

Introduction

14.454

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Economic Crises

The Crisis of 2008 (Lehman Brothers Collapse)

- On Monday, September 15, 2008, at 1:45 AM, Lehman Brothers Holdings Inc filed a bankruptcy petition in the United States Bankruptcy Court for the Southern District of New York...
- Why did it fail?
 - It suffered large losses on real estate investments in 2007-2008; other financial institutions lost confidence in Lehman, which triggered a liquidity crisis (couldn't rollover short-term funding that supported illiquid assets)
 - Other institutions such as Bear Stearns and AIG also experienced liquidity crises but were given emergency loans from FED. That is, there was also a policy decision involved... (big debate till today...)
- What followed was terrifying... unimaginable for the US (rather than an EM) only a few hours earlier...

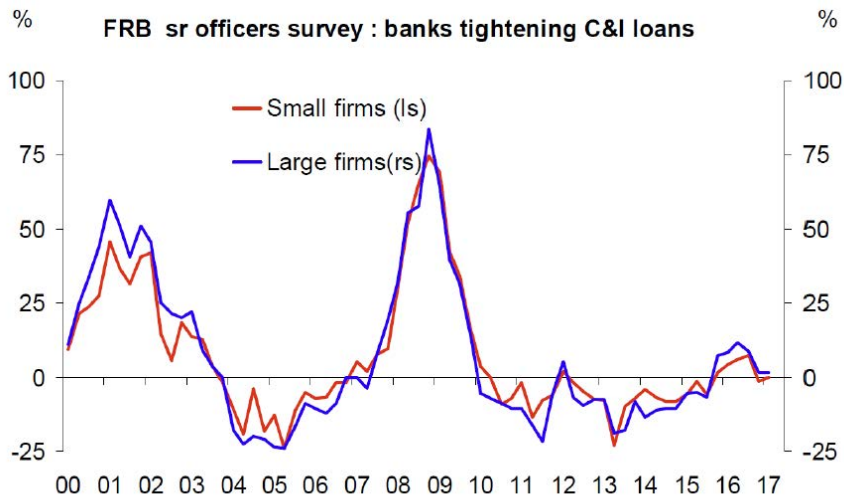
Turmoil in Asset Markets



Perceived Risk Spikes

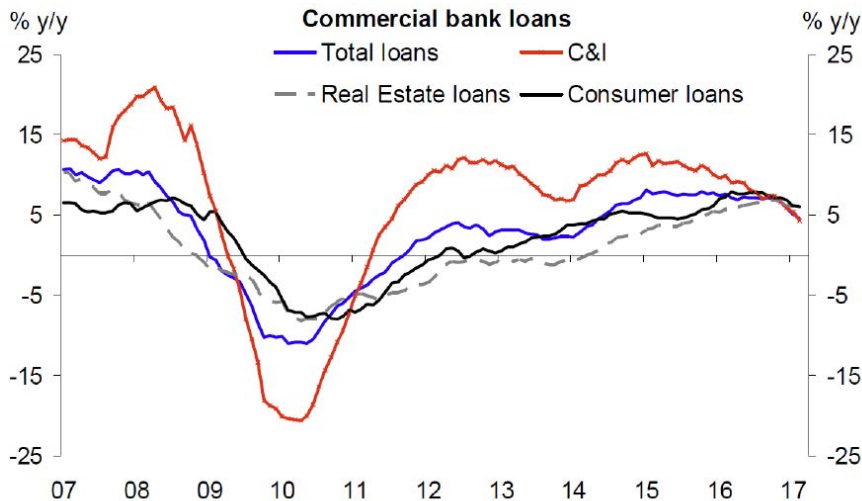


Credit Conditions Tighten



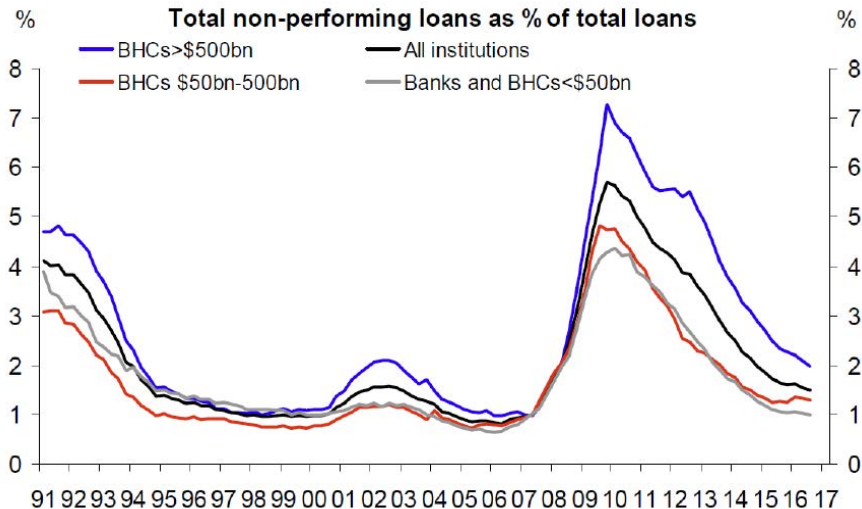
Source: FRB, Haver Analytics, DB Global Markets Research

Credit Collapses



Source: FRB, Haver Analytics, DB Global Markets Research

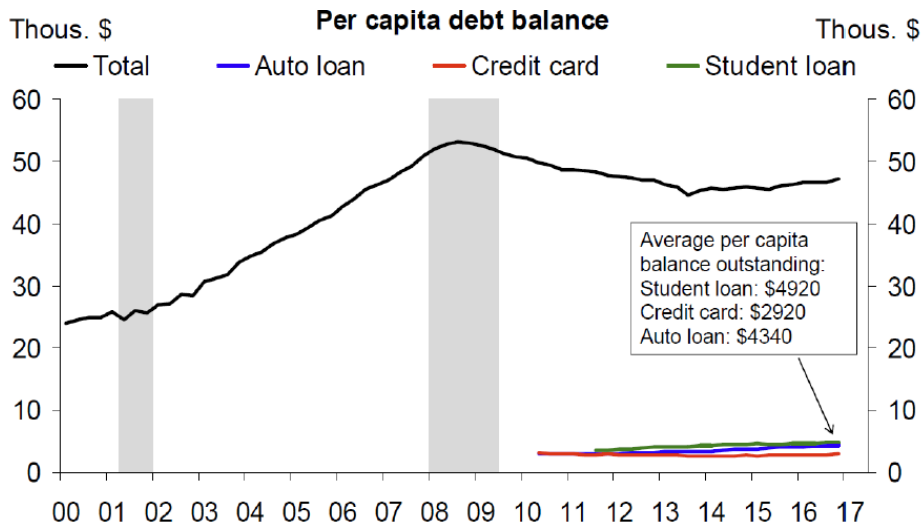
NPL Spike



Note: Non-performing loans include loans that are (1) 90 days or more past due and still accruing or (2) non-accrual.

