

Annex: Monetary policy, financial conditions and real activity: is this time different?

Financial conditions indices – taxonomy and caveats

Financial conditions – defined as the availability and cost of financing for real economic activity – have many dimensions. These can span a variety of markets and instruments, and include price as well as non-price aspects (such as spreads and lending standards). Moreover, domestic financial conditions may, to a significant extent, be driven by global factors.

Because of their importance for economic activity and, in turn, inflation, central banks pay close attention to financial conditions in their conduct of monetary policy. In practice, gauging financial conditions relies on synthetic measures that combine many indicators in a single metric – financial conditions indices (FCIs).

Main classifications

FCIs are weighted averages of key financial variables that proxy for financial conditions. They are generally normalised to indicate how tight financial conditions are by historical standards (see Table A1 for examples).

FCIs vary depending on the weights they use in aggregating different variables. Some FCIs use weights that are unrelated to the impact of the variables on economic activity (eg IMF FCI, Chicago Fed National FCI). Others are constructed based on forecasting performance or on macroeconomic models (eg Goldman Sachs FCI, OECD FCI, Fed’s FCI-G).

Financial stress indices (FSIs) differ from regular FCIs in that they aim more specifically to gauge financial stress (eg Kansas City Fed FSI, Asian Development Bank FSI (ADB FSI)).

Caveats

Aiming to summarise financial conditions in a one-dimensional FCI is challenging for various reasons.

First, capturing non-price aspects of financial tightness (eg the use of bond covenants or origination standards) is difficult, largely because of data availability. This is one reason why price measures of credit tightness are sometimes complemented by quantities or other proxies (eg house prices).

Second, adequately assessing the role of global financial conditions is complicated by the fact that these not only affect local financial conditions directly, but may do so indirectly by influencing the funding of global value chains, which weave an intricate web of interconnections across countries and sectors.

Third, those FCIs that aim to establish a tight link to economic activity often effectively assume that demand elasticities are constant, which need not be the case. For instance, the effects of changes in interest rates on aggregate demand may depend on the level and/or the structure of indebtedness of the economy at a given point in time. Indeed, evidence indicates that the relationship between financial conditions and future economic activity is non-linear and time-varying (Adrian et al (2022)).

Financial conditions indices

Table A1

<i>Index name</i>	<i>Main purpose</i>	<i>Methodology</i>	<i>Coverage</i>	<i>Strengths</i>	<i>Weaknesses</i>
Goldman Sachs FCIs ¹	Impact of financial conditions on GDP growth	Five variables: nominal short-term rate, nominal long-term rate, corporate spread, equity price, trade-weighted exchange rate A sixth variable for some countries: sovereign spread (EA countries), debt-weighted FX rate (some EMEs) Weights based on one-year GDP impact	Daily frequency AEs and EMEs Since 1980s for most AEs and 2000s for most EMEs	Economic meaning for index changes Accounts for relative contributions of variables Subcomponents available Updated regularly	Not robust to regime shifts
OECD FCIs ²	Impact of financial conditions on GDP growth	Eight variables: real short-term rate, real long-term rate, real effective exchange rate, loan survey results, real house prices, real share prices, bond yield spreads between corporate and public bonds Weights based on 1/1.5 years GDP impact	Quarterly frequency Seven OECD countries Since 1995	Economic meaning for index changes Accounts for relative contributions of variables	Not robust to regime shifts Not publicly available
IMF FCIs ³	Tightness of financial conditions by historical standards	Eleven variables: real short-term rate, interbank spread, term spread, sovereign local debt spread, sovereign dollar debt spread, corporate local currency spread, corporate dollar debt spread, equity price, equity volatility, exchange rate, real house price Weights based on principal components analysis	Monthly frequency AEs and EMEs From 1990 to 2017, depending on data availability	Accounts for relative contributions of variables	Not robust to regime shifts No economic meaning for the weights Not updated regularly
ADB FSIs ⁴	Financial conditions / financial stress	Five variables covering four major financial markets: banking sector, foreign exchange market, equity market, debt market Weights based on equal variance and principal components analysis	Daily frequency AEs and EMEs Since mid-1990s	Subcomponents available Updated regularly	Not robust to regime shifts
Bloomberg FCIs ⁵	Financial stress	Ten variables from money, bond, and equity markets Equal weights	Daily frequency US, EA, GB Since early 1990s	Robust to regime shifts Updated regularly	No account for relative contributions of variables
CISS ⁶	Systemic financial stress / financial crisis risk	Fifteen variables capturing stress in /money, bond, equity and foreign exchange markets Time-varying cross-correlations as systemic weights; more weight to periods with systemic stress	Daily frequency AEs and China Time coverage varies widely	Systemic dimension Subcomponents available Updated regularly	Not robust to regime shifts

