GLOBAL ECONOMICS FOCUS

Introducing our new financial conditions indices (FCIs)

- Note: We will be discussing our revamped FCIs and taking your questions on global financial conditions in a 20-minute online briefing at **10:00 EST/15:00 BST on Thursday, 20ᵗʰ April**. **Register here**.

- **We have revamped our financial conditions indices (FCIs) for DM economies. This document sets out a framework for analysing financial conditions, explains our methodology, presents and interprets our new FCIs, compares them to alternative FCIs, and considers their relationship with GDP. The upshot for today is that our new FCIs indicate it hasn't been this hard to raise funds since 2009. While financial stress is not that high, the big picture is that borrowing costs have surged – a fact that other popular FCIs understate.**

- While there is no precise definition of 'financial conditions', they are generally taken to refer to the ease with which external funds can be accessed. Accordingly, they can be thought of as a way through which monetary policy and other financial shocks transmit to the real economy. Financial conditions indices (FCIs) distil a range of financial variables into aggregate indicators that attempt to gauge how conditions compare to the past and hence give some indication of whether they are supportive or restrictive of economic activity.

- **Against a backdrop of rate hiking cycles and jitters in the banking sector, FCIs have taken on a renewed importance in assessing the economic outlook.** Accordingly, we have revamped the FCIs that we first published in 2019. We now draw upon a wider range of financial variables, use a new method for constructing the aggregate indicators, publish 'broad' (monthly, comprehensive) FCIs alongside 'narrow' (daily, purely market-based) FCIs, and have expanded our coverage to include Canada and Australia.

- **In principle, our new approach should be better at registering the effects of tighter monetary policy and banks' lending aversion than other popular measures of financial conditions.** No FCI is perfect, and there are pros and cons to different methods. But we think that the oft-cited Bloomberg and Goldman Sachs indices for major DMs – in addition to the older vintage of our own FCIs – are too narrow in scope to adequately reflect financial conditions in an environment of big moves in interest rates. These indices often end up putting a lot of weight on spreads rather than the levels of interest rates. This is fine if the task is to monitor stress levels in the financial system, as some FCIs are deigned to do. But if we want a barometer of financial conditions that reflects the cost of new funds as well as signs of stress, then an emphasis on spreads causes FCIs to understate the tightness of financial conditions in high interest rate environments like today.

- **As we would expect, our new FCIs suggest that financial conditions are tighter and thus a greater headwind to economic activity than other popular FCIs.** While other FCIs suggest that financial conditions are around or below their average levels from the past 25 years, our new FCIs show that financial conditions in advanced economies are about the tightest they have been since the GFC. This is particularly concerning given that our FCIs have enjoyed a better track record at highlighting substantial risks to the growth outlook.

- One issue is that distilling a lot of financial data into a single FCI indicator has the potential to obscure as much as elucidate. Like any aggregate indicator, FCIs can mask consequential developments in a couple of components. Accordingly, **we complement our FCIs with a new Financial Conditions Dashboard on our CE Advance platform, which offers clients a holistic overview of financial conditions. CE Advance clients have access to interactive graphics and the underlying data.**

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Introducing our new financial conditions indices (FCIs)

With central banks having embarked upon the most aggressive tightening cycle in 40 years, and banking sector concerns resurfacing, financial conditions indices (FCIs) recently re-entered the spotlight. This prompted us to take a fresh look at our own FCIs, reflect on their shortcomings, and improve them and their accompanying CE Dashboard to give both us and clients a better steer on how financial conditions are evolving and what that means for the economy.

This *Focus* kicks off by briefly recapping the concept of financial conditions, and sets out how our new indicators differ from the old vintage. We proceed to discuss what our revamped FCIs show and how they compare to other measures of financial conditions.

What are FCIs?

In truth, 'financial conditions' are a bit of a nebulous concept. This is why there is no universally accepted definition and why there is no definitive way of measuring them. In broad terms, though, **financial conditions are usually taken to refer to the ease with which external funds can be accessed, which in turn can help or hinder growth in economic activity**. Accordingly, financial conditions can be thought of as a key channel through which monetary policy and other financial shocks transmit to the real economy.

Financial conditions indices (FCIs) are an attempt to gauge financial conditions by distilling a range of

financial variables into summary indicators. They vary in what variables are included and how they are aggregated, but they are typically expressed as Z-scores. In other words, the unit of measurement is standard deviations away from the series average, meaning that the level of an FCI compares financial conditions to historical norms in a given economy. (For this reason FCIs can't, strictly speaking, be used to compare financial conditions *between* countries.)