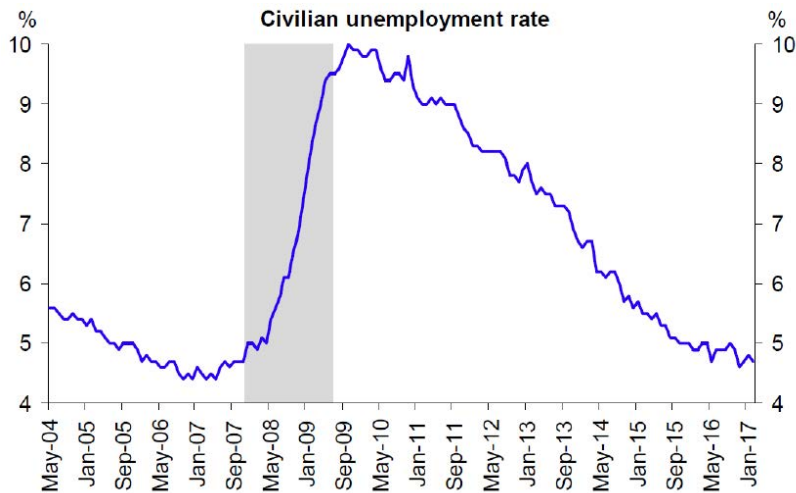
Source: FRBNY, DB Global Markets Research

Deleveraging



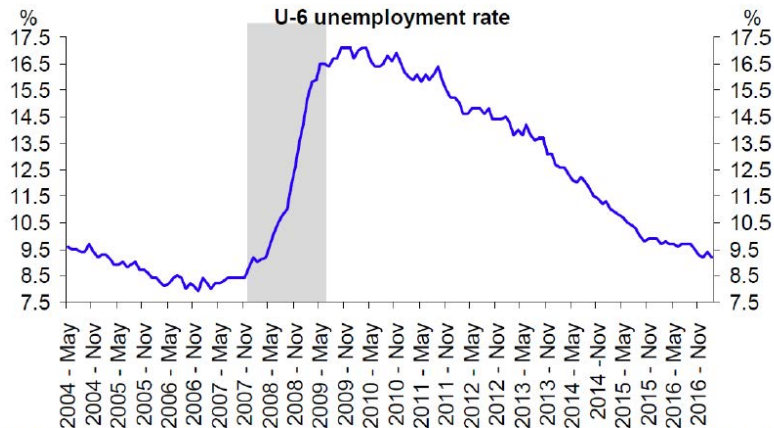
Source: FRBNY, Equifax, DB Global Markets Research

Very Large Impact on Real Economy



Source: BLS, DB Global Markets Research

Very Large Impact on Real Economy



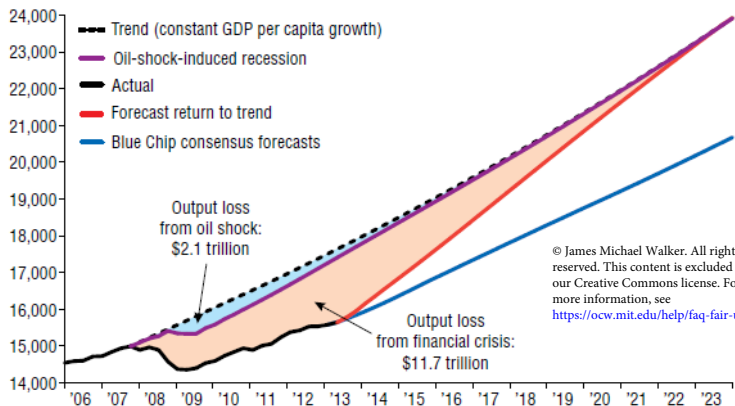
Note: U6 is total unemployed, plus all persons marginally attached to the labor force, plus total employed part time for economic reasons, as a percent of the civilian labor force plus all persons marginally attached to the labor force. Source: BLS, DB Global Markets Research

Very Large Impact on Real Economy (Secular Stagnation?)

Chart 2

Output Loss Is Large Even with Optimistic Forecast

Real GDP, billions of 2009 dollars

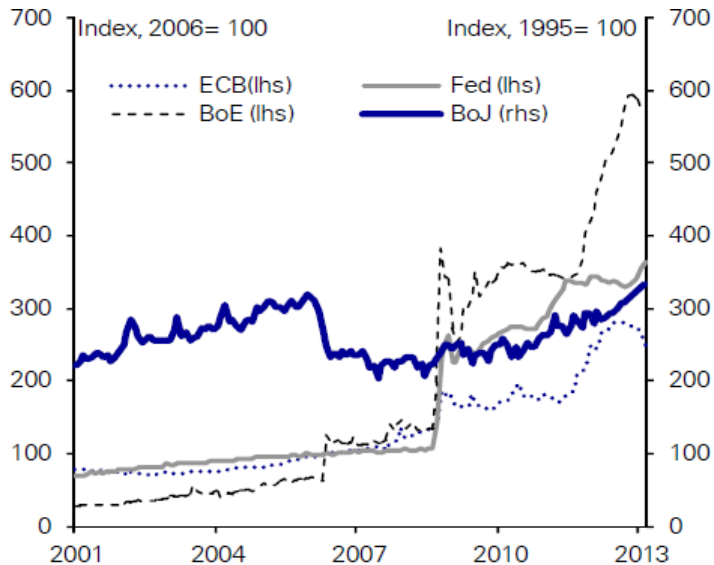


SOURCES: Bureau of Economic Analysis; Census Bureau; Blue Chip Economic Indicators; authors' calculations

Despite Enormous Policy Intervention



Despite Enormous Policy Intervention



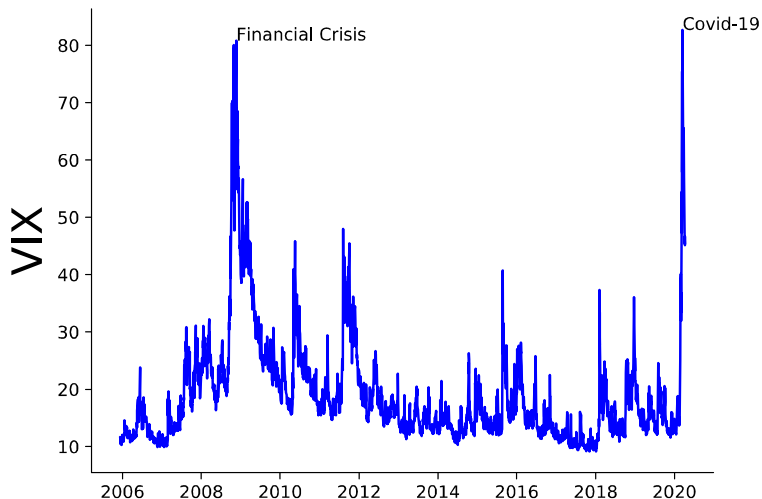
Source: FED, ECB, BoJ, BoE, Haver Analytics, DB Research

Attempting to Boost Asset Markets

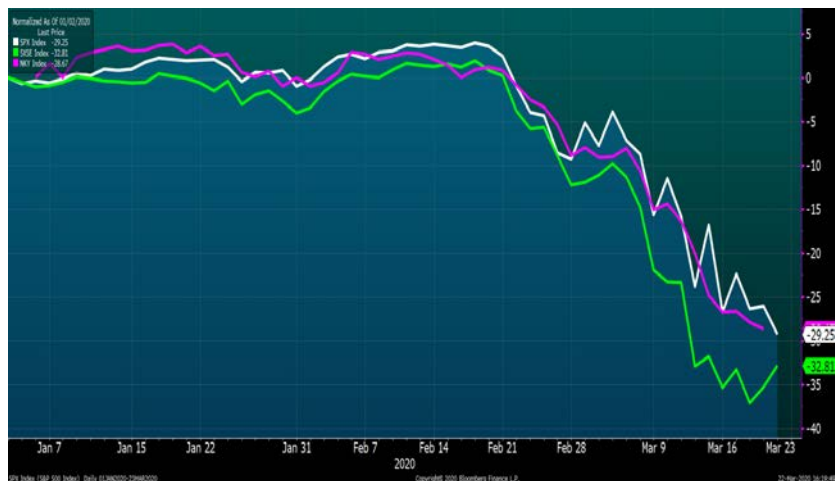


The Covid-19 Crisis

- A real (non-financial) shock that almost turned into a financial crisis



The Covid-19 Crisis



The Covid-19 Crisis: Financial Conditions Index (BBG)



