

Econ 702 Macroeconomics I

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Spring 2020

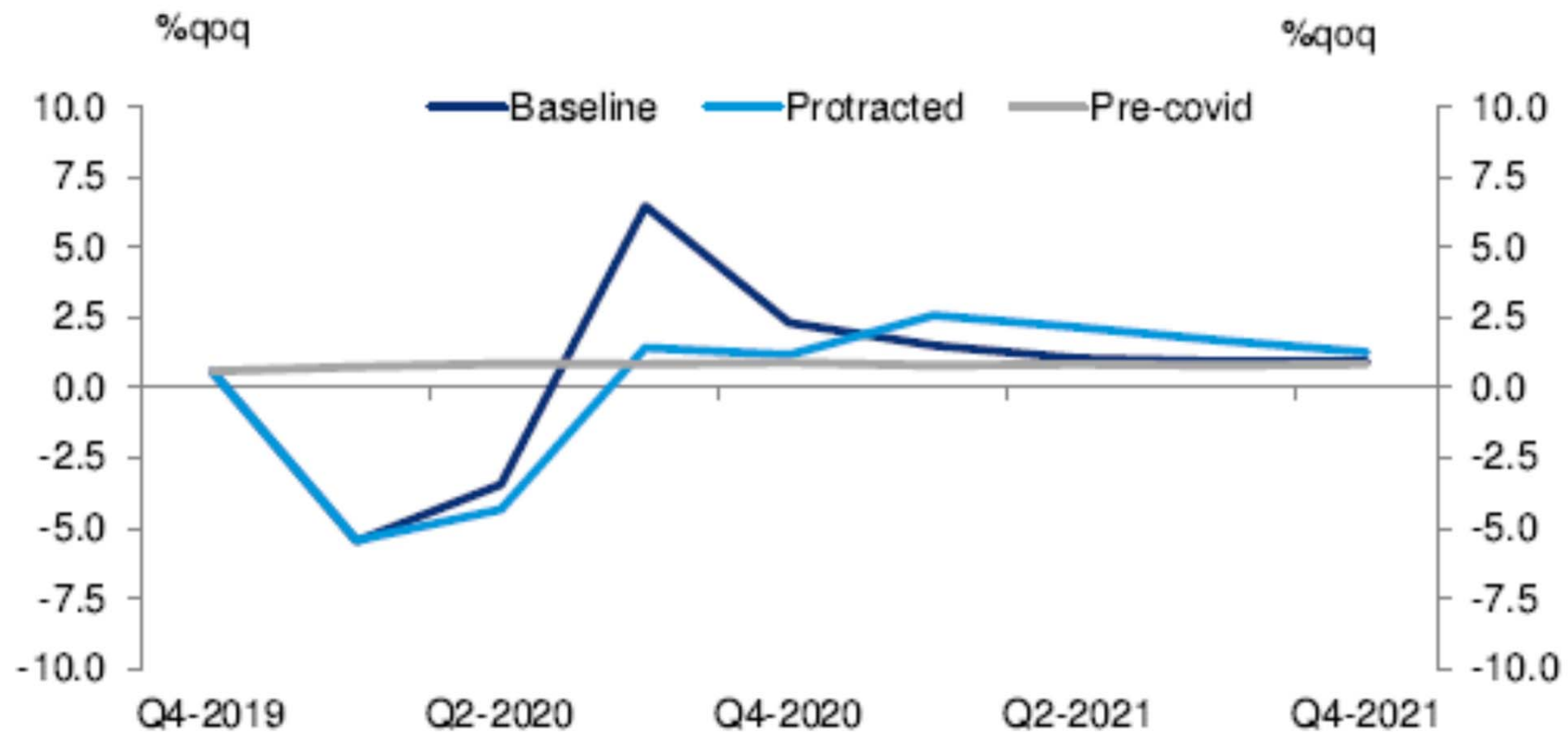
Lecture 20: The Real World,
April 2020

Outline

- The World
- China
- The United States
- Interpreting the US using a macro model (I)

The World Projections

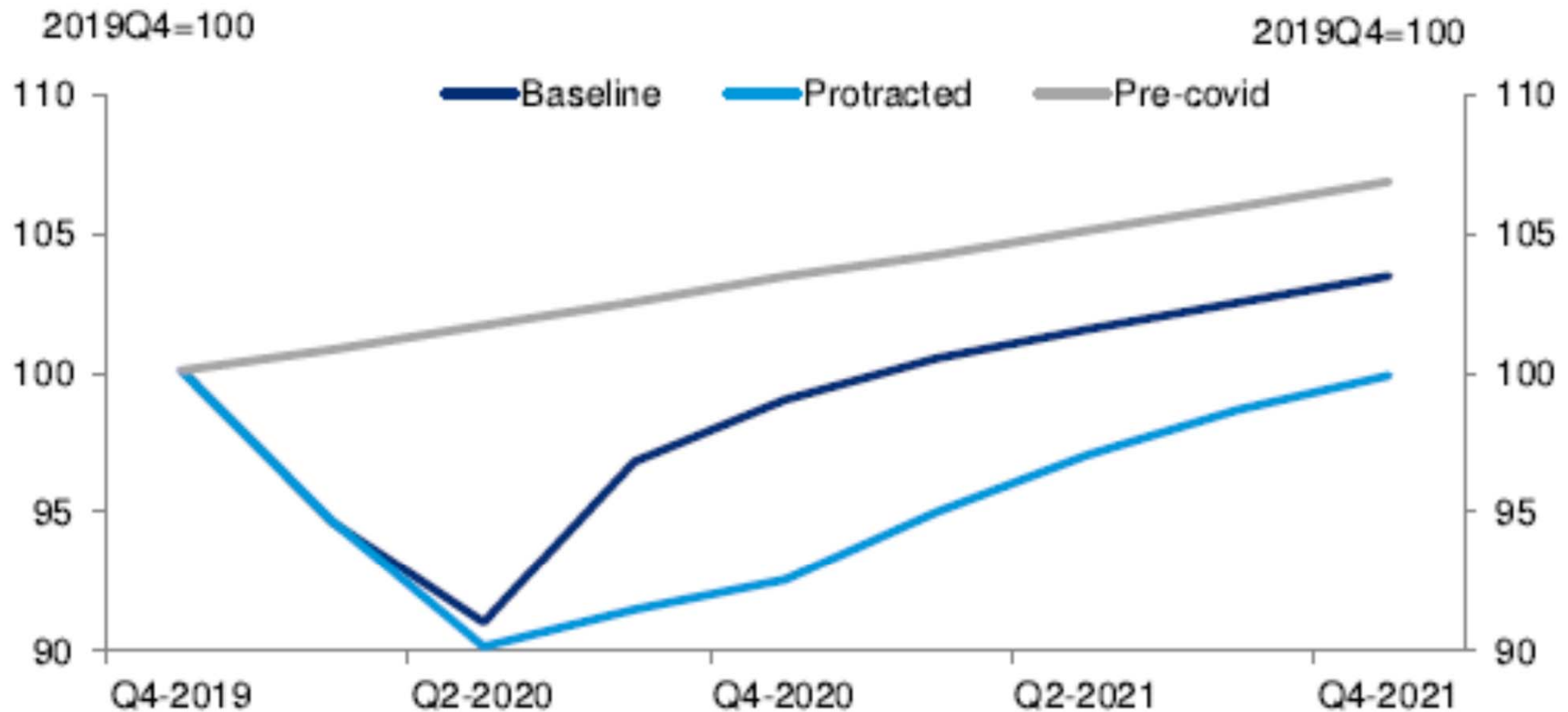
Figure 18: World GDP growth*



* Weighted average of EA, US, UK, China & Japan
Source: Deutsche Bank Research.

Figure 20: World real GDP*

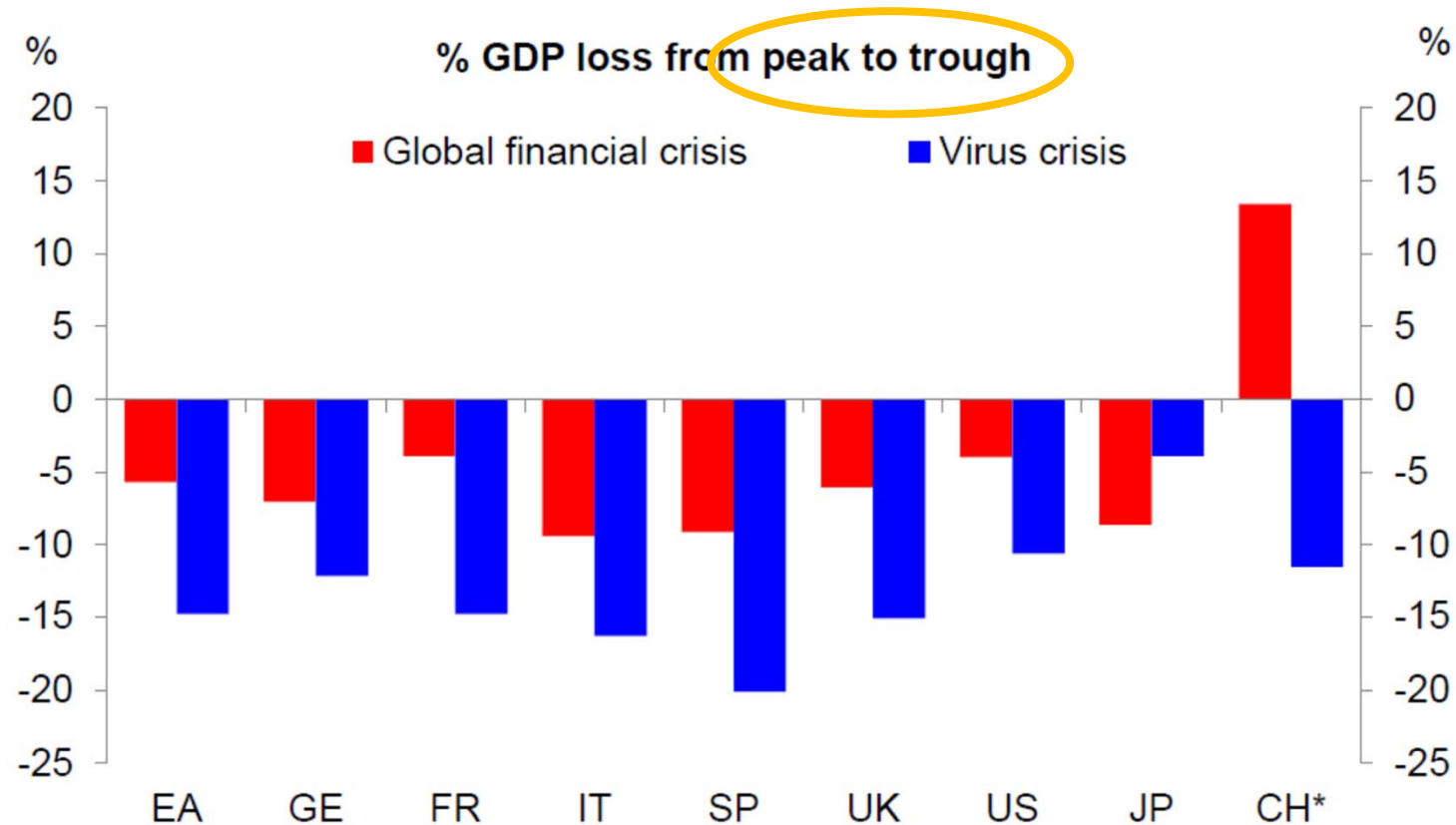
Note: There is no “V” recovery in output



* Weighted average of EA, US, UK, China & Japan
Source: Deutsche Bank Research

Output Impact Compared to Great Recession

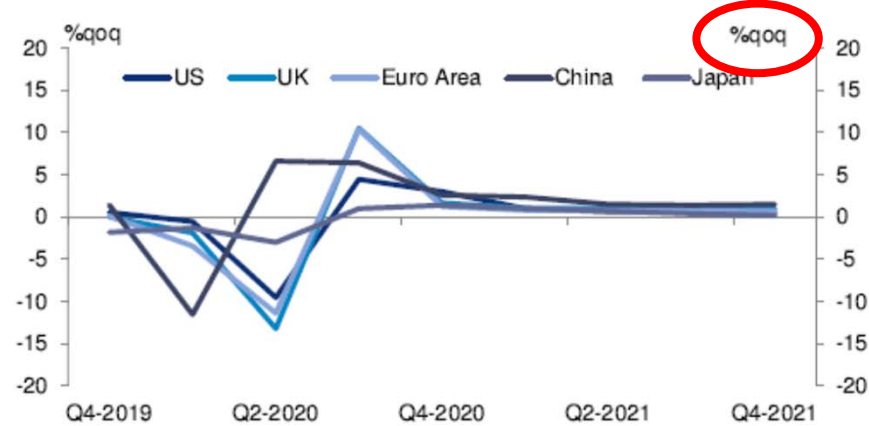
This recession will be deeper than the 2008 Great Recession



Note: China 'GFC crisis' based on GDP growth over the same period the US contracted; 'virus crisis' is Q1-2020 only

Source: DB Global Research

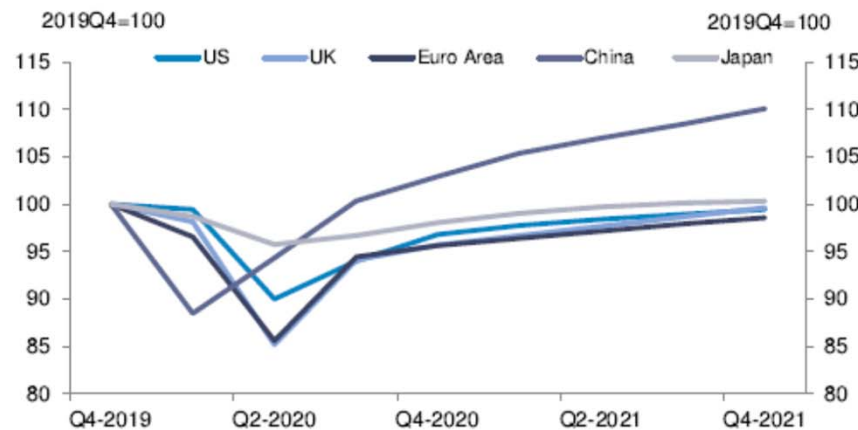
Figure 9: GDP growth - baseline



Source : Deutsche Bank Research

%qoq means
multiply by 4
to obtain
annualized
rates

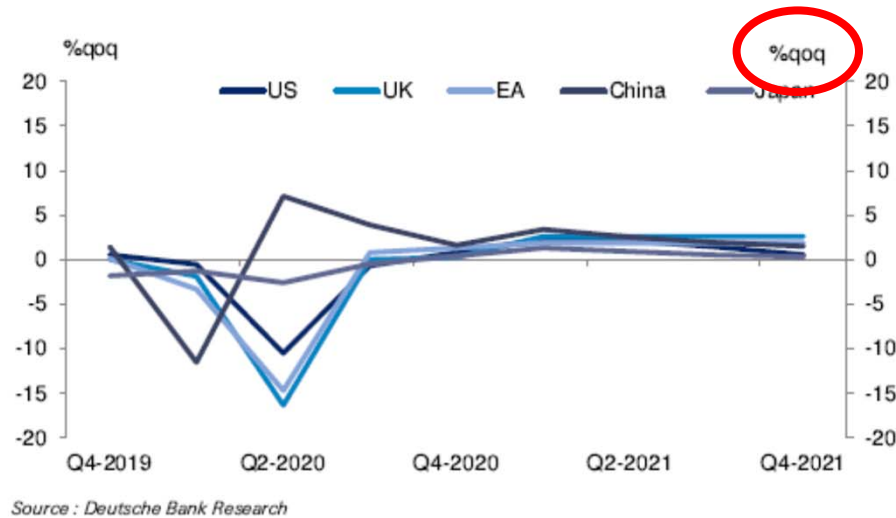
Figure 11: GDP levels - baseline



Source : Deutsche Bank Research.