We think it's helpful to consider financial conditions (and hence FCIs) as comprising two distinguishable elements, which we illustrate in Chart 1. First, there are the costs of raising funds, which capture debtors' ability to take on finance. This 'cost' side of financial conditions covers variables like interest rates, equity prices, and the value of loan collateral.

Second, there is the availability of external finance to consider, which relates to the willingness of creditors to offer funds depending on market functioning, risk appetite, as well as perceived creditworthiness. This 'stress' side of financial conditions can be quantified by looking at asset price volatility, money and credit market spreads, and surveys of lending conditions.

Given both the inputs used and the way that they are aggregated, most FCIs – including our old ones – are effectively financial stress indicators. Not enough weight is given to actual borrowing costs. Our revamped FCIs seek to redress this shortcoming.

Chart 1: Schematic Diagram of 'Financial Conditions'
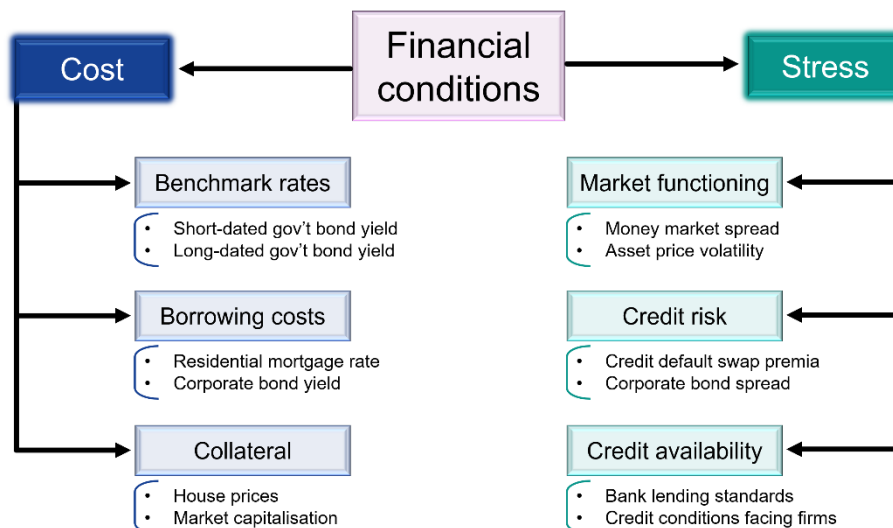
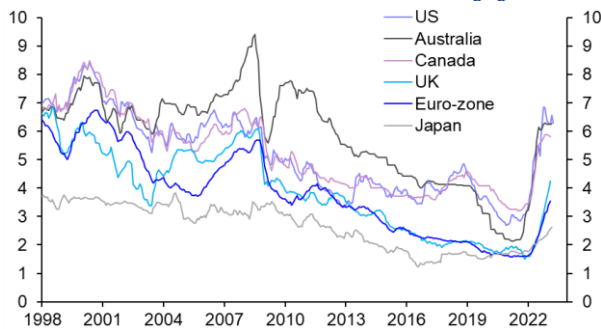Source: Capital Economics

Revamping our FCIs

We have made three key changes to our FCIs: we now draw upon a wider range of financial variables, use a new method for constructing the aggregate indicators, and have expanded our coverage beyond the largest DMs to include Canada and Australia.

The details of the changes we have made can be found in the Box at the end of this publication. But, in brief, the choice of variables is less skewed towards spreads and includes more interest rates. We also don't constrain ourselves to using just daily data, which would limit the potential FCI components to financial market variables.

We have created 'narrow' FCIs based on daily financial market data to give us a timely gauge of financial conditions in response to sudden market moves. We also have more comprehensive 'broad' FCIs at a monthly frequency. These include monthly data for variables such as interest rates on new consumer loans and mortgages. (See Chart 2.)

**Chart 2: Interest Rates on New Resi. Mortgages (%)**

Sources: Refinitiv, RBA, Capital Economics

The broad FCIs also include house prices. Since housing is used as collateral for bank loans, the value of housing collateral can be a key determinant of debtors' ability of to borrow. Indeed, bank lending surveys conducted by the ECB and Bank of England suggest that housing downturns in their respective economies have already caused banks to tighten lending standards to households. (See Chart 3.) Moreover, we interpolate the headline series from these quarterly bank lending surveys into a monthly frequency, and incorporate them into the broad FCIs too. We took the same approach to incorporating survey measures of firms' perceived credit conditions.