The Covid-19 Crisis: Preventing a Financial Crisis (One day...03/18/2020)

*BOE INCREASES BOND PURCHASE PROGRAM BY GBP200B TO GBP645B	BN	14:36
*BOE CUTS RATES BY 15 BASIS POINT TO 0.1%	BN	14:33
*FED SAYS ESTABLISHES DOLLAR SWAP LINES WITH MORE CENTRAL BANKS	BN	13:00
*U.S. MARCH PHILLY FED FACTORY INDEX FALLS BY RECORD TO -12.7	BN	12:33
*U.S. WEEKLY JOBLESS CLAIMS AT 281,000 LAST WEEK; EST. 220,000	BFW	12:30
*IFO MARCH GERMAN BUSINESS CONFIDENCE INDEX AT 87.7	BFW	09:00
*BOJ BUYS RECORD TOTAL 201.6B YEN OF ETFs ON MARCH 19	BN	08:32
*SNB SAYS STEPS UP FX MARKET INTERVENTIONS	BFW	08:30
*SNB MAINTAINS POLICY RATE AT -0.75%	BFW	08:30
*EUROPE CORPORATE DEBT RISK DROPS MOST SINCE 2016 ON ECB ACTION	BFW	08:16
*ITALIAN BOND FUTURES SURGE AS TRADING BEGINS AFTER ECB PACKAGE	BFW	07:06
*BOJ OFFERS TO BUY 300B YEN 5-10Y JGBs IN ANOTHER UNSCHEDULED OP	BN	04:25
*BOJ OFFERS TO LEND 2 TRILLION YEN IN UNSCHEDULED OPERATION	BN	04:05
*FED SAYS TO LAUNCH MONEY MARKET MUTUAL FUND LIQUIDITY FACILITY	BN	03:30

The Covid-19 Crisis: Massive Policy Intervention (as of 03/23/2020)

Figure 1: United States

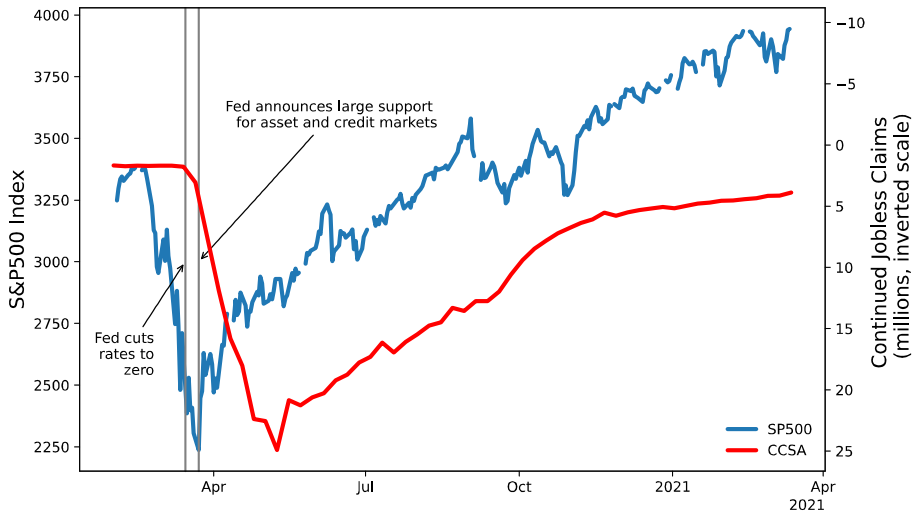
Country	Containment measures	Fiscal Policy	Monetary Policy
United States	<p>Citizens told to avoid social gatherings of more than 10 people</p> <p>Advice to work from home whenever possible.</p> <p>Advice to avoid bars and restaurants, as well as not visit nursing or retirement homes.</p> <p>Statewide lockdowns in New York, California, Illinois, Ohio, Connecticut and New Jersey</p> <p>Travel restrictions in place for foreign nationals from the EU, the UK, China and Iran.</p> <p>On March 19, the State Department issued a Global Level 4 Travel Advisory telling its citizens to avoid all international travel. The US has limited land border crossings from Canada and Mexico to "essential travel".</p>	<p>On March 6, Congress passed the first emergency fiscal package of USD8.3bn, targeted at the healthcare crisis response.</p> <p>On March 13, President Trump declared a National Emergency under the Stafford Act, which immediately provided FEMA with between USD40bn and USD50bn to combat the virus. Trump also announced that the April tax date will be delayed, which could act as a roughly USD200-300bn bridge loan to households and businesses, and will also defer student loan interest payments which could amount to another USD20bn on an annualised basis.</p> <p>The House passed a bill on a federal emergency program to provide payments to employees taking unpaid leave due to Covid-19, expand unemployment benefits, provide grants to states, require employers to provide paid sick leave and establish requirements for diagnostic testing at no cost, among other measures.</p> <p>What to expect? Republicans and Democrats continue to negotiate on a fiscal package. Senate Republicans put out the text of their proposal late last week. By our rough calculations, the bill would provide a little over \$1trn in near-term stimulus, with roughly half of that in the form of guaranteed loans to specific sectors and small firms. Another \$500-600bn would consist of economic impact payments directly to households. In addition, the bill proposes to defer the employer portion of the payroll tax over the rest of 2020 until 2021 and 2022, which could be worth around \$300-450bn in terms of liquidity to businesses. Finally, the deadline for to pay 2019 taxes has been pushed to 15 July, potentially freeing up an additional \$300bn of liquidity near term.</p>	<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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 each as of now. Once Congress pass additional legislation, it will allow for extra \$400+bn for the Treasury to finance the facilities, which in turn would then unlock another \$4 - \$5 trn of potential Fed purchases across these facilities.</p> <p>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.</p>

The Covid-19 Crisis: Massive Policy Intervention (as of 03/23/2020)

