LIVERPOOL INVESTMENT LETTER

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Julian Hodge Institute of Applied Macroeconomics

LIVERPOOL RESEARCH GROUP IN MACROECONOMICS

LIVERPOOL RESEARCH GROUP IN MACROECONOMICS

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PROJECTING THE EFFECTS OF A FISCAL REFORM PACKAGE

In this Letter we discuss the prospects for taxes and debt in the context of the post-Covid economic prospects. We begin with a background note on the key issue of how tax behaves in response to the economy.

A background note on tax behaviour

Taxes and benefits (tax credits) vary greatly with income, since the UK has a highly progressive and redistributive tax system. Usually, i.e. except when it is explicitly suspended, the tax bands are indexed to inflation, so that real tax receipts vary only with real income. But, as now in fact, this indexation has been suspended by the recent budget — currently inflation too raises taxes.

The average (net of benefit) tax yield is 0.20. This average rate consists about half of income taxes and half of expenditure taxes (mainly VAT). For income taxes, the top 50% of income earners have 75% of income and pay 88.4% of income tax. Their average tax rate is about 14%. For those in the bottom 50%, with 25% of income, they pay negative tax of about 9% of their income. (Source: Table 2.7 of HMRC Income Tax Statistics).

So the average net tax rate on income is (0.75(the share of income of top 50%) x 14%)-(0.25x9%)=8%. The average tax rate on other indirect taxes would then be about 12%, so that the total net tax rate is about 20% = 8 % +12%. This is in line with the calculated average net tax rate. This average net rate, ART, is to be compared with the marginal tax rate. For income tax this is around 0.4 (for some it will be higher and for benefit recipients it is close to 0.7; but for very many it is the top band rate of 0.4, while for minorities it is less or much more) and for indirect taxes around 0.2 (the marginal VAT rate). Hence on £100 of income extra total tax will be £60, a marginal tax rate, MRT, of 60%. The elasticity of tax revenue to income is MRT/ART, which is therefore about 3. This implies that the ART rises by 2% for every 1% rise in GDP — an elasticity of the ART of 2 — while tax receipts net of benefits rise by 3% for every 1% rise in GDP — a tax total elasticity of 3.

These are theoretical calculations of the elasticity to real GDP; but because they are based on the actual UK tax structure, they can be considered strongly based. In the data these changes are mixed up with many policy changes which are hard to identify. For one recent period, 1993–2000, we can get a rough idea of the trend due to GDP. The ART rose 55%, while GDP rose 23%, implying an ART elasticity to GDP elasticity of about 2, in line with our theory. From 2008 to 2019, GDP rose 27% and the ART 20%, a rather smaller ART elasticity of 0.7. Empirically, an ART elasticity must be in the range of 1-2, and most probably around the top of it.

Table 1: Summary of Forecast

	2018	2019	2020	2021	2022	2023	2024
GDP Growth[1]	1.3	1.4	-9.9	5.4	8.5	3.3	3.0
Inflation CPI	2.4	1.8	1.0	1.6	5.0	4.0	3.0
Wage Growth	3.0	3.5	1.5	3.1	6.0	5.3	4.2
Survey Unemployment	4.1	3.8	4.5	6.1	5.2	3.6	2.8
Exchange Rate[2]	78.6	78.0	78.2	76.1	74.7	74.0	78.0
3 Month Interest Rate	0.4	0.8	0.2	0.1	1.5	4.5	5.0
5 Year Interest Rate	1.0	0.6	0.2	0.5	1.5	4.7	5.0
Current Balance (£bn)	-82.9	-89.1	-58.4	-51.1	-38.9	-27.8	-21.0
PSBR (£bn)	39.3	49.1	312.3	140.4	96.2	65.3	28.8

[1]Expenditure estimate at factor cost
[2]Sterling effective exchange rate, Bank of England Index (2005 = 100)

In the tables that follow we show the rising spending (corresponding roughly to Departmental spending limits, DEL, in the OBR report), against rising tax receipts net of tax credits (these are shown as 'welfare spending' by the OBR and included in Total Managed Expenditure, TME, their spending aggregate). We do this both for the Base Run, where current policies continue; in this base case the debt/GDP ratio falls to 52% by 2034/35, illustrating the point that there is no need to rush and pay off a large debt ratio after a crisis such as a war or Covid — it will fall steadily to a safe sustainable level with growth. Then we do the same for the Variant case where we implement the Fiscal-Fund-plus-Reform package of tax cuts and infrastructure spending set out in the table below. According to our models this raises growth by 1% p.a. over the decade to 2034/35; with higher growth of GDP comes a rising ART after the initial drop in revenues from the programme. Again, the debt ratio falls with now faster growth to a safe and sustainable 45% by 2034/35. In effect the package pays for itself.

Table 2: A fiscal stimulus package costing £100 billion p.a.

Tax Cuts	Amount
Cut corporation tax by 10%	£32 bn
Abolish the very top additional 5% rate	£1bn
Cut the top rate of income tax to 30%	£15bn
Cut the standard rate of income tax by 5%	£28bn
Total Tax Cuts[1]	£76bn
Public Spending[2]	£24bn
Total Package	£100 bn

[1] Representing a weighted average tax cut across all income of about 15%
[2] On public services and infrastructure

Table 3: Basic Forecast

	Nom PSBR	Nom GDP	Nom Pub Spend	Spend/ GDP	PSBR/ GDP	Nom Debt	Debt Interest	Debt/ GDP	Net Taxes	Net Tax Rate
2019/20	49.0	2201.4	473.2	21.5	2.2	1621.0	48.1	73.6	472.3	21.5
2020/21	313.6	1963.6	473.2	24.1	16.1	1934.6	39.8	98.5	199.4	10.2
2021/22	139.8	2233.3	474.5	21.2	6.3	2074.4	42.6	92.9	377.3	16.9
2022/23	58.2	2481.4	544.5	21.9	2.3	2132.6	41.1	85.9	527.3	21.3
2023/24	42.5	2660.8	587.7	22.1	1.6	2175.1	42.9	81.7	588.1	22.1
2024/25	27.8	2814.4	633.6	22.5	1	2202.9	41.1	78.3	646.9	23.0
2025/26	3.7	2931.4	658.0	22.4	0.1	2205.3	44.6	75.2	700.2	23.9
2026/27	0.2	3054.4	712.0	23.3	0	2205.5	47.9	72.2	759.7	24.9
2027/28	0.2	3180.6	771.9	24.3	0	2205.7	51.0	69.3	822.7	25.9
2028/29	0.0	3311.8	836.9	25.3	0	2205.7	53.9	66.6	890.9	26.9
2029/30	0.0	3448.3	907.9	26.3	0	2205.7	56.8	64.0	964.7	28.0
2030/31	0.0	3590.2	985.1	27.4	0	2205.7	59.4	61.4	1044.6	29.1
2031/32	0.0	3736.2	1068.6	28.6	0	2205.7	62.0	59.0	1130.5	30.3
2032/33	0.1	3889.0	1159.5	29.8	0	2205.8	64.4	56.7	1223.8	31.5
2033/34	0.0	4047.7	1258.0	31.1	0	2205.8	66.7	54.5	1324.7	32.7
2034/35	-0.1	4212.2	1364.7	32.4	0	2205.7	68.9	52.4	1433.7	34.0

Note: Net Tax = Nom Pub Spend+ Debt Interest - PSBRM

Table 4: Variant Forecast — Fiscal Stimulus Package

	Nom PSBR	Nom GDP	Nom Pub Spend	Spend/ GDP	PSBR/ GDP	Nom Debt	Debt Interest	Debt/ GDP	Net Taxes	Net Tax Rate
2019/20	49.0	2201.4	473.2	21.5	2.2	1621.0	48.1	73.6	472.3	21.5
2020/21	313.6	1963.6	473.2	24.1	16.0	1934.6	39.8	98.5	199.4	10.2
2021/22	139.8	2233.3	474.5	21.2	6.3	2074.4	42.6	92.9	377.3	16.9
2022/23	58.2	2481.4	544.5	21.9	2.3	2132.6	41.1	85.9	527.3	21.3
2023/24	42.5	2660.8	587.7	22.1	1.6	2175.1	42.9	81.7	588.1	22.1
2024/25	127.0	2816.2	658.6	23.4	4.6	2302.1	41.1	81.7	572.7	20.3
2025/26	89.8	2960.8	683.0	23.1	3.1	2391.9	45.1	80.8	638.3	21.6
2026/27	75.6	3108.8	737.0	23.7	2.5	2467.5	49.0	79.4	710.4	22.9
2027/28	59.1	3264.3	796.9	24.4	2.0	2526.6	52.9	77.4	790.7	24.2
2028/29	38.6	3427.5	861.9	25.1	1.5	2565.1	56.6	74.8	880.0	25.7
2029/30	13.7	3598.9	932.9	25.9	0.9	2578.9	60.2	71.7	979.4	27.2
2030/31	-16.4	3778.8	1010.1	26.7	0.1	2562.5	63.6	67.8	1090.1	28.8
2031/32	-53.0	3967.8	1093.6	27.6	-0.6	2509.5	66.7	63.2	1213.3	30.6
2032/33	-96.4	4166.1	1184.5	28.4	-1.5	2413.1	69.4	57.9	1350.4	32.4
2033/34	-148.3	4374.5	1283.0	29.3	-2.5	2264.7	71.6	51.8	1503.0	34.4
2034/35	-209.9	4593.2	1389.7	30.3	-3.5	2054.8	73.2	44.7	1672.8	36.4

Note: Net Tax = Nom Pub Spend+ Debt Interest - PSBRM

Reconciling our projections with the OBR forecasts to 2024

Our own projections of future debt and public finances are far less dire than the official ones from the Treasury and OBR. The recovery should be very strong and there will be higher inflation until the Bank gets its post-Covid act together and tightens money. If marginal tax rates were held down and cut somewhat, in a future reversal of this gloomy budget direction, rising growth and inflation would cut the debt/GDP ratio down to 60% or less within the next decade.