As for aggregating the FCIs, we determine the weights by estimating the effect of each variable on GDP controlling for other shocks – see the Box for details.

Chart 3: Contribution of House Price Prospects to Change in Bank Credit Availability to H'holds (sd., 0 = net balance)
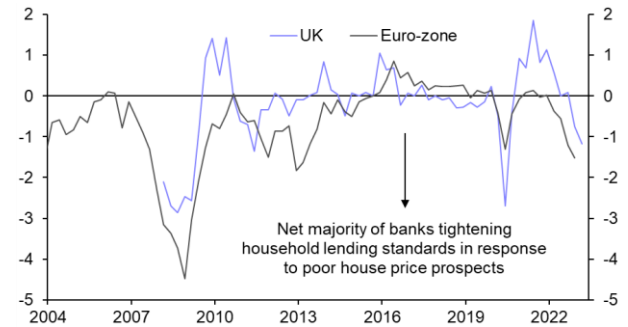
Sources: Refinitiv, ECB, Bank of England, Capital Economics

The new set of variables, combined with the new aggregation methodology, re-orient the FCIs away from being mainly an indicator of financial stress to a more comprehensive index of financial conditions. Our conceptual framework discussed above and illustrated in Chart 1 together with the breadth of data included in our FCIs, have enabled us to create **cost and stress subindices, which allow for an intuitive decomposition of the key drivers of overall financial conditions captured by the composite FCIs**. In principle, we think that our new approach should do a better job at registering the effects of tighter monetary policy and banks' lending aversion than our old vintage of FCIs, as well as other popular measures of financial conditions. This is exactly what we find in practice. We will now present our new FCIs and then compare them to alternative measures.

Unveiling our new FCIs

Chart 4 shows our new broad composite FCIs for the six largest advanced economies. **All the FCIs are above zero, meaning that financial conditions are tighter than normal. And they are all around their highest levels since the GFC or, in the euro-zone's case, the euro-zone crisis.** What's more, from late 2021/ early 2022 they rose rapidly until November

Chart 4: CE Broad Composite FCIs (Z-Scores)
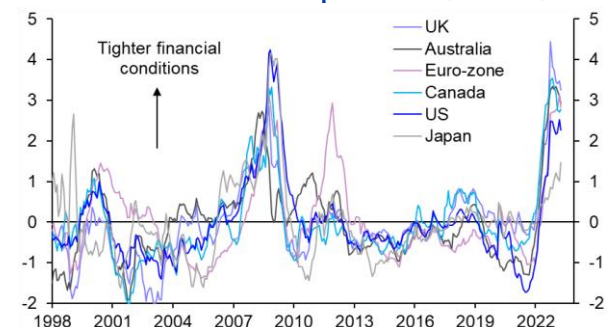
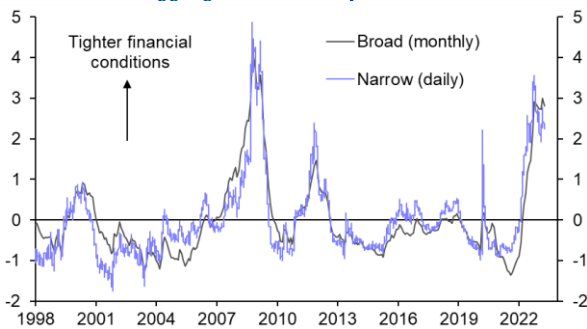Sources: Refinitiv, Bloomberg, Statcan, RBA, Capital Economics

last year, when the US October CPI print sparked optimism that inflation and ultimately interest rates would fall. (Although, in Japan's case, speculation about the end of Yield Curve Control has since caused conditions there to tighten.) Financial conditions are – relative to their own histories – least restrictive in Japan and most restrictive in the UK.

We have used GDP to weight together the individual FCIs into developed market aggregate indicators. Chart 5 compares the weighted DM narrow (daily) composite FCI with its broad (monthly) counterpart. The two generally track each other, but there have been two noteworthy deviations between the series in recent years. The first was in late 2020 until late 2021, when the narrow index was flat but the broad FCI fell by one standard deviation, suggesting that financial conditions loosened significantly. The broad index was picking up the loosening of bank lending standards to firms and households as well as the surge in house prices, which the narrower, purely financial market-based index could not.