Figure 2: Eurozone

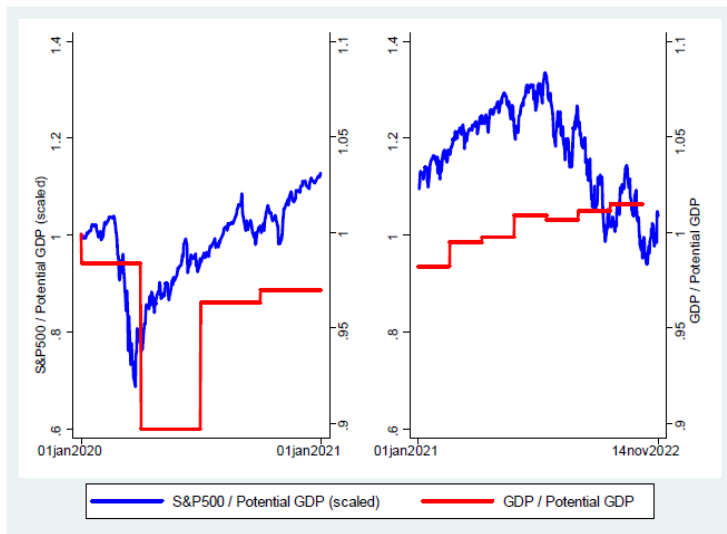
Country	Containment measures	Fiscal Policy	Monetary Policy
Eurozone	<p>The EU has announced a 30-day travel ban for most visitors from outside the EU, Schengen members and the UK, with limited exceptions (e.g. family members of EU nationals). Residents are advised against non-essential travel. More policies have been introduced at national level.</p>	<p>The European Commission announced a EUR1bn transfer to the European Investment Fund to guarantee EUR8bn of financing to SMEs and mid-cap firms; the EIB intends raising this by up to EUR20bn. There will also be "credit holidays" for existing debtors who are affected by the virus. The EIB also pledged to catalyse EUR10bn of investment in SMEs and mid-caps for their own account and to accelerate the deployment of another EUR10bn backed by the EU Budget.</p> <p>EUR37bn of EU Cohesion Policy resources are being converted into a "Corona Response Investment Initiative" to plough funds into healthcare and supporting SMEs. This is mostly based on EUR25bn of unabsorbed Structural Funds. The German Federal Government said it was injecting EUR25bn immediately into this Commission initiative.</p> <p>The Commission also announced that it would accelerate the preparation of a legislative proposal for a European Unemployment Reinsurance Scheme.</p> <p>In the latter half of last week, the European Commission approved numerous state aid requests from Member States. On Friday 20 March, it also proposed for the European Council to activate the escape clause of the Stability and Growth Pact, which, if approved, would effectively suspend it.</p> <p>What to expect? The ESM (European Stability Mechanism), the EU's crisis-fighting fund, has been asked to explore options to use its EUR410bn of unused firepower. The news that Germany could support a common bond (Eurobond) to finance the fight</p>	<p>Late on 18 March, the ECB launched a Pandemic Emergency Purchase Programme (PEPP) worth EUR 750bn (6.5% of GDP). The ECB will deploy these resources in a highly flexible manner including temporary deviation from capital keys over the rest of 2020, and in a way that creates implicit monetary-fiscal policy coordination. There is additional credit easing also, with non-financial CP added to the list of eligible securities and an expansion of collateral to include corporate credits. The message to governments is: (a) you are free to spend what is necessary to fight the virus without having to worry about the bond market, and (b) don't waste valuable time trying to construct a common bond or agree ESM conditionality. Both may be relevant to the recovery phase, but are a political distraction in the emergency phase. The ECB commitment to doing whatever is necessary to smooth the transmission mechanism in any/all member states was stated very strongly.</p> <p>This decision builds on the package of measures at its 12 March regular meeting. The ECB increased the capacity of TLTRO3 from 30% of eligible assets to 50% of assets, adding EUR1.2tn of potential liquidity. The ECB offered an unprecedented discount on TLTRO interest rates. Banks that maintain their level of lending outstanding unchanged over the next year will receive a 25bp discount below the deposit facility rate (currently -0.50%). To smooth over liquidity until the next TLTRO3 operation in June, the ECB has offered a series of shorter LTROs. In addition to the existing EUR200bn of monthly asset purchases, the Governing Council on 12 March approved a EUR120bn asset purchasing "envelope" that can be deployed flexibly. The ECB also announced relief on capital and liquidity requirement for banks and that supervisors will apply operational flexibility to the rules.</p> <p>On Friday 20 March, together with other major CBs, the ECB announced additional provision of USD swap lines.</p> <p>What to expect? The ECB has reiterated its pledge to use all its policy instruments as necessary and do everything within its mandate. It has also stated that self-imposed limits hinder its ability to take further action, it will consider revising</p>

The Covid-19 Crisis: Success!

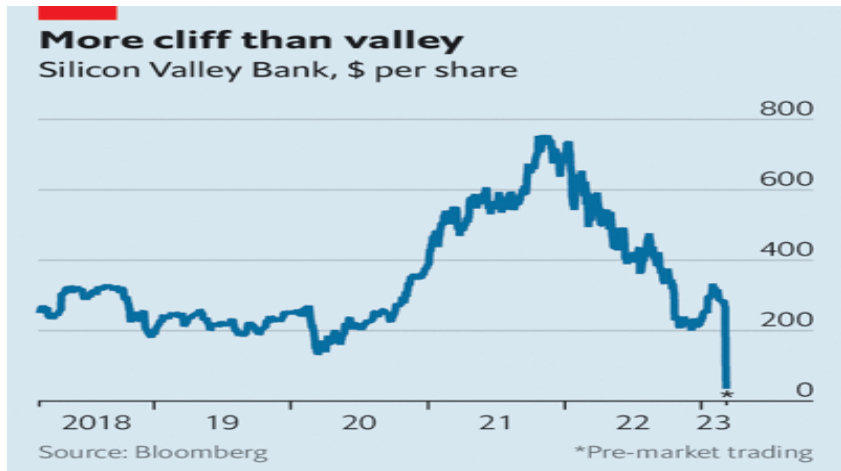


- Same story will real estate...

The Covid-19 Crisis: Too much success?