¹ **GS-FCI:** US (Sep 1982), EA (Dec 1980), AU (Dec 1980), BE (Jan 2000), BR (Jun 2004), CA (Jan 1980), CN (Sep 2006), FR (Jan 2000), DE (Jan 2000), IN (Mar 2007), ID (Jan 2005), IT (Jan 2000), JP (Jan 1980), KR (Aug 2002), MY (Oct 2004), MX (Dec 2001), NL (Jan 2000), PI (Jun 2005), ZA (Aug 2002), ES (Jan 2000), SE (Mar 1998), CH (Jan 2000), TH (Oct 2006), TR (Mar 2005), GB (Jan 1985), AT (Jan 2000), CL (May 2006), CZ (Jun 2005), FI (Apr 2000), HU (Jun 2005), IL (Feb 2003), NZ (May 2003), NO (Jan 2000), PH (Aug 2002), RO (Jul 2005). See also Annex Table 2. ² **OECD FCI:** US (1995), EA (1995), UK (1995), JP (1995), DE (1995), FR (1995), IT (1995). ³ **IMF FCI:** AR, AU, AT, BE, BR, CA, CH, CL, CN, CO, DE, DK, EG, ES, FI, FR, GB, HK, HU, ID, IE, IN, IT, JP, KR, KZ, LB, LU, MY, MX, NL, NG, NO, PE, PH, PL, RU, SE, SG, TR, UA, US, ZA. ⁴ **ADB FSI:** US (Jan 1995), EA (Jan 1995), AU (Dec 1996), CN (Jun 2005), HK (Nov 1996), IN (Dec 1996), ID (Jul 2003), JP (Jan 1995), KR (May 1995), MY (Jan 1995), TH (Jan 1996), GB (Dec 1996), PH (Oct 1998), SG (Dec 1996), LK (June 1994), TW (Jan 1995), PK (Dec 1996). ⁵ **BFCI:** US (Jan 1990), EA (Jan 1992), GB (Nov 1992). ⁶ **CISS:** US (Jan 1973), EA (Jan 1999), BE (Jan 1999), CA (Jan 1960), CN (Oct 2006), FR (Feb 1985), DE (Jan 1980), IT (Jan 1986), NL (Jan 1999), ES (Jul 1991), GB (Jan 1980), AT (Jan 1999), FI (Jan 1999), IE (Jan 1999), PT (Jan 1999).

Sources: Hatzius et al (2017) and Hatzius and Stehn (2018) for the GS-FCI; Davis et al (2016) for the OECD FCI; IMF (2017) and IMF (2018) for the IMF FCI; Park and Mercado (2014) for the ADB FSI; Bloomberg for the BFCI; Chavleishvili and Kremer (2023) and Duprey (2020) for the CISS.

Fourth, differences in market structures, economic and financial development, institutions and other country characteristics hamper the construction of FCIs that are comparable across jurisdictions. For example, the role of non-bank financing differs in important ways across economies.