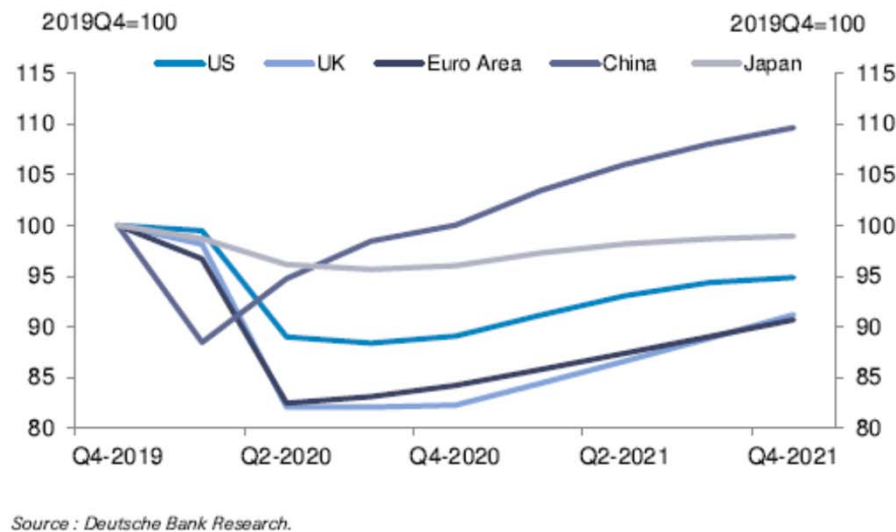
Folkerts-Landau et
al., Deutsche Bank,
March 30, 2020

Figure 10: GDP growth - protracted pandemic



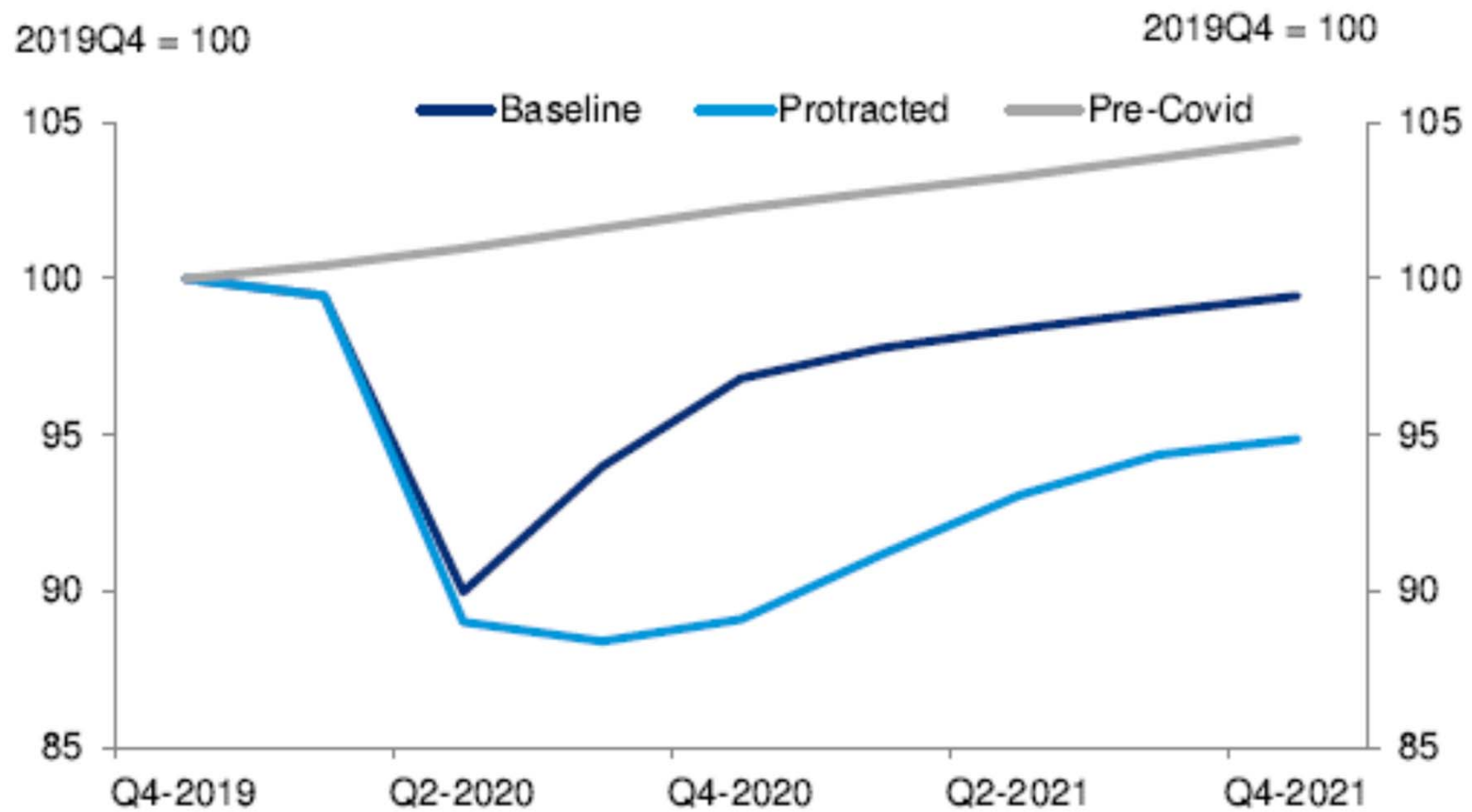
%qoq means multiply by 4 to obtain annualized rates

Figure 12: GDP levels - protracted pandemic



Folkerts-Landau et al., Deutsche Bank, March 30, 2020

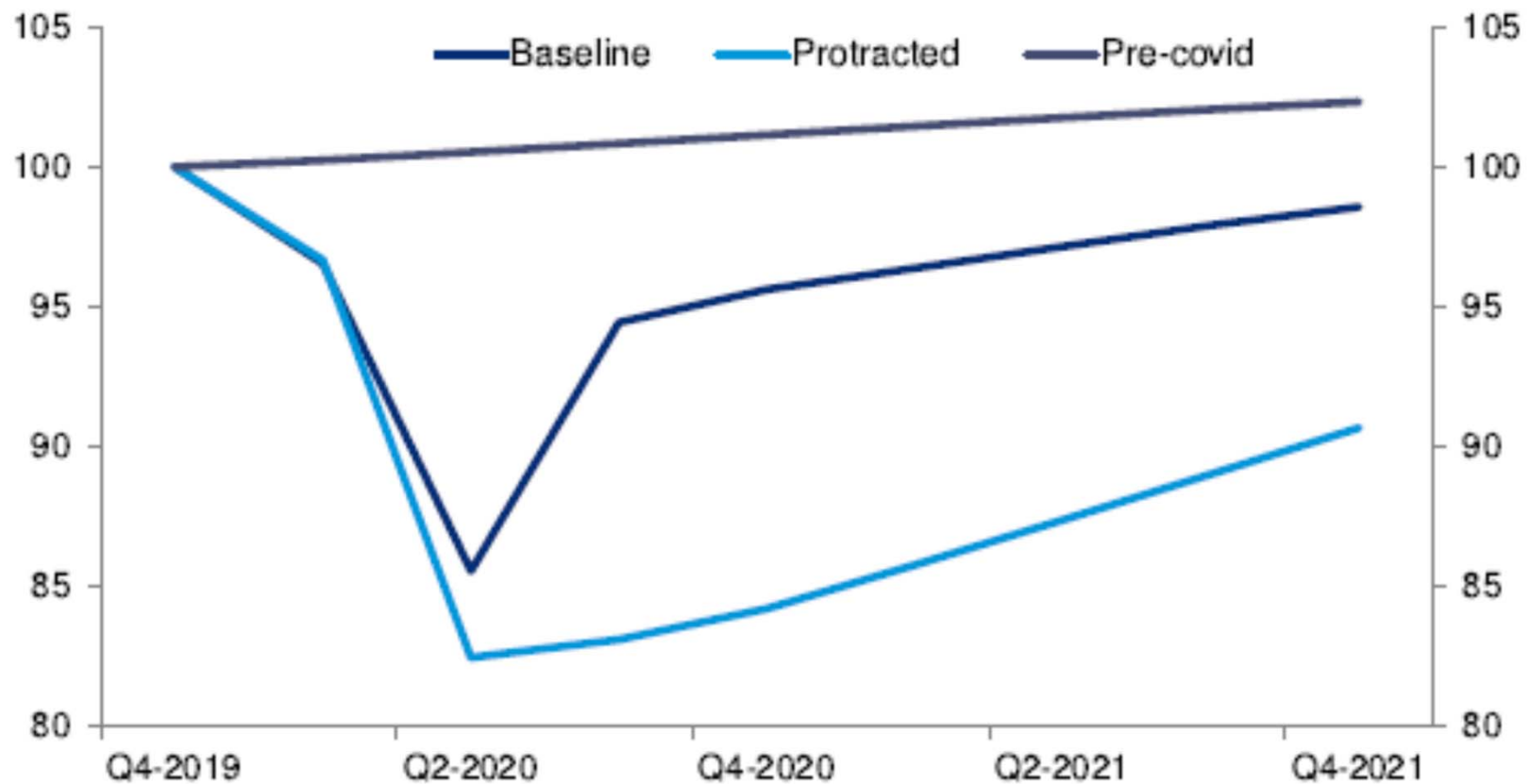
Figure 13: US Real GDP



Source : Deutsche Bank Research

Figure 14: Euro Area real GDP

2019Q4=100



Source : Deutsche Bank Research

Figure 15: Baseline Scenario Projections

	Q1 2020	Q2 2020	Q3 2020	Q4 2020	2020	2021	2020	2021
GDP Growth (%qoq)					%yoy	%yoy	%q4/q4	%q4/q4
US	-0.5	-9.5	4.5	3.0	-4.2	3.8	-3.2	2.7
Euro Area	-3.4	-11.4	10.4	1.3	-6.9	4.8	-4.4	3.1
Germany	-2.6	-9.6	8.7	1.6	-5.3	5.4	-2.8	4.0
UK	-1.9	-13.2	10.5	1.7	-6.5	5.2	-4.3	4.1
France	-2.8	-12.0	10.2	1.2	-6.8	4.2	-4.7	2.8
Italy	-6.3	-10.0	10.9	0.8	-8.7	4.1	-5.7	1.7
Spain	-3.0	-17.1	14.6	1.2	-8.7	5.0	-6.7	3.3
Japan	-1.3	-3.0	1.0	1.4	-3.9	2.6	-1.9	2.3
China	-11.5	6.6	6.4	2.6	-1.4	11.9	2.9	6.9
Fed Funds Rate	0.1	0.1	0.1	0.1				
ECB Main Refinancing Rate	0.0	0.0	0.0	0.0				
ECB Deposit Facility Rate	-0.5	-0.5	-0.5	-0.5				
BoJ Policy Rate	-0.1	-0.1	-0.1	-0.1				
10Yr US Treasury	1.0	0.9	0.8	1.3				
10Yr German Bund	-0.4	-0.3	-0.1	0.0				
S&P 500	2350	2650	2950	3250				
STOXX 600	275	330	385	440				
US HY	1020*	1100	700	535		400		
US IG	380*	280	180	155		140		
EUR HY	920*	1000	650	490		400		
EUR IG	235*	230	155	130		110		
EUR/USD	1.08	1.13	1.17	1.20		1.30		

* Credit numbers are for Q1 are current

Source : Deutsche Bank Research

Figure 16: Protracted Scenario Projections

	Q1 2020	Q2 2020	Q3 2020	Q4 2020	2020	2021	2020	2021
GDP Growth (%qoq)					%yoy	%yoy	%q4/q4	%q4/q4
US	-0.5	-10.5	-0.7	0.8	-7.8	2.0	-10.9	6.4
Euro Area	-3.3	-14.7	0.8	1.3	-13.3	1.8	-15.9	7.7
Germany	-3.0	-10.1	0.3	0.5	-10.0	2.0	-12.1	7.0
UK	-1.9	-16.3	0.0	0.3	-13.7	1.9	-17.7	10.8
France	-2.8	-14.9	0.5	1.5	-12.9	2.9	-15.6	9.5
Italy	-5.8	-14.2	1.5	2.5	-14.9	1.1	-15.9	4.1
Spain	-3.0	-24.0	2.5	3.5	-18.3	2.0	-21.8	9.3
Japan	-1.3	-2.6	-0.5	0.4	-4.5	1.7	-4.0	3.0
China	-11.5	7.1	3.9	1.6	-2.5	12.0	0.0	9.6
Fed Funds Rate	0.1	0.1	0.1	0.1				
ECB Main Refinancing Rate	0.0	0.0	0.0	0.0				
ECB Deposit Facility Rate	-0.5	-0.6	-0.7	-0.7				
BoJ Policy Rate	-0.1	-0.1	-0.1	-0.1				
10Yr US Treasury	0.8	0.5	0.7	0.9				
10Yr German Bund	-0.4	-0.6	-0.5	-0.4				
S&P 500	2200	2050	2500	2950				
STOXX 600	260	245	325	400				
US HY	1020*	1400	1300	1000		400		
US IG	380*	350	350	290		140		
EUR HY	920*	1400	1300	1000		400		
EUR IG	235*	270	270	225		110		
EUR/USD	1.08	1.13	1.17	1.20		1.30		

* Credit numbers are for Q1 are current

Source : Deutsche Bank Research

Folkerts-Landau et al., Special Report, Deutsche Bank, March 30, 2020

The World

Policy Responses

Figure 1: United States

Country	Containment measures	Fiscal Policy	Monetary Policy
United States	Citizens told to avoid social gatherings of more than 10 people.	On March 6, Congress passed the first emergency fiscal package of USD8.3bn, targeted at the healthcare crisis response.	The Fed cut the target range for the fed funds rate by 150 bps to 0-0.25%. In addition, the Fed announced initial QE purchases of 500bn of Treasuries and 200bn of agency MBS. These purchases are now open ended and market is awaiting further operational guidance.
	Advice to work from home whenever possible. Advice to avoid bars and restaurants, as well as not visit nursing or retirement homes. The federal social distancing guideline have been extended until at least 30 April.	On March 13, President Trump declared a National Emergency under the Stafford Act, which immediately provided FEMA with \$40-50bn to combat the virus. At the same time, the "Families First" Act provided around \$100bn of tax credits for sick while a delay of the April tax date to October would act as a bridge loan of up to \$300bn for households and businesses.	Together with the fed funds cut, the FOMC lowered the discount rate on primary credit and extended the term of lending at the discount window to 90 days. The Fed further encouraged banks to tap the discount window and cut required reserves to zero. The Fed is considering other regulatory capital changes to further encourage banks to tap their capital and liquidity buffers, which totaled \$1.3 trn of common equity and \$2.9 trillion in HQLA.
	Several additional states announced lockdowns last week, with stay-at-home orders now in force in around half of US states, with a few others closing non-essential activity.	The new fiscal package passed last week amounts to slightly over \$2trn. Following a vote in the Senate late on Wednesday, the CARES Act was approved by the House and signed by President Trump on Friday 27 March.	To improve liquidity and functioning in asset markets, the Fed has rolled out its full suite of credit facilities to address the issue. The Commercial Paper Funding Facility, the Primary Dealer Credit Facility, the Money Market Mutual Fund Facility all address market dislocations and provide several trillion USD of liquidity to these markets.
	On 28 March, the CDC announced a domestic travel advisory warning for New York, New Jersey and Connecticut, urging residents to avoid non-essential travel for 14 days.	To support household incomes, the two key components are i) a tax rebate of \$1200 for all U.S. residents income below \$75k, (\$150k married), phased out for higher earners; ii) additional unemployment insurance of \$600 per week for up to 16 weeks. State and local authorities will receive \$150bn of additional resources, while \$340bn of direct spending will be provided to various federal agencies.	The Fed also introduced massive repo operation at extended terms - three-month and one-month tranches - that could amount to a maximum of more than USD5tn in additional liquidity, though the take up has been significantly less so far.
	Travel restrictions in place for foreign nationals from the EU, the UK, China and Iran. On March 19, the State Department issued a Travel Advisory telling its citizens to avoid all international travel. The US has limited land border crossings from Canada and Mexico to "essential travel".	To support companies, the Act will first provide close to \$50bn of loans to airlines and critical defense industries. Second, \$349bn will be directed to make loans to SMEs that meet certain requirements, in particular maintaining employment at 90% plus of pre-Covid shock level. Third, to support large corporates, the Treasury will provide \$454bn of support, effectively as an equity investment to backstop several of the Fed's lending facilities. Firms will also benefit from a suite of mostly temporary tax provisions, including on interest expensing and a modification on net operating losses. Deferral of employer payroll tax payments through year end should further free up \$350bn of liquidity near term.	On 23 March, the FOMC announced broad credit easing measures. First, to address strains in Treasuries and agency MBS markets it moved to a QE framework that is open-ended in terms of size. Second, the Fed established two new facilities to support credit to large firms – the Primary Market Corporate Credit Facility (PMCCF), to finance new bond and loan issuance directly via an SPV, and the Secondary Market Corporate Credit Facility (SMCCF) to provide liquidity for secondary corporate bonds. A third facility, the Term Asset-Backed Securities Loan Facility (TALF), will enable the issuance of ABS backed by a broader range of underlying assets including student loans, auto loans, credit card loans. The three facilities - PMCCF, SMCCF and TALF - will each be able to purchase roughly \$100bn in securities initially. The additional \$454bn of Treasury injections to finance these facilities, unlocked by Congress last week, could in turn allow the Fed to inject up to \$4.5trn of liquidity into credit markets. The Fed aims to facilitate the flows of credit to municipalities by expanding the Money Market Mutual Fund Liquidity Facility (MMLF) and Commercial Paper Funding Facility (CPFF) to include a wider range of securities. The Fed also expects to announce soon the establishment of a programme to support lending to SMEs.