Chart 5: CE Aggregate DM Composite FCIs (Z-Scores)

Sources: Refinitiv, Bloomberg, Statcan, RBA, Capital Economics

The second difference between the two composite indices has occurred since November last year, with the narrow FCI having fallen but the broad index having held fairly steady around its post-GFC high. On the stress side of things, bank lending standards have tightened since late last year, even as credit spreads narrowed (at least up until the collapse of SVB.) Meanwhile, from a cost perspective, interest rates on new bank loans have continued to rise or held steady and house prices have continued to fall in most cases (captured only in the broad index), even as benchmark interest rates have eased back.

The two recent deviations between the narrow and broad FCIs underscore the point that they should be used to complement each other. The narrow FCIs

provide a timely gauge of financial market conditions, while the broad indices paint a more complete picture for the wider economy, albeit less promptly.

Chart 6 shows the DM broad FCI and its cost and stress components. The most striking observation is that **the cost and stress elements of financial conditions behave differently most of the time**.

**Chart 6: CE Aggregate DM Broad FCIs (Z-Scores)***
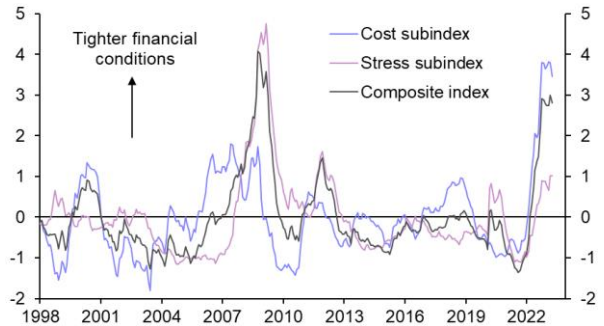
Sources: Refinitiv, Bloomberg, Statcan, RBA, Capital Economics.
*Note: Because each of the indices is standardised to its own past, the composite can be higher/lower than the two component parts. E.g. 2021.

Around the dotcom bubble, the financial stress index barely moved, while the cost index swung around with moves in interest rates. In the run-up to the GFC, stress started picking up almost two years after the cost subindex began its ascent. And by the time stress was rising sharply in 2007, the cost of new funds was stabilising as tightening cycles drew to a close and the economic outlook worsened. (While equity prices fell, the effect on overall conditions was offset by falling interest rates.) After the GFC, credit spreads and other stress measures remained elevated while borrowing costs sank. In the late 2010s, financing costs rose due to rising interest rate expectations, but financial stress was contained. And, in 2020, stress reached a decade high while the cost of acquiring new funds plumbed to new depths (again, lower interest rates outweighing declining equity prices).

Chart 7: CE Aggregate DM Narrow FCIs (Z-Scores)
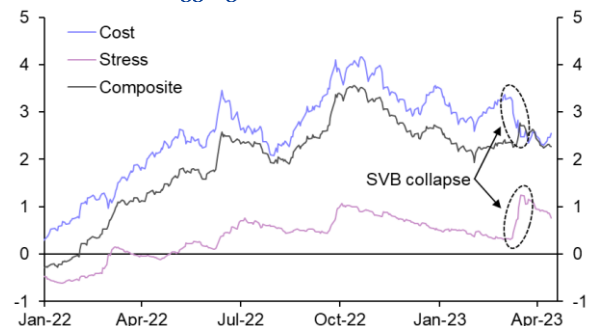
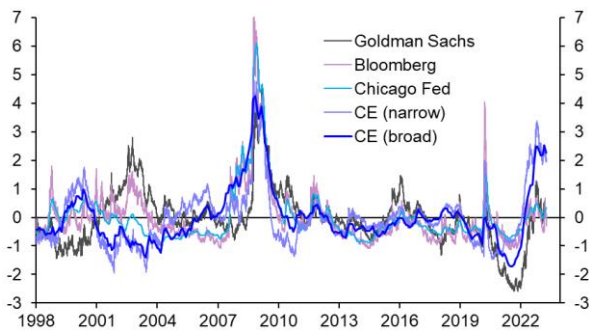Sources: Refinitiv, Bloomberg, Statcan, RBA, Capital Economics

The contrast between movements in the cost and stress subindices was stark during the recent banking sector strains. As our narrow FCIs make clear, while stress rose, the effect on overall financial conditions was mitigated by a fall in risk-free interest rates. (See Chart 7.) This underlines the importance of FCIs being able to track financial costs as well as stress.

