[3] Central Bank and Federal Gov't monetary/fiscal stimulus; equity and fixed income valuations; COVID and the unfunded obligations of US states; a history of market bottoms

The first table itemizes monetary and fiscal stimulus unleashed by the Federal Reserve and other Central Banks this year, measured as Central Bank liquidity provisions, new fiscal stimulus programs and rates cuts. For context, new fiscal stimulus and total fiscal deficits in the US are roughly double the levels seen in 2008-2009, and the US fiscal deficit we project for 2020 of 15%-18% is only matched by deficits seen at the height of WWII in 1942-1943.

Monetary and fiscal stimulus

Country	Central Bank potential liquidity injection US$ trillions	Central Bank potential liquidity injection GDP %	New Govt fiscal stimulus US$ trillions	New Govt fiscal stimulus GDP %	Rate cuts basis points
United States	$6.21	29.0%	$3.30	15.4%	-150
Eurozone	$1.10	8.3%	$2.83	21.2%	
Japan	$0.75	14.6%	$0.99	19.2%	
United Kingdom	$0.25	9.0%	$0.14	5.1%	-65
China	$1.44	10.0%	$0.68	4.7%	-100
Others	$0.68		$2.09		
Total	**$10.43**	**12.0%**	**$10.03**	**11.6%**	

Source: Cornerstone, JPM Economic Research. May 06, 2020. Others include: RoW, Asian Development Bank, IMF, World Bank.

The amount of stimulus and support from the Fed for markets cannot be fully captured by the table above. To do that, one would have to add up all of the Fed's Asset Purchase commitments, Direct Lending programs and Guarantee/Backstop programs as well: that amounts to around $8 trillion. See page 6 for details on the ECB.

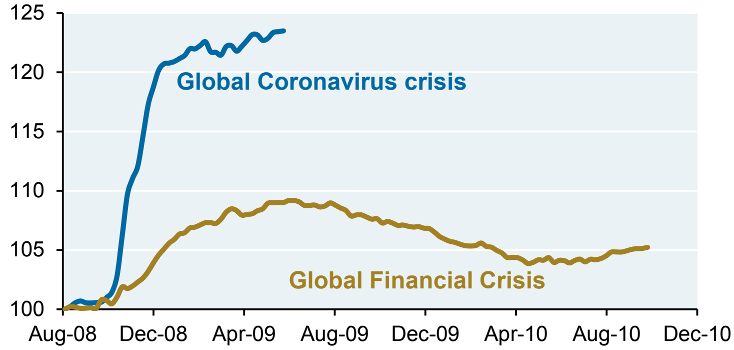
Federal Reserve Programs to Support Credit (US$, Billions)

Targeted Sector & Policy	Asset Purchases	Direct Lending	Guarantee/Backstop	
Government				
QE Treasury Purchases	$2,200			
Commercial Paper Funding Facility (Muni CP)			$30	
Households				
QE MBS Purchases	$1,000			
TALF (Consumer ABS Purchases)	$100			
Businesses				
Commercial Paper Funding Facility (Non-Fin Corp CP)			$240	
Primary Market Corporate Credit Facility		$500		**New**
Secondary Market Corporate Credit Facility	$250			**New**
Paycheck Protection Program Lending Facility	$350			**New**
Municipal Liquidity Facility		$500		**New**
Main St Loan Facility		$600		**New**
Financials/Liquidity				
Repo Operations		$200		
Commercial Paper Funding Facility (Fin + ABCP)			$640	
Money Market Mutual Fund Liquidity Facility			$1,400	
Total by type of program	$3,900	$1,800	$2,310	
Cumulative Total			**$8,010**	
Other Fed facilities include the revival of the Primary Dealer Credit Facility for broker-dealers, and FX swap lines for developed and developing economy central banks.				

Source: Bridgewater, J.P. Morgan Asset Management. April 2020.

Measuring the Fed's ability to alleviate a credit crunch. Spread increases were in many cases much smaller than in 2008, which reflects improvements in the plumbing and capitalization of the banking sector. Furthermore, the explosion of Fed liquidity this time around contributed to substantial rallies in spread markets. The table shows the % of spread widening that has been recovered so far.

Faster growth in the money supply this time around
M2 money supply + institutional money market fund balances, index



Source: St Louis Fed, J.P. Morgan Asset Management. October 26, 2020.

Recovery from peak spread since January

Spread	% recovered
3 month LIBOR - 3 month forward Fed Funds rate	100%
AAA asset backed credit card - Treasury	99%
AAA asset backed prime auto - Treasury	99%
US asset backed commercial paper - 3 month Treasury	97%
3 month LIBOR - 3 month Treasury (TED spread)	96%
AAA asset backed CMBS - Treasury	95%
Financial investment grade corporates - Treasury	92%
US investment grade corporates - Treasury	90%
Non Financial investment grade corporates - Treasury	90%
Leveraged loan price index	84%
US High Yield corporates - Treasury	84%
Emerging markets dollar denominated bonds - Treasury	77%
US BB - BBB corporates	73%
30 year fixed rate mortgage - 10 year Treasury	72%
Fixed rate preferred securities option adjusted spread	62%

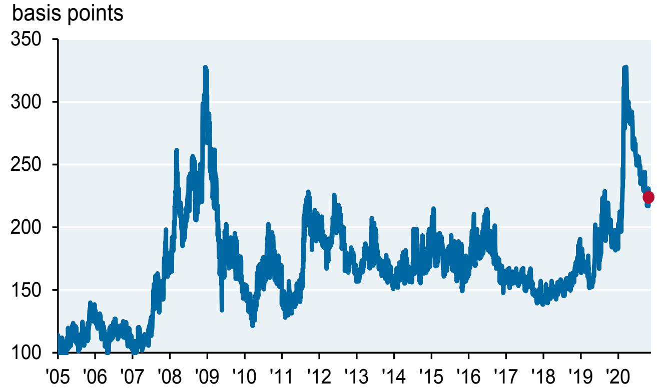
Source: Bloomberg. November 06, 2020.