Source : Deutsche Bank

Sidorov, et al., Deutsche Bank, March 30, 2020.

Figure 3: Germany

Country	Containment measures	Fiscal Policy
Germany	<p>Nationwide closure of non-essential retail activities including bars, clubs, theaters, opera houses, museums, exhibitions, movie theatres, casinos, gyms, swimming pools, playgrounds, etc.</p> <p>Religious congregations are no longer allowed to meet in person, nor the civic associations. Meetings in community colleges, musical institutes, and other private educational and recreational institutions are also now prohibited.</p> <p>The government has moved to prohibit gatherings of three or more people in public unless the meeting is work-related if they are from the same household.</p> <p>Relaxation of the lockdown appears unlikely before Easter.</p> <p>Border closures with Germany's neighbors (Austria, Denmark, France, Luxembourg, and Switzerland) and the school and daycare center closures announced in all 16 states.</p>	<p>German Chancellor Merkel has indicated that Germany may support a common fiscal instrument to finance the fight against the crisis.</p> <p>The government plans to broaden the existing liquidity programs – through potentially unlimited state guarantees – to facilitate firms' access to affordable loans. Business will benefit from deferred tax payments, reducing prepayments and other steps like waiving of late fees until end-2020 for affected firms. The Central Customs Authority has been instructed to provide concessions for taxes in its remit (e.g., Energy, Aviation tax). The same guideline will fall for insurance and value added tax.</p> <p>On providing financing, the government plans to (1) open the various KfW credit instruments to more firms, (2) increase the upper limits for guarantee banks and (3) open up its "large-scale guarantee program granted to firms operating in laggard regions" also to firms in other areas. (4) Firms which do not have access to the existing programs should receive financial support through the introduction of new special KfW programs. Last week the upper limit for federal guarantees was increased to EUR 822 bn (from EUR 465bn). The flexibility clause is set to be raised from 20% to 30%, implying the upper guarantee limit could be raised by a further EUR 247bn to EUR 1.07trn (over 30% of GDP), according to press reports.</p> <p>The government promised to give also some smaller tax relief to corporates through improving the depreciation allowance for "digital goods" and granting non-incorporated firms to be taxed alike corporate companies. Meanwhile, affected firms will no longer have to pay social contributions on the amount of the short-time allowance. The government has also announced a cosmetic increase in investment spending of about EUR12.4bn, split over the next four budget years (i.e., EUR3.1bn per year (0.1% of GDP) each year over 2021-24).</p> <p>The supplementary federal budget for 2020 was approved last week. Federal spending will increase by EUR 122bn (3.5% of GDP) to EUR 485bn (+34%). Additional money will be provided for (1) emergency relief to small companies and self-employed (EUR 50bn), (2) easing the access to basic security benefits (EUR 8bn), (3) additional health care spending (EUR 3bn) and (4) a budgetary provision for guarantees (EUR 6bn). A further EUR 55bn will fund other forthcoming Covid-related expenses.</p> <p>The federal government is heading for record debt issuance of EUR 335bn in 2020. Net borrowing will increase by EUR 156 bn (4.5% of GDP) to finance the above spending increases and a drop in revenues (of EUR 33bn) with an exemption in the debt brake rule being used.</p> <p>The government will provide EUR 600bn to a newly established Economic Stabilisation Fund" (WSF), which will mostly give support to large corporates by supplementing the KfW liquidity support measures. The WSF receives (1) a credit authorisation of EUR 100bn usable for capital measures, (2) government guarantees of EUR 400bn and (3) an additional credit authorisation of up to EUR 100bn to finance already agreed KfW programs.</p> <p>The government may also allow for a moratorium for social security contributions for financially stressed companies. Meanwhile, federal states push ahead with own programs to supplement the federal package. North Rhine-Westphalia plans to establish a debt financed extra-budgetary unit with a volume of up to EUR 25bn, while Hesse came up with an extra EUR 8.5bn as part of its 2020 supplementary budget to spend on guarantees (EUR 5 bn), VAT tax relief (EUR 1.5bn) and emergency aid (EUR 2 bn).</p>

Source :Deutsche Bank

Sidorov, et al., Deutsche Bank, March 30, 2020.

Figure 4: France

Country	Containment measures	Fiscal Policy
France	<p>Restaurants and bars have been shut down. Universities and schools have been closed. Ski resorts have been put off-limits. Paris closed all its parks and gardens.</p> <p>People to be allowed to leave their homes for necessary outings such as buying groceries, seeking medical care.</p> <p>Paying visits to family or meeting up with friends will be banned.</p> <p>Travel will be allowed only with evidence. Travel from home to work only if working at home is not possible. Travel for childcare and to help vulnerable people - but only while strictly respecting advice on barrier measures.</p> <p>Many public spaces closed at the local level (e.g. beach, parks) and curfews imposed in a few towns. Fines for not respecting the containment measures increased.</p> <p>Physical exercise to be carried out individually, close to home and with no gathering of people.</p> <p>The nationwide lockdown, which had been due to end on 1 April, has been extended to 15 April.</p> <p>Fines for those ignoring confinement rules were increased, fresh produce markets will be closed (exception if it is the unique source of fresh produce in a municipality). Citizens only allowed to go out for sports or with children once a day and within a 1km radius.</p>	<p>Emergency fiscal spending to total an estimated EUR45bn (1.9% of GDP), that can be revised as events unfold. This includes:</p> <p>Measures for partial unemployment for the first time in French history. This will be available for 2 months for any employee above minimum wage (estimated cost of EUR 8.5bn for 2 months), with the aim of ensuring that firms avoid layoffs.</p> <p>Direct taxes and social contribution payments, which are estimated to total EUR32bn for the month of March, are delayed. At the end of the crisis, there will be case by case evaluations if those tax delays need to be turned into outright cancellations. Companies can defer payments regarding rent and utility bills for their professional activities.</p> <p>Solidarity public spending fund of EUR2bn over two months, to be extended if necessary, for companies less than EUR 1m turnover that have had to close down or lost more than 70% of revenues. A company can claim EUR 1,500 immediately.</p> <p>Emergency public health law adopted by Parliament on 22 March: This set the emergency period (not necessarily the confinement period per se) to two months. Employers can now force on workers up to 6 days of paid holidays to be taken during the health emergency period if there has been agreement between unions and employers at the firm or sectoral level, added flexibility for employers to set working hours.</p> <p>State guarantee of all new bank loans up to EUR300bn to ensure companies have cash flow. The French Finance Minister also assured that "they have tools to support Air France or to support any strategic company" if required.</p> <p>Simplification to the partial unemployment scheme: if no response given by the administration within 48 hours of applying, the request is automatically approved. Exceptional flexibility to working hours decisions for employers and ability to impose up to 6 days of holidays until end of June</p>

Source : Deutsche Bank

Figure 5: Italy

Country	Containment measures	Fiscal Policy
Italy	All non-essential travel and public gatherings banned until 3 April. Movement of people only for essentials (food, essential work). People not indoors must have written declaration justifying their movement.	Italy has assigned EUR 25bn (1.5% of GDP) to tackle COVID-19 pandemic.
	With the exception of food stores, pharmacies, banking etc., all retail activity suspended. Cafes, bars, museums, gyms, schools, etc closed. No sporting events.	Households. EUR 1.5bn for the health system (to cover overtime, infrastructure including additional ICU beds, etc.), EUR 1.5bn for the civil protection agency, with the National Emergency Fund increased by EUR 1.65bn.
	All non-strategic activity closed from 25 March until 3 April. Metallurgic and steel industry will be closed as well as half of textile sector and construction (with the exception of infrastructures).	EUR10bn to support employment and workers' income, including: special payments in March to self-employed and seasonal workers; parental leave extension; childcare costs; a freeze on any worker lay-offs for two months starting from 23 February; suspension of social security and national insurance payments until 31 May; cash bonus to people working during the lockdown; and EUR 3.3bn for the national redundancy fund.
	Parks, playground and similar areas closed from 21 March. Most recreational activities prohibited. Jogging is still allowed, but done alone and close to the home residence.	Cassa Integrazione Guadagni (CIG) covers up to 80% of lost pay for employees affected by lay-offs or short-time working for a maximum of 52 weeks. Also, suspension of mortgage payments for those in difficulty for 9 months, with a possible 4 month extension.
		Businesses. Increase in capacity for SME credit guarantee fund. Moratorium on SME loan repayments until Sep 2020. EUR10bn credit available to medium and large firms. Banks encouraged to sell non-performing loans by converting deferred tax assets into tax credits for financial and industrial companies to facilitate access to credit.
	It is forbidden to leave primary residences to travel to second homes on the weekend and during days preceding bank holidays.	Tax and payment deadlines deferred. Includes suspension of withholding payments, social security, welfare contributions, compulsory insurance premiums and VAT in the most affected sectors for March and/or April. Tax credit equal to 60% of rent for March given to shops. The government aims to use guarantees to support up to EUR 340bn of credit.
	The closure of universities and schools will be extended beyond 3 April. However, there is no information yet on how many weeks for. The government has not yet decided if the stoppage of non-essential activity will be extended beyond 3 April.	The government is working on a new fiscal decree with additional measures to counter the effect of the crisis. The amount of resources mobilised by the decree should be no smaller than EUR 25bn. The decree is likely to be presented by mid-April. Among the measures likely to be included, there might be a sort of "emergency income" which should provide a monthly payment of around EUR 600. Preliminary estimates suggest that around 5-10 million workers could be eligible for this measure. The government decided to provide additional resources to the local authorities to counter the crisis. These measures account to EUR 4.3bn. These, however, are not additional measures to those already allocated to counter the crisis, but just resources brought forwards from the "Solidarity Fund" that would have otherwise been available to local councils in May. In addition, the government will provide vouchers for buying food products for those that are particularly in need. This will be financed with an additional EUR 400m.

Source : Deutsche Bank

Sidorov, et al., Deutsche Bank, March 30, 2020.

Figure 7: United Kingdom

Country	Containment measures	Fiscal Policy	Monetary Policy
UK	<p>All schools closed nationwide from 20 March. Major annual events including Glastonbury Festival and the Eurovision Song Contest have been cancelled. Cultural spaces across the country closed. Residents, especially those vulnerable, advised to avoid non-essential social interaction. Moreover, pubs, clubs, theatres, restaurants closed from 20 March.</p> <p>Nationals being advised against all international travel for 30 days.</p> <p>Vulnerable and older aged put under more stringent self-containment measures from 23 March.</p> <p>Tighter 'lockdown' measures in place starting 24 March where only essential travel and work can be conducted outside home</p>	<p>On the healthcare front, a COVID-19 response fund has been set up, initially set at GBP 5bn to treat coronavirus patients and support social care services.</p> <p>For households, Statutory Sick Pay (SSP) will be available for individuals diagnosed with the virus and those unable to work because of it, while a GBP 500m Hardship Fund for local authorities is aimed to support economically vulnerable people and households.</p> <p>For firms, the government is targeting GDP 20bn of business rates support and grant funding, through a 12-month business rates holiday for all retail, hospitality and leisure businesses and grants to SMEs. A new temporary Coronavirus Business Interruption Loan Scheme, delivered by the British Business Bank, will be launched. VAT and income tax (self-assessment) payments will be deferred with unlimited interest free loans for 12m given to all business struggling with the impact of COVID-19.</p> <p>The government is planning to make available an initial GBP 330bn of credit guarantees and loans to SMEs (15% GDP).</p> <p>Government will now pay up to 80% of wages (up to GBP2,500/month) for those jobs at risk of being lost. Government has also increased social safety net up to GBP 7bn, including increases in universal credit payments. Government will also give GBP 1bn as part of a renter relief fund.</p> <p>Self-employed workers will now be eligible for statutory sick pay. Moreover, the Chancellor has also introduced a new Self-Employed Income Protection Scheme that will compensate up to 80% of lost income (up to GBP 2,500/month) eligible for those whose taxable profit is below GBP 50k. Scheme will provide grants by the end of June.</p>	<p>On 10 March, the Monetary Policy Committee (MPC) reduced Bank Rate by 50bp to 0.25%. This was taken down to 0.1% on 19 March. The Bank of England has also introduced a new Term Funding scheme with additional incentives for Small and Medium-sized Enterprises (TFSME), financed by the issuance of central bank reserves.</p> <p>The Financial Policy Committee (FPC) has reduced the UK countercyclical capital buffer rate to 0% of banks' (expects to maintain it for 12m at least) exposures to UK borrowers with immediate effect.</p> <p>The BoE and Treasury have also announced a new Corporate Financing Facility (CCFF) to provide funding for large corporates by purchasing commercial paper.</p> <p>The BoE has also announced an increase in QE and Corporate Bond Purchases of up to GBP200bn (largely skewed to government bonds).</p>

Source : Deutsche Bank

Sidorov, et al., Deutsche Bank, March 30, 2020.

Figure 14: Japan

Country	Containment measures	Fiscal Policy	Monetary Policy
Japan	<p>Inbound travel from coronavirus-affected countries restricted. Foreigners, who travelled to 26 countries in Asia and Europe within 14 days of their arrival in Japan, are banned from entry into Japan. The government is expected to include the US in the above list.</p> <p>Schools closed (not compulsory) and expected to re-start after the spring holidays in early April. But the government is expected to reconsider it. Self-restraint on large-scale events.</p> <p>The Tokyo metropolitan government decided last week to ask the three neighboring prefectures of Kanagawa, Chiba and Saitama not to make any non-essential trips to Tokyo. Tokyo has thus far issued only warnings, which have no legal basis, presumably because the government has not yet proclaimed an official state of emergency. Other than that citizens are asked to work from home and refrain from travelling over the weekends.</p> <p>The government has set up a dedicated task force on 26 March based on the Act on Special Measures for Pandemic Influenza in response to Tokyo's growing infections.</p>	<p>Cabinet revised the 2013 special measures law to provide the Prime Minister and the government authority to deal directly with the coronavirus outbreak. The bill would add the new coronavirus to the infectious diseases targeted under the special measures law for a two-year period. Under the law, the prime minister can declare a state of emergency, specifying a timeframe and geographic area, when an infectious disease threatens enormous impact on the lives of people and the economy. If a state of emergency is declared, prefectural governments would temporarily have authority to request or order local residents to refrain from unnecessary outings or holding events.</p> <p>The government has already decided assistance for workers using leave to take care of their children due to government-requested school closures, expanded virus testing and the creation of a special loan program for small firms. The package included some 1.6trn yen in financial measures through state-backed lenders and the use of 430bn yen in government funds.</p> <p>On 24 March Prime Minister Shinzo Abe and the Olympic Committee agreed to move the Tokyo Olympics, which were due to start in July, to 2021. We believe that the likely slump in foreign visitors and falloff in Olympic-related spending from the Olympics postponement would weigh down nominal GDP by JPY 1.5trn (0.3%) in 2020.</p> <p>What to expect? We expect the government to approve a supplementary budget of 10-15trn yen in April in response to the spread of the novel coronavirus in Japan. Measures already reported include 200-300k yen cash benefits to households whose income declined significantly, coupons and gift certificates to subsidize the cost of tourist trips or restaurants, enhancement of employment adjustment subsidies system which supports businesses that give workers days off in an effort to avoid cutting jobs, and property tax reduction for SMEs.</p>	<p>On 16 March, BoJ enhanced monetary easing through (1) the further ample supply of funds by conducting various operations including purchases of Japanese government bonds (JGBs) and the U.S. dollar funds-supplying operations, (2) measures to facilitate corporate financing including the introduction of a new operation, and (3) active purchases of exchange-traded funds (ETFs) and Japan real estate investment trusts (J-REITs). On 19 March, the BoJ further offered to buy JPY 1tn (\$9.2bn) of JGBs in an unscheduled operation.</p> <p>What to expect? BoJ will maintain its current monetary policy stance unless the yen should appreciate below 100 yen/dollar. BoJ will increase its JGB purchasing pace if 10y JGB yield goes up toward 20-30bp under the yield curve control policy, which should support the government aggressive fiscal policy.</p>

Source :Deutsche Bank

Sidorov, et al., Deutsche Bank, March 30, 2020.

