautious for some time.
- South Australia and the Northern Territory are both relatively protected from the downturn. But supply chain disruption will be a significant factor in the coming months, particularly for Adelaide's manufacturing sector, and the expected recovery in conditions in NT will now take longer, with the pandemic set to delay some mining investment jobs s put out the recent signs of life in the economy.
- ACT is the strongest performing state (in relative terms). Public services dominate the state's economy and demand for this sector will remain elevated and supply will rise to meet it. This becomes even more pronounced in the downside scenario. Meanwhile, ACT also has limited exposure to the other forces (tourism related services and net overseas migration) that present drags on other state economies.

Global headquarters
Oxford Economics Ltd
Abbey House
121 St Aldates
Oxford, OX1 1HB
UK
Tel: +44 (0)1865 268900

London
Broadwall House
21 Broadwall
London, SE1 9PL
UK
Tel: +44 (0)203 910 8000

New York
5 Hanover Square, 8th Floor
New York, NY 10004
USA
Tel: +1 (646) 786 1879

Sydney
Level 8, 99 Walker Street
North Sydney NSW 2060
Australia
Tel: +61 2 8458 4200

Belfast
Tel: + 44 (0)2892 635400

Paarl
Tel: +27(0)21 863-6200

Frankfurt
Tel: +49 69 95 925 280

Paris
Tel: +33 (0)1 78 91 50 52

Milan
Tel: +39 02 9406 1054

Dubai
Tel: +971 56 396 7998

Philadelphia
Tel: +1 (610) 995 9600

Mexico City
Tel: +52 (55) 52503252

Boston
Tel: +1 (617) 206 6112

Chicago
Tel: +1 (773) 372-5762

Los Angeles
Tel: +1 (424) 238-4331

Florida
Tel: +1 (954) 916 5373

Toronto
Tel: +1 (905) 361 6573

Hong Kong
Tel: +852 3103 1096

Tokyo
Tel: +81 3 6870 7175

Singapore
Tel: +65 6850 0110

Melbourne
Tel: +61 (0)3 8679 7300

Email:
mailbox@oxfordeconomics.com

Website:
www.oxfordeconomics.com

Email:
info@bisoxfordeconomics.com.au

Website:
www.bisoxfordeconomics.com.au