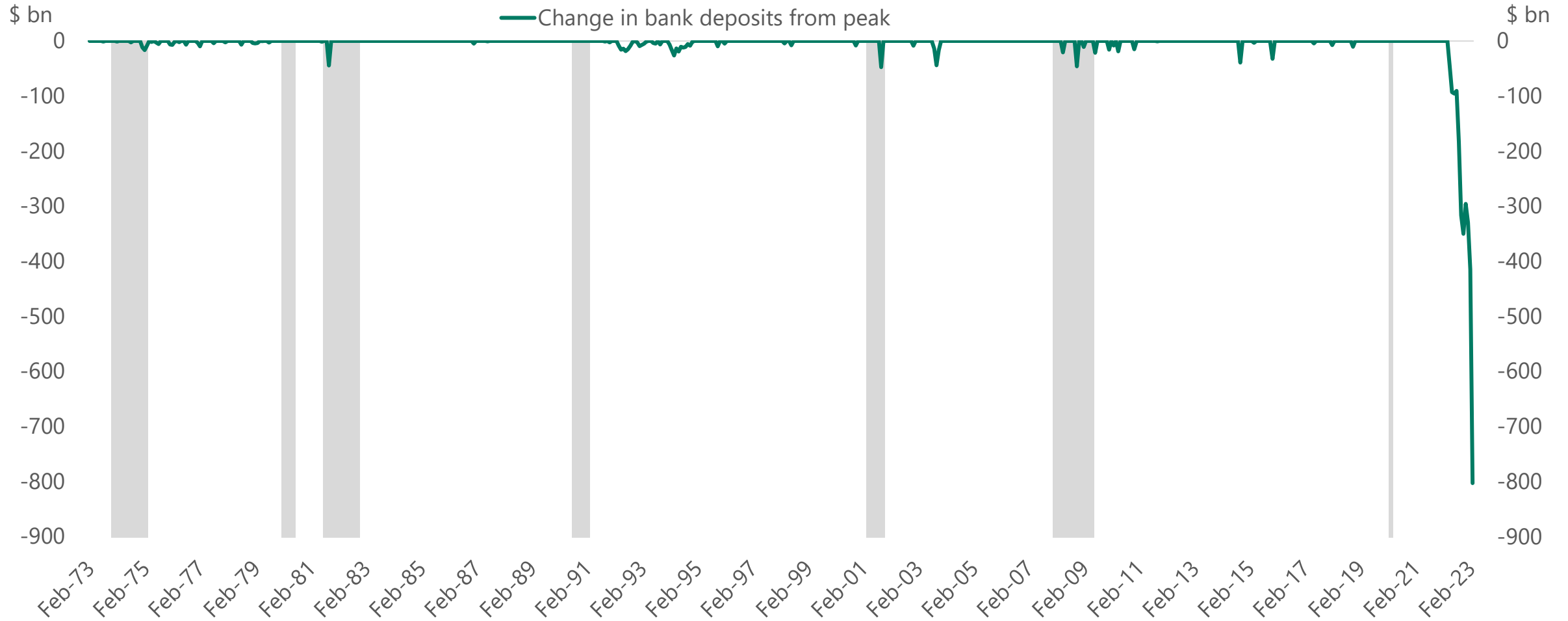


The SVB Event



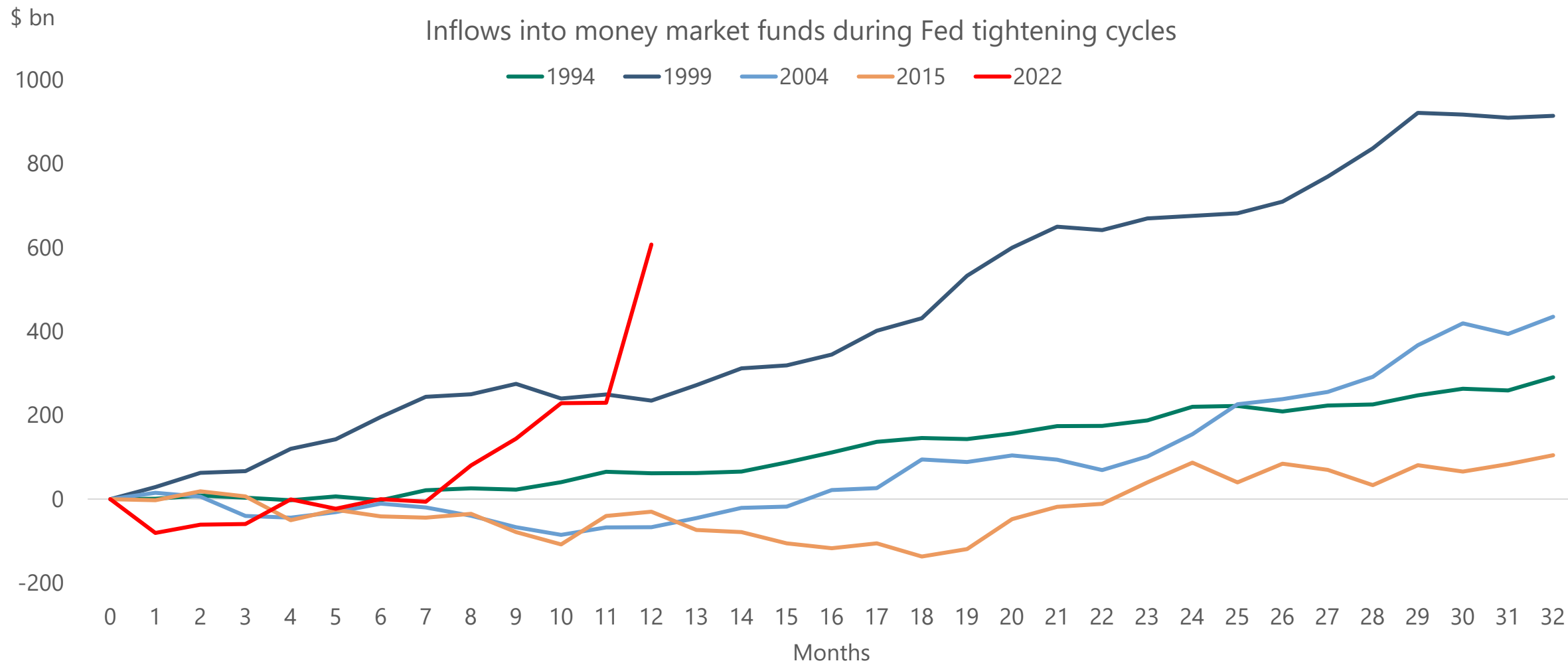
The Economist

\$800bn in deposits have left the banks since the Fed began to raise interest rates, the biggest outflow on record

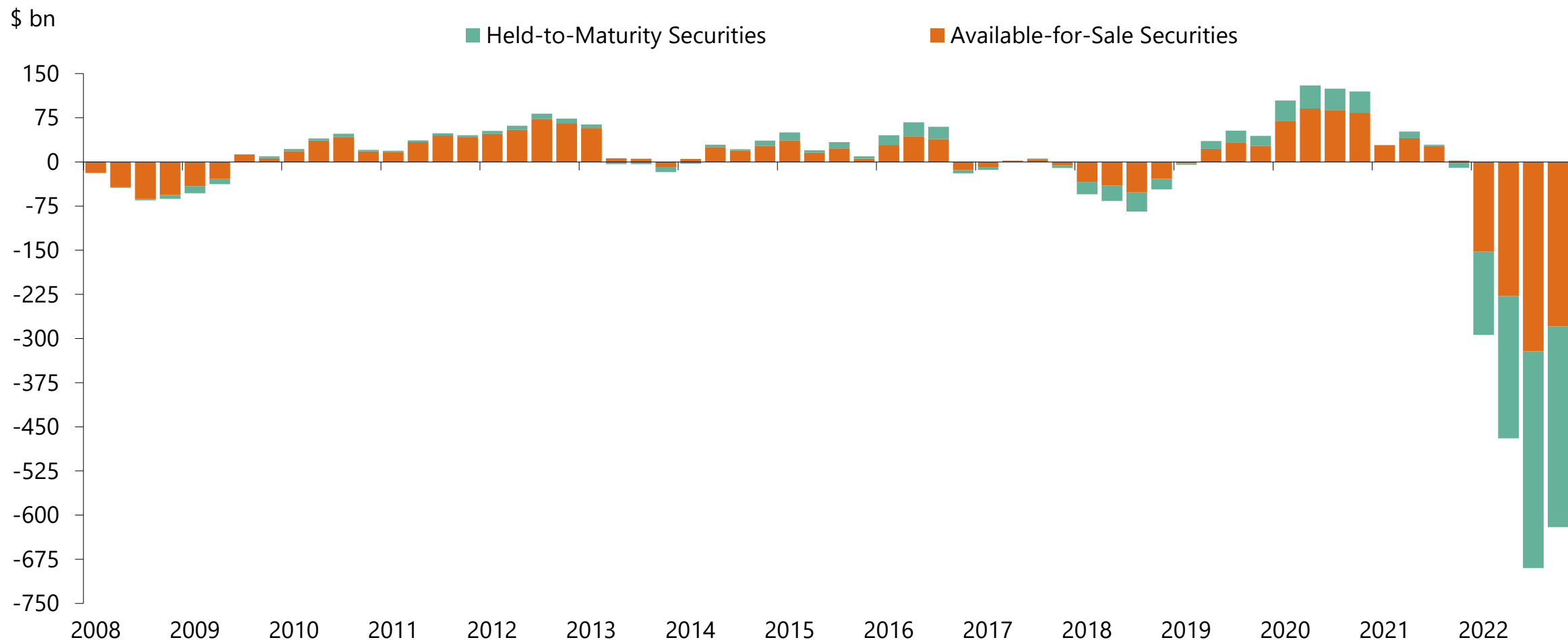


Source: Federal Reserve Board, Haver Analytics, Apollo Chief Economist. Note: March data as of 22nd March 2023. Peak is defined as the month before monthly outflows turn negative