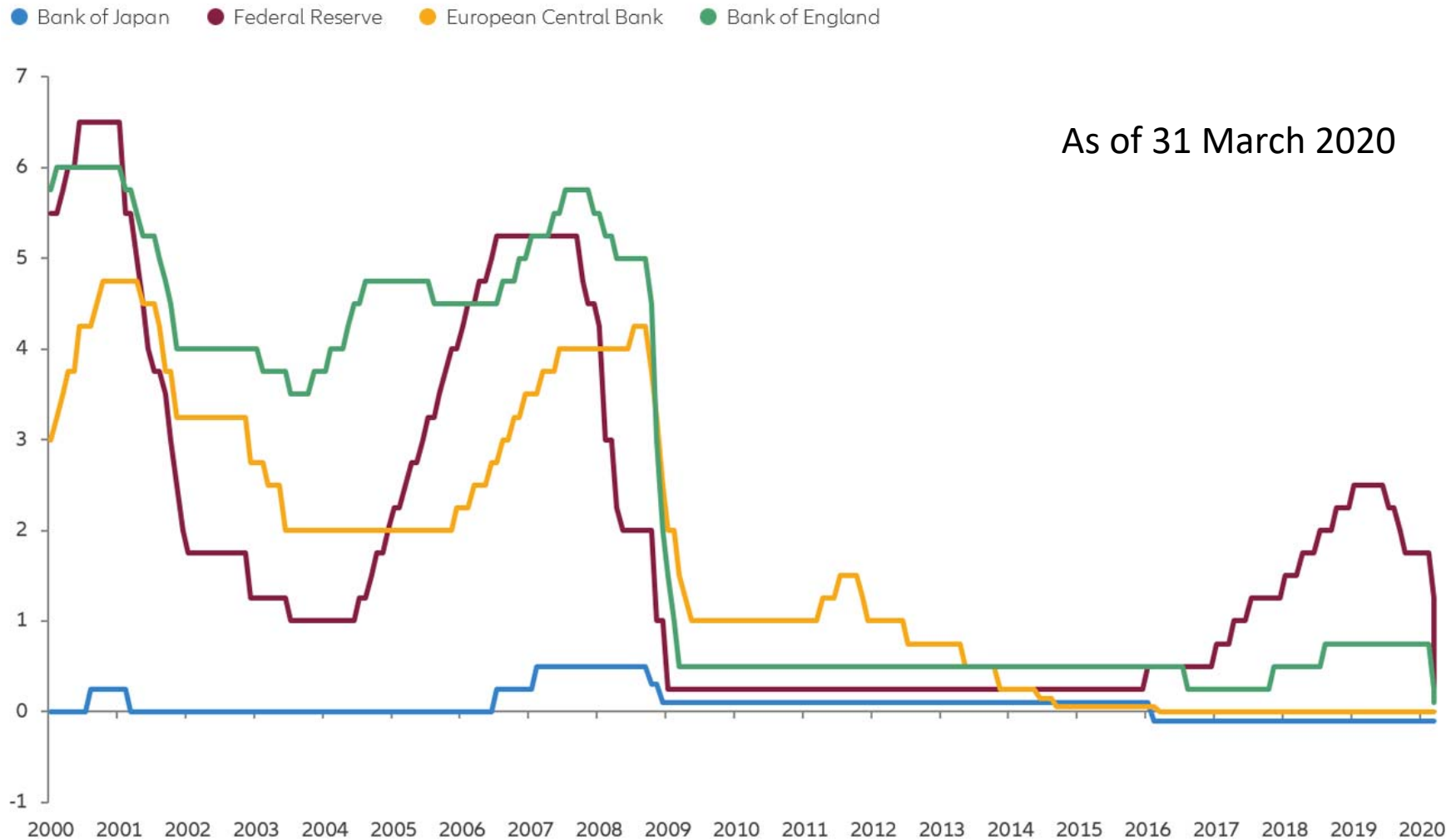
Figure 15: China

Country	Containment measures	Fiscal Policy	Monetary Policy
China	<p>A variety of inbound restrictions on movement remain in place throughout the country. After local transmission increased in Hong Kong, the government announced social distancing measures, including a ban of alcohol sales in pubs and restaurants.</p> <p>From 16 March, all those arriving in Beijing from abroad have to undertake 14 days of quarantine in a designated place.</p> <p>The government plans to end restrictions on travel into and out of Wuhan on April 8.</p> <p>China will temporarily suspend entry of foreign nationals, including those with visas or residence permits, from 28 March.</p>	<p>What to expect? The economy needs direct demand stimulus, which will take the form, we think, of income tax cuts, subsidies for automobile and other purchases and coupons for spending at hard-hit restaurants and other SME service enterprises. The Mar 29 Politburo meeting confirmed that the government is preparing a comprehensive policy package which will likely be announced in April.</p> <p>We expect the central government to increase its budget deficit by more than 1ppt (to 4% of GDP) when the 2020 budget is passed in April. On top of that, it will also issue RMB 2-3trn of special central government bonds (2-3% of GDP) as well as more local government bonds. The augmented deficit – including off budget funds and local government borrowing – will likely rise by 6% of GDP. Government finances have been on an unsustainable path for years, but with most government debt held by safe domestic investors there is no risk of a crisis.</p>	<p>Financial conditions hardly tightened onshore in China. After years of credit tightening, there seems to have been low leverage in financial markets so it was enough for the PBoC to ensure liquidity conditions didn't tighten. They have cut their key policy rate, the MLF rate, by only 10bps and lowered banks reserve requirements.</p> <p>OMO rates was cut by another 20 bps on March 30, which will likely be passed on to the MLF rate in April. Most significantly, probably, was the RMB800bn in refinancing provided to allow banks to lend to large and small corporations to allow them to weather the storm of the outbreak. Substantial support has been provided by banks, who have been guided (and funded) to continue to lend to companies, if only to allow them to meet payrolls.</p> <p>What to expect? We expect another 100bps of RRR cuts, another 40bps off the MLF rate (20bps in April, 20bps in May-June) and 25bps off the benchmark deposit rate by mid-year.</p>

Source :Deutsche Bank

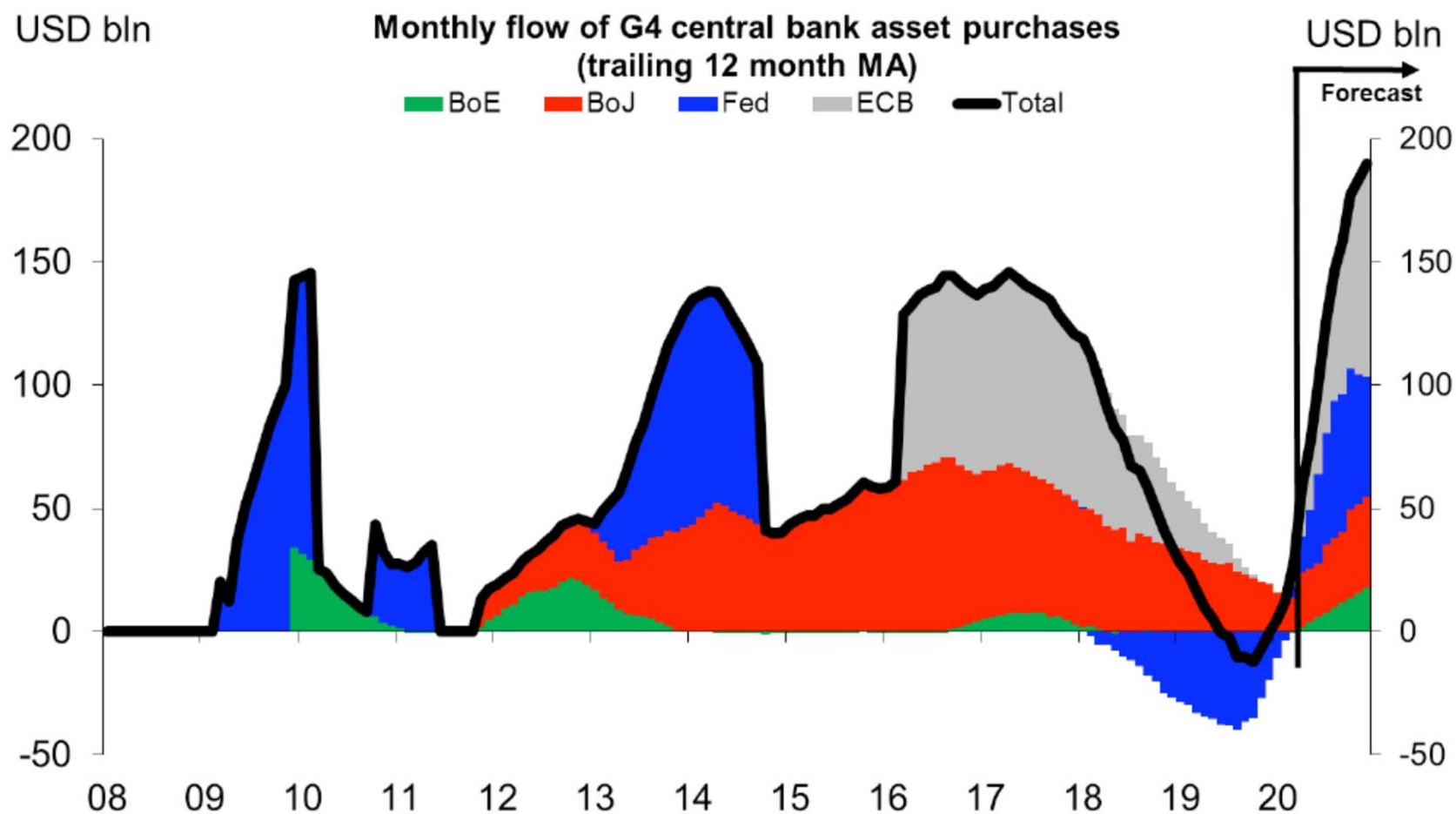
Sidorov, et al., Deutsche Bank, March 30, 2020.

Monetary Policy – Policy Rates



<https://www.allianzgi.com/en/insights/outlook-and-commentary/bond-markets-and-coronavirus>

Credit Easing Is Back

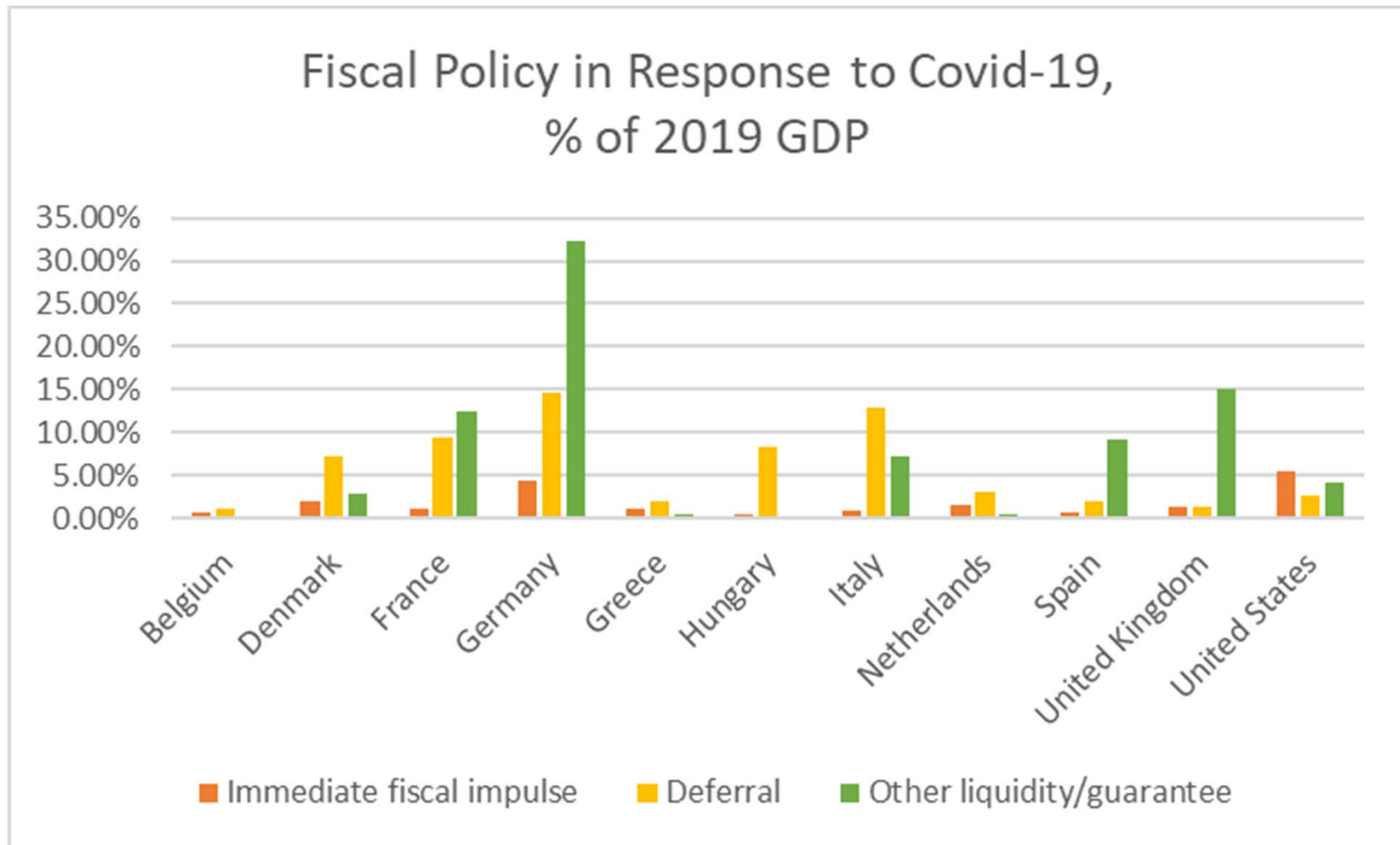


Note: We assume that between March & December 2020, the Fed will purchase assets worth \$ 700 billion; ECB to purchase assets worth EUR 750 billion, BoE will purchase GBP 200 billion & BoJ would allow purchases to double from the annual purchase in 2019. We assume FX to be same as on Mar 20 2020.

Source: Central Banks, Haver Analytics, DB Global Research

Slok, Chartbook, Deutsche Bank, April 2, 2020

Fiscal Response

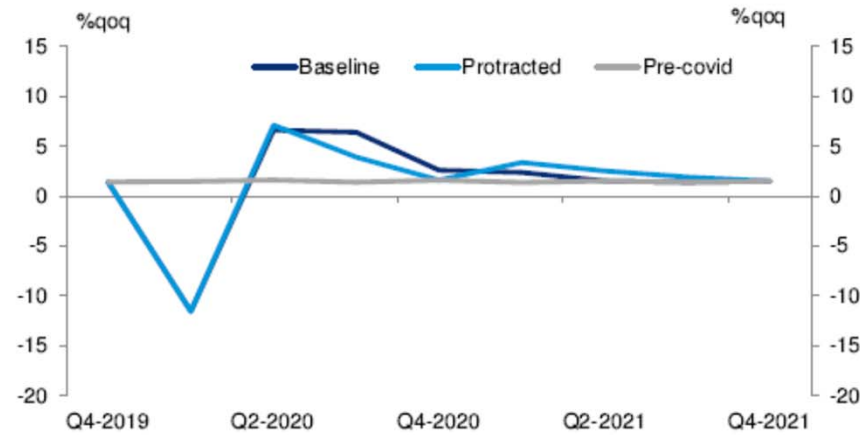


<https://www.bruegel.org/publications/datasets/covid-national-dataset/>

Anderson, The fiscal response to the economic fallout from the coronavirus, Bruegel, April 1, 2020

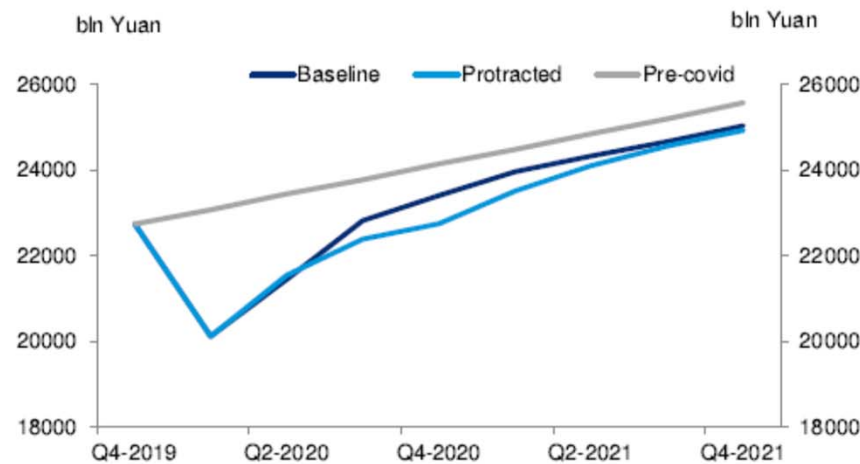
China Projections

Figure 35: GDP growth in China



Source : Deutsche Bank Research.