Below, we show four spread markets with the weakest recoveries relative to pre-COVID conditions.

US high yield corporate bond spreads
JPDFHYI index spread versus Treasury, basis points

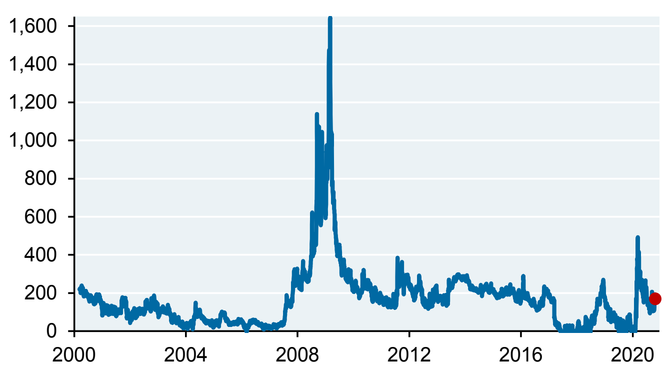
Source: Bloomberg, J.P. Morgan HY Team. November 06, 2020.

30 year fixed rate mortgage - 10 year Treasury
basis points



Source: Bloomberg, J.P. Morgan. November 06, 2020.

Fixed rate preferred securities option adjusted spread
P0P1 index, basis points



Source: Bloomberg, J.P. Morgan. November 06, 2020.

Leveraged loan price index
SPBDALB index

Source: S&P/LSTA, Bloomberg. November 08, 2020.

Equities

Valuations[1]. The first two charts below show P/E ratios relative to 2021 consensus earnings, which we believe is a more useful way to think about valuation.

S&P 500 price/earnings
Price / forward 2 year earnings per share

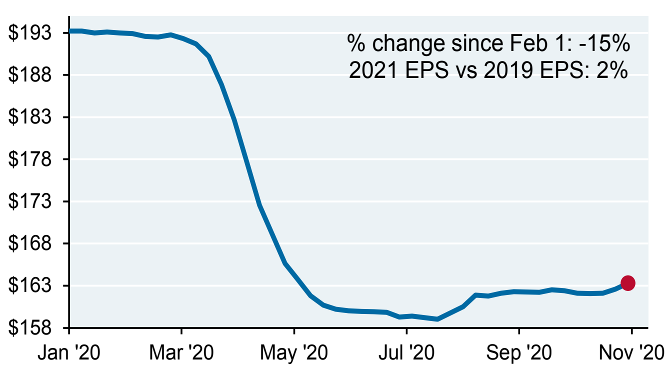
Source: Bloomberg, J.P. Morgan. November 06, 2020.

Stoxx Europe 600 price/earnings
Price / forward 2 year earnings per share

Source: Bloomberg, J.P. Morgan. November 06, 2020.

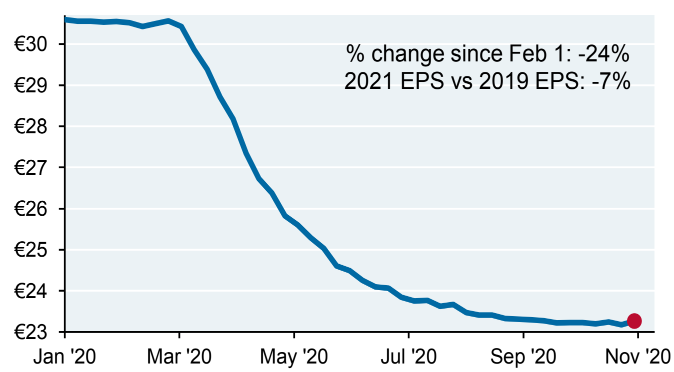
The P/E ratios shown above are based on consensus earnings forecasts for 2021, which so far have declined by ~20% since February 1. As a result, the P/E ratios above are understated if 2021 earnings undershoot the levels shown below.

S&P 500 2021 EPS forecasts



Source: Datastream, J.P. Morgan. November 04, 2020.

Stoxx Europe 600 2021 EPS forecasts

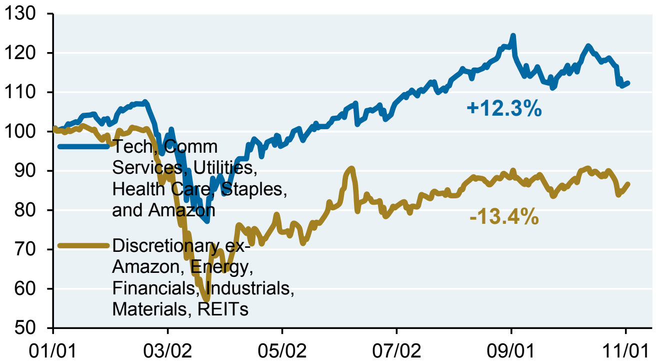


Source: Datastream, J.P. Morgan. November 04, 2020.

[1] Our Europe P/E chart starts in 2006. Before 2006, IFRS required European companies to amortize goodwill, and the amounts involved were at times substantial. As a result, pre-2006 P/E multiples for Europe are not exactly comparable to post-2006 multiples.

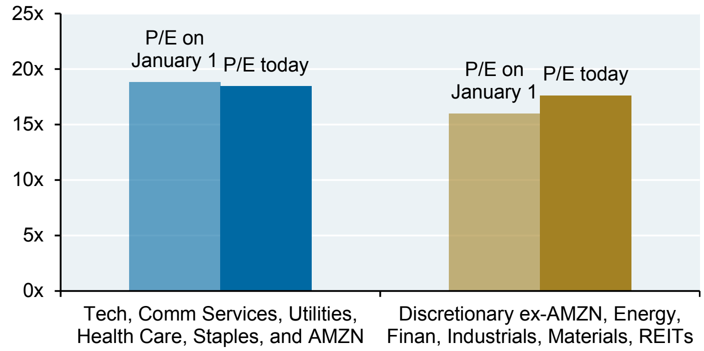
You can also see the impact of ample liquidity on rising P/E multiples of COVID "victim" sectors (gold line and bars in the charts below). The performance of the resilient blue sectors makes sense to me, and they represent around 2/3 of S&P 500 market cap. But the recovery of the victim sectors is pricing in an even more rapid recovery than the one occurring now, and suggests that many investors are searching for any possible return now that cash and bond yields have been eviscerated (again) by the Fed.