Our projections of the PSBR on this basis give us £42.5 billion in 2023/4, 1.6% of GDP. The debt ratio by 2024/5 would be about 78% of GDP, down from around 100% today; debt before the crisis was £1.7 trillion, and the extra debt by then would be another £0.5 trillion, making £2.2 trillion in all, or against GDP by then of £2.8 trillion, hence 78% of GDP. With nominal GDP growth of 5% p.a. in our variant forecast with the fiscal reform package, and the PSBR running below 1% of GDP, the debt to GDP ratio would reach less than 50% in a decade from then.

The latest OBR forecast is relatively pessimistic about the recovery path in real GDP; it also forecasts unrealistically low inflation, at a steady 2%. By 2024 its nominal and real GDP projection is well below ours. It assumes a slow recovery and a substantial permanent failure to reach the previous path; the basis for this pessimism is quite unclear and out of line with the Bank's up to date assessment of the outlook, to which our view is much closer. We project a catching-up by end 2024 to the previous pre-Covid growth trend, of 2% p.a. 1989-2019 (see chart opposite). Furthermore, inflation is already strongly visible in sharply rising raw material prices. If we adjust the OBR tax revenues for our higher GDP forecast, including the effects of our higher inflation forecasts, the OBR's PSBR forecast for 2024–25 becomes a small surplus, against our £28 billion deficit- this makes some allowance for higher spending in response to higher nominal GDP. This suggests that the borrowing outlook is far from the grim picture painted by the OBR.

Table 4: Paths of Forecast Real GDP: 2019=100

	2020	2021	2022	2023	2024	2025
OBR	90.1	93.7	100.5	102.3	103.9	105.7
Bank	90.1	94.6	102.2	103.5	104.8	-
LPL	90.1	95.0	103.0	106.4	110.0	-

Figure 1: The Quarterly Recovery Path to the pre-Covid Trend

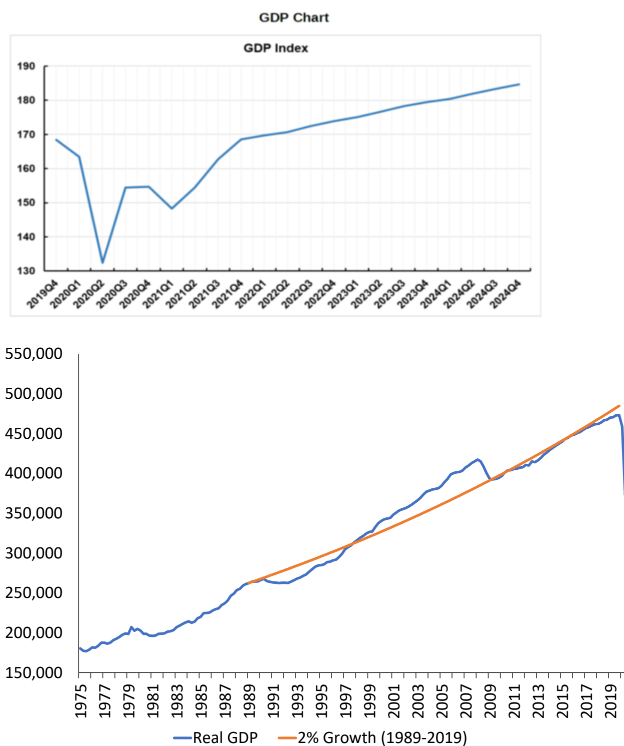

Table 5: OBR projections adjusted for effects of under-forecast of GDP

FY	OBR Spend	OBR Tax[+]	Nominal GDP under-fcast by %+	OBR Tax Adjusted[*]	OBR PSBR-adjusted
20	1140	786	-	786	354
21	1053	819	1.4	833	220
22	991	875	5.6	939	52
23	1030	924	9.0	1032	2
24	1068	964	11.9	1113	-45

[+] excluding effects of Budget tax measures. Spending includes debt interest.
[*] Tax raised by % under-forecast x1.3 (tax elasticity)
+Includes higher inflation: 5% 2022, 4% 2023, 3% 2024

The research basis for growth effects of tax and inflation effects of QE*

According to the Liverpool Model 2% off the average tax rate gains 1% on GDP in the long run by making the labour market more competitive. Second round effects of Brexit through the Fiscal Fund-plus would therefore boost the economy by a further 7% over the decade from 2020 — or another 0.7% pa on growth from 2020–2030. The remaining £24 billion extra spend on public services boosts growth by raising private productivity — we assume in line with our Regional Model (Gai et al, 2020) by another 0.23% per annum to the growth rate. Hence the whole post-Brexit programme from the new Fund boosts growth in the decade from 2025 by 1% per annum.

Recent work has confirmed these effects in recent UK data. Minford and Meenagh (2018) found that tax and regulative costs for entrepreneurs had a powerful causal impact on innovation and so productivity growth. This was further confirmed by Yang, Minford and Meenagh (2019), who also confirmed a link with inequality; and also at the regional level by Gai, Meenagh and Minford (2020).

With regard to the effects of QE on inflation, these are confirmed in Le et al. (2016) for the US and by Le et al. (2021) for the UK.

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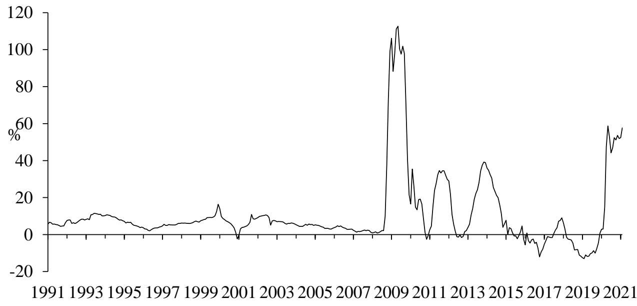
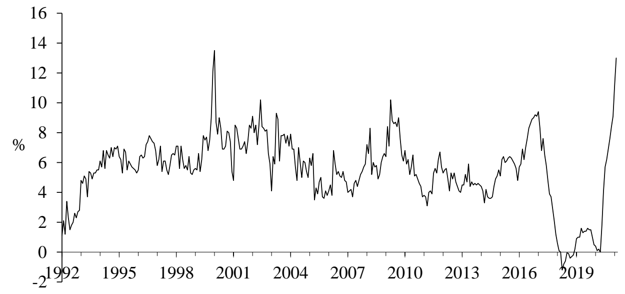
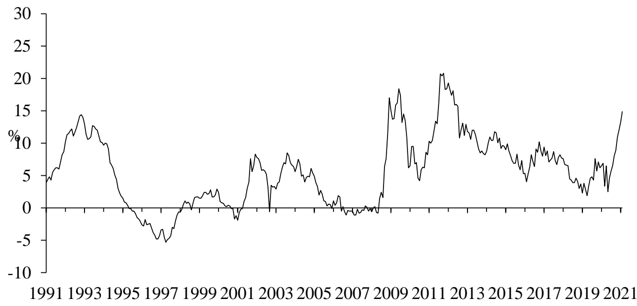
U.S.: Growth in M0 (Yr - on - Yr)



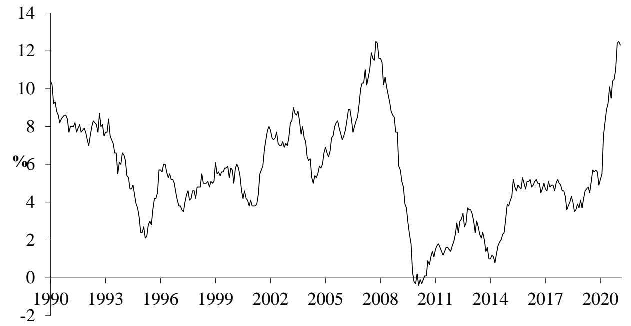
UK: Notes and Coins in Circulation Growth



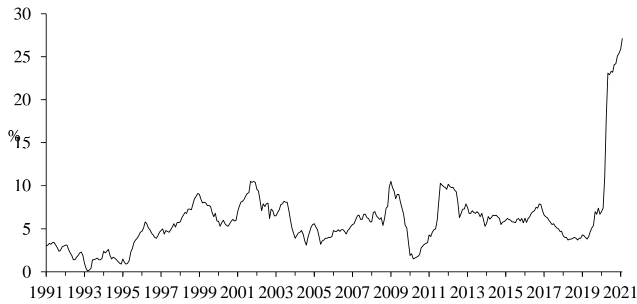
U.S.: Growth in M1 (Yr - on - Yr)