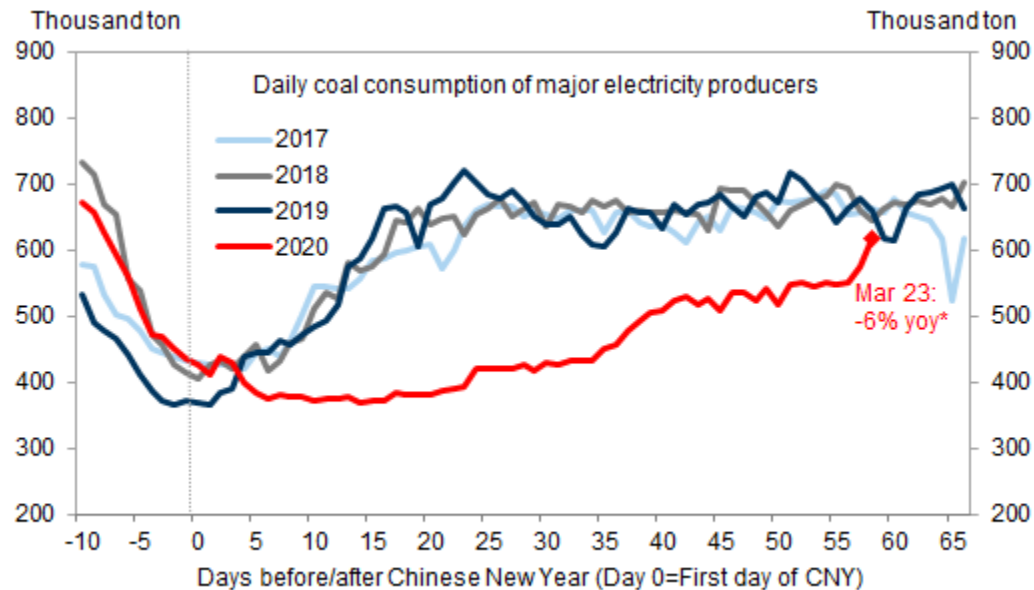
Figure 37: China real GDP



Source : Deutsche Bank Research.

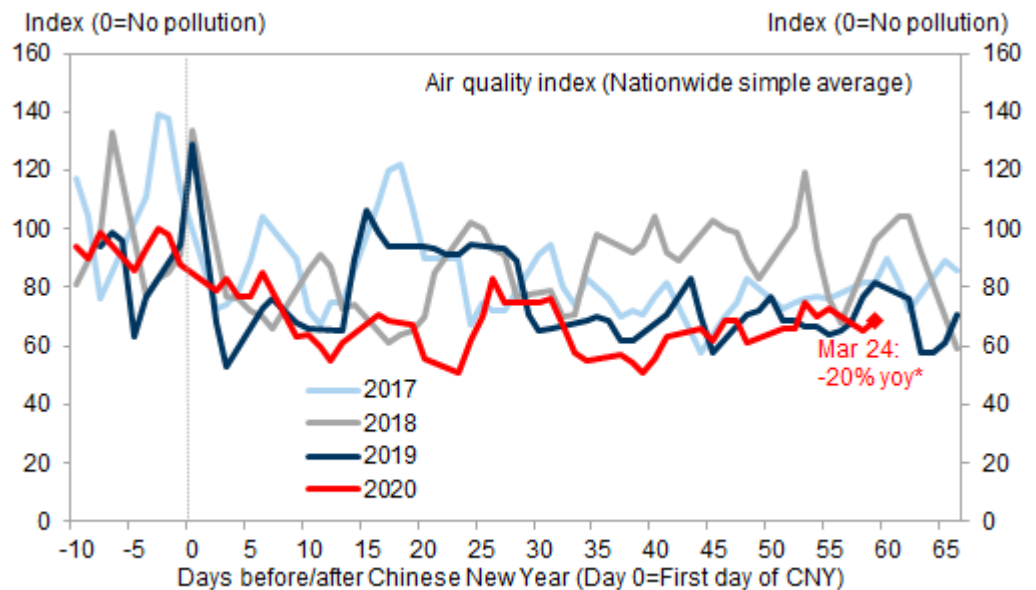
Folkerts-Landau et al., Deutsche Bank, March 30, 2020

How Do We Know How China Is Doing?



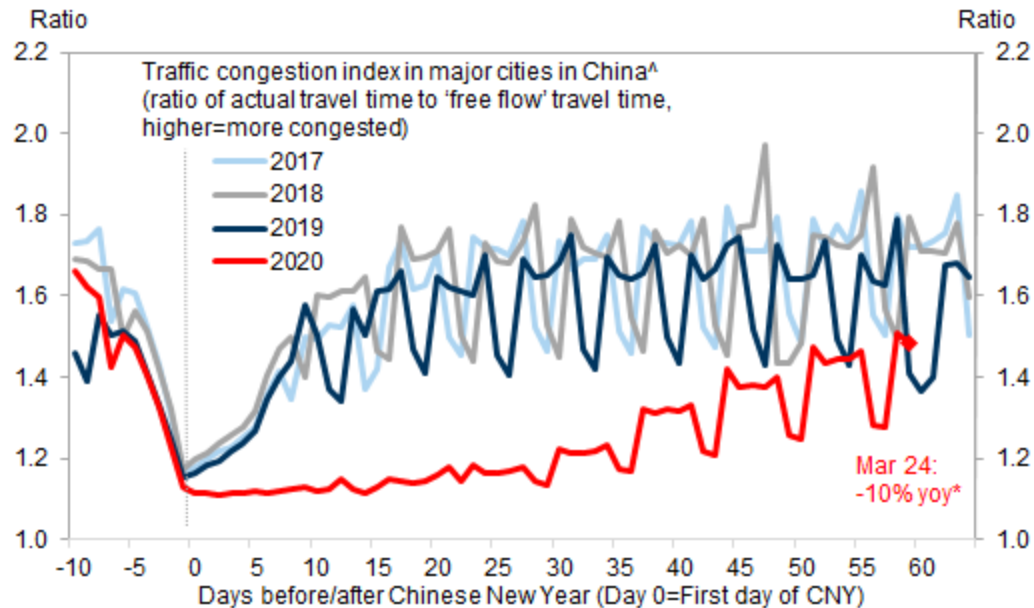
*Percentage change relative to the same day after CNY in 2017-19

Hu, et al., "China: Update of high frequency trackers on Chinese economic activity," Goldman Sachs, March 25

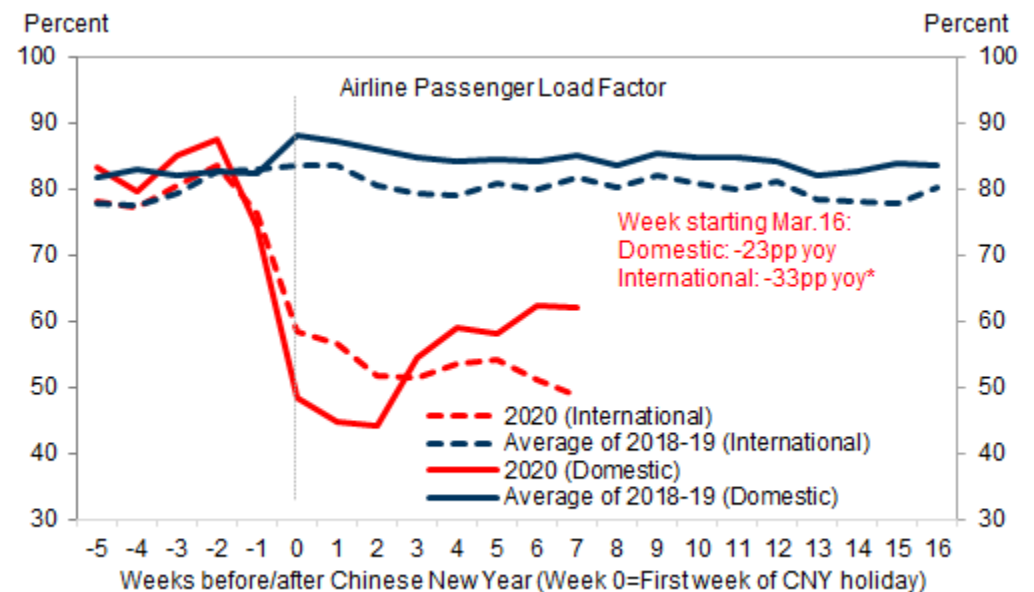


*Percentage change relative to the same day after CNY in 2017-19

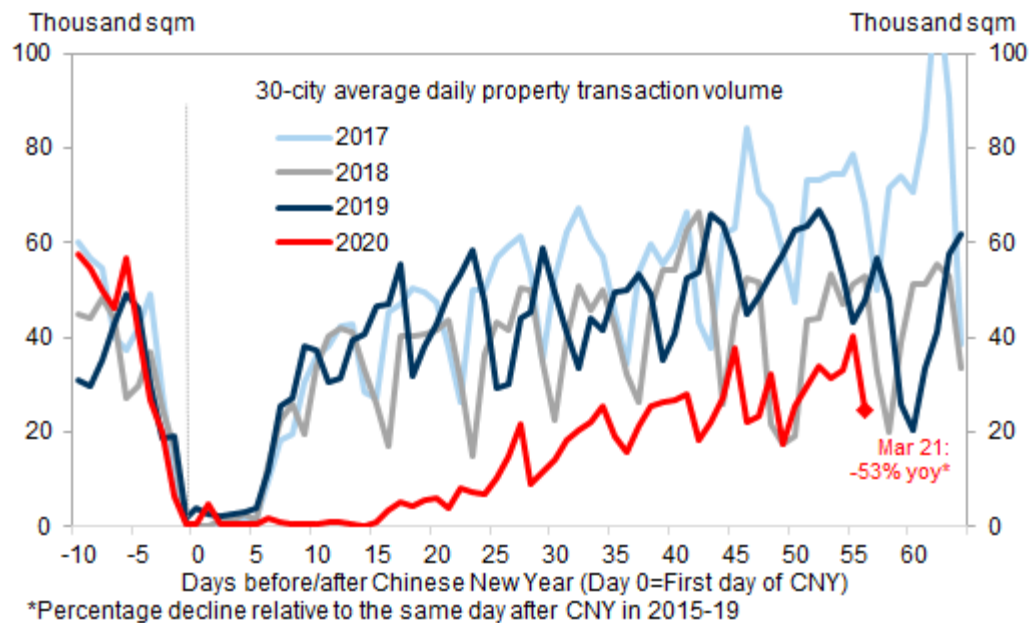
Hu, et al., "China: Update of high frequency trackers on Chinese economic activity,"
Goldman Sachs, March 25



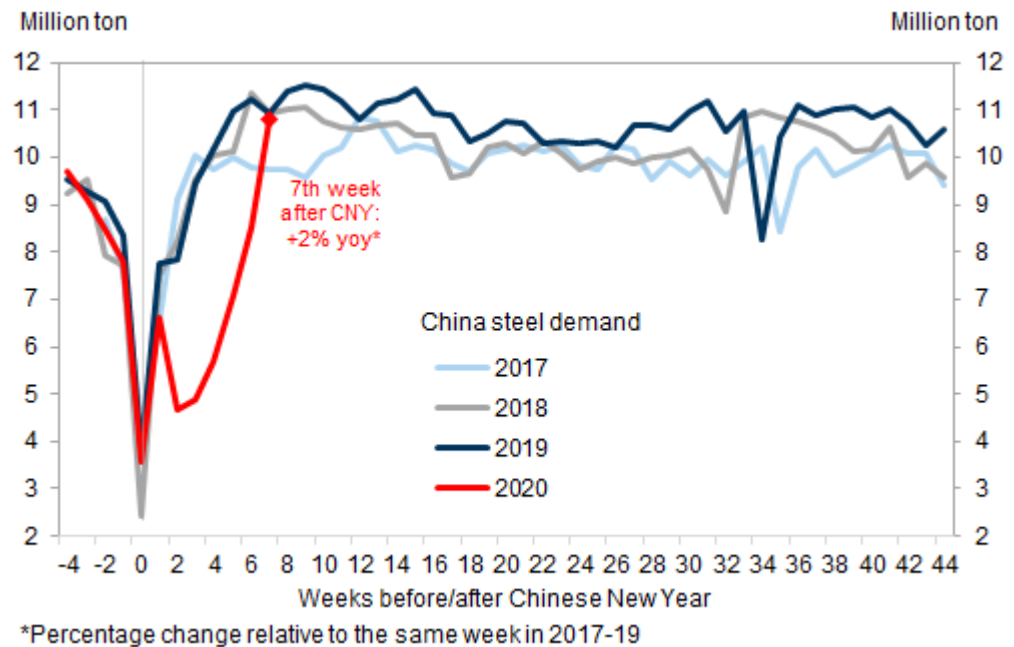
*Percentage change relative to the same day after CNY in 2017-19



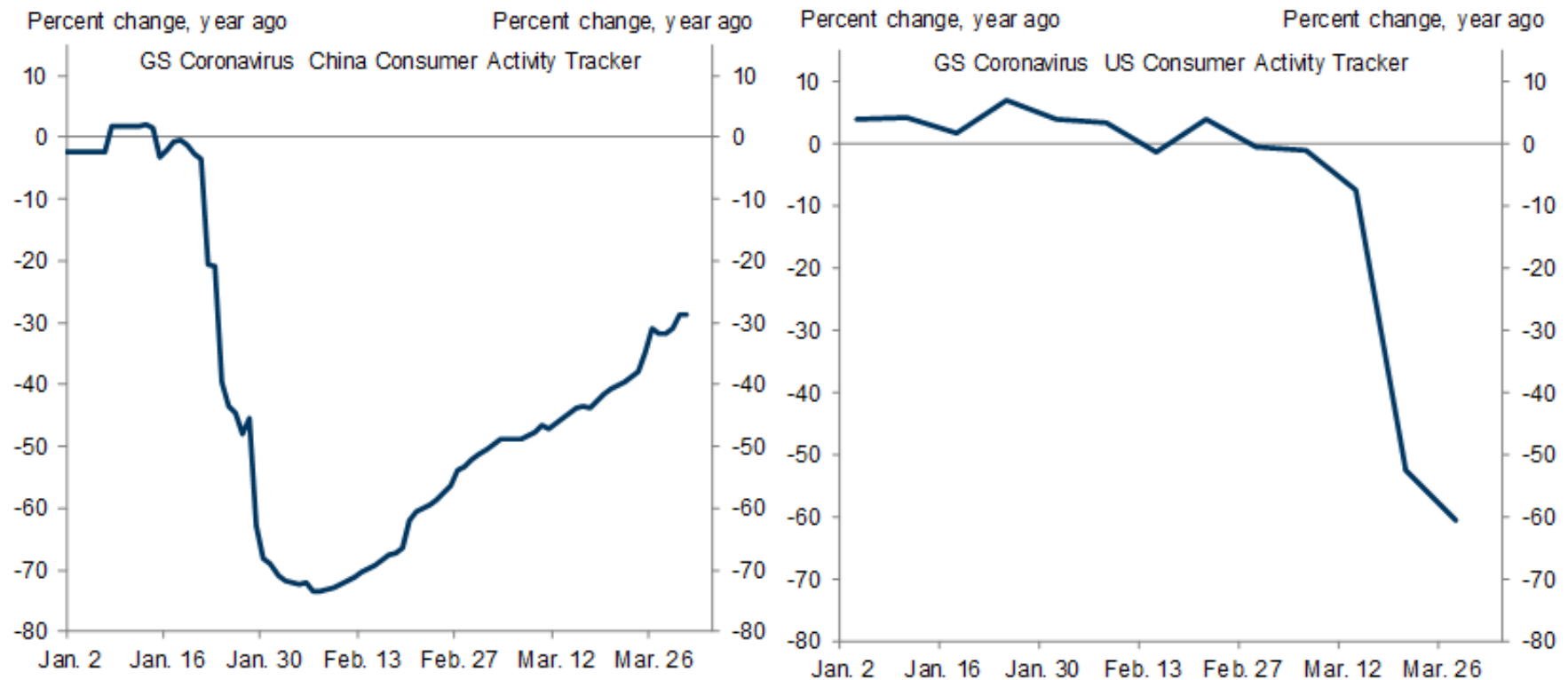
*Percentage point change in load factors relative to the same week after CNY in 2018-19