YTD S&P 500 sector returns
Index, Jan 1 = 100



Source: Factset, J.P. Morgan Asset Management. November 02, 2020.

Change in P/E since January 1
P/E based on consensus 2021 forward EPS, median company

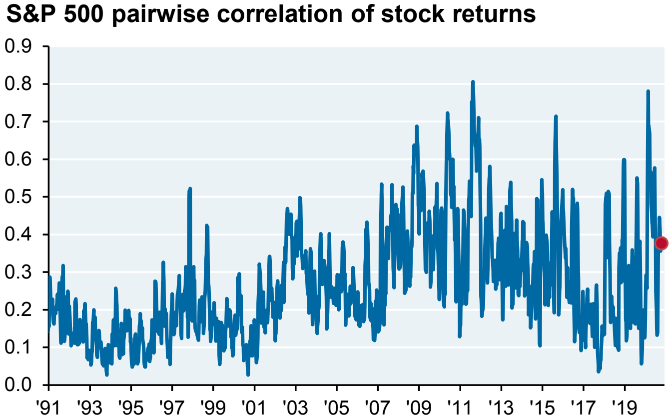


Source: Factset, J.P. Morgan Asset Management. November 03, 2020.

Valuation dispersion and the opportunity for stock pickers

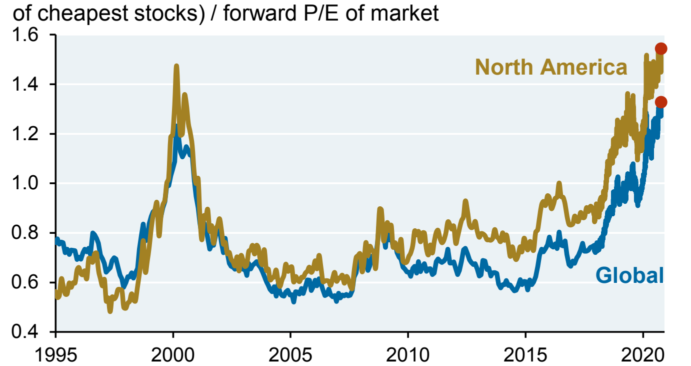
In March there was a large spike in pairwise stock correlations, and in the dispersion of valuations across the entire market and within sectors. A spike can either mean a huge greed-based valuation gap between the most expensive stocks and the rest (i.e., tech bubble in 1999), or a huge fear-based valuation gap between the cheapest stocks and the market (i.e., selloff in airlines, cruise ships, energy and other distressed cyclicals). These valuations are based on pre-virus expectations, a lot of which will change due to changes in consumption, possible changes in buyback policy subject to bailout provisions and other lingering effects of the virus. Even so, market pricing is creating opportunities for investors to underwrite business models at some of the lowest valuations on record.

S&P 500 pairwise correlation of stock returns



Source: JPMAM Equity Research. November 06, 2020.

Spread of cheapest versus most expensive stocks within each industry, (forward P/E of most expensive stocks -forward P/E of cheapest stocks) / forward P/E of market



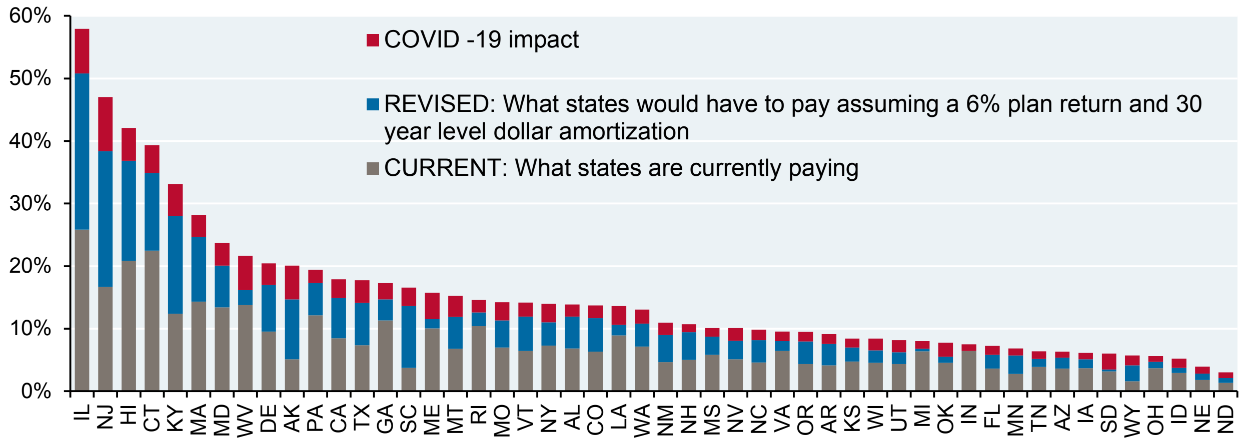
Source: J.P. Morgan Asset Management. November 06, 2020.

Special topics: COVID's impact on state finances and the Chapter 9 debate

In our May 4th Eye on the Market, we analyzed the potential impact of COVID on state unfunded obligations due to falling discount rates, falling revenue collections and falling portfolio valuations. Estimated COVID impacts were small for less indebted states, and larger for more highly indebted states, as you would expect. The first few bars on the left appear unsustainable from a long term public policy perspective, but this was the case before COVID as well. As a reminder, this analysis focuses on state resource adequacy for meeting unfunded long-term obligations, and is separate from the question of whether rainy day funds plus the Fed's new Municipal Liquidity Facility are adequate to fund 2020 state operating deficits.