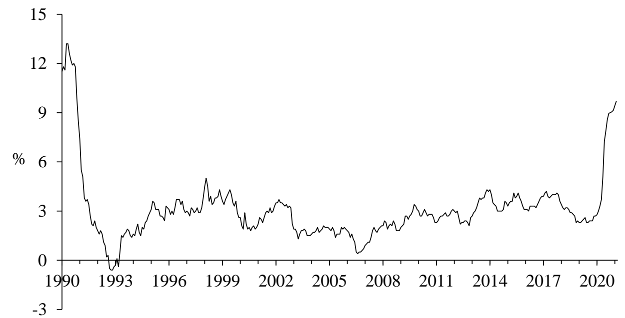
Eurozone M3 Growth



U.S.: Growth in M2 (Yr - on - Yr)



Japan: Growth of M2+CD's



FOCUS ON JAPAN

Francesco Perugini

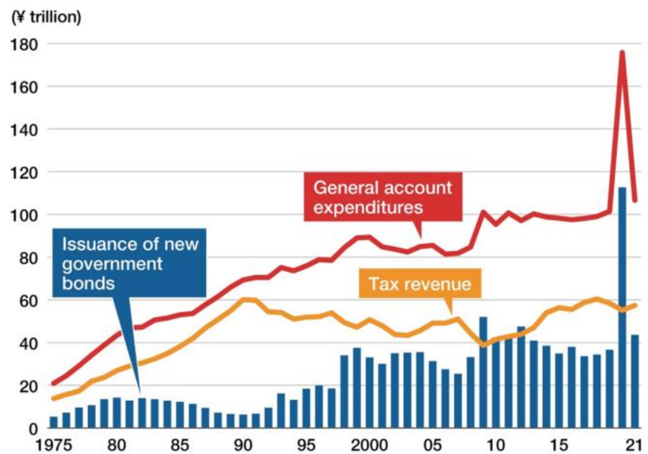
Japanese policymakers reacting to pandemic

Last month the Bank of Japan (BOJ) tweaked its policy framework to continue with monetary easing in more sustainable and effective ways as economic recovery from the pandemic is still nascent and its inflation target is far off. After a review at a two-day policy meeting, the BOJ dropped its annual target of buying ¥6 trillion ($55 billion) in exchange-traded funds and said it will step up purchases only in times of market turmoil with its ceiling kept at around ¥12 trillion.

The decision was supported by many BOJ board members as enhancing the sustainability and flexibility of asset purchases by the bank, according to the summary. At the same time, there was an opinion that "it is necessary to be careful so as to avoid a misunderstanding that the bank has adopted a less accommodative stance on monetary policy." The BOJ maintained its "yield curve control" keeping short-term interest rates at minus 0.1% and guiding 10-year Japanese government bond yields around zero percent. In a policy statement issued after the meeting, the BOJ said it would now tolerate the benchmark 10-year government bond yield moving between around plus and minus 0.25% from zero percent.

The current easing framework has done little to accelerate inflation toward a 2% target since its launch in 2016. The BOJ sought through the latest review to address the adverse effects of keeping interest rates low for an extended period and aggressively buying assets. Core consumer prices fell 0.4% in Japan in February from a year earlier, remaining far below the BOJ's 2% target, due largely to receding electricity prices driven by lower crude oil prices last year.

Meanwhile, a record annual budget of ¥106.6 trillion ($1.03 trillion) — about 19% of GDP — passed last month by the Diet is likely to be just the start for a government that already has the developed world's heaviest debt burden. 40.9% of next year's budget will be funded by debt, compared with 31.7% in 2020 (see graph opposite). Japan's spending plan for the year beginning in April represents a 3.8% increase from 2020's initial budget. Actual spending could rise higher, given Japan's repeated use of extra budgets, three of which were drafted last year to fight the coronavirus, adding ¥73 trillion ($650 billion) to the debt pile — about 13% of GDP. Still, the government is unlikely to add as much spending as it did at the height of the COVID-19 crisis. With the economy seen to be recovering from the latest state of emergency, there is less urgency to put together an extra budget within a month of the annual budget as happened last year. "We're not thinking about immediately putting another extra budget together, that's a given," Finance Minister Taro Aso told reporters after the budget's passage. "For the



moment, we don't expect the situation to get markedly worse than what we're forecasting", he added.

While Aso continues to play down the likelihood of an extra budget, some ruling party lawmakers are calling for more stimulus along the lines of the massive aid package adopted this month in the United States. A ¥5 trillion virus reserve fund in the latest budget gives Prime Minister Yoshihide Suga some stimulus ammunition, but economists expect at least one more round before a general election that's set to happen by fall. With the Tokyo Summer Olympics just months away, a bigger outbreak of the virus would likely trigger more, sooner. "I'm certain there'll be another extra budget in the autumn, and we might even have more in the spring or right before the election," said economist Shunsuke Kobayashi at Mizuho Securities Co. "If we end up having to do restrictions for another year and need to support wages, that's a huge amount of money and what we have now won't be enough". The government ended the virus emergency in Tokyo and surrounding prefectures on March 21, the last region to have restrictions lifted, but an uptick in new infections is keeping officials cautious. Restaurants and bars are being asked to continue closing early.

Some good news comes from foreign affairs, as Japan approved a bill to ratify the world's largest free trade deal signed last year by 15 Asia-Pacific countries also including China, South Korea and ASEAN members. The Regional Comprehensive Economic Partnership (RCEP) agreement, covering a third of global trade and population, will become the "foundation of trade in Asia," Japanese trade minister Hiroshi Kajiyama told a press conference. According to government estimates, RCEP trade deal could boost Japan's GDP by 2.7% and around 570,000 jobs would be created. Acknowledging that the RCEP "could affect the economy significantly," a Foreign Ministry official told reporters it "will cover around 46% of Japan's total trade, compared with about 15% in the case of the 11-member TPP and about

12% in the case of the Japan-EU EPA." But the official added it would take a "considerable" period of time for the impact to fully materialize.

Signed last November, the deal will eliminate tariffs on 91% of goods and set common rules on investment, intellectual property and e-commerce. It is expected to reinvigorate supply chains in the region and make them more effective for businesses. It is Japan's first trade deal involving both China and South Korea. China is Japan's largest trading partner in terms of the total sum of imports and exports, and South Korea is its third biggest. Besides the three East Asian countries, the RCEP consists of Australia, New Zealand and the 10 members of the Association of Southeast Asian Nations. ASEAN groups Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam. The pact will come into effect once it is ratified by any six of the ASEAN members and three of the other countries.

MARKET DEVELOPMENTS

Inflation and interest rates are likely to rise in the post-Covid recovery. This will depress gilts but equities should be sustained by much better profit prospects.

Table 1: Market Developments

	Market Levels		Prediction for Feb/Mar 2022	
	Mar 1	Apr 1	Previous Letter	Current View
Share Indices				
UK (FT 100)	6589	6737	10298	10530
US (S&P 500)	3902	4020	5310	5471
Germany (DAX 30)	14013	15107	22995	24791
Japan (Tokyo New)	1902	1972	2230	2311
Bond Yields (government				
UK	0.76	0.80	0.50	0.50
US	1.44	1.73	1.30	1.30
Germany	–0.34	–0.33	–0.20	–0.20
Japan	0.13	0.12	0.00	0.00
UK Index Linked	–2.02	–2.14	1.00	1.00
Exchange Rates				
UK ($ per £)	1.39	1.38	1.30	1.30
UK (trade weighted)	81.37	82.11	80.0	80.0
US (trade weighted)	100.40	101.68	102.5	102.5
Euro per $	0.83	0.85	0.88	0.88
Euro per £	1.16	1.18	1.14	1.14
Japan (Yen per $)	106.65	110.60	107.5	107.5
Short Term Interest Rates				
UK	0.83	0.83	0.30	0.30
US	0.22	0.25	1.00	1.00
Euro	–0.51	–0.49	–0.50	–0.50
Japan	–0.05	–0.05	0.10	0.10

Table 2: Prospective Yields [1]

Equities: Contribution to £ yield of:

	Dividend Yield	Real Growth	Inflation	Changing Dividend Yield	Currency	Total
UK	3.60	2.4	1.9	52.00		59.90
US	1.99	2.2	2.0	31.90	5.94	44.03
Germany	3.30	1.6	1.5	61.00	2.65	70.05
Japan	1.90	0.6	1.6	15.00	8.58	27.68
UK indexed[2]	–2.02		2.0	8.00		7.77
Hong Kong[3]	2.60	5.5	2.0	5.00	5.94	21.04
Malaysia	3.30	6.9	2.0	85.00	5.94	103.14
Singapore	3.50	5.0	2.0	54.00	5.94	70.44
India	1.40	5.0	2.0	14.00	5.94	28.34
Korea	1.10	2.0	2.0	–9.00	5.94	2.04
Indonesia	2.20	4.8	2.0	41.00	5.94	55.94
Taiwan	2.80	2.9	2.0	38.00	5.94	51.64
Thailand	3.20	4.1	2.0	51.00	5.94	66.24

Bonds: Contribution to £ yield of: –

	Redemption Yield	Changing Nominal Rates	Currency	Total
UK	0.80	3.04		3.84
US	1.73	4.27	5.94	11.94
Germany	–0.33	–1.25	2.65	1.08
Japan	0.12	1.20	8.58	9.90

Deposits: Contribution to £ yield of:

	Deposit Yield	Currency	Total
UK	0.83		0.83
US	0.25	5.94	6.19
Euro	–0.49	2.65	2.16
Japan	–0.05	8.58	8.53

[1] Yields in terms of €s or $s can be computed by adjusting the £-based yields for the expected currency change.
[2] UK index linked bonds All Stocks
[3] Output based on China.