How do our FCIs compare to other measures?
The most commonly cited FCIs are those produced by Bloomberg and Goldman Sachs. For the US, the Chicago Fed's National FCI also draws attention. **The main takeaway is that, with the exception of the euro-zone, our revamped FCIs suggest that financial conditions are tighter than other popular measures.**

While our US FCIs show that financial conditions are tight by past standards, the alternative FCIs suggest that they are merely around their average level since 1998. (See Chart 8.) Admittedly, the Goldman Sachs FCI has risen a lot since the end of 2021 – even if it remains at a relatively subdued level – consistent with conditions having become less accommodative. But it has not risen as far as our own index. Given that the Bloomberg and Chicago Fed measures include interest rate spreads only – no levels – they are effectively barometers of financial market stress.

Chart 8: US Financial Conditions Indices (Z-Scores)

Sources: Refinitiv, Bloomberg, Capital Economics

As for the euro-zone, the various FCIs have been in broad agreement since the mid-2000s. (See Chart 9.) While the Bloomberg index for the US contains no levels of interest rates or bond indices at all, its index for the euro-zone places a 33% weight on a bond index, so it has done a better job of capturing the tightening of financial conditions in the past year than its US counterpart. The big differences in the FCIs took place in the early 2000s, when the Bloomberg index was highly volatile and the Goldman Sachs index surged from very low levels.
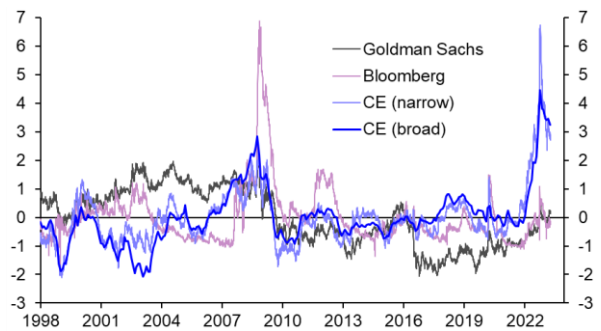
Chart 9: E-Z Financial Conditions Indices (Z-Scores)
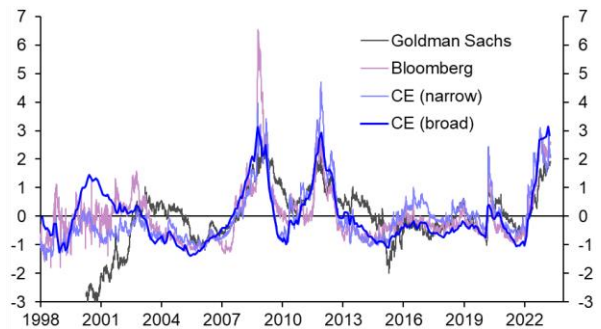
Sources: Refinitiv, Bloomberg, Capital Economics

Like with the US, though, our FCIs for the other advanced economies point to financial conditions being much tighter than on alterative measures. For instance, the surge in interest rates in the UK over the course of 2022, especially around the LDI crisis in September, had very modest effects on the Goldman Sachs and Bloomberg measures. (See Chart 10.)

Chart 10: UK Financial Conditions Indices (Z-Scores)

Sources: Refinitiv, Bloomberg, Capital Economics

There are no Bloomberg FCIs for Canada, Australia and Japan, but Goldman Sachs' indices are currently all below their average levels since 1998. In Japan's case, the Goldman Sachs FCI is around its lowest level this century. In contrast, our FCIs for these economies are all elevated, albeit less so in Japan. (See Chart 11.)

Chart 11: Financial Conditions Indices (Z-Scores)
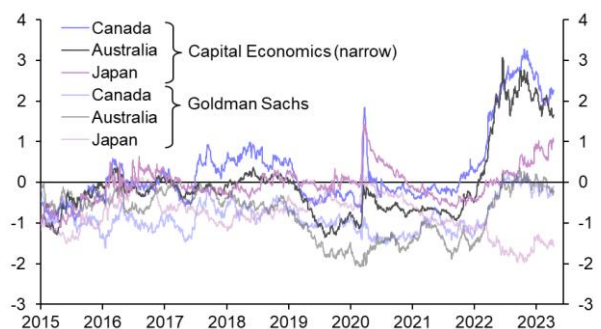
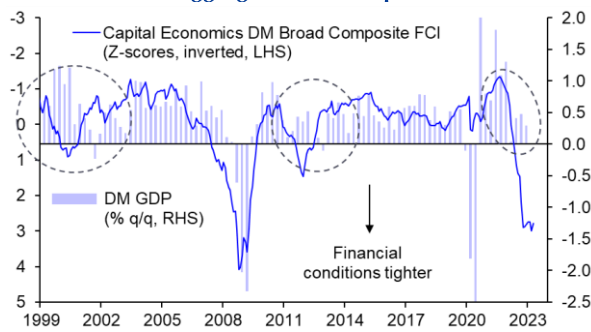Sources: Refinitiv, Bloomberg, Capital Economics

What do the FCIs imply about the real economy?