Fifth, some variables proxying for financial conditions may affect the real economy through non-financial channels, complicating the interpretation of FCIs. For example, although not directly a measure of cost or availability of financing, the exchange rate is often included in FCIs, since it exerts a sharp influence on financial conditions in many economies. However, the exchange rate also affects relative prices directly, and thereby demand for exports and imports, and economic activity.

Finally, the interpretation of FCIs depends on what drives them. Movements in an indicator can be primarily driven by underlying fundamental economic shocks. Alternatively, the drivers can be purely financial and related to changes in risk premia. Distinguishing between these two alternatives in real time remains a challenge and is important to identify the appropriate policy response.

Policy rates, financial conditions indices and GDP

It is still too early to get definitive answers from econometric studies on how much of the impact of tighter financial conditions has already been felt on activity. The number of observations is small, especially in those countries where the tightening cycle started later. Moreover, the pandemic and the war have introduced exceptional volatility, which heavily distorts the estimates.

That said, standard local projections can provide some preliminary, suggestive evidence on the extent of the impact of higher policy rates on financial conditions and that of tighter financial conditions on GDP. We regress cumulative log FCI changes on policy rate changes (Graphs A1.A and A1.C) or cumulative log GDP changes on log FCI changes (Graphs A1.B and A1.D), with country and time fixed effects and a set of controls $X_{i,t}$ with up to four lags (inflation, the unemployment rate, nominal effective exchange rate and coronavirus stringency index). The estimates are based on quarterly average data for 18 AEs and 16 EMEs since 1980, where data are available. Responses in past and current cycles are obtained by including an interaction term with the current cycle dummy, with the combined impact in the current cycle of the policy rate hike on the FCI shown in panel C, or of the change in the FCI on GDP shown in panel D (blue lines). Due to the small number of observations in the current cycle, we cannot further distinguish between advanced economies (AEs) and emerging market economies (EMEs).

More specifically, the full regression specification for panels C and D of Graph A1 is as follows, and the only difference with the specification in panels A and B is that the latter lacks the terms with D_i^{curr} :

$$\begin{aligned}
 FCI_{i,t+h} - FCI_{i,t-1} &= \alpha_{f,i} + \lambda_{f,t} + \phi_f D_i^{curr} + (\beta_f + \psi_f D_i^{curr}) \Delta policy\ rate_t + \sum_{p=1}^4 \gamma_{f,p} \Delta FCI_{i,t-p} \\
 &+ \sum_{p=0}^4 \theta_{f,p} X_{i,t-p} + \varepsilon_{f,i,t}
 \end{aligned}$$

$$\begin{aligned}
 y_{i,t+h} - y_{i,t-1} &= \alpha_{y,i} + \lambda_{y,t} + \phi_y D_i^{curr} + (\beta_y + \psi_y D_i^{curr}) \Delta FCI_t + \sum_{p=1}^4 \gamma_{y,p} \Delta y_{i,t-p} + \sum_{p=0}^4 \theta_{y,p} X_{i,t-p} \\
 &+ \sum_{p=0}^4 \delta_{y,p} \Delta policy\ rate_{t-p} + \varepsilon_{y,i,t}
 \end{aligned}$$

The estimates are broadly in line with those from the literature: the FCI tightens in response to a policy rate hike, with the peak effect reached in the third quarter after the hike; GDP contracts by about 1% by the second year of the hike.

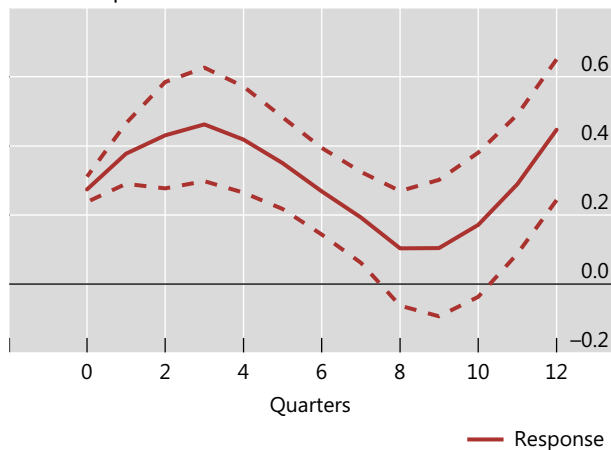
Compared with past cycles, the response of monetary policy tightening on FCI is similar, while the response of GDP to tighter FCI seems to be somewhat weaker.