Hu, et al., "China: Update of high frequency trackers on Chinese economic activity," Goldman Sachs, March 25



China Consumer vs. US Consumer



Briggs, "Coronavirus Global Activity Tracker," Goldman Sachs, April 1, 2020

China

Policy Response

Figure 15: China

Country	Containment measures	Fiscal Policy	Monetary Policy
China	<p>A variety of inbound restrictions on movement remain in place throughout the country. After local transmission increased in Hong Kong, the government announced social distancing measures, including a ban of alcohol sales in pubs and restaurants.</p> <p>From 16 March, all those arriving in Beijing from abroad have to undertake 14 days of quarantine in a designated place.</p> <p>The government plans to end restrictions on travel into and out of Wuhan on April 8.</p> <p>China will temporarily suspend entry of foreign nationals, including those with visas or residence permits, from 28 March.</p>	<p>What to expect? The economy needs direct demand stimulus, which will take the form, we think, of income tax cuts, subsidies for automobile and other purchases and coupons for spending at hard-hit restaurants and other SME service enterprises. The Mar 29 Politburo meeting confirmed that the government is preparing a comprehensive policy package which will likely be announced in April.</p> <p>We expect the central government to increase its budget deficit by more than 1ppt (to 4% of GDP) when the 2020 budget is passed in April. On top of that, it will also issue RMB 2-3trn of special central government bonds (2-3% of GDP) as well as more local government bonds. The augmented deficit – including off budget funds and local government borrowing – will likely rise by 6% of GDP. Government finances have been on an unsustainable path for years, but with most government debt held by safe domestic investors there is no risk of a crisis.</p>	<p>Financial conditions hardly tightened onshore in China. After years of credit tightening, there seems to have been low leverage in financial markets so it was enough for the PBoC to ensure liquidity conditions didn't tighten. They have cut their key policy rate, the MLF rate, by only 10bps and lowered banks reserve requirements.</p> <p>OMO rates was cut by another 20 bps on March 30, which will likely be passed on to the MLF rate in April. Most significantly, probably, was the RMB800bn in refinancing provided to allow banks to lend to large and small corporations to allow them to weather the storm of the outbreak. Substantial support has been provided by banks, who have been guided (and funded) to continue to lend to companies, if only to allow them to meet payrolls.</p> <p>What to expect? We expect another 100bps of RRR cuts, another 40bps off the MLF rate (20bps in April, 20bps in May-June) and 25bps off the benchmark deposit rate by mid-year.</p>

Source :Deutsche Bank

Sidorov, et al., Deutsche Bank, March 30, 2020.

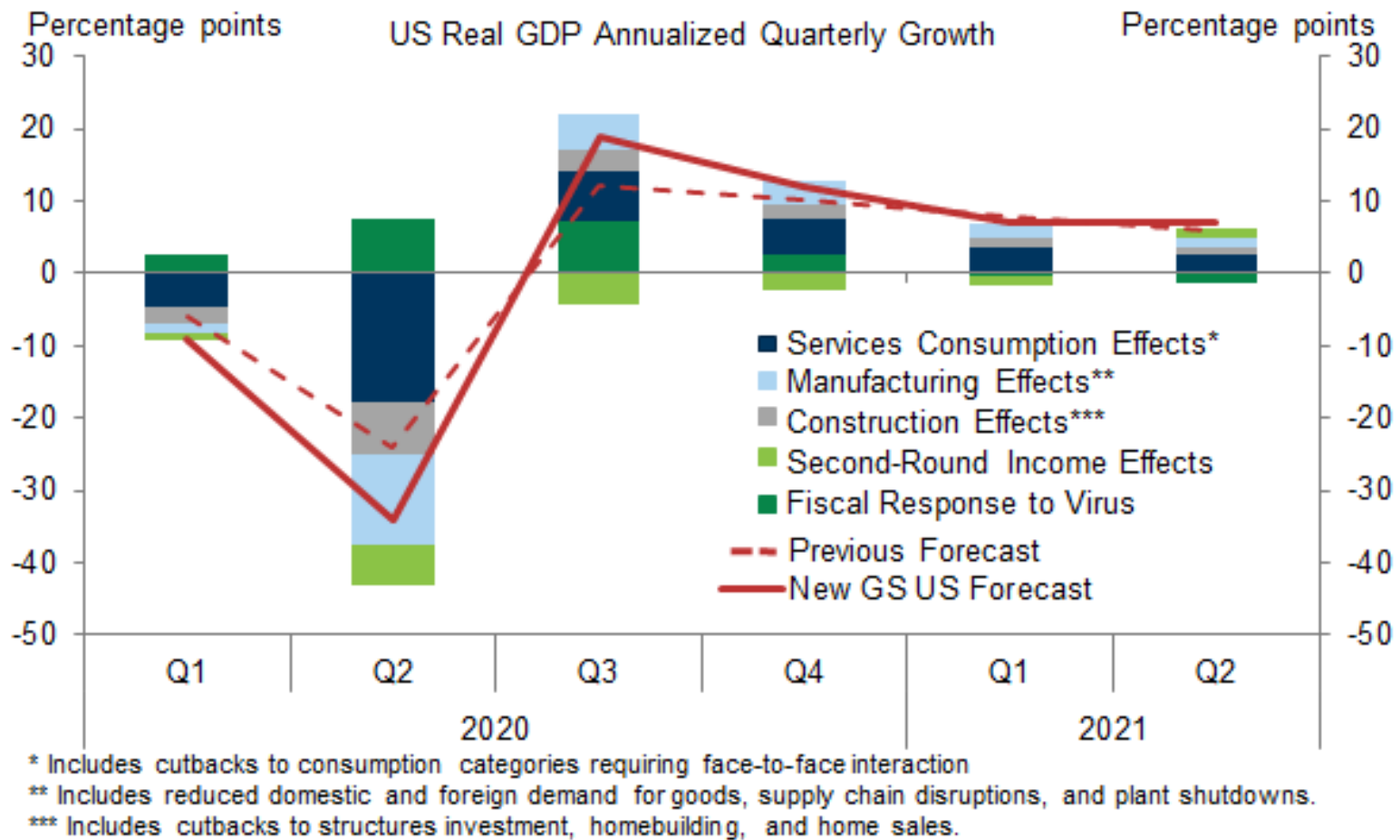
Threats to Recovery

- China remains export dependent
- In 2009Q2, US and Euro Area GDP fell by 5%, resulting in 18% decline in exports
- Possible that export fall could be larger this time

The United States

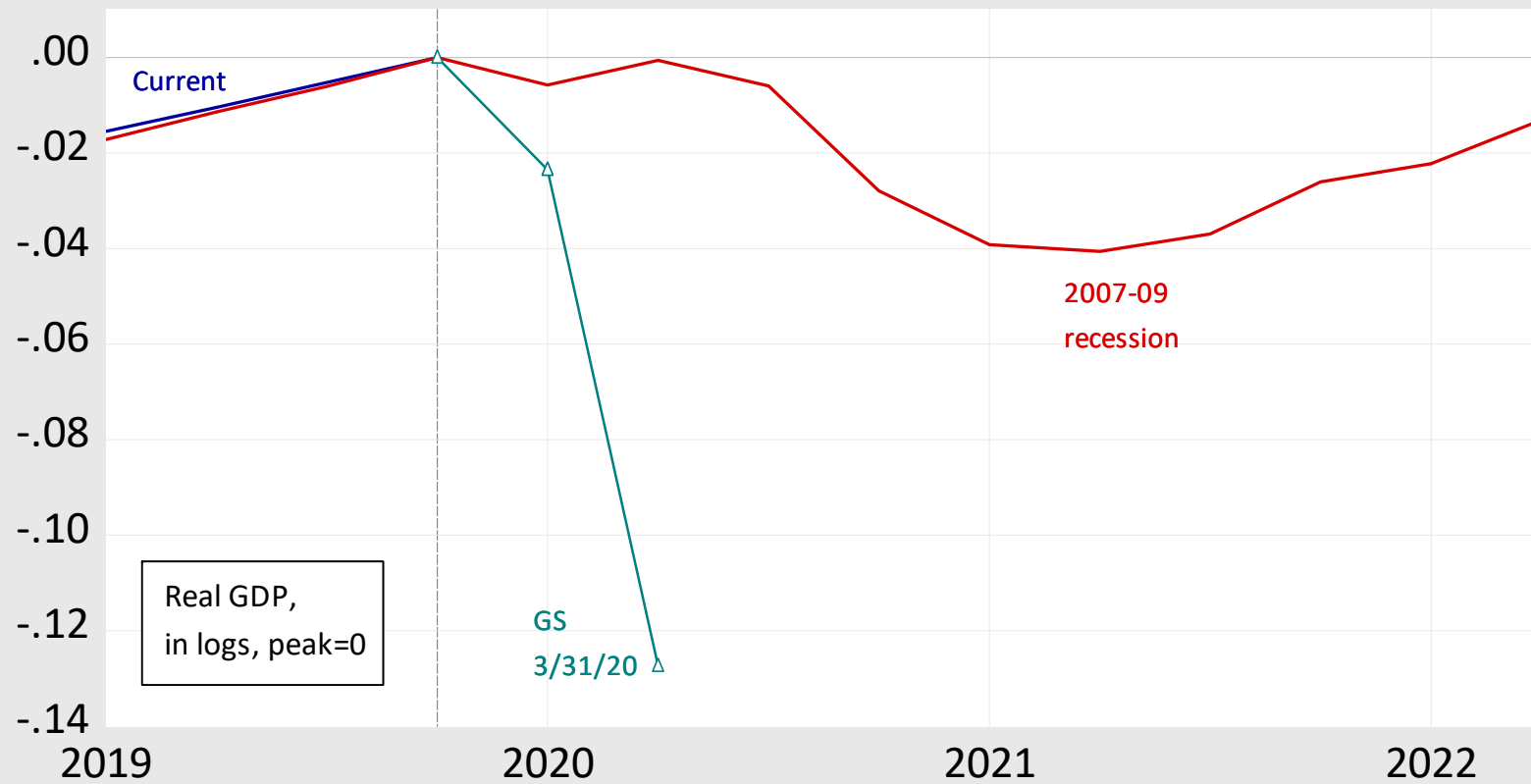
Current Situation, Projections

Forecast (Goldman Sachs 3/31)

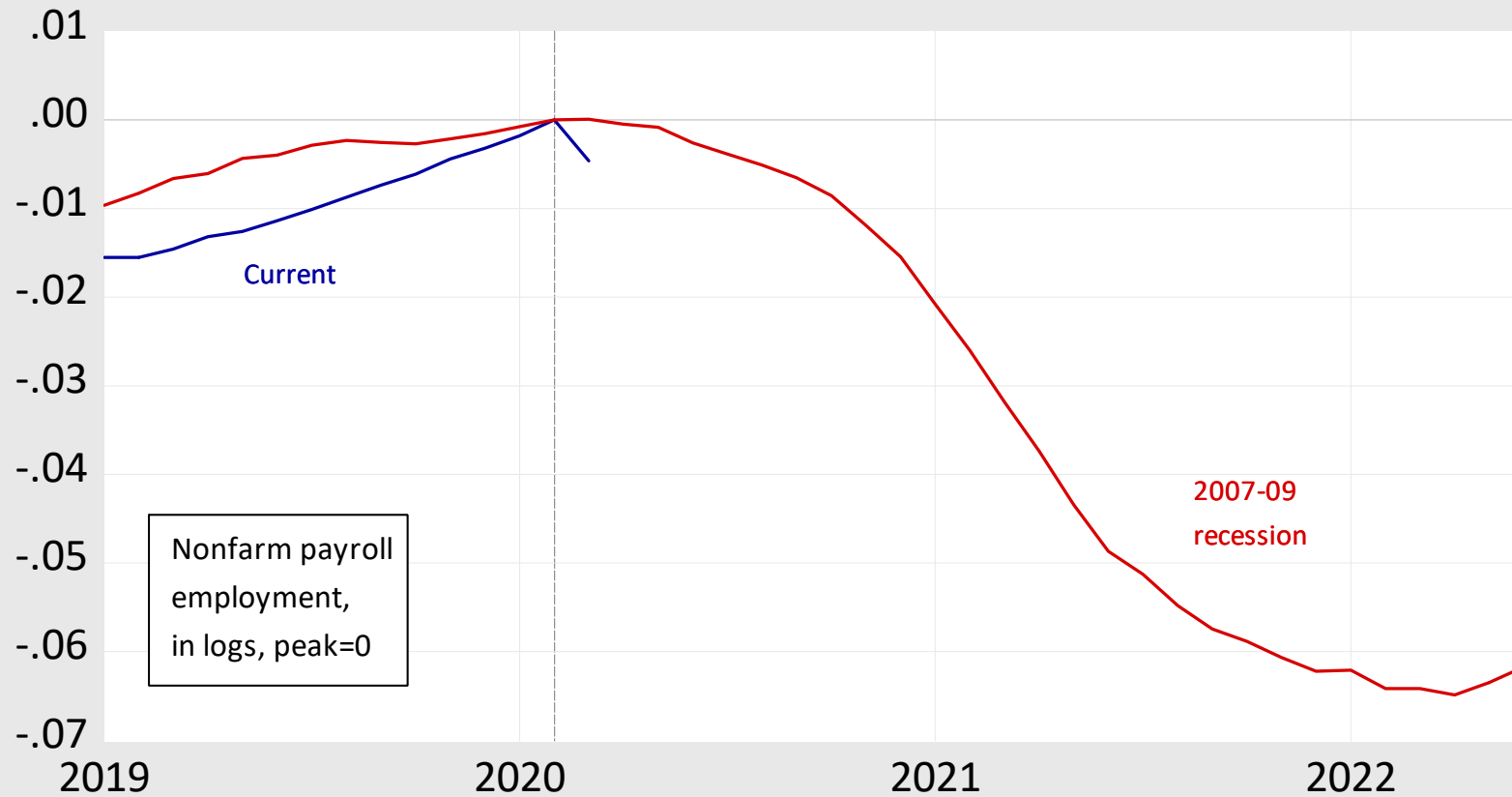


Hatzius, et al., "The Sudden Stop: A Deeper Trough, A Bigger Rebound," Goldman Sachs, 31 March 2020

Compared to the 2008-09



Compared to 2008-09



THE U.S. ECONOMIC AND FINANCIAL OUTLOOK

(% change on previous period, annualized, except where noted)