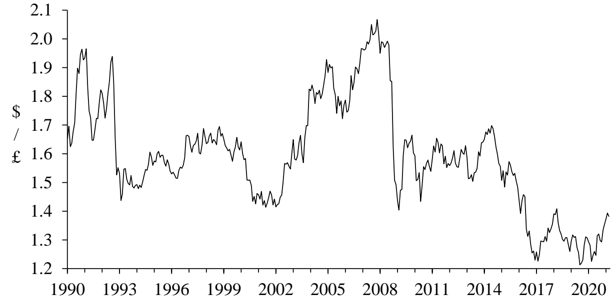
Table 3: Portfolio(%)

	Sterling Based Investor		Dollar Based Investor		Euro Based Investor	
	March Letter	Current View	March Letter	Current View	March Letter	Current View
UK Deposits (Cash)	5	5	5	5	1	1
US Deposits	-	-	-	-	-	-
Euro Deposits	-	-	-	-	-	-
Japanese Deposits	-	-	-	-	-	-
UK Bonds	-	-	-	-	-	-
US Bonds	-	-	-	-	-	-
German Bonds	-	-	-	-	-	-
Japanese Bonds	-	-	-	-	-	-
UK Shares	19	19	14	14	17	17
US Shares	14	14	19	19	16	16
German Shares	14	14	14	14	21	21
Japanese Shares	9	9	9	9	11	11
Hong Kong/Chinese Shares	4	4	4	4	4	4
Singaporean Shares	4	4	4	4	4	4
Indian Shares	4	4	4	4	4	4
Thai Shares	3	3	3	3	3	3
South Korean Shares	4	4	4	4	4	4
Taiwanese Shares	4	4	4	4	3	3
Brazilian Shares	4	4	4	4	3	3
Chilean Shares	4	4	4	4	3	3
Mexican Shares	4	4	4	4	3	3
Peruvian shares	4	4	4	4	3	3
Other:						
Index-linked bonds (UK)	-	-	-	-	-	-

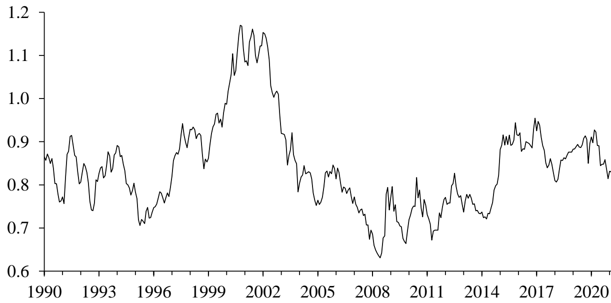
INDICATORS AND MARKET ANALYSIS
FOREIGN EXCHANGE MARKETS

US : Trade Weighted Index
(Bank of England 1990 = 100)

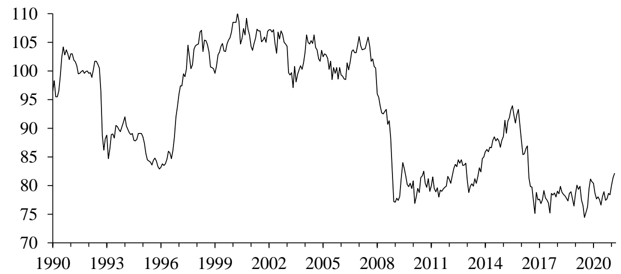
UK: Dollars Per Pound Sterling



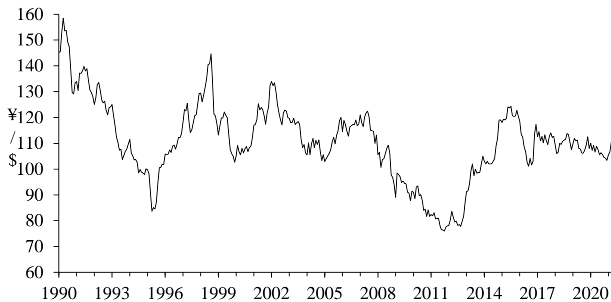
Euro per US dollar



UK: Trade-Weighted Index
(Bank of England 1990 = 100)



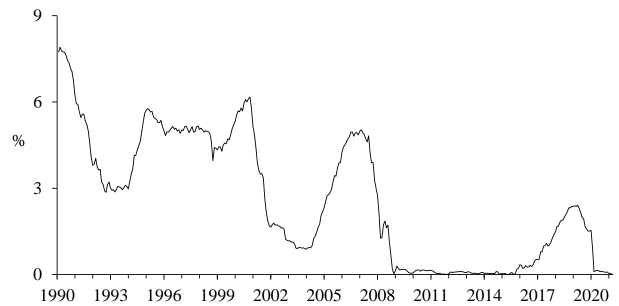
Japan : Yen Per U.S. Dollar



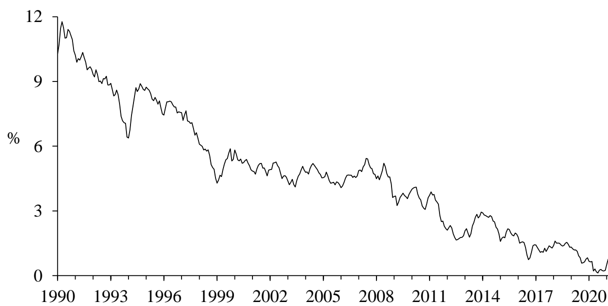
GOVERNMENT BOND MARKETS

U.S.: Yield on Long-Term Government Bonds

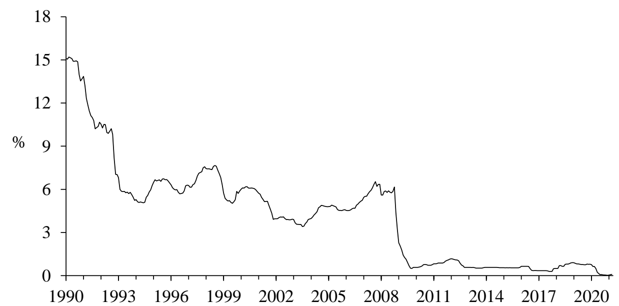
U.S. : 3-Month Treasury Bill



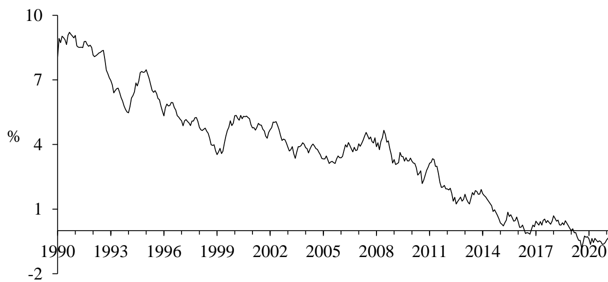
U.K.: Yield on Long-Term Government Bonds



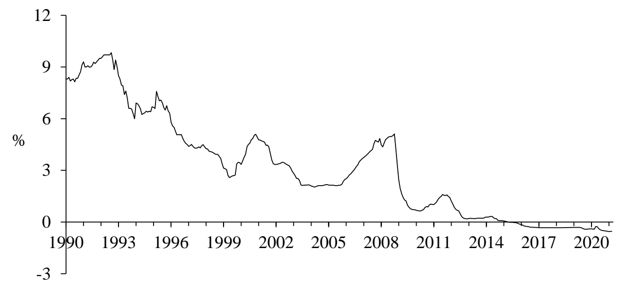
U.K. : 3-Month Certificate LIBOR Rate



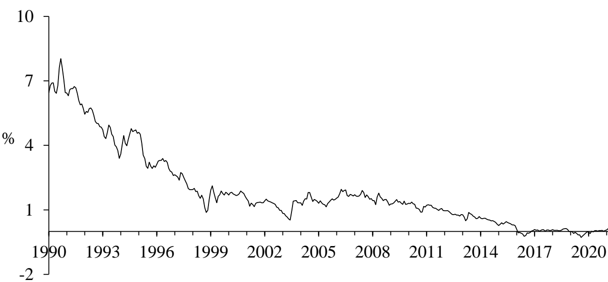
Germany: Yield on Public Authority Bonds



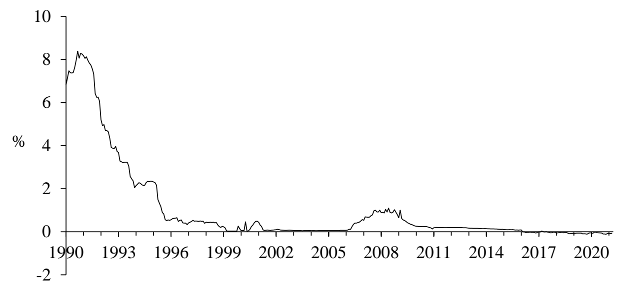
Germany : 3-Month Interbank Deposit Rate