The cost of unfunded pensions and retiree healthcare as a % of state revenues

% of state revenues required to pay the sum of interest on net direct debt, the state's share of unfunded pension and retiree healthcare liabilities, and defined contribution plan payments



Source: J.P. Morgan Asset Management, State Annual Financial Reports, Moody's. FY 2017. April 29, 2020.

Since we began this project in 2014, we have argued that states should have access in emergency to Chapter 9 bankruptcy provisions, for the following reasons: fair treatment of all creditors, particularly across generations of workers; the ability to make choices regarding allocations to bondholders, retirees and discretionary spending on infrastructure/education in a way that balances the needs of all state constituents in case of dire fiscal distress; and to avoid what Federalists argue is an **unconstitutional irrevocable obligation** due by the state, whose existence is proscribed by the Federal bankruptcy code.

There's a "State's Rights" argument as well (see contrasting views in the *Eye on the Market*), but I'm a Federalist on this issue and agree with former FDIC Chairman William Isaac who said this in 2016 when discussing Illinois:

> "The city of Chicago and the state of Illinois should act now to restructure their liabilities and put the fiscal mess behind them. This can be accomplished by utilizing Chapter 9 and other tools Congress just gave Puerto Rico. The process would entail about two years of unpleasant headlines, but the city and the state will rebound far sooner and less painfully than if they stay on their current paths".

Isaac's comments were not the first on the need for Chapter 9 for states. Legal scholars at the University of Chicago began writing about it in the early 1990's, and U Penn Law Professor and bankruptcy expert David Skeel[2] has been writing about the need for Chapter 9 for states for over a decade.

[2] David has also published a must-read article on the need to **flatten the bankruptcy curve given the massive wave of corporate bankruptcies expected to occur**. Critical needs include allowing simultaneous prepackaged bankruptcies, government provision of DIP financing to failing firms and a lot more temporary bankruptcy judges. "*Bankruptcy and the Coronavirus*", David Skeel (U Penn), Brookings Economic Studies, April 2020.

Special focus: what is the ECB doing?

In June the ECB expanded its Pandemic Emergency Purchase Program (PEPP) from €750 billion to €1,350 billion. The ECB announced the Pandemic Emergency Purchase Program (PEPP) back in March, when it agreed to buy up to €750 billion in public and private-sector securities until the end of the year. This program complements the Asset Purchase Program (APP), which has also been further expanded by €120 billion.

In addition, the ECB agreed to further ease the conditions of its TLTRO III program (targeted longer term refinancing operations), which provides banks long-term financing at attractive rates. For the period between June 2020 and June 2021, banks meeting their lending targets can borrow from the ECB at -1%, which corresponds to a -0.5% net interest margin for the ECB. Moreover, to further enhance lending, the ECB has announced a new series of seven refinancing operations (LTRO) with maturities of around one year at -0.25%. Unlike in the past, when ECB liquidity was mainly used by peripheral countries to offset credit crunches faced by the weakest banks, today banks in both EU core and peripheral countries are taking advantage of the ECB's attractive lending terms. Banks are likely to use the ECB's funds to provide government-guaranteed loans, making it possible for banks to lend with less risk while governments can avoid issuing bonds in the short term. Unlike in the US, where firms can receive grants and households receive direct cash transfers, the European model of providing stimulus through banks allows only entities that choose to borrow to receive access to credit, which must eventually be repaid.

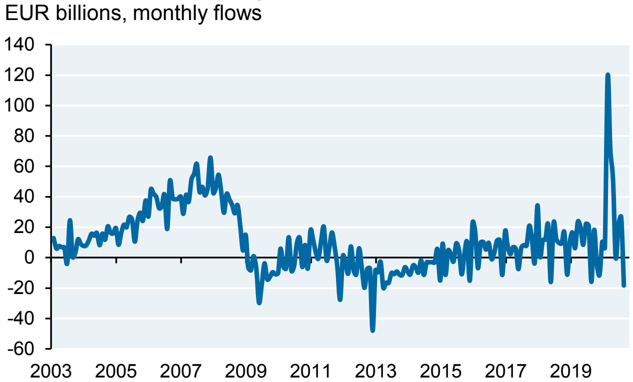
2020 current and projected ECB Balance Sheet size - EUR billions

	2018	2019	6-Jul	Sep	Dec	Mar	Description
Liquidity measures for banks			**1,592**	**1,650**	**1,750**	**1,850**	Targeted longer-term refinancing operations and bridging refinancing operations
Asset purchases			**3,179**	**3,663**	**4,153**	**4,513**	
Pandemic Emergency Purchase Program			366	750	1,150	1,450	New Pandemic Emergency Asset Purchase Programme of private & public sector securities, not subject to the 33% issuer limit*
ABS and Covered Bonds Purchase Program			316	323	329	332	Existing Asset Purchase Programs, expanded by EUR 120 billion for COVID-19
Public Sector Purchase Program			2,242	2,318	2,387	2,435	
Corporate Bonds Purchase Program			255	272	287	296	
Cash & other securities			**1,465**	**1,465**	**1,465**	**1,465**	
Balance Sheet size	**4,669**	**4,644**	**6,236**	**6,778**	**7,368**	**7,828**	

Source: J.P. Morgan Securities. July 06, 2020. *Maximum share of an issuer's outstanding securities that the ECB can buy.

As the chart below shows, ECB policy support led to a record level increase in loans to non-financial corporations in March/April.

Euro area bank lending to non-financial corporations
EUR billions, monthly flows



Source: European Central Bank. September 2020.

Special focus: what are European Governments doing?