FCIs are not designed to be reliable real-time indicators of GDP growth. Lots of factors drive GDP, and an index of financial variables cannot hope to incorporate the effects of fiscal policy, commodity prices, supply shocks, and swings in foreign demand. However, they are designed to indicate if financial conditions are supportive or restrictive of activity, so **big moves in FCIs can help flag the risks to the growth outlook. Our indicators have done a decent job in this regard, and better than other measures**.

In addition to the global financial crisis, our broad composite FCI for advanced economies pre-empted economic downturns and subsequent recoveries around the dotcom bubble and euro-zone crisis. More recently, upside surprises to growth during the past 6-12 months might plausibly be partly explained by the lagged effects of excessively loose financial conditions in the previous year. Today, our FCI is signalling that recessions are coming. (See Chart 12.)

Chart 12: CE Aggregate DM Composite FCI & GDP

Sources: Refinitiv, Bloomberg, Statcan, RBA, Capital Economics

In contrast, weighted averages of alternative FCIs didn't give any early steer on the DM business cycle in the early 2000s and gave much later signals of downside risks to growth in the run-up to the GFC. (See Chart 13.) The Goldman Sachs FCIs missed

**Chart 13: Alternative Aggregate DM FCIs & GDP**
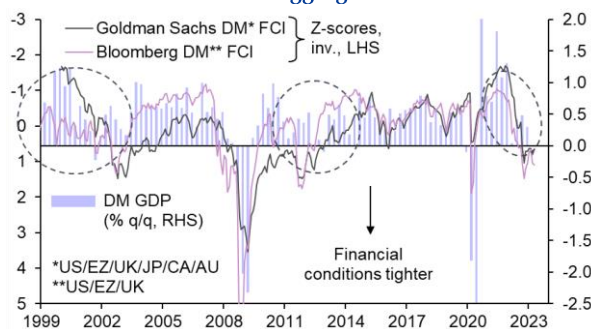
Sources: Refinitiv, Bloomberg, Capital Economics

looser financial conditions supporting a recovery in the aftermath of the GFC, and then barely tightened during the euro-zone crisis. The Bloomberg FCIs provided more accurate signals during this period. But given their narrow scope in terms of the variables included, they understated the upside risks to growth from loose financial conditions in 2021.

Another way of considering what big moves in the FCIs mean for the real economy is to model them. For example, Chart 14 shows the estimated response of Australian GDP to a one standard deviation increase in our FCI within a six-month period, elicited by an exogenous shock. It suggests that, in a world of no other subsequent shocks, GDP would fall by around 0.5% over the course of about a year.

Chart 14: Response of Australia GDP to a One Standard Deviation Increase in the CE Broad Aus. FCI (% Change)*
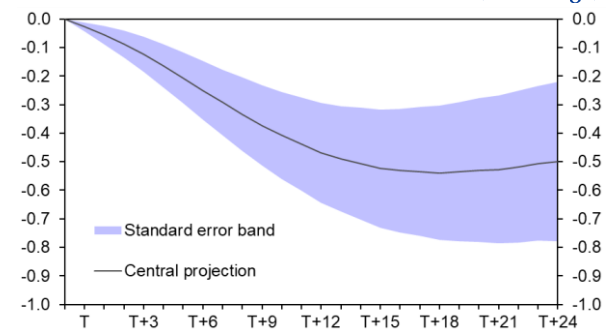
Sources: Refinitiv, Bloomberg, Statcan, RBA, Capital Economics.

*Estimated 2000-2019. Controlling for shocks in effective exchange rates, commodity prices, rest-of-world GDP, and own-economy GDP.

Repeating the same exercise for the three economies with FCIs constructed by ourselves, Goldman Sachs, and Bloomberg yields the results shown in Chart 15. Big jumps in our own broad FCIs are consistently estimated to precede more significant hits to GDP.