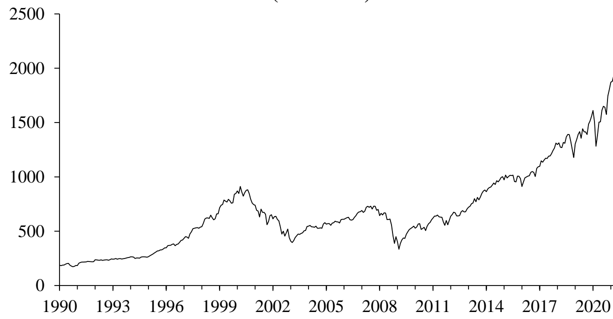
Japan: Yield on Long-Term Government Bonds

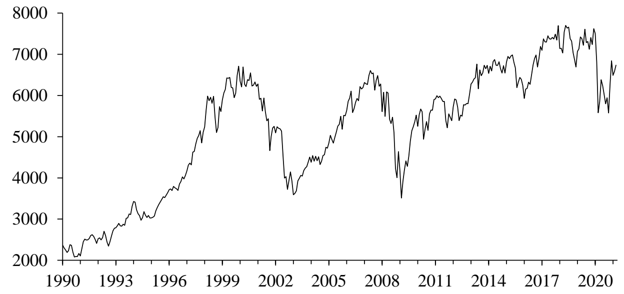


Japan : 3-Month Money Market Rate



MAJOR EQUITY MARKETS





EMERGING MARKETS

Anupam Rastogi

India

India is passing through the second wave of Covid-19 pandemic and in a few states like Maharashtra and Delhi the rebound is strong. Out of 100,000 cases reported in the first week of April, half of them were in Maharashtra. But, India's response is very different from its earlier one where it enforced one of the harshest lock downs in the world. Its present response is based on rapid vaccination of people. The country is seeing three million or so people getting inoculated every day.

Economic growth in the last six months has been robust. High frequency indicators such as direct and indirect tax collections are showing rapid growth after adjusting for the low base of the last year. The corporate sector is in fine fettle, after having deleveraged and cut costs. Banks have used the opportunity to bolster capital and increase provisions for bad debts. That means the twin balance sheet problem weighing down on the Indian economy in the past is not there and the strong balance sheet of corporates is providing room for a cyclical upturn.

We forecast the real GDP growth for FY21/22 to be 11%, assuming that the new restrictions to mobility, in the wake of the second wave, would be short lived, as the country accelerates its vaccination drive. Fitch Ratings expects GDP growth to be 12.8%, based on a stronger statistical effect, a looser fiscal stance and better virus containment.

India's consumption demand and business activity looked steady in February. India's manufacturing PMI for March 2021 was 55.4, which is a seven month low but still expanding.

The government's target for inflation is 4% — with an upper tolerance limit of 6% and a lower limit of 2%, measured in terms of consumer price index (CPI) based inflation. We expect inflation to be around 5% in the FY21/22 due to higher commodity prices and elevated inflation expectations in response to a period of high food inflation. The fiscal deficit is expected to remain above 10% of GDP until FY22/23. Public debt is expected to grow almost 90% of GDP before declining gradually thereafter.

Due to high inflationary expectations, the RBI would remain 'accommodative' in 2021 given the nascent economic recovery and no change in policy rates. The RBI's focus would remain on maintaining adequate liquidity in the system to support the ongoing recovery and ensure effective execution of the government's borrowing programme.

India's current account balance slipped back into deficit in Q3FY21 at US$1.7bn or 0.2% of GDP after remaining in surplus for the previous three quarters. This is primarily attributed to a 133% QoQ expansion in merchandise trade deficit as import bill grew 24% QoQ. The full year figure, however, is expected to remain lower than the last year. We expect a current account surplus of 1.1% of GDP in FY21 — the first surplus in 17 years. Alongside, sturdy foreign capital inflows should result in a record-high Balance of Payments surplus in FY21. In FY22, we expect the current account to slip into deficit again to approximately 0.7% of GDP. The continuation of foreign investments on the back of easy global monetary policy will keep the balance of payments in a comfortable surplus position.

India: BSE Sensitive

India has built the war chest of forex reserves (US$582bn as of March 19th). This has resulted in the rupee being a winner in Asia. It has outperformed the Chinese yuan and the tech-reliant currencies of Taiwan dollar and the Korean won, which had all been forecast to keep gaining as the global economy rebounds. The RBI has no internal target on forex reserves and the central bank aims to keep the rupee stable. The stock market remains firmly pivoted to future growth.

India's Prime Minister Narendra Modi finally appears ready to place the private sector at the heart of his development model. The government has budgeted roughly two trillion rupees ($27.50 billion) over the next five years to boost manufacturing by providing "production-linked incentives" for domestic and foreign firms in 13 sectors, including those producing mobile phones, pharmaceuticals, automobiles and auto components, and solar batteries. In recent years Apple, Samsung and Foxconn have set up manufacturing facilities in India. The government hopes that Cisco and Tesla, among others, will follow. The government's logic is based on China+1 strategy of firms i.e. firms seeking to diversify supply chain away from China will choose India for its large domestic market and deep pool of skilled manpower. The stick of tariffs and the carrot of production-linked incentives will spur this shift. This belated embrace of business is welcomed by industry captains at large. But the path of state-guided capitalism of the East Asian variety has its own pitfalls. The government is keen to privatize many of the

state owned entities including bank and the national carrier Air India.

	19–20	20–21	21–22	22–23	23-24
GDP (%p.a.)	4.0	-7.5	11.0	5.5	6.0
WPI (%p.a.)	3.6	5.5	5.0	5.0	4.8
Current A/c(US$ bill.)	-20.0	35.0	-20.0	-10.0	-10.0
Rs./$(nom.)	73.0	75.0	74.0	76.0	78.0

China

After recording a positive growth in GDP of 2.3% in 2020, the Chinese economy is surging ahead in 2021. Manufacturing and non-manufacturing Purchasing Managers' Index (PMI) rose in March from 50.6% in February to 51.9% in March. We maintain our growth forecast of 7.5% for 2021. Surprisingly, the government has put a target of 6% for 2021. Premier Li Keqiang announced at the country's Parliament National People's Congress (NPC) that China aims to expand its Gross Domestic Product by over 6% in 2021 and it will make more efforts on reform, innovation and high-quality development.

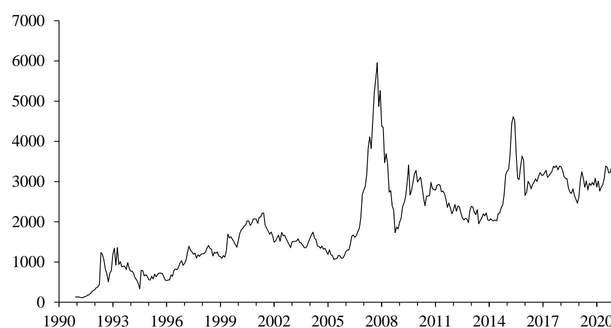
The Chinese producer price index rose 1.7% from a year earlier, but consumer prices fell 0.2% in March from a year earlier. The resurgent producer prices in China raise the prospect that it will start exporting inflation globally as factories hike prices for goods sold abroad assuming commodity prices remain buoyant and supply-chain constrained. The weak CPI shows that there's no obvious inflation pressure. The government wants to cut the fiscal-deficit target to 3.2% of China's projected GDP this year, compared with a target of more than 3.6% in 2020. Subdued inflation reduces pressure on the People's Bank of China (PBOC), the country's central bank, to tighten monetary policy. The PBOC has warned about financial risks, such as asset bubbles, suggesting a policy of gradual tightening.

China's exports surged by more than 60% in the first two months of the year from last year's coronavirus-induced lows, as demand in the U.S. and Europe for made-in-China goods continued to rebound. The outbound shipments and imports have surged in February from a year earlier after the last February's momentous plunge in trade. China's trade surplus in January–February turned out to be $103 billion. This is roughly 20% higher than the same period in 2018 and 2019.

Chinese yuan has changed its course after appreciating for eight months against the US dollar. The yuan weakened in February and then dropped more than 1% so far in March. The monetary policy committee of the central bank wants to make the Chinese exchange rate more flexible.

The daily fixing of the yuan-dollar rate is the tool used by the central bank to influence its currency. As the US Treasury yields rise and relationship between the US and China becomes tense, we will witness a volatile yuan. However, over the year, the yuan is expected to appreciate marginally.

China: SSE Composite Index



Beijing had hoped that President Biden's administration would reset the relationship with America. It has turned out to be very different. If anything, signs of a cold war between the two countries are there for everyone to see. The public spat in Alaska confirms that and the pact between China and Iran, an example of U.S. adversaries uniting to advance their strategic ambitions corroborates it further. Neither side is in mood to blink.

The establishment of a Chinese-Iranian bank with the aim of evading the U.S. dollar dominance in world trade is intended to breaking the dollar's hold on global trade and finance. Many in China believe that U.S. fiscal extravagance would lead to increase in inflationary expectations and depreciation of dollar. This will put the dollar's role as the world's reserve currency at risk, and China wants the yuan to replace it.