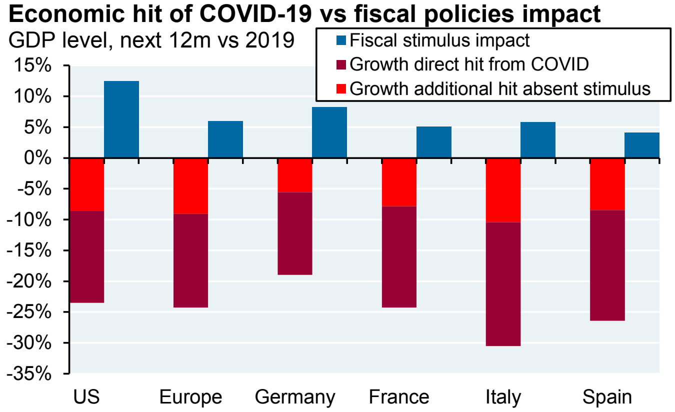
Following a long negotiation, on July 21st the EU has reached an agreement on both the recovery fund and the budget settlement for 2021-2027. The European Commission will borrow €750 billion on behalf of the European Union, of which €390 billion will be provided in the form of grants to member states most affected by the pandemic and €360 billion will be made available as loans. Back in May, France and Germany proposed to split the recovery fund between €500 billion in grants and €250 billion in loans. The shift in the composition of the recovery fund, with a higher allocation to loans, has been an important element that led more conservative member states (like the Netherlands, Austria, Denmark, and Sweden) and higher debt countries (Southern Europe) to agree on the deal. Moreover, member states agreed to insert "an emergency brake" to temporarily stop transfers of money from the recovery fund if an EU state was seen as not meeting reform conditions tied to the money.

These funds will add to the European Commission €1.1 trillion long term budget and to the €540 billion package endorsed in April to provide, mainly in the form of loans, a safety net for workers, businesses and member states. To finance the necessary investments, the Commission will issue bonds on the financial markets on behalf of the European Union; the funds will be channeled through EU programs and will be repaid through EU revenues between 2029 and 2058. The Commission proposed to finance part of the repayment of the funds raised through a series of new taxes, including a carbon tax, a digital tax and a tax on non-recycled plastics and to prioritize investments in climate change and digital transformation.

The proposal marks an important advance on the future of the European Union and greater burden-sharing, reducing the pressure on the ECB to keep the monetary union afloat. However, its slow speed of implementation (as funds will be disbursed only in the fall) has raised concerns over the already limited European response to the crisis. The first chart below shows how the hit to growth in the EU is similar to the US, but EU fiscal responses have been smaller so far. The recovery fund aims to help peripheral economies which have been damaged the most by the COVID-19 crisis. As the second chart shows, equities in Italy and Spain in May were trading at record-low valuations compared to the rest of Europe and the Eurozone.

Economic hit of COVID-19 vs fiscal policies impact

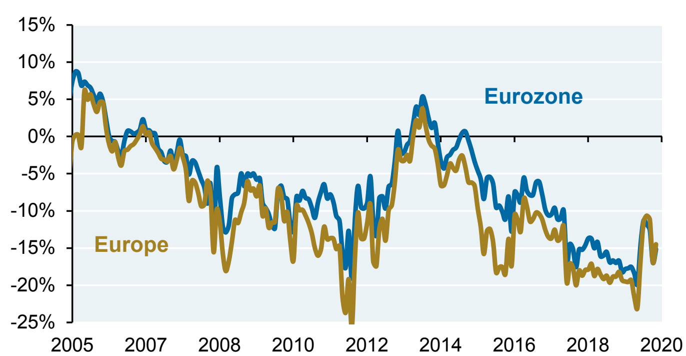
GDP level, next 12m vs 2019



Source: Bridgewater . May 20, 2020. Excludes recovery fund.

Italy and Spain PE discount vs the Eurozone and Europe

MSCI Italy&Spain vs MSCI EMU and Europe P/E, 12m fwd earnings

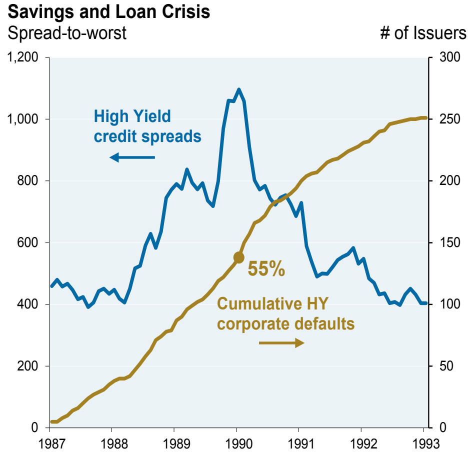


Source: Bloomberg, J.P. Morgan Asset Management. November 2020.

Special topics: A history of market bottoms

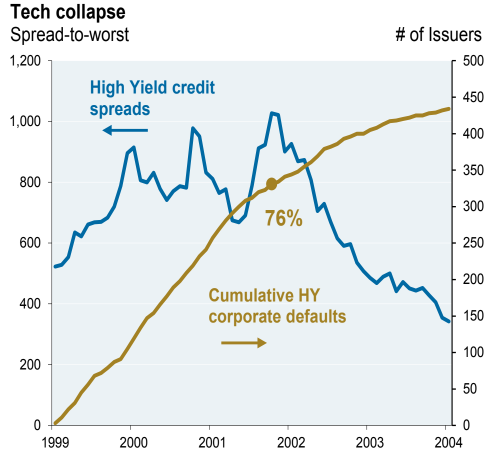
A history of asset prices bottoming before associated defaults, bank failures and delinquencies started to improve. In the first and third rows, spreads peaked well before defaults and delinquencies did; in the middle row, banks stocks bottomed long before bank failures stopped rising.

Savings and Loan Crisis



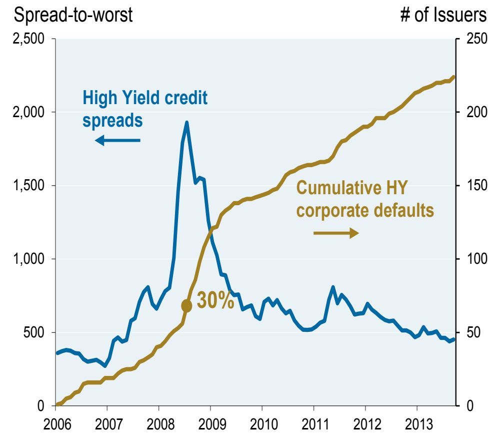
Source: J.P. Morgan Securities LLC. 2020.