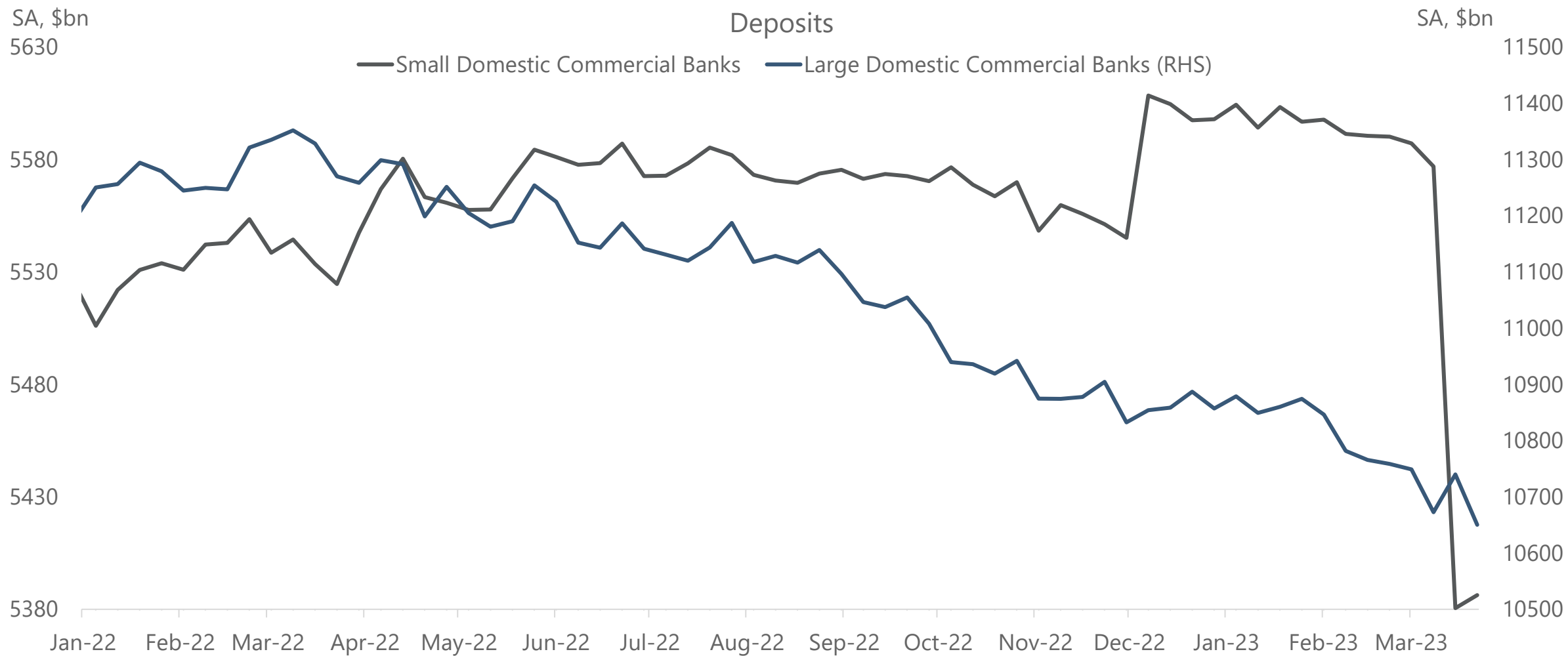
\$600bn inflows into money market funds during this Fed hiking cycle



Unrealized Gains (Losses) on investment securities for banks

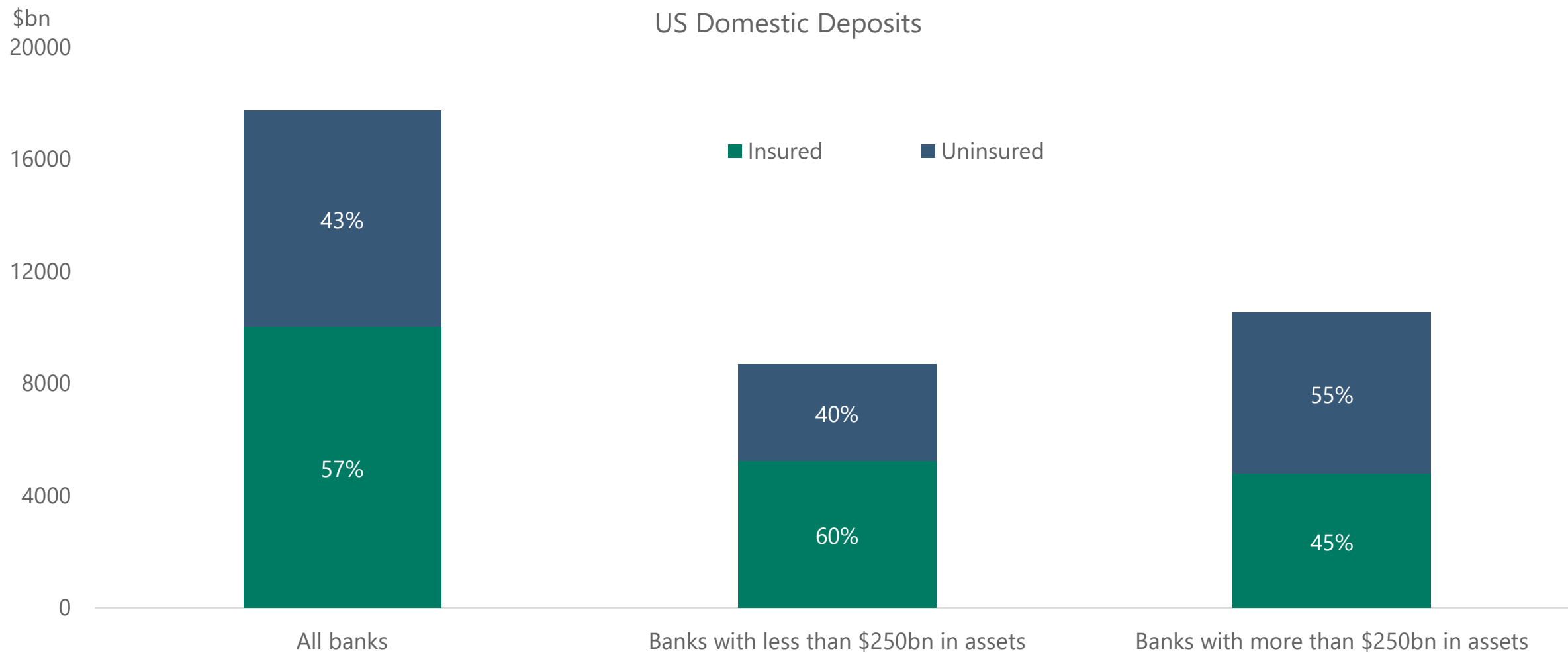


Deposits in small and large banks



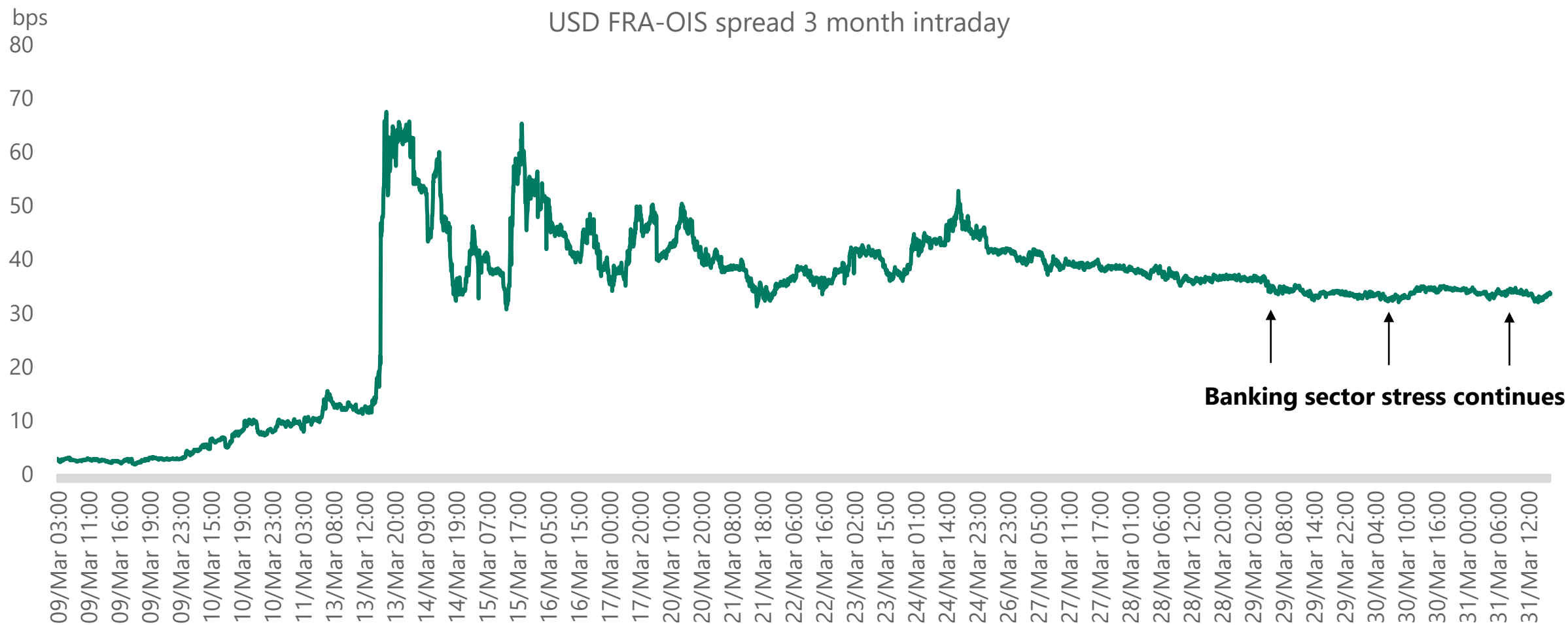
Source: Federal Reserve Board, Haver Analytics, Apollo Chief Economist.