China has introduced a digital currency. It will be issued, controlled and monitored by the PBOC. However, the digital yuan will not have anonymity for the user. China intends to use it for international use and try to challenge the US dollar in the global financial system. The digital yuan may be a novelty but not a replacement of a bitcoin as it is not anonymous.

President Biden has avowed that China's dream to become the world's most powerful and the wealthiest country in the world is not going to happen on his watch. He will make the United States continue to grow and expand. China has identified artificial intelligence, quantum computing, integrated circuits, genetic and biotechnology research, neuroscience and aerospace sectors where it will create national laboratories and bolster academic programs to nurture and harness these technologies. At this point, demography is in favour of the US.

China has drawn a red line and anyone who crosses it would be sanctioned. Under this policy, China sanctioned nine British individuals, including members of Parliament, and other four entities in retaliation for U.K. moves over Xinjiang. The individuals and their relatives are banned from entering the country or trading with Chinese citizens and institutions. Biden refused to answer a question about whether he is more likely now than before entering office to keep in place tariffs on Chinese imports, or whether he is

considering banning products that are produced with forced labour in China's Xinjiang region.

China has also sanctioned nearly 30 current or former U.S. government officials in addition to the American human-rights activists, pro-democracy foundations and some U.S. senators last year.

Beijing's message is clear. If you want to do business with China, you have no business to criticize Chinese policies including the international treaty guaranteeing a "high degree of autonomy" for Hong Kong.

	19	20	21	22	23
GDP (%p.a.)	6.1	2.0	7.5	5.2	5.0
Inflation (%p.a.)	2.9	2.5	1.8	2.0	2.0
Trade Balance(US$ bill.)	40.0	60.0	50.0	40.0	42.0
Rmb/$(nom.)	7.1	6.7	6.3	6.2	6.0

South Korea

The central bank maintains that the country's real GDP would expand 3% and consumer inflation by 1.3% in 2021. Real GDP, adjusted for inflation, expanded 1.2% in the fourth quarter from the previous quarter in 2020 Q4.

The government expects growth to overshoot the central bank's forecast as the vaccination campaign spreads and fiscal stimulus package feeds into economic growth. Besides this the Korean economy will benefit from the global economic recovery pushed by expansionary fiscal policies of major economies and the growing vaccination campaigns in the world.

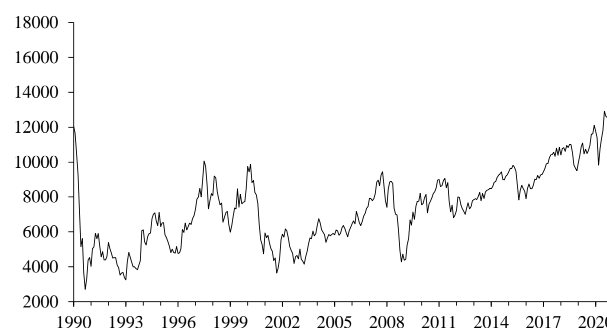
South Korea overtook Italy in gross national income per capita in 2020, according to the Bank of Korea. But a demographic implosion is staring at the horizon. South Korea's total fertility rate is the world's lowest, falling to just 0.84 in 2020. Korean population growth has been lower than that of the U.S. for almost all of the last three decades. The country is at risk of falling into a balance-sheet trap of the variety encountered by Japan in the 1990s, which happens when all sectors of the economy try to trim their spending at the same time.

The Bank of Korea expects inflation to average 1.3% for this year, faster than 0.5% in 2020. South Korea's inflation picked up in February as holiday demand drove up food prices while global oil prices remained elevated. There is no possibility for the escalated inflation to continue for long and, therefore, the central bank would not tighten monetary policy. The BOK is expected to continue with its accommodative monetary policy in the near future. The BOK has left its benchmark interest rate unchanged at an all-time low of 0.50% since May last year.

Export, which accounts for about half of the export-driven economy, advanced 5.4% in the fourth quarter of 2020. The surplus on the current account increased year on year for the eighth consecutive month and the surpluses are growing.

Korea: Composite Index

Taiwan: Weighted TAIEX Price Index



South Korea's service account deficit decreased US$2.38 billion in one year to US$610 million. This is mainly because the numbers of those entering and leaving the country plummeted and the travel account deficit decreased as a result of COVID-19. Going forward, South Korea is stuck in an untenable position. The semiconductor industry of South Korea has relied on the U.S. for security and on China for trade. This may not continue for more than a couple of years now.

	19	20	21	22	23
GDP (%p.a.)	1.8	-1.0	3.0	2.2	1.5
Inflation (%p.a.)	0.4	0.5	1.0	1.2	1.0
Current A/c(US$ bill.)	60.0	70.0	60.0	40.0	10.0
Won/$(nom.)	1200	1070	1100	1100	950

Taiwan

The manufacturing Purchasing Managers' Index (PMI) rose from 60.4 in February to 60.8 in March, the best reading in the last eleven years. The upturn is the result of strong growth in new orders and employment, while output and exports remain upbeat. Taiwan's gross domestic product (GDP) growth for 2021 may outstrip our last forecast of 4%. We remain a bit cautious as both input and output costs are rising and it may dent the spurt in exports. Taiwan Vice President Lai Ching-te expects GDP growth to reach 4.64%.

Taiwan's consumer price index is expected to grow about one percent in 2021, compared with an earlier forecast of less than one percent.

Exports are likely to grow approximately 10% this year as display panels join semiconductors as a new driver of growth due to supply shortages and rising prices. Taiwan's technology advantage over rival exporting economies has put the country in a strong position

The rapid growth in exports has put pressure on the local currency to appreciate further. The Taiwan dollar has strengthened more than 6% over the past 12 months against the U.S dollar and the central government would like to hold it around this level.

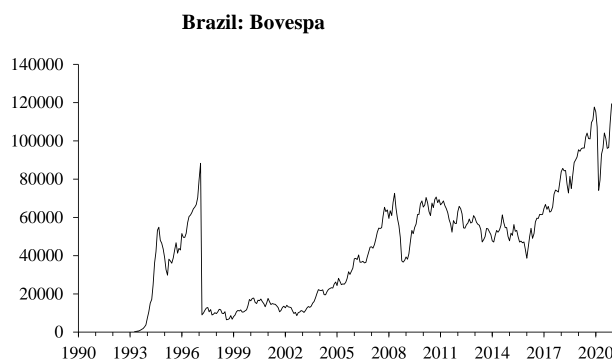
Taiwan's central bank acknowledged grudgingly that it is intervening in foreign exchange markets. The bank does not like the word intervention and prefers its actions to be referred to as 'smoothing' process. Daily efforts to stabilize the Taiwan dollar began in earnest in June of last year, holding at around the 29.5 level against the U.S. dollar until September. Since then, it appears that the bank has been managing the currency's appreciation, with intraday trading crossing the 28 mark, before retreating at close.

The Biden administration will make it easier for US diplomats to meet with Taiwanese officials. The Biden administration is sticking with the Trump administration policy that made it easier for US diplomats to meet with Taiwanese officials, the reason being that the US fears that China is flirting with the idea of seizing control of Taiwan as President Xi Jinping is willing to take risk to boost his legacy. The US administration perceives that China is more impatient and better prepared to test the limits and flirt with the idea of unification now on the basis of Chinese administration's behaviour and posturing in the past two months.

	19	**20**	**21**	**22**	**23**
GDP (%p.a.)	2.0	3.0	4.0	3.0	3.0
Inflation (%p.a.)	1.0	-1.0	1.0	1.0	1.0
Current A/c(US$ bill.)	70.0	71.0	90.0	100.0	65.0
NT$/$(nom.)	31.0	29.0	28.5	27.5	27.0

Brazil

Brazil is passing through a major health crisis. Different strains of Covid-19 variants were found in Brazil and spread of the virus has been lethal. Researchers believe that the spread of P.1 strain is the cause of Brazil's problem. Currently, Brazil accounts for almost a third of the daily global deaths from Covid-19. More than 300,000 people have died, and daily deaths are more than 3,000 people per day even though Brazil's population is far less than the US which saw similar casualties earlier. Researcher are trying to figure out the new Covid-19 variant from the Amazon which may turn out to be more virulent than the strains found so far. The public is in panic and President Bolsonaro is fighting for his own survival. The doles given out to people are not working anymore.



Not surprisingly, Brazil's central bank has pared down its GDP growth to 3.6% from 3.8% for 2021. This is still more optimistic than our forecast of 3% where we have taken into account enormous uncertainty surrounding the pace of recovery.

The monthly and annual rates of factory gate inflation jumped to 5.2% and 28.6%, respectively, both the highest since 2014 when recording of this statistics started. In response to this spike, the central bank raised interest rates by 75 basis points to 2.75% — the first increase in six years and the biggest in over a decade. Besides this, the currency is weakening and fuel prices have risen sharply. Consumer price inflation expectations are rising above the bank's year-end target of 3.75%. Consumer price inflation touched 5.2% in February, near the top of the central bank's target range.

Brazil recorded a current-account deficit of $2.3 billion in February, from a deficit of $7.3 billion in January. International trade is not able to take advantage of pickup in the world trade due to pandemic.