Tech collapse



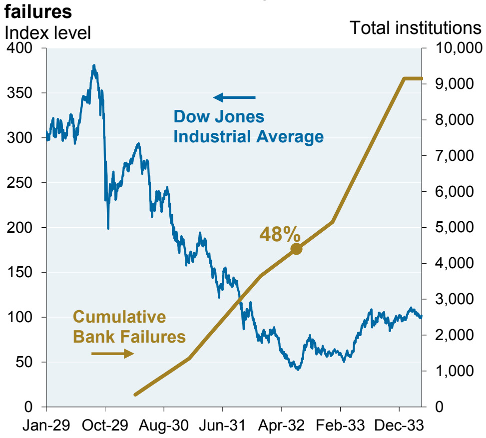
Source: J.P. Morgan Securities LLC. 2020.

Financial crisis



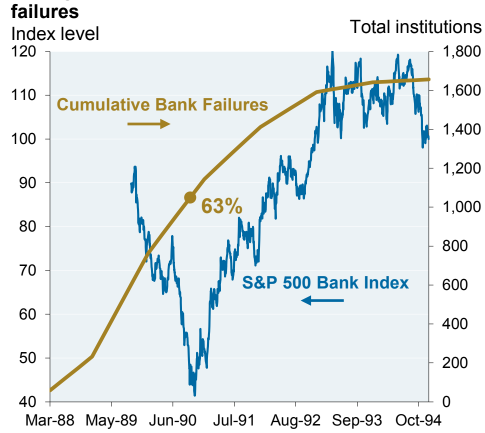
Source: J.P. Morgan Securities LLC. 2020.

The Great Depression: Equity market vs. bank failures



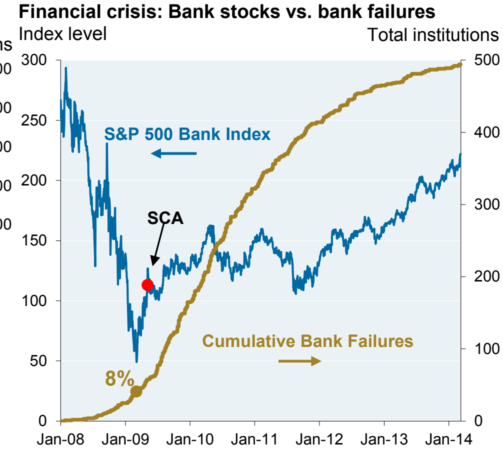
Source: FDIC, Bloomberg. 2020.

Savings and Loan Crisis: Bank stocks vs. bank failures



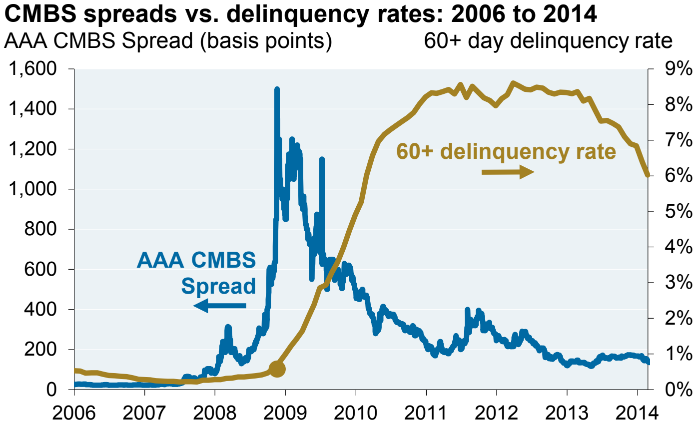
Source: FDIC, Bloomberg. 2020.

Financial crisis: Bank stocks vs. bank failures



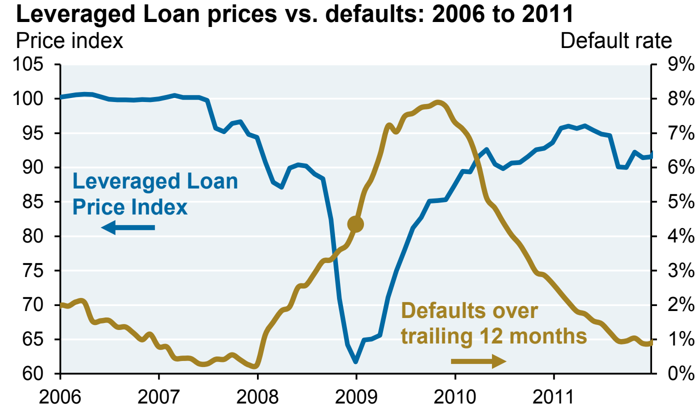
Source: FDIC, Bloomberg. 2020.

CMBS spreads vs. delinquency rates: 2006 to 2014



Source: Trepp, J.P. Morgan Securities LLC. 2020.

Leveraged Loan prices vs. defaults: 2006 to 2011



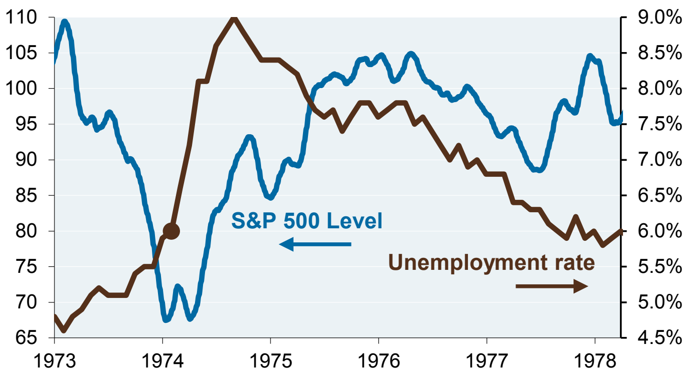
Source: J.P. Morgan Securities LLC, Standard and Poor's, S&P/LSTA Leveraged Loan Index. 2020.