Share of insured deposits, by bank size



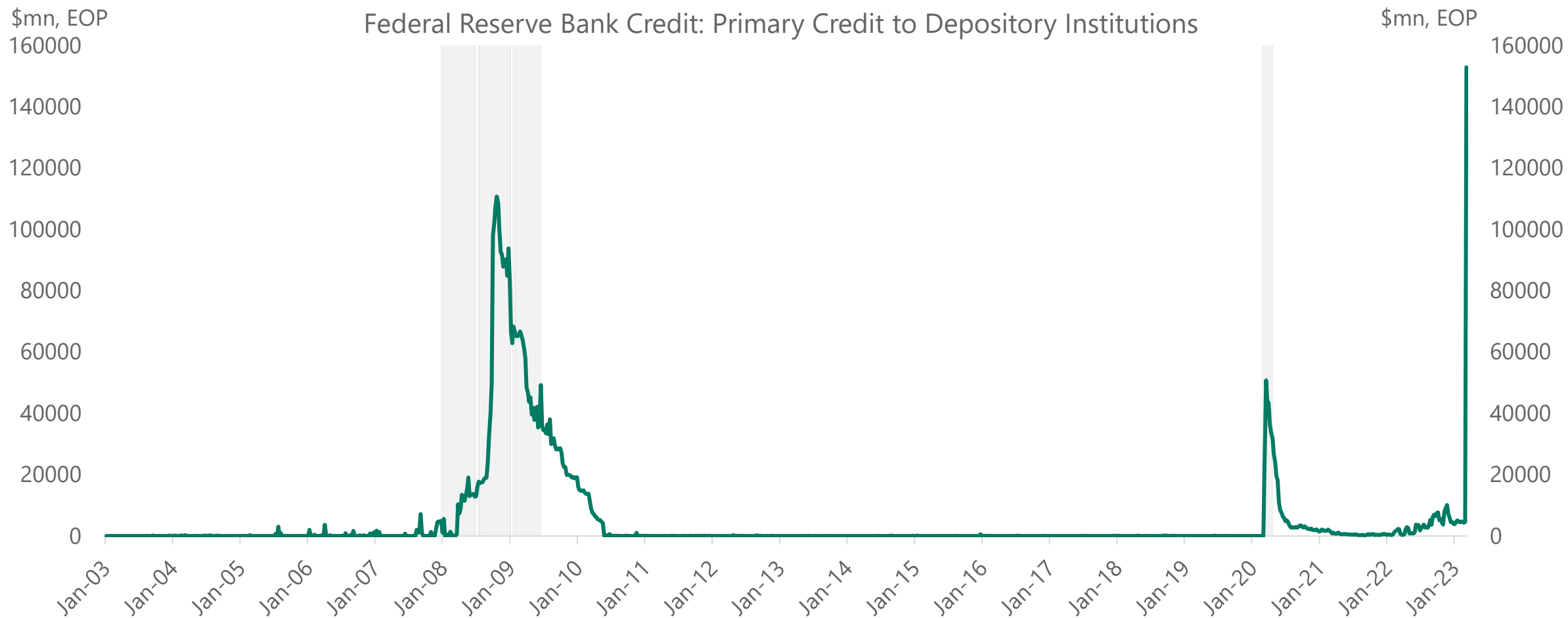
Source: FDIC, Haver Analytics, Apollo Chief Economist. As of Q4 2022

Bank funding costs remain high: FRA-OIS spread remains elevated



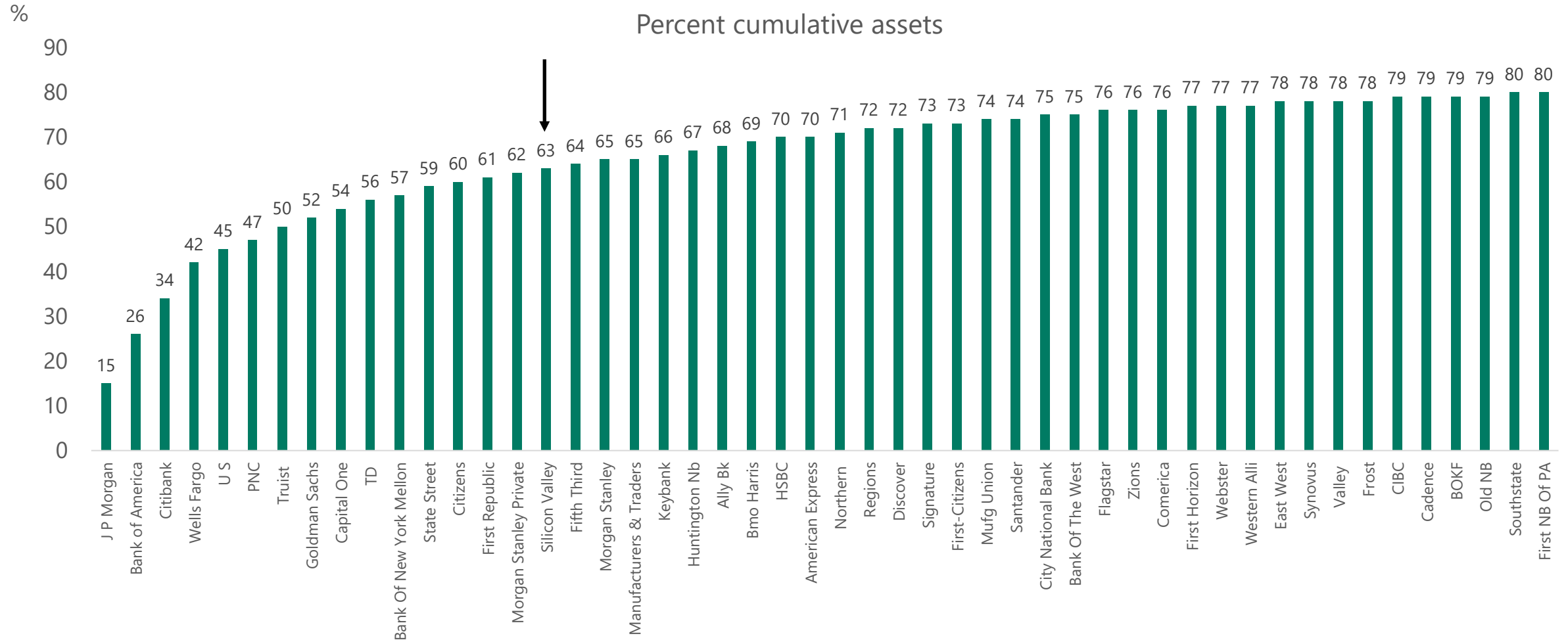
Source: Bloomberg. Note: Ticker used USFOSC1 BGN Currency. As of March 31, 2023.