Chart 15: Cumulative Response in DM GDP within One Year to a One S.D. Increase in the FCI (% Change)*
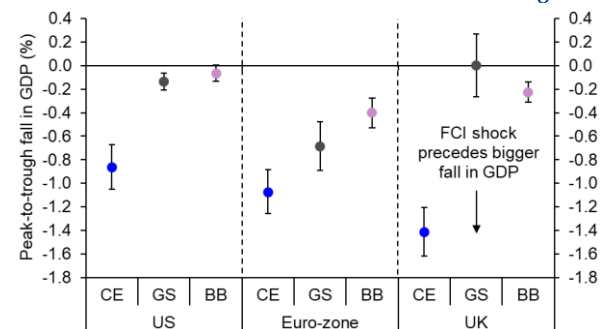

Sources: Refinitiv, Bloomberg, Statcan, RBA, Capital Economics.

*Estimated 2000-2019. Controlling for shocks in effective exchange rates, commodity prices, rest-of-world GDP, and own-economy GDP.

Conclusion

In summary, we have revamped our advanced-economy FCIs in a way in which we believe makes them more reflective of overall financial conditions. The upshot for today is they imply that financial conditions are very tight by past standards and so are likely to act as a headwind to real economic activity, and more so than other popular FCIs would suggest.

In addition to finding our FCIs in future publications, clients have access to our new Financial Conditions Dashboard. As well as presenting the FCIs and their subindices – the data for which CE Advance clients can access – this Dashboard presents a selection of the key input variables into our FCIs. Indeed, while the very purpose of FCIs is to boil down lots of information into a summary indicator, like any aggregate they can mask interesting developments taking place under the hood. So, the Dashboard aims to provide a holistic overview of financial conditions.

(Methodology Box overleaf.)

Table 1: Components of Capital Economics Financial Conditions Indices

Variable	US	Euro-zone	UK	Japan	Canada	Australia	Transformations**
Cost							
Benchmark rates							
2-year generic government bond yield	✓	✓	✓	✓	✓	✓	1
10-year generic government bond yield	✓	✓	✓	✓	✓	✓	1
Borrowing costs							
Investment-grade corporate bond yield	✓	✓	✓	✓	✓	✓	1
BoA ML ABS/MBS index yield	✓	✓	✓		✓		1
S&P/LSTA leveraged loan price index	✓	✓					0
Interest rate on bank loans to businesses	✓	✓	✓	✓	✓	✓	1
Interest rate on bank loans to consumers	✓	✓	✓	✓	✓	✓	1
Interest rate on new residential mortgages	✓	✓	✓	✓	✓	✓	1
Citi broad nominal effective exchange rate index	✓	✓	✓	✓	✓	✓	2
Collateral							
Residential house prices	✓	✓	✓	✓	✓	✓	2
Benchmark equity market capitalisation	✓	✓	✓	✓	✓	✓	2
Stress							
Market functioning							
Conditional volatility of BoA ML gov. bond indices	✓	✓	✓	✓	✓	✓	0
Conditional volatility of benchmark equity indices	✓	✓	✓	✓	✓	✓	0
Conditional volatility of Citi broad NEER indices	✓	✓	✓	✓	✓	✓	0
1-year/3-month USD cross-currency basis (spliced)*		✓	✓	✓		✓	0
3-month repo-treasury bill spread	✓						0
3-month commercial paper-treasury bill spread	✓	✓	✓	✓	✓	✓	0
10-year/2-year government bond term spread	✓	✓	✓	✓	✓	✓	0
BoA ML financials bond yield less non-financials	✓	✓	✓	✓	✓	✓	0
Equity price ratio of financials vs. non-financials	✓	✓	✓	✓	✓	✓	2
Credit risk							
Investment-grade corporate bond OAS	✓	✓	✓	✓	✓	✓	0
Junk/BBB bond yield less investment grade/prime	✓	✓	✓	✓	✓	✓	0
BoA ML ABS/MBS index option-adjusted spread	✓	✓	✓		✓		0
5-year bank credit default swap premia	✓	✓	✓	✓		✓	0
5-year sovereign credit default swap premia	✓	✓	✓	✓		✓	0
BoA ML PIIGS government bond yield less non-PIIGS		✓					0
S&P/LSTA leveraged loan yield less corp. bond yield	✓						0
BBB-rated CLO yield less corporate bond yield	✓						0
Credit availability							
Bank lending survey: lending standards to firms	✓	✓	✓	✓	✓		0,1***
Bank lending survey: lending standards to households	✓	✓	✓	✓			0,1***
Business surveys: difficulty to access external finance	✓	✓	✓	✓	✓	✓	0

Source: Capital Economics. *Risk-free-rate-based measures spliced with LIBOR-based measures before 2020.
**Transformation codes: none (0); difference from 2-year moving average (1); percentage difference from 2-year moving average (2). ***1 for Japan.