Monetary tightening, financial conditions, real activity: similar response as in the past for FCI but not for GDP

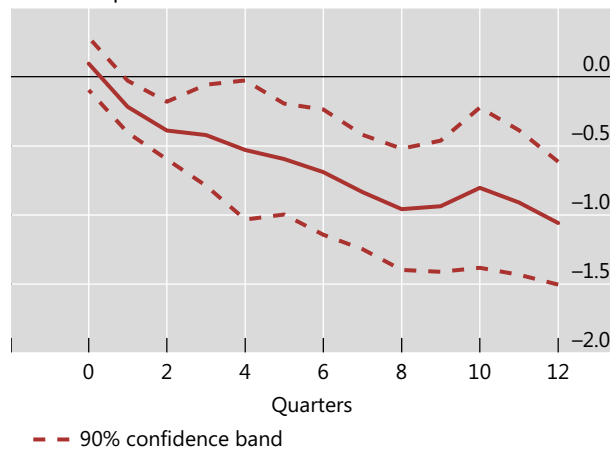
Cumulative changes in per cent

Graph A1

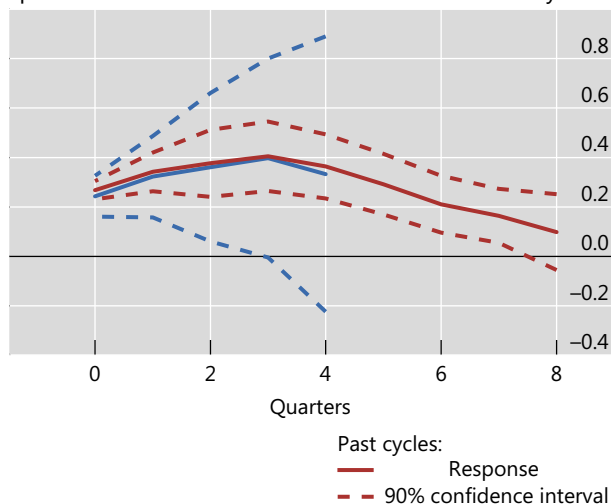
A. Response of FCI to a 1 percentage point rate hike: baseline specification



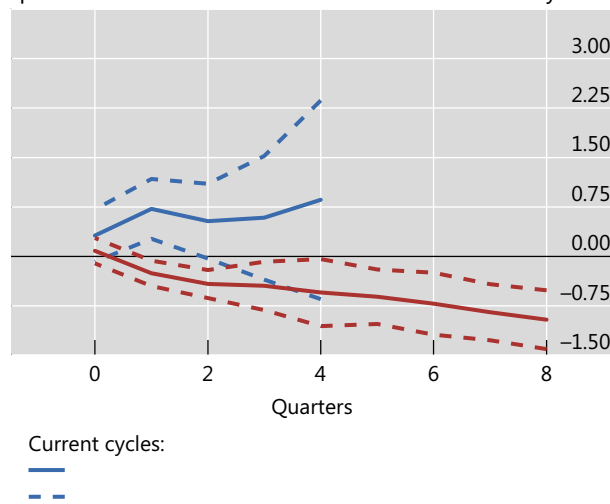
B. Response of GDP to a 1 percent FCI tightening: baseline specification



C. Response of FCI to a 1 percentage point rate hike: specification with interaction term for the current cycle



D. Response of GDP to a 1 percent FCI tightening: specification with interaction term for the current cycle



Sources: Oxford University, Blavatnik School of Government; Bloomberg; Goldman Sachs; Refinitiv Datastream; national data; BIS.

