Box Article 3

Financial Conditions Index for Malaysia

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HIGHLIGHTS

- The Financial Conditions Index (FCI) has gained prominence in the last decade among policymakers and market participants due to its ability to summarise the current state of overall financial conditions.
- The estimated FCI for Malaysia can provide useful insights about domestic financial conditions. The latest assessment of the FCI indicates improving financial conditions since 2016.
- Given the highly complex financial environment, no single indicator should be solely relied upon to inform policymakers of financial conditions. However, as a summary indicator, the FCI provides a glimpse into the current state of financial conditions.

As financial systems develop beyond the traditional banking channel to meet the needs of expanding economies, it has become increasingly necessary to have a broader perspective of financial conditions in the conduct of monetary policy. In general, there are two ways in which financial conditions can be used to inform monetary policy. Firstly, while trends in central bank policy rates have tended to be gradual, financial conditions in the last decade have become more volatile. As a result, these frequent changes in financial conditions can influence overall economic conditions even without changes in monetary policy, especially when financial market volatility is large and persistent. Secondly, in the run-up to financial crises, prolonged stretches of economic growth have tended to be accompanied by an underlying increase in leverage and risk-taking. While the longer-term implications to macroeconomic stability may be less apparent during an economic upswing, the subsequent correction could entail extended periods of balance sheet repair and longer periods of subdued inflation (Dudley, 2010). The 2008 Global Financial Crisis is one such example which highlighted the importance of assessing macro-financial linkages between the financial system and the real economy. In recognising the significance of the financial system to overall macroeconomic stability, the Financial Conditions Index (FCI) has gained prominence in the last decade among policymakers, international market analysts and professional forecasters alike for its potential to summarise overall financial conditions in the economy (Figure 1) (Hatzius et al, 2010).

Figure 1: Selected Institutions that Have Developed the FCI



Source: Staff compilation from various literature

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Formally, the FCI is defined as a statistically-driven composite indicator that aggregates a wide range of financial variables to summarise the current state of domestic financial conditions. This concept is not new. Prior to the construction of the FCI, the Monetary Conditions Index (MCI) – a weighted[2] two-variable aggregator of the exchange rate and a money market interest rate against a base period – was introduced and popularised during the early nineties by the Bank of Canada (Debuque-Gonzales and Gochoco-Bautista, 2013). Back then, the MCI was used by central banks as both an operational target of policy and to signal divergence between actual and desired monetary conditions that could warrant a monetary policy adjustment. The FCI is perceived as a natural extension of the MCI, focusing on a much broader range of financial variables. Such breadth has the advantage of summarising comprehensive variables from different segments of the financial system.

At least two important applications have driven the rapid adoption of the FCI. Firstly, the FCI provides a significant addition to the macro-financial surveillance toolkit; it encapsulates and consolidates information from a broad array of financial variables, and indicates whether overall financial conditions are tightening or loosening relative to a base period. Insofar as these financial variables reflect conditions that enable economic activity, the FCI could provide some information about potential risks to the economy in the near future. Secondly, the FCI provides complementary information that is observable in real-time. These characteristics distinguish it from macroeconomic variables that are either unobservable, such as the output gap and neutral rate, or available with a substantial time lag, such as GDP growth and unemployment (Osario et al, 2011).

Construction of the FCI captures common variation in financial variables

A prominent approach in constructing the FCI is the principal-components analysis, which extracts a common underlying variation in the financial variables[3]. Using this method, each financial variable is assigned a weight based on its relative importance in driving this variation; the more correlated a variable is with the other variables, the higher the weight it receives. The benefits of this approach have been well-documented[4] and include allowing for a wider range of relevant financial indicators to which their respective systemic importance can be identified and interpreted (Debuque-Gonzales and Gochoco-Bautista, 2013; Brave and Butters, 2011).