**Box: CE Financial Conditions Index Methodology**

A full list of the input variables for the FCIs, along with their transformations are presented in Table 1. The general principle is that all series are stationary and standardised to have a mean of zero and a standard deviation of one. Where appropriate, series are stationarised using two-year moving averages. Quarterly series are interpolated into a monthly frequency using a partial Bessel spline procedure. And where the latest observations of a monthly series are missing, flash estimates are used based on a mix of CE forecasts and ARIMA model projections.

When it comes to weighting the standardised input variables together into FCIs, there are two possible broad approaches that have been described as 'statistical' and 'economic' methods. The former encompass simple averages of the inputs (used in the Bloomberg FCIs), and weighted averages where the weights are derived from factor loadings in principal component analysis (used in our old FCIs), or dynamic factor models (used by the Chicago Fed).

Simple averages give every variable the same weight in the FCI, while the latter two methods put more weight on variables that share common variation with other variables in the dataset. While each of these approaches has its benefits, the main drawback of them all is that a financial variable could have a small influence on the FCI even if it is impactful in economic terms. Consequently, like Goldman Sachs, the IMF, and others, we take the 'economic' approach by using regressions to estimate the FCI weights on the basis of a variable's impact on GDP.

Specifically, the weights are the one-year cumulative impulse responses of GDP to a one standard deviation increase in a variable within a six-month period elicited by a scaled exogenous shock. We used factor-augmented vector autoregressions to estimate the responses, controlling for shocks in commodity prices, rest-of-world GDP, and principal components of the other stress and cost variables. Given the number of model parameters, we used monthly data from 1998 to 2019. For daily series, we used monthly averages. For economies without official monthly GDP series, we constructed monthly GDP proxies from a weighted average of industrial production, real retail sales, employment, and trend-restored leading indicators from the OECD. (See Chart 16.)

Chart 16: DM Aggregate GDP & Monthly Proxy
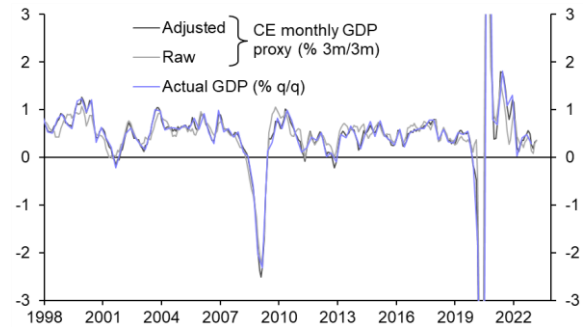
Sources: Refinitiv, Capital Economics

A summary of the weights are shown in Chart 17, grouped by their cost and stress categories as set out in Chart 1. On average, the composite FCIs are split about 50:50 between cost and stress components. (By contrast, a purely principal components approach to aggregation with the same variables puts an 80% weight on stress variables, which highlights that the choice of weighting methodology can be decisive.) The variables with the biggest weights are typically bank lending surveys, house prices, and bond yields.

Chart 17: Broad Composite FCI Weight Groupings (%, Average of the Six Advanced Economies)
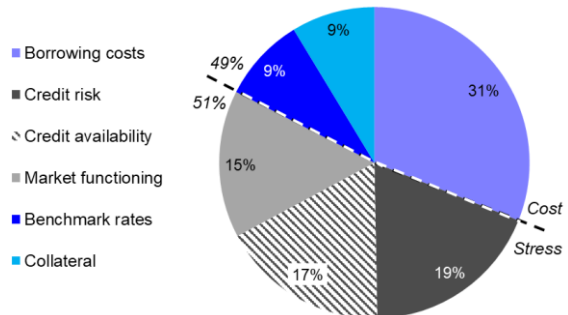
Source: Capital Economics

Finally, the standardised input variables were weighted together into FCI aggregates, and these spliced FCI series themselves were standardised to have a mean of zero and standard deviation of one.

Changes in financial conditions will to some extent reflect economic developments that have already occurred as well as provide signals about current conditions and future activity. (Think of how financial markets respond to major data releases, for example.) Hence, some have argued that FCIs need expunging of 'endogenous variation' (essentially removing changes in FCIs explained by the past). However, like the Chicago Fed and Goldman Sachs, we found that cyclically adjusting the FCIs made little difference.

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