Note: SCA in the financial crisis stock price chart refers to the implementation of the 2009 Supervisory Capital Assessment Program on US banks.

Some history of unemployment as a lagging indicator for investors, both in the US and in Europe. When the bottom does occur, I expect it to be consistent with prior cycles in the US and Europe in which markets bottomed well before unemployment levels started to decline. Look at the stagflation era of the 1970's; equities bottomed when unemployment was just starting to ***rise***. The tech collapse, in which peak unemployment closely coincided with the market bottom, was the exception.

1970's stagflation crisis

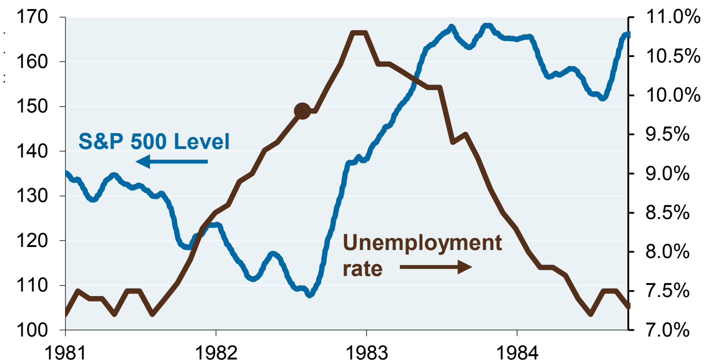
Index level (30-day moving average) | Unemployment rate



Source: Bloomberg, BLS. 2020.

1980's inflation / housing crisis

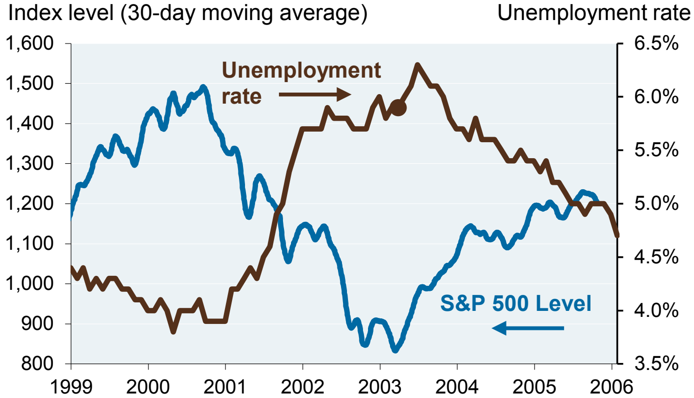
Index level (30-day moving average) | Unemployment rate



Source: Bloomberg, BLS. 2020.

Tech collapse

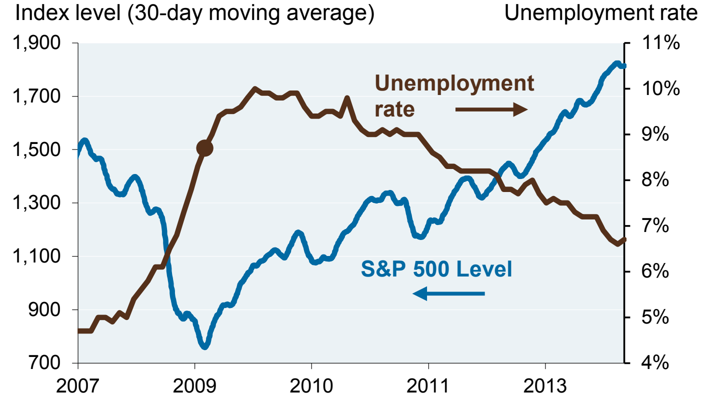
Index level (30-day moving average) | Unemployment rate



Source: Bloomberg, BLS. 2020.

Financial crisis

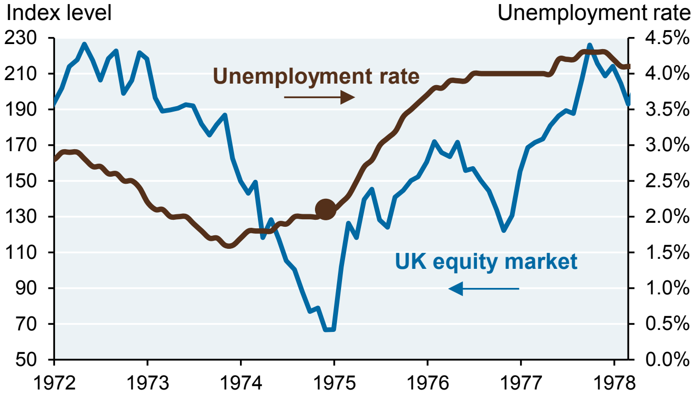
Index level (30-day moving average) | Unemployment rate



Source: Bloomberg, BLS. 2020.

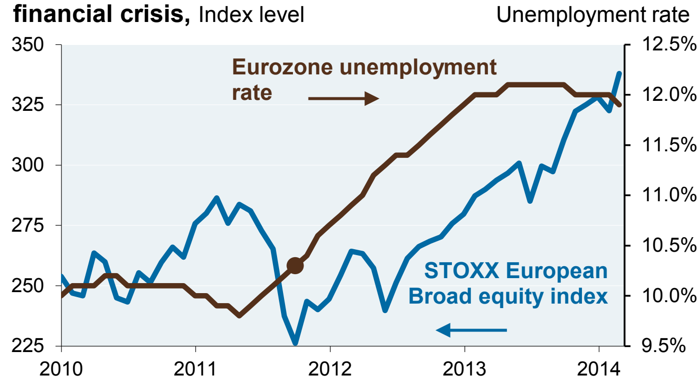
UK equity market and unemployment rate in the 1970's

Index level | Unemployment rate



Source: Bloomberg, Federal Reserve Bank of St. Louis. 2020.