Fed Discount window borrowing higher than in 2008



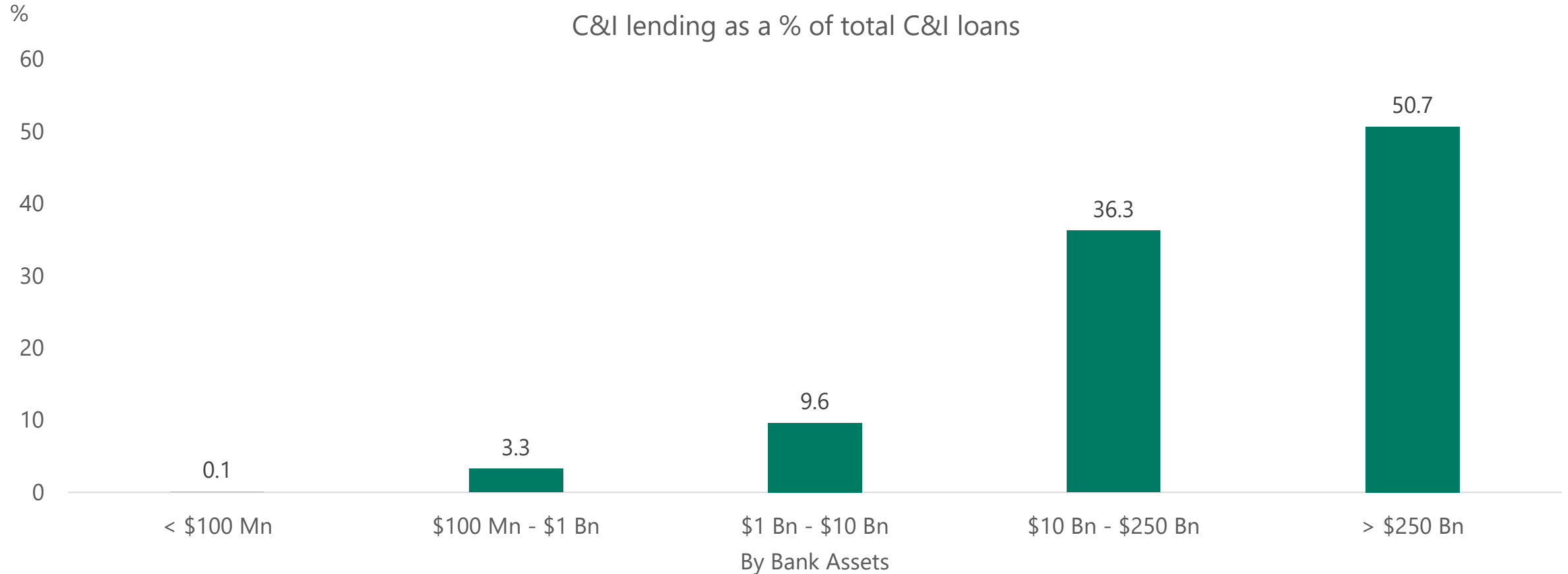
Source: Federal Reserve Board, Haver Analytics, Apollo Chief Economist.

Tighter credit conditions are coming: Banks “to the right” of SVB are likely to start reorganizing their balance sheets



Source: Federal Reserve Board, Haver Analytics, Apollo Chief Economist. As of Q4 2022. Represents the views and opinions of Apollo's Chief Economist. Subject to change at any time without notice.

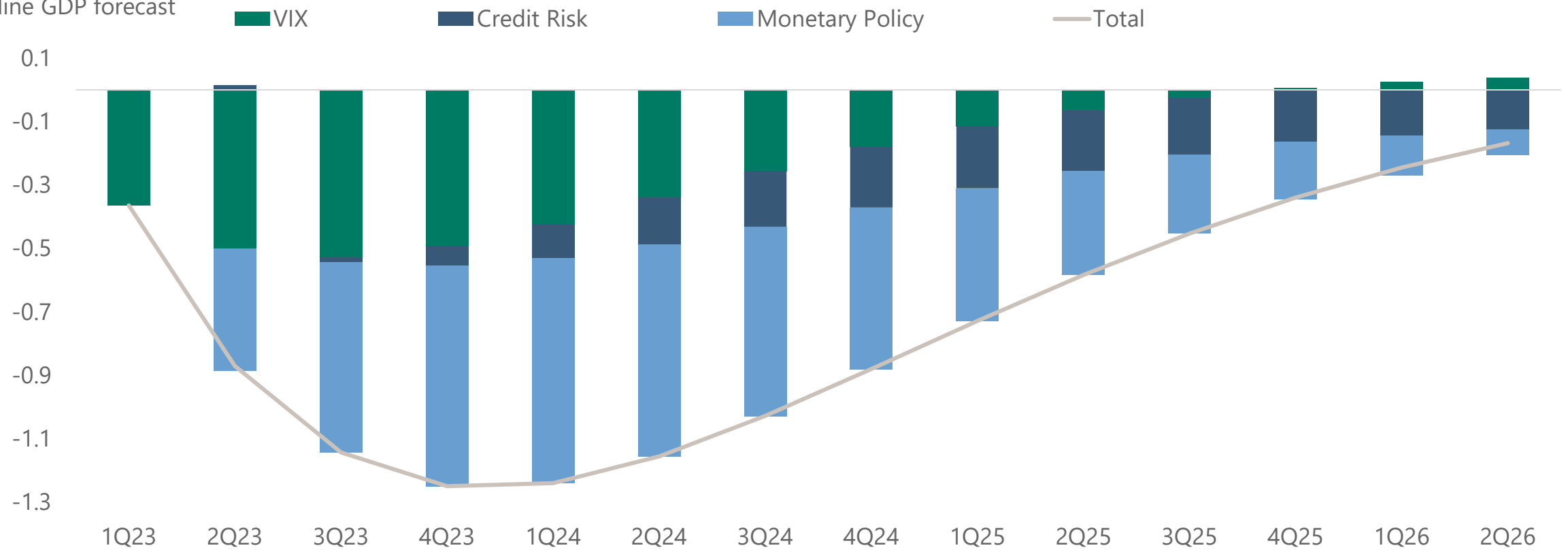
Small banks are important for small businesses: Banks with less than \$250bn in total assets account for about 50% of total commercial and industrial (C&I) lending



Impact on GDP if the ongoing banking crisis continues

Shock to GDP level, compared with baseline forecast

% difference from baseline GDP forecast



Source: Bloomberg, Apollo Chief Economist. Note: The chart shows difference in baseline forecast adding a 150bps shock to Fed funds rate and 30 bps to credit risk and a two standard deviation shock to VIX, all starting in 1Q23. VIX is currently two standard deviations from its mean since 2010.

Questions and Topics

- How do financial frictions amplify macroeconomic shocks? Why does collateral matter for macroeconomics?
- What is a credit crunch and why does banking sector capital matter for macroeconomics?
- What is behind financial runs and panics? How do they spread?
- How do bubbles emerge? What is the connection between low interest rates and speculative bubbles?
- What are the dangers of credit booms?
- Why may deleveraging trigger recessions?
- What is the role of capital flows in international crises?

The Methodology



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