Changes in financial conditions and forecast revisions

Professional forecasters incorporate the impact of tighter monetary policy and, by association, tighter financial conditions based on estimates of its magnitude and over which horizon it would materialise. To reflect expectations of drops in GDP growth due to the tightening, forecasts were revised down as central banks raised rates. Yet, in some cases, activity tended to surprise on the upside a year or so after the beginning of the tightening cycle, given the extent of tightening that had taken place.

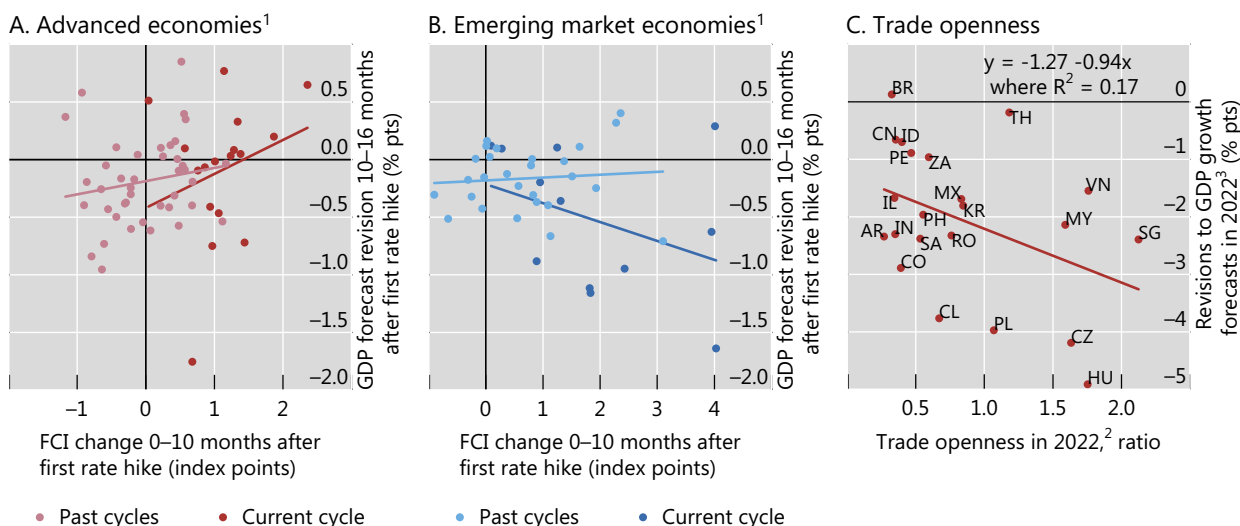
Across AEs, the forecast revision was smaller or even positive where FCI had tightened more (Graph A2.A). This suggests that the negative impact of conditions was overestimated. Such a relationship is hardly visible in previous episodes, hinting that the impact of tighter financial conditions was correctly incorporated at the time.

For EMEs, larger increases in the FCI corresponded to larger downward revisions (Graph A2.B). This points to some underestimation of the impact. One possible reason is the role of the stronger US dollar as a channel of tighter financial conditions. While this channel applies generally, it arguably has a larger

impact on EMEs, given currency mismatches on borrowers' and lenders' balance sheets and the greater reliance of some major EMEs on manufacturing trade. Indeed, downward revisions to growth in 2022 were stronger in EMEs that are more open to trade (Graph A2.C).

Growth in AEs is more resilient than expected, trade acts as a drag in EMEs

Graph A2



¹ Revisions in the one-year-ahead consensus GDP forecasts normalised with all episodes' std dev in each respective country. Past tightening episodes: for AEs since 1980; for EMEs since 2000; where data are available. Current tightening episodes: latest ones in 2020–22. 18 AEs and 17 EMEs. ² Total merchandise exports and imports relative to nominal GDP. ³ Sum of monthly revisions to one-year-ahead GDP forecasts (weighted average of current and next-year Consensus forecasts).

Sources: IMF; Bloomberg; Consensus Economics; Goldman Sachs; BIS.

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