The Brazilian currency has depreciated about 10% against the dollar in the last three months as investors pull their money out of riskier markets that raked up debt during the pandemic. The central bank's aggressive intervention in early March saved Brazil's real from its lowest point in almost a year. The real has been hit from all sides this year — fiscal deficit and return of former president Lula as a probable contender in the next election, and a Covid toll that's one of the worst in the world.

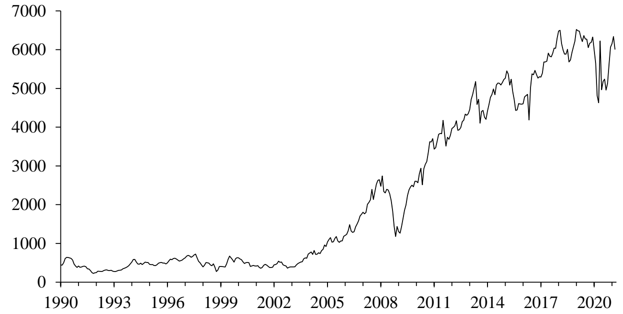
President Jair Bolsonaro announced sweeping cabinet changes amid growing pressure from the pandemic that's ravaging Brazil and making people angry. The centrist members of his cabinet have been replaced. Minister of defence, foreign affairs and justice have been replaced. The president has held his grip on his political base and he fired commanders of Brazil's army, navy and air force after he dismissed his defence chief as part of a broader cabinet restructuring. However, Brazil is not at risk of a coup.

	19	**20**	**21**	**22**	**23**
GDP (%p.a.)	0.8	-4.5	3.0	2.5	3.0
Inflation (%p.a.)	4.3	4.5	4.0	4.0	4.0
Current A/c(US$ bill.)	-36.0	-7.6	-20.0	-26.0	-22.0
Real/$(nom.)	4.2	5.5	5.8	5.8	4.7

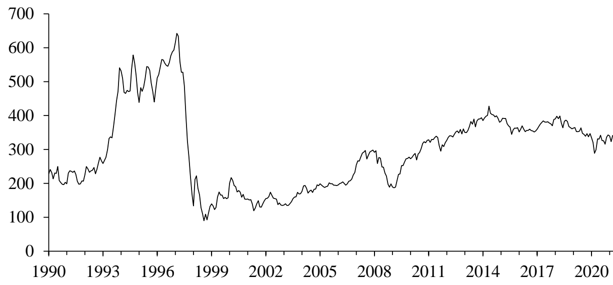
Other Emerging Markets

Hong Kong: FT-Actuaries

Indonesia: Jakarta Composite

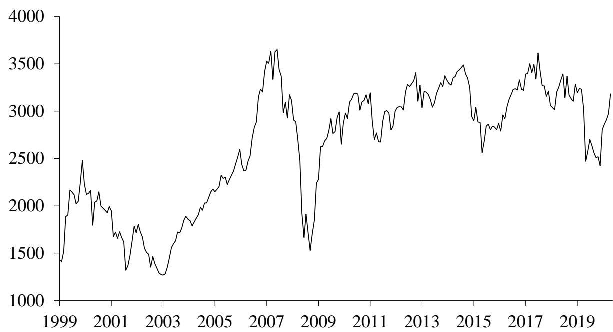


Malaysia: FT-Actuaries (US$ Index)



Thailand: Composite Index

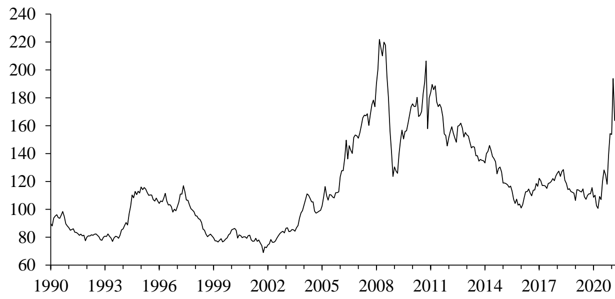
Singapore: Straits Times Index



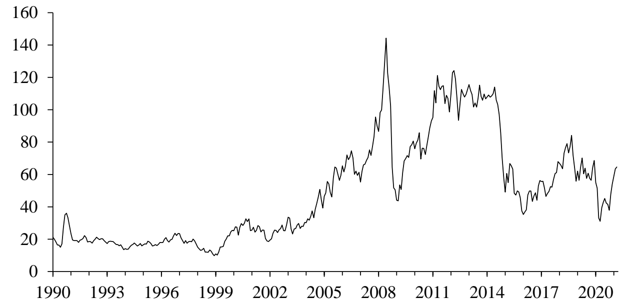
Philippines: Manila Composite

COMMODITY MARKETS

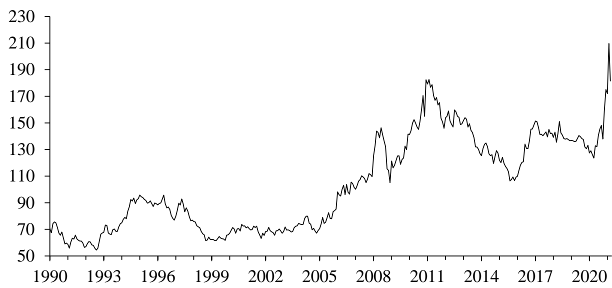
Commodity Price Index (Dollar)
(Economist, 2015 = 100)



Oil Price: North Sea Brent (in Dollars)

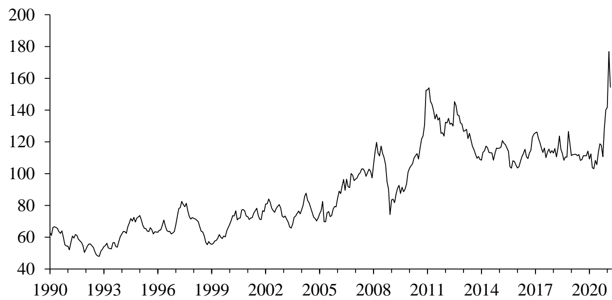


Commodity Price Index (Sterling)
(Economist, 2015 = 100)



Gold Price (in Dollars)

Commodity Price Index (Euro)
(Economist, 2015 = 100)



UK FORECAST DETAIL

Prices, Wages, Interest Rates and Exchange Rate Forecast (Seasonally Adjusted)

	Inflation %[1] (CPI)	Short Dated (5 Year) Interest Rates	3 Month Int. Rates	Nominal Exchange Rate (2005=100) [2]	Real Exchange Rate[3]	Real 3 Month Int. Rates %[4]	Inflation (RPIX)	Real Short Dated Rate of Interest[5]
2019	1.8	0.6	0.8	78.3	73.8	-0.7	2.6	-0.6
2020	1.0	0.3	0.2	78.0	72.7	-0.7	2.6	-0.6
2021	1.6	0.5	0.1	78.2	73.2	-0.9	1.6	-0.7
2022	5.0	1.5	1.5	76.1	73.7	-3.3	2.3	-1.3
2023	4.0	4.7	4.5	74.7	74.3	-2.9	6.1	-0.4
2024	3.0	5.0	5.0	74.0	74.8	1.4	5.5	2.8
2020:1	1.7	0.4	0.6	79.5	74.9	-0.5	2.7	-0.3
2020:2	0.8	0.0	0.1	77.6	71.9	-1.1	1.3	-1.0
2020:3	0.8	0.4	0.1	77.3	72.0	-0.9	1.1	-1.2
2020:4	0.8	0.4	0.1	77.6	72.1	-1.2	1.1	-1.5
2021:1	1.0	0.5	0.1	77.8	72.7	-2.0	1.1	-2.4
2021:2	1.6	0.5	0.1	78.7	73.4	-2.9	3.0	-3.3
2021:3	1.8	0.6	0.1	78.2	73.4	-3.7	2.5	-4.2
2021:4	2.1	0.6	0.2	78.2	73.3	-4.4	2.6	-4.8
2022:1	4.6	1.0	1.0	76.0	73.3	-3.9	5.4	-3.9
2022:2	5.2	1.5	1.5	76.4	73.9	-3.1	6.5	-3.1
2022:3	5.1	1.6	1.7	76.0	73.9	-2.7	6.3	-2.6
2022:4	5.1	2.0	2.0	76.0	73.9	-2.1	6.3	-2.1

[1] Consumer's Expenditure Deflator
[2] Sterling Effective Exchange Rate Bank of England
[3] Ratio of UK to other OECD consumer prices adjusted for nominal exchange rate
[4] Treasury Bill Rate less one year forecast of inflation
[5] Short Dated 5 Year Interest Rate less average of predicted 5 year ahead inflation rate

Labour Market and Supply Factors (Seasonally Adjusted)

	Average Earnings (1990=100)[1]	Wage Growth[2]	Unemployment (New Basis) Percent[3]	Millions	Real Wage Rate[4] (1990=100)
2019	275.7	3.5	3.8	1.0	148.8
2020	279.3	1.5	4.5	1.3	149.8
2021	288.0	3.1	6.1	1.9	152.1
2022	305.3	6.0	5.2	1.6	153.7
2023	321.5	5.3	3.6	1.0	155.6
2024	335.1	4.2	2.8	0.7	157.5
2020:1	279.7	2.7	4.0	1.1	150.0
2020:2	270.1	-0.5	4.1	1.2	145.9
2020:3	279.1	0.3	4.8	1.4	149.4
2020:4	288.3	3.7	5.2	1.5	154.1
2021:1	285.4	2.1	5.3	1.6	151.6
2021:2	280.3	3.8	6.1	1.9	149.0
2021:3	288.0	3.2	6.9	2.2	151.4
2021:4	298.3	3.5	6.3	2.0	156.3
2022:1	300.9	5.4	5.8	1.8	152.9
2022:2	298.0	6.3	5.2	1.6	150.7
2022:3	305.5	6.1	5.0	1.5	153.0
2022:4	316.7	6.2	4.7	1.4	158.1