	2018	2019	2020 (f)	2021 (f)	2022 (f)	2023 (f)	Q1	2020 Q2	Q3	Q4	Q1	2021 Q2	Q3	Q4
OUTPUT AND SPENDING														
Real GDP	2.9	2.3	-6.2	5.5	3.5	2.0	-9.0	-34.0	19.0	12.0	7.5	6.0	5.0	3.5
Real GDP (Advance Release)	—	—	—	—	—	—	-6.5	-19.0	9.0	12.0	7.5	6.0	5.0	3.5
Real GDP (Q4/Q4)	2.5	2.3	-5.4	5.5	2.8	1.8	—	—	—	—	—	—	—	—
Consumer Expenditure	3.0	2.6	-4.4	4.0	3.7	2.1	-6.6	-28.0	16.0	8.0	5.0	4.0	4.0	4.0
Residential Fixed Investment	-1.5	-1.5	-3.2	9.1	5.5	2.3	10.8	-45.0	25.0	15.0	15.0	12.0	10.0	5.0
Business Fixed Investment	6.4	2.1	-10.3	6.4	5.0	3.9	-16.6	-37.6	20.8	15.0	8.8	6.1	5.7	5.3
Structures	4.1	-4.3	-14.7	4.4	3.1	2.7	-14.8	-45.0	15.0	15.0	10.0	5.0	3.0	3.0
Equipment	6.8	1.3	-13.1	5.3	4.2	2.7	-22.8	-40.0	20.0	15.0	7.0	5.0	5.0	5.0
Intellectual Property Products	7.4	7.5	-4.2	8.7	7.0	5.7	-10.0	-30.0	25.0	15.0	10.0	8.0	8.0	7.0
Federal Government	2.9	3.5	4.2	2.6	0.1	0.0	2.5	6.0	6.0	3.0	3.0	1.0	0.0	0.0
State & Local Government	1.0	1.6	3.3	3.0	1.2	1.0	2.4	6.0	6.0	3.0	3.0	1.5	1.5	1.5
Net Exports (\$bn, '09)	-920	-954	-1,127	-1,330	-1,297	-1,318	-893	-1084	-1231	-1301	-1355	-1357	-1314	-1292
Inventory Investment (\$bn, '09)	48	67	-274	119	75	60	-144	-550	-300	-100	50	150	150	125
Industrial Production, Mfg.	2.3	-0.2	-12.8	7.6	4.7	1.2	-17.6	-43.8	8.9	17.4	14.9	12.2	8.4	5.5
HOUSING MARKET														
Housing Starts (units, thous)	1,250	1,298	1,425	1,506	1,578	—	1,612	1,324	1,331	1,431	1,543	1,447	1,467	1,568
New Home Sales (units, thous)	615	684	724	782	829	—	753	709	697	738	794	763	763	809
Existing Home Sales (units, thous)	5,334	5,330	5,453	5,509	5,569	—	5,434	5,447	5,460	5,473	5,488	5,502	5,516	5,531
Case-Shiller Home Prices (%yoy)*	4.1	3.2	-2.1	2.3	1.9	2.0	2.8	-0.5	-1.6	-2.1	-1.0	0.1	1.2	2.3
INFLATION (% ch, yr/yr)														
Consumer Price Index (CPI)	2.4	1.8	1.3	2.1	2.1	2.2	2.2	0.8	0.9	1.1	1.3	2.5	2.4	2.2
Core CPI	2.1	2.2	2.1	2.0	2.1	2.2	2.3	2.2	2.0	2.0	1.9	2.0	2.0	2.0
Core PCE**	2.0	1.6	1.6	1.6	1.8	2.0	1.7	1.6	1.4	1.6	1.5	1.6	1.7	1.6
LABOR MARKET														
Unemployment Rate (%)	3.9	3.7	10.3	7.1	5.2	3.9	3.7	13.2	14.7	9.5	8.0	7.4	6.8	6.3
U6 Underemployment Rate (%)	7.7	7.2	18.3	12.8	9.3	7.2	7.1	23.0	25.9	17.2	14.5	13.2	12.2	11.2
Payrolls (thous, monthly rate)	192	174	-700	550	350	213	0	-5,000	-600	3,000	850	450	450	450
GOVERNMENT FINANCE														
Federal Budget (FY, \$bn)	-779	-984	-1,025	-1,050	-1,200	-1,250	—	—	—	—	—	—	—	—
FINANCIAL INDICATORS														
FF Target Range (Bottom-Top, %)^	2.25-2.5	1.5-1.75	0-0.25	0-0.25	0.5-0.75	1-1.25	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25	0-0.25
10-Year Treasury Note^	2.69	1.92	0.75	1.35	1.75	1.90	0.60	0.40	0.55	0.75	0.90	1.05	1.20	1.35
Euro (€/€)^	1.15	1.12	1.13	1.17	1.20	1.22	1.07	1.08	1.10	1.13	1.14	1.15	1.16	1.17
Yen (\$/¥)^	110	109	105	104	102	101	111	102	105	105	105	105	104	104

* Weighted average of metro-level HPIs for 381 metro cities where the weights are dollar values of housing stock reported in the American Community Survey.

** PCE = Personal consumption expenditures. ^ Denotes end of period.

Hatzius, et al., "The Sudden Stop: A Deeper Trough, A Bigger Rebound," Goldman Sachs, 31 March 2020

Fiscal Measures

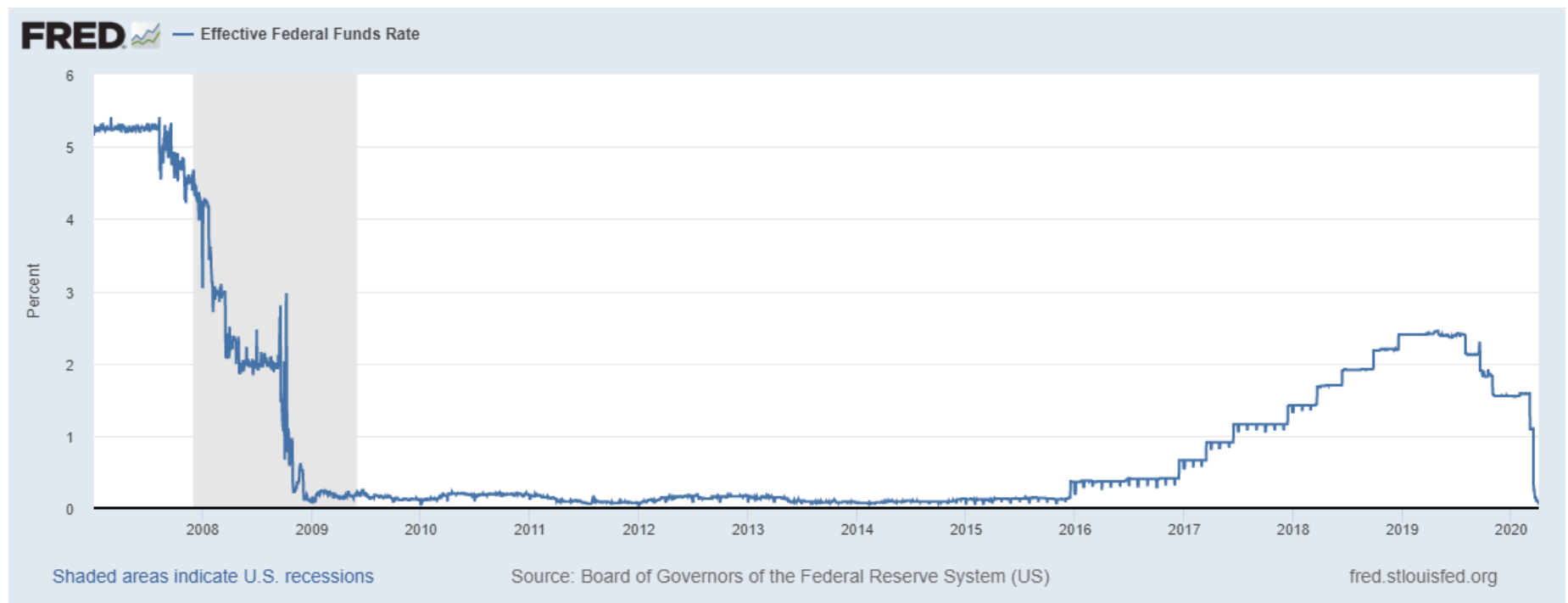
Figure 3: The fiscal scorecard broken down by specific stimulus measures

Legislation	Fiscal Stabilizers	Tax Deferments	Direct Spending	Loans	Total
Senate CARES Act					
Tax Rebates (\$1200/\$2400 checks)	292.4				
Temporary Tax Provisions	163.0				
Permanent Tax Provisions	152.7				
Unemployment Insurance Benefits (\$600/week)*	125.0				
Employer Payroll Tax Deferment**		351.8			
Emergency Funding Authorization			340		
State and Local Support			140		
Airline / Air Cargo Industry				29	
Defense Industries (Boeing)				17	
Fed Lending Facilities				454	
Small Business Administration Loan Guarantees				349	
Subtotal	733.1	351.8	480	849	2413.9
Prior Bills/Executive Actions					
Deferred 2019 Tax Payments (to July 15)**		300.0			
Families First Act Tax Credits	104.8				
Subtotal	104.8	300			404.8
Total (\$ billions)	837.9	651.8	480	849	2818.7
<i>Estimate*</i>					
<i>Temporary Liquidity Provisions**</i>					

Source : JCT & Deutsche Bank

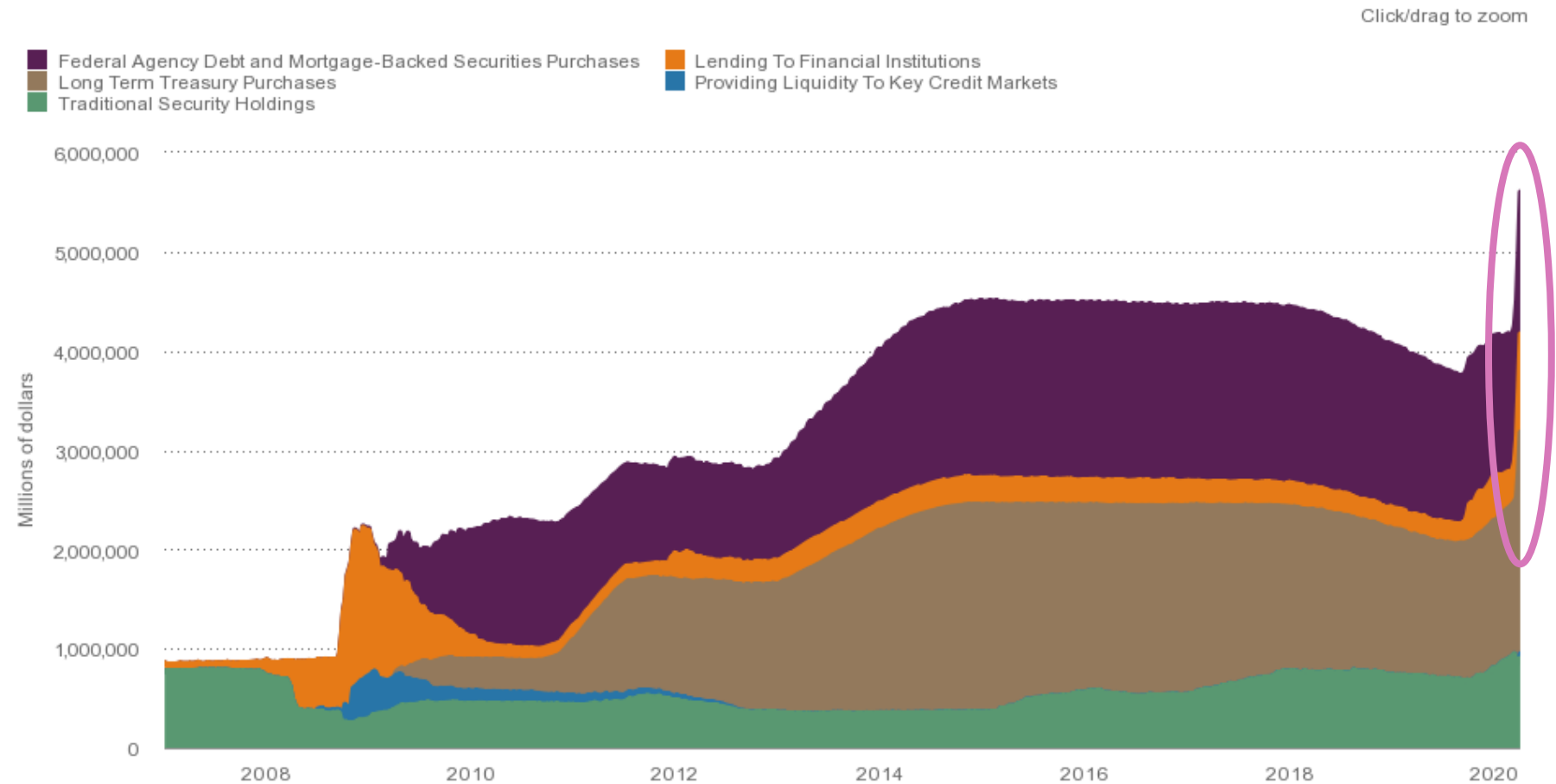
Ryan, "What's in the \$2 trillion stimulus package?" Deutsche Bank, March 27, 2020.

Fed Funds to ZLB



Credit Easing

Summary View



Source: Federal Reserve Bank of Cleveland calculations based on data from Federal Reserve Board and Haver Analytics.

<https://www.clevelandfed.org/en/our-research/indicators-and-data/credit-easing.aspx>

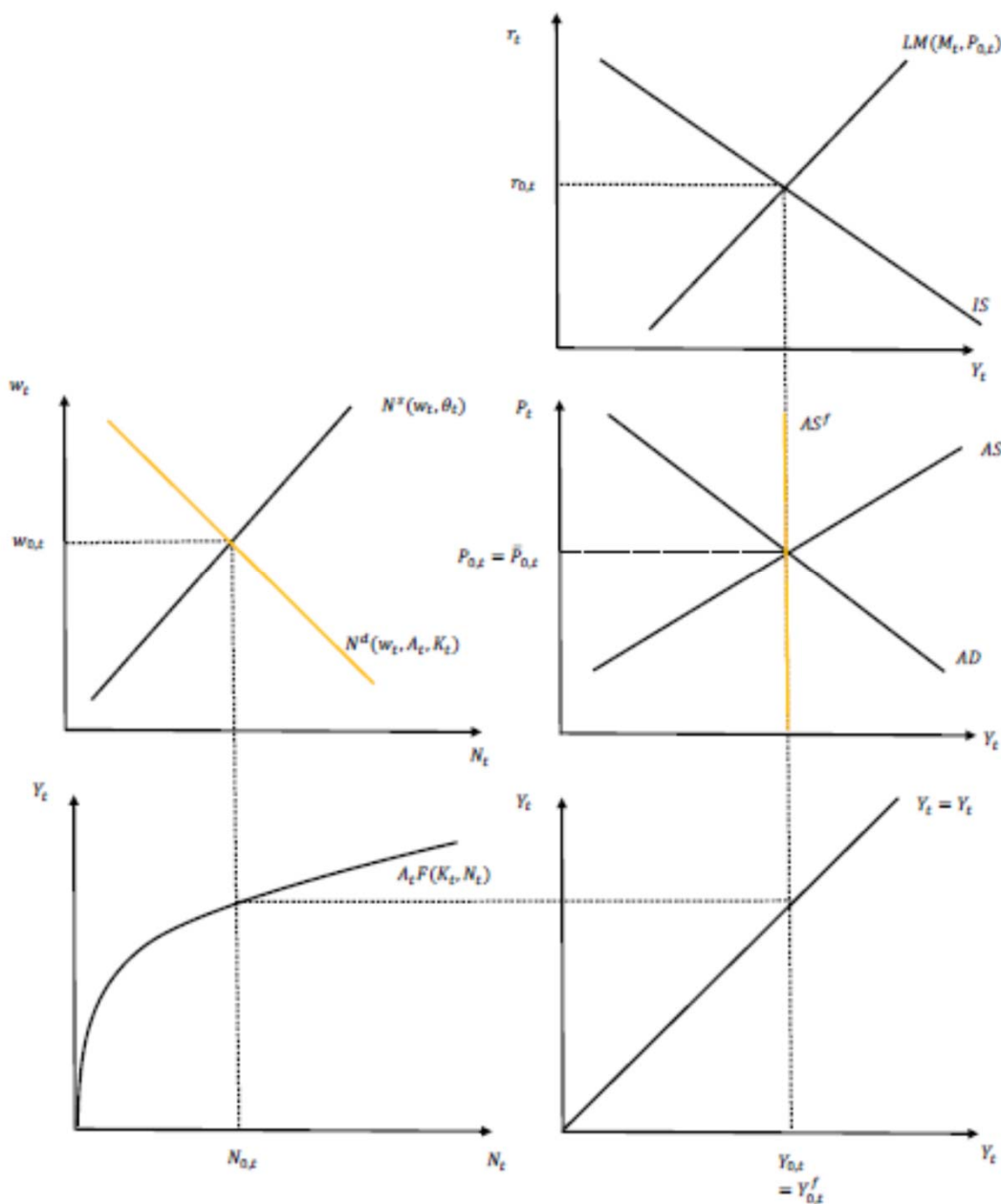
Accessed April 5, 2020

Interpreting the US Using a Macro Model (I)

We start at
equilibrium

IS-LM-AD-AS,
combines
Keynesian and
New Classical
attributes
w/forward
looking
expectations