Figure 2: List of Financial Variables Included in the FCI for Malaysia

List of Variables		Treatment
Banking System	Banking sector credit spread: 3M KLIBOR – 3M Malaysian Treasury Bills (MTB)	Level
	Retail credit spread: Average lending rate – 10Y Malaysian Government Security (MGS)	Level
	Broad money, M3	Log first-difference, seasonally adjusted
Foreign Exchange (FX)	Real effective exchange rate: USDMYR	Log first-difference
	Exchange rate volatility: Intra-month USDMYR standard deviation	Level
	International Reserves	Log first-difference
Bond	Short term yield: 3M MTB	First-difference
	Long term yield: 10Y MGS	First-difference
	Sovereign spread: 10Y MGS – 10Y US Treasury Note	Level
Equity	KLCI Index	Log first-difference
	KLCI volatility: Intra-month KLCI index standard deviation	Level
	Market Capitalisation	Log first-difference

Source: Staff research

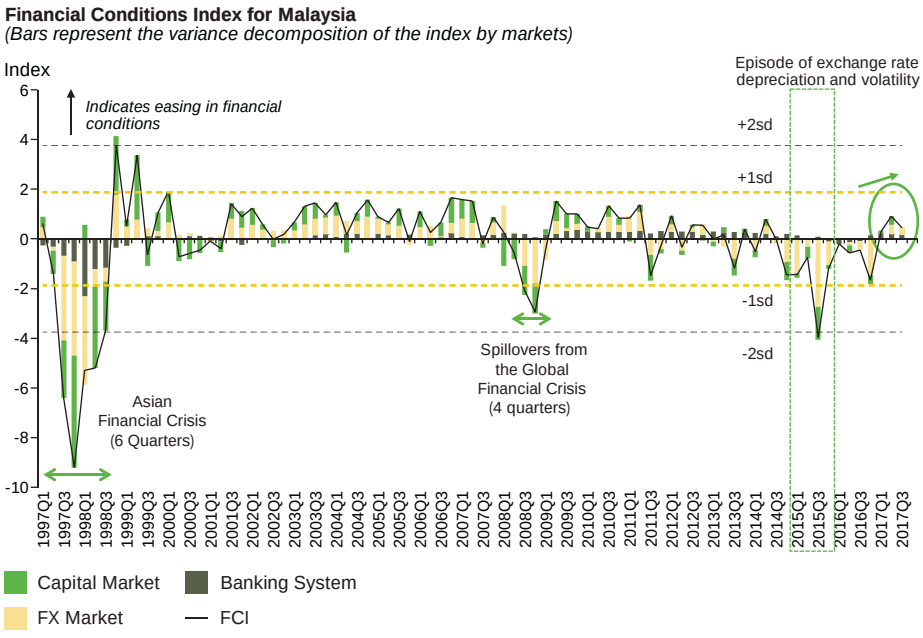
[2] MCI weights are based on the relative effects of the exchange rate and money market interest rate on aggregate demand.
[3] Another popular method in constructing the FCI is the weighted-sum approach. Using this approach, the weights on each financial variable are assigned based on its relative impact of its changes on real GDP (Hatzius et al, 2010).
[4] For a review on the benefits of the principal-component approach, refer to Hatzius et al (2010).

The choice of financial variables to be included in the FCI is also important. Ideally, the variables must be representative of the different components of the financial system. In the construction of the FCI for Malaysia, 12 financial variables are used (Figure 2). The variables satisfy three additional criteria; they are available from 1993 in order to capture the cycle leading to the Asian Financial Crisis (AFC), they cover indicators commonly used in the literature and they do not exhibit counterintuitive trends.

Financial Conditions Index for Malaysia

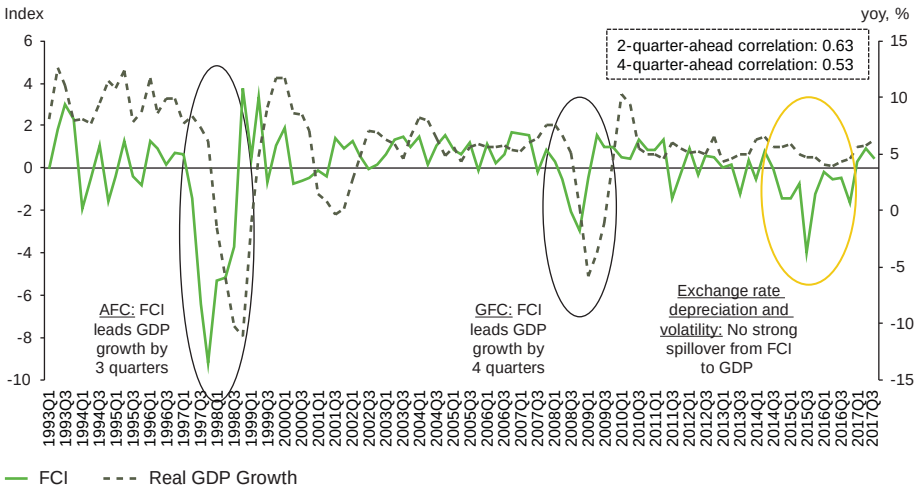
The estimated FCI for Malaysia is comprised of three broad components covering the banking system, capital market and foreign exchange market (Figure 3). This categorisation enables the identification of the time-varying drivers of domestic financial conditions. An increasingly positive index indicates easing in financial conditions while a decreasing index implies potential stresses. For example during the Asian Financial Crisis (AFC), the FCI declined significantly. In this period, the stresses were identified to be widespread across all segments of the financial system. This situation stood in contrast to the Global Financial Crisis (GFC), where shocks emanated mainly from external sources, with limited signs of stress in the banking system. The latest assessment of the FCI at end-September 2017 indicates that financial conditions have eased relative to 2016, reflecting decreased volatility in the foreign exchange and equity markets.

Figure 3: Financial Conditions Index for Malaysia



Source: Staff estimation

Figure 4: Estimated FCI vs Real GDP Growth



Source: Staff estimation

The FCI reflects the overall enabling conditions for future economic activity and therefore suggests that it could provide complementary information about future economic activity (Figure 4). (Debuque-Gonzales and Gochoco-Bautista, 2013; Hatzius et al, 2010). For policymakers, the different drivers of financial conditions revealed by the FCI provide important information when it comes to deciding on appropriate policy responses. The empirical estimation shows that the FCI for Malaysia tends to lead real GDP growth by two to four quarters[5].

However, careful interpretation of the implication of the FCI on future growth is needed as changes in the FCI do not always translate into co-movement with economic activity. In essence, movements in the financial variables driving the FCI are not necessarily rooted in changes due to economic fundamentals. The FCI tightening episode in 2015 is a clear example of external shocks being contained within the domestic financial market without major implications on the real economy. This difference in the pass-through to the real economy is critical, for it underscores the uniqueness that characterises different financial stress periods. In the 2015 example, the absence of a significant global downturn during this period made it possible for the exchange rate depreciation to act as a shock absorber to prevent spillovers to the real economy (BNM Annual Report, 2015). In the same view, the variables in the FCI may also overlook other sources of vulnerabilities.

Additionally, the FCI is not underpinned by a structural model derived from stable underlying economic foundations, and as such, limiting the predictive power of the FCI (Hatzius et al, 2010; Kocherlakota, 2010)[6]. Another limitation of the FCI is that it may not be able to adequately capture the evolution of the financial system (Dudley, 2010). Over time, the financial variables that form the underlying trend of the FCI would naturally evolve with the structure of the financial system. This may result in some key variables becoming less important in explaining overall financial conditions. For example, as the Malaysian financial markets deepen and increase their tolerance to exchange rate volatility, the variability of the exchange rate may become less important relative to other variables included in the FCI. Furthermore, each financial variable in the FCI affects the real economy in a complex manner, making the economic interpretation of the FCI potentially challenging (IMF Global Financial Stability Report