[1] Whole Economy
[2] Average Earnings
[3] Wage rate deflated by CPI

Estimates and Projections of the Gross Domestic Product[1] (£ Million 1990 Prices)

	Expenditure Index	£ Million '90 prices	Non-Durable Consumption[2]	Private Sector Gross Investment Expenditure[3]	Public Authority Expenditure[4]	Net Exports[5]	AFC
2019	167.8	803514.3	475369.3	308458.5	209136.4	-70959.7	118490.2
2020	151.2	724216.9	419988.4	260629.6	199161.5	-33375.3	122187.3
2021	158.5	759124.8	447029.8	264798.0	206975.3	-29533.8	130144.5
2022	171.7	822161.7	453561.0	322554.1	208189.3	-23651.1	138491.6
2023	177.4	849343.4	460358.4	339925.1	209439.6	-18608.5	141771.2
2024	182.6	874408.4	467263.5	357381.6	210696.2	-15890.2	145042.7
2019/18	1.4		0.3	3.1	3.0		-0.1
2020/19	-9.9		-11.7	-15.3	-4.8		3.1
2021/20	5.4		7.4	3.7	4.4		6.4
2022/21	8.5		1.5	24.1	0.6		7.4
2023/22	3.3		1.5	5.4	0.6		2.6
2024/23	3.0		1.5	5.2	0.6		2.9
2020:1	163.4	195632.5	118032.8	72147.1	51656.8	-11632.2	34572.0
2020:2	132.4	158502.4	91565.8	47009.3	43743.5	429.6	24245.8
2020:3	154.4	184828.8	99906.5	75030.8	50861.9	-9722.9	31247.5
2020:4	154.7	185253.2	110483.3	66442.5	52899.3	-12449.8	32122.1
2021:1	148.3	177573.3	112227.8	57424.5	51108.2	-12795.0	30392.2
2021:2	154.4	184909.1	111100.8	57241.2	51381.7	-3100.0	31714.6
2021:3	162.7	194736.5	111235.7	72545.2	51168.9	-6668.9	33544.4
2021:4	168.6	201905.9	112465.6	77587.1	53316.5	-6969.9	34493.4
2022:1	169.7	203207.5	113844.5	83269.0	51388.0	-11003.1	34290.9
2022:2	170.7	204400.2	112659.5	77593.9	51689.0	-2877.7	34664.5
2022:3	172.4	206414.2	112904.4	82009.5	51475.6	-5097.2	34878.1
2022:4	173.9	208139.8	114152.7	79681.7	53636.7	-4673.1	34658.2

[1] GDP at factor cost. Expenditure measure; seasonally adjusted
[2] Consumers expenditure less expenditure on durables and housing
[3] Private gross domestic capital formation plus household expenditure on durables and clothing plus private sector stock building
[4] General government current and capital expenditure including stock building
[5] Exports of goods and services less imports of goods and services

Financial Forecast

	PSBR/GDP %[1]	GDP[1] (£bn)	PSBR (£bn) Financial Year	Debt Interest (£bn)	Current Account (£ bn)
2019	2.3	2166.6	49.1	24.1	-89.1
2020	16.4	1947.3	312.3	26.0	-58.4
2021	6.4	2216.9	140.4	27.5	-51.1
2022	3.9	2453.6	96.2	30.5	-38.9
2023	2.5	2632.4	65.3	37.4	-27.8
2024	1.0	2786.2	28.8	42.8	-21.0
2020:1	-0.9	542.0	-5.0	6.5	-18.7
2020:2	27.3	431.7	118.0	6.4	-11.9
2020:3	14.4	508.7	73.5	6.5	-15.5
2020:4	13.7	510.9	70.2	6.5	-12.3
2021:1	10.2	496.0	50.6	6.6	-21.8
2021:2	8.6	513.6	43.9	6.7	-19.5
2021:3	6.6	544.1	36.1	6.8	-9.1
2021:4	5.7	568.5	32.6	6.9	-0.8
2022:1	4.7	590.7	27.8	7.2	-17.9
2022:2	4.7	595.7	28.3	7.3	-19.7
2022:3	4.3	607.4	26.0	7.5	-5.8
2022:4	3.0	616.5	18.5	7.6	4.5

[1] GDP at market prices (Financial Year)

WORLD FORECAST DETAIL

Growth Of Real GNP

	2017	2018	2019	2020	2021	2022
U.S.A.	2.3	3.0	2.2	–3.5	5.7	4.0
U.K.	1.8	1.3	1.4	–9.9	5.4	8.5
Japan	2.2	0.3	0.7	–5.3	2.7	2.3
Germany	2.6	1.3	0.6	–5.4	3.5	3.8
France	2.4	1.8	1.5	–9.3	5.5	3.7
Italy	1.7	0.9	0.3	–9.0	4.1	4.0

Growth Of Consumer Prices

	2017	2018	2019	2020	2021	2022
U.S.A.	2.1	2.4	1.8	1.2	2.4	5.0
U.K.	2.6	2.4	1.8	1.0	1.6	5.0
Japan	0.5	1.0	0.5	0.0	0.0	0.5
Germany	1.5	1.8	1.4	0.5	2.0	1.6
France	1.0	1.8	1.1	0.5	1.0	1.1
Italy	1.2	1.2	0.6	0.0	0.8	0.9

Real Short-Term Interest Rates

	2017	2018	2019	2020	2021	2022
U.S.A.	–1.0	0.6	–0.5	–1.6	–1.0	0.0
U.K.	–2.0	–1.1	–0.2	–1.4	–4.9	–2.5
Japan	–0.9	–0.4	0.1	0.0	–0.4	–0.5
Germany	–2.1	–1.7	–0.9	–1.9	–2.2	–1.9
France	–2.1	–1.4	–0.9	–1.2	–2.0	–1.7
Italy	–1.5	–0.9	–0.2	–0.8	–1.5	–1.4

Nominal Short-Term Interest Rates

	2017	2018	2019	2020	2021	2022
U.S.A.	1.4	2.4	1.5	0.4	1.0	2.0
U.K.	0.4	0.7	0.8	0.2	0.1	1.5
Japan	0.1	0.1	0.1	0.0	0.1	0.1
Germany	–0.3	–0.3	–0.4	–0.4	–0.5	–0.1
France	–0.3	–0.3	–0.4	–0.4	–0.5	–0.1
Italy	–0.3	–0.3	–0.4	–0.4	–0.5	–0.1

Real Long-Term Interest Rates

	2017	2018	2019	2020	2021	2022
U.S.A.	0.4	0.9	0.1	0.3	0.8	1.0
U.K.	–1.2	–0.7	–2.3	–2.8	–2.7	–1.1
Japan	–0.6	–0.6	–0.6	–0.5	–0.6	–0.7
Germany	–1.2	–1.4	–1.9	–2.3	–2.2	–2.0
France	–0.6	–0.7	–1.4	–1.9	–1.7	–1.6
Italy	0.9	1.8	0.2	–0.6	–0.5	–0.3

Nominal Long-Term Interest Rates

	2017	2018	2019	2020	2021	2022
U.S.A.	2.4	2.9	2.1	2.3	2.8	3.0
U.K.	0.6	1.0	0.6	0.3	0.5	1.5
Japan	0.1	0.0	0.0	0.1	0.1	0.1
Germany	0.4	0.2	–0.2	–0.5	–0.3	0.0
France	0.8	0.7	0.1	–0.3	0.0	0.2
Italy	1.9	2.8	1.4	0.7	0.9	1.2

Index Of Real Exchange Rate(2000=100)[1]

	2017	2018	2019	2020	2021	2022
U.S.A.	94.5	93.5	96.3	96.2	95.5	94.9
U.K.	75.5	76.9	73.8	72.7	73.2	73.7
Japan	58.3	57.8	56.3	54.2	51.4	48.0
Germany	94.3	96.5	95.6	94.1	92.2	90.0
France	95.3	97.4	96.3	94.5	92.1	89.4
Italy	101.2	102.8	104.5	105.2	103.8	101.7

[1] The real exchange rate is the domestic price level relative to the foreign price level converted into domestic currency. A rise in the index implies an appreciation in the real exchange rate.

Nominal Exchange Rate (Number of Units of Local Currency To $1)

	2017	2018	2019	2020	2021	2022
U.S.A.[1]	101.68	10.96	104.31	106.43	101.34	100.53
U.K.	1.29	1.34	1.28	1.28	1.36	1.38
Japan	112.14	110.43	109.03	106.79	104.70	103.90
Eurozone	0.89	0.85	0.89	0.88	0.83	0.82

[1] The series for the USA is a trade weighted index (1990=100); the series for the UK is $ per £

* Forecasts based on the Liverpool World Model