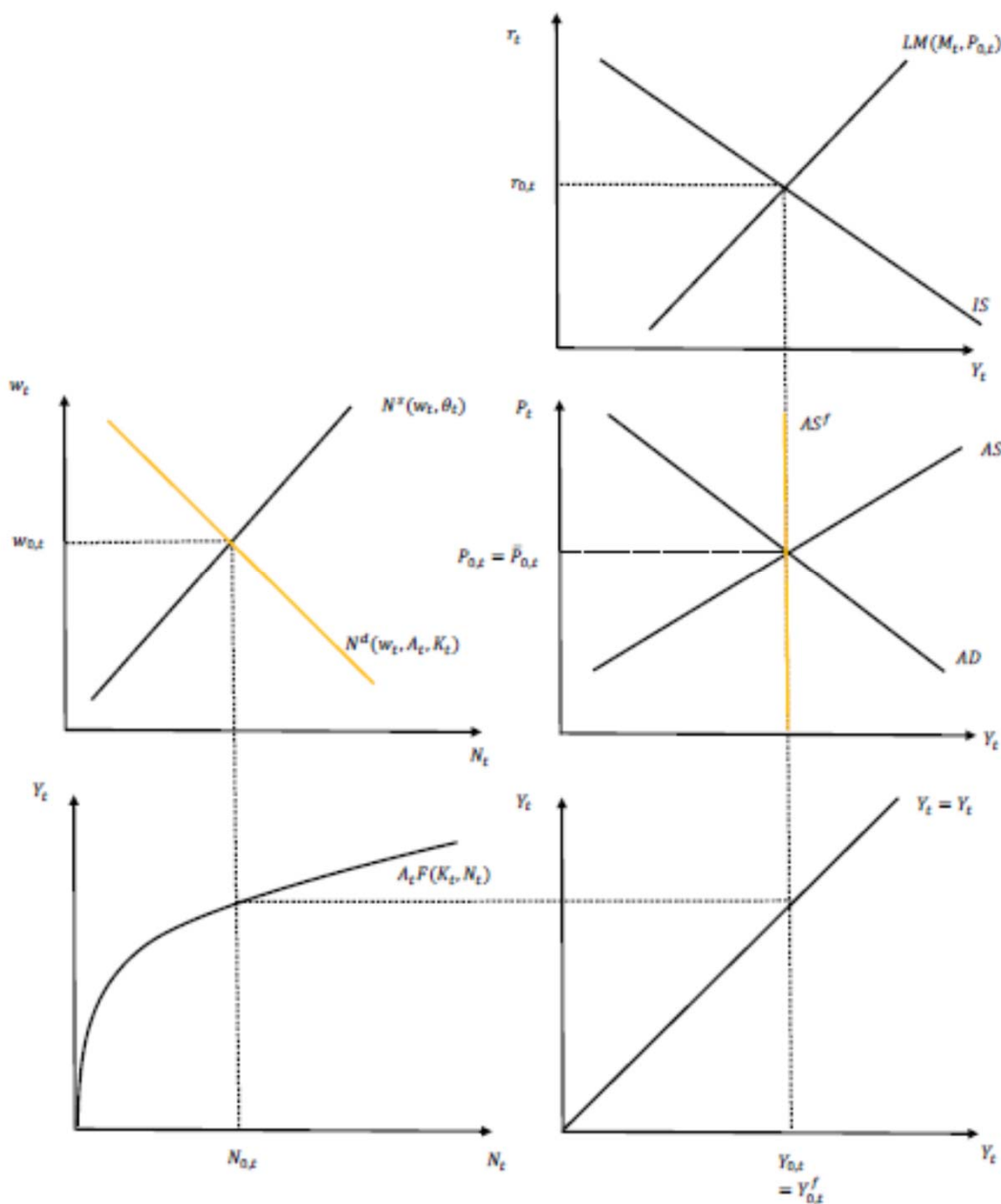
Figure 25.11: Equilibrium in the Partial Sticky Price Model



We start at
equilibrium

IS-LM-AD-AS,
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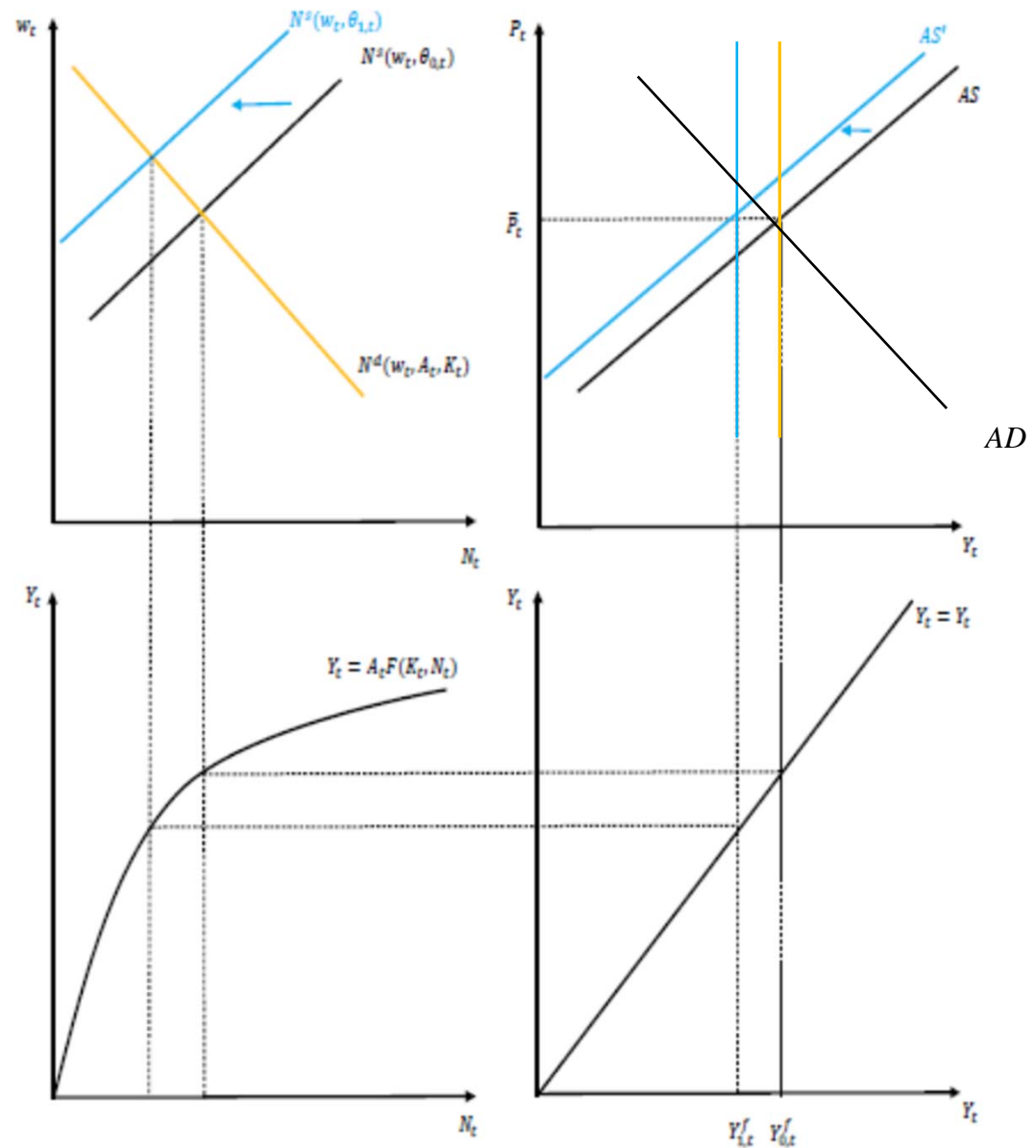
Figure 25.11: Equilibrium in the Partial Sticky Price Model



Θ rises (social distancing restrictions on employment), C falls

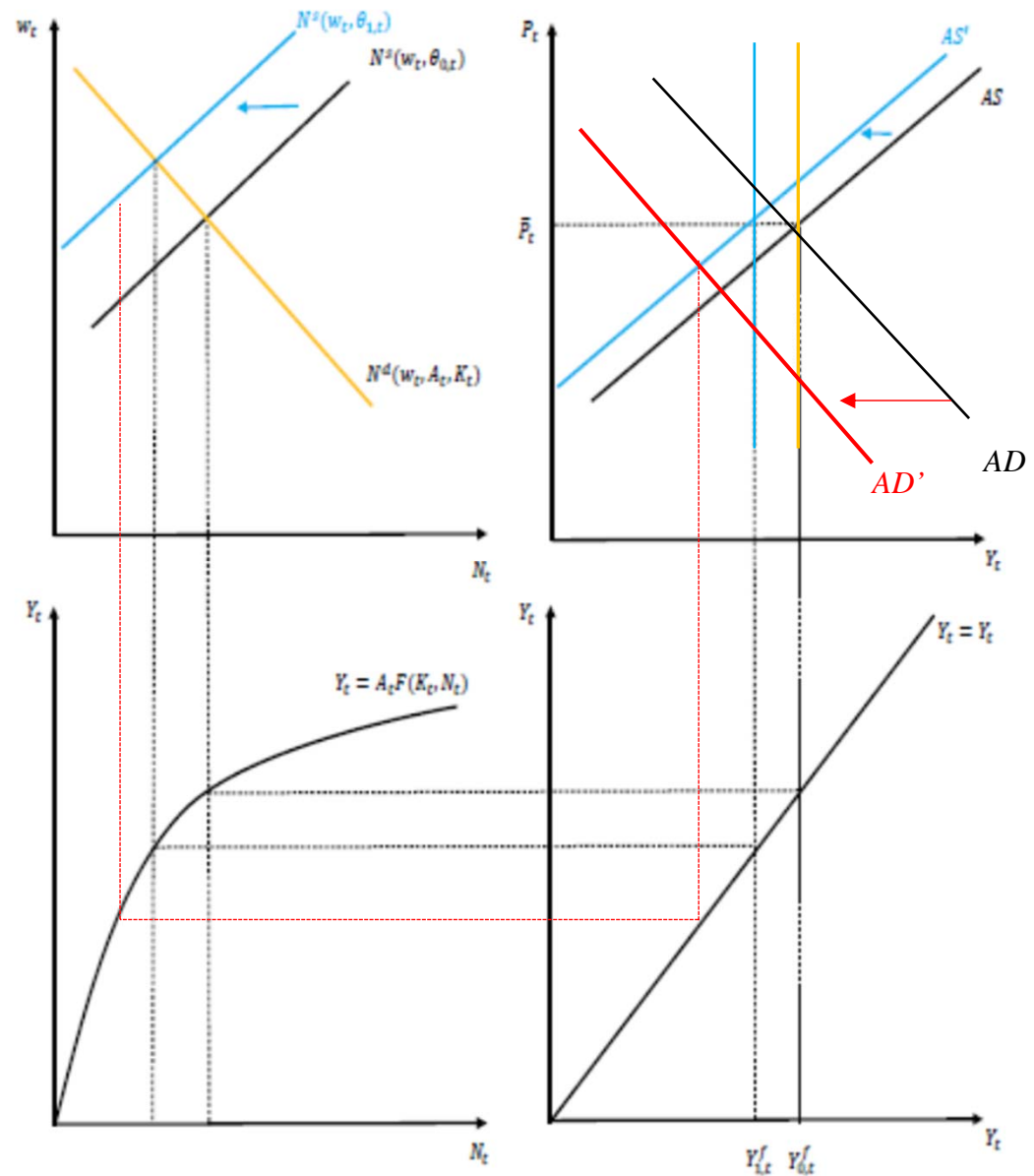
N^s shifts in, AS shifts up, neoclassical AS shifts in (blue arrows)

Figure 24.10: Shift of the Partial Sticky Price AS Curve: $\uparrow \theta_t$



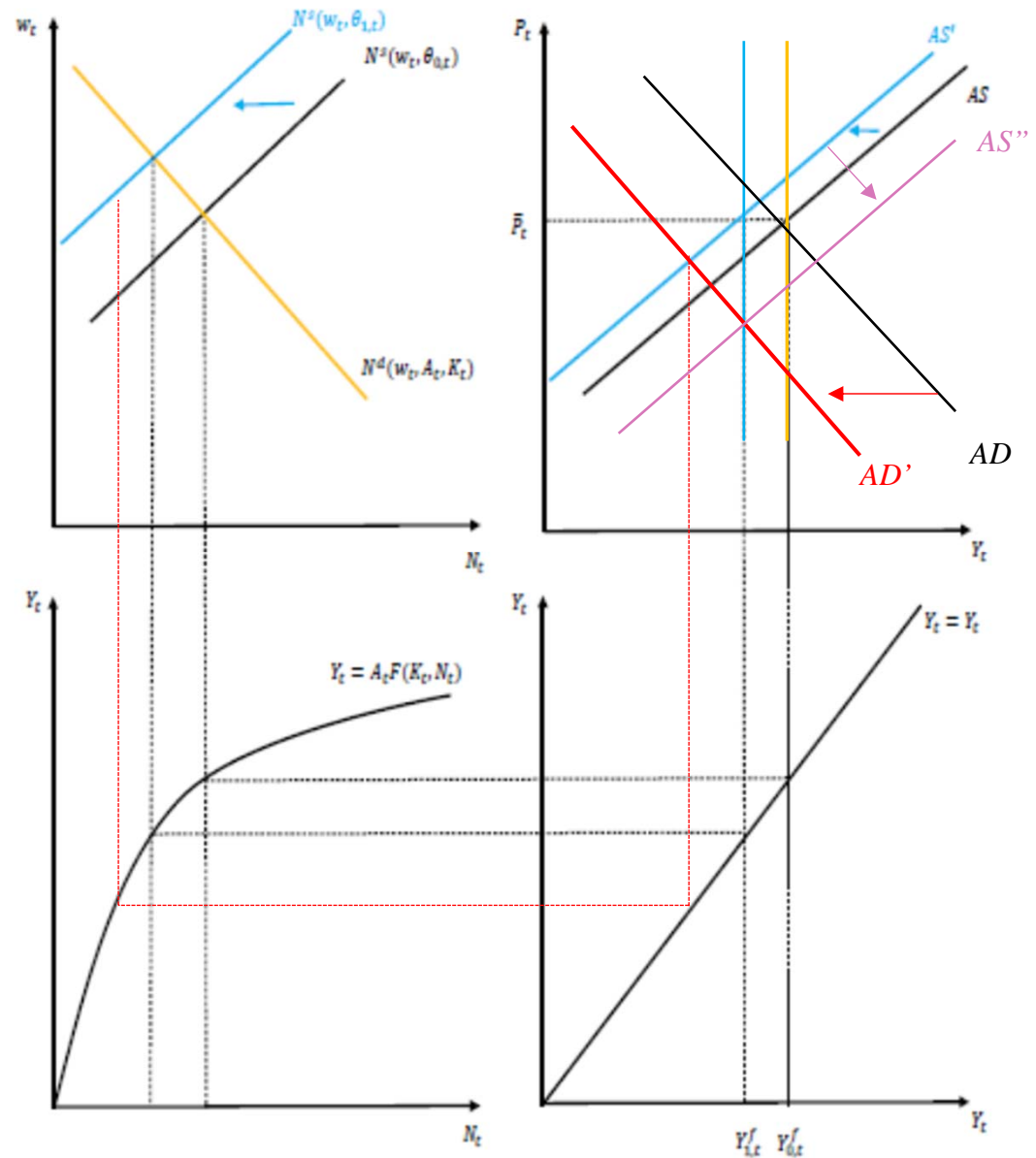
Income
reduced
exogenously
means AD
shifts in (red
arrows)

Figure 24.10: Shift of the Partial Sticky Price AS Curve: $\uparrow \theta_t$



AS shifts out to AS'' as P-bar reset, output rises up to new Y^f (red arrows)

Figure 24.10: Shift of the Partial Sticky Price AS Curve: $\uparrow \theta_t$



New Keynesian Model Implications

- In short run, price level rises and output fall as AS shifts up (blue arrow)
- In short run, price level and output fall as AD shifts in, even after taking into account expansionary fiscal, monetary policy (red arrow)
- In medium run, output rises to new full employment output as AS shifts downward (purple arrow).

New Keynesian Model Implications

- If social distancing/quarantine and other non-pharmaceutical interventions (NPI's) are relaxed, output eventually returns to original full employment levels.
- However, over time, full employment output might fall as labor force falls, firms disappear.
- Hence, the economy might never return to the pre-shock flexible price equilibrium.