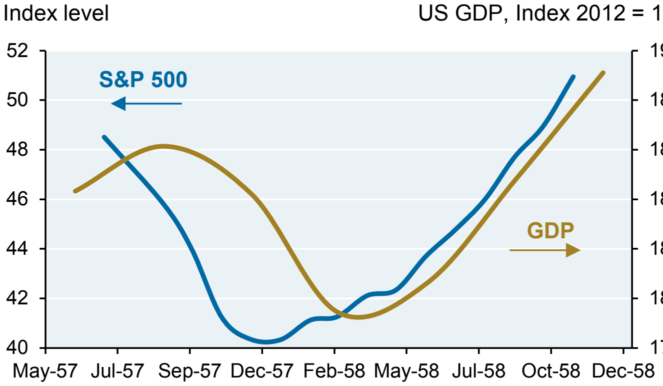
European equities and unemployment rate during global financial crisis, Index level | Unemployment rate



Source: STOXX, Eurostat. 2020.

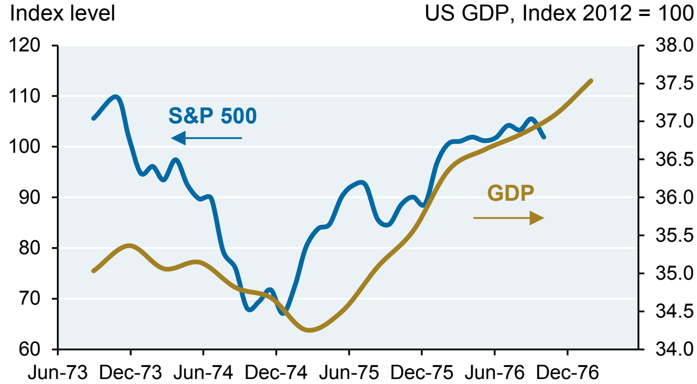
Equities vs the recovery in GDP: on average, equities lead the GDP rebound by 4-8 months

Eisenhower recession



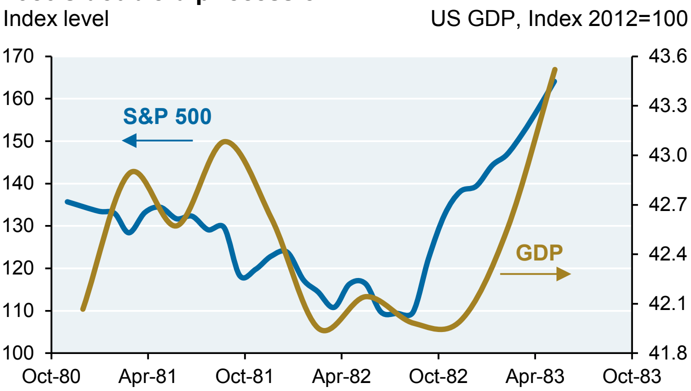
Source: BEA, Shiller. April 2020.

Stagflation era



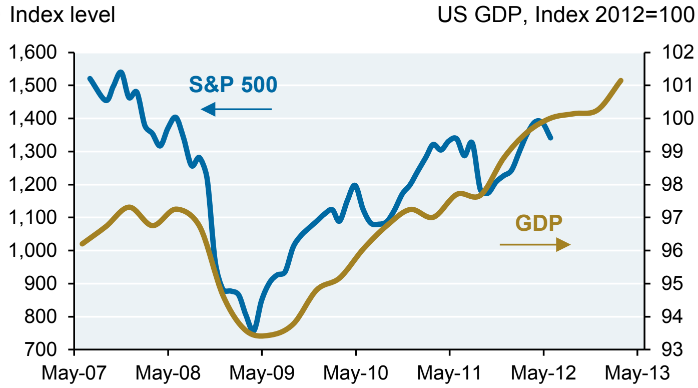
Source: BEA, Shiller. April 2020.

1980's double-dip recession



Source: BEA, Shiller. April 2020.

Global financial crisis



Source: BEA, Shiller. April 2020.

This final table summarizes the results of all of our market bottom analyses

Market appreciation during times of ample economy-wide distress

Date	Market	Rallied By	From	Before	Action
1932	Dow Jones	67%	Lowest Level	Bank Failures	Reached 75% of eventual total
1957	US Equities	4%	Lowest Level	GDP	Bottomed
1974	US Equities	25%	Lowest Level	GDP	Bottomed
1974	US Equities	35%	Lowest Level	Unemployment	Peaked
1982	US Equities	26%	Lowest Level	GDP	Bottomed
1983	US Equities	27%	Lowest Level	Unemployment	Peaked
1990	US High Yield	350 bps	Widest Spread	HY Defaults	Reached 75% of eventual total
1990	S&P Bank Index	90%	Lowest Level	Bank Failures	Reached 75% of eventual total
2002	US High Yield	0 bps	Widest Spread	HY Defaults	Reached 75% of eventual total
2003	US Equities	17%	Lowest Level	Unemployment	Peaked
2008	US High Yield	1177 bps	Widest Spread	HY Defaults	Reached 75% of eventual total
2009	US Equities	24%	Lowest Level	GDP	Bottomed
2009	S&P Bank Index	180%	Lowest Level	Bank Failures	Reached 75% of eventual total
2009	AAA CMBS	975 bps	Widest Spread	Deliquency rates	Reached 75% of max deliquency rate
2009	Leveraged Loans	6%	Lowest Level	Defaults	Reached 75% of max default rate
2009	US Equities	33%	Lowest Level	Unemployment	Peaked
2012	European Equities	33%	Lowest Level	Unemployment	Peaked

Sources: Spreads measured in basis points. STOXX, Eurostat, FDIC, Bloomberg, J.P. Morgan Securities, BLS, Trepp, Standard & Poor's, S&P/LSTA Leveraged Loan Index , BEA, Shiller , JPMAM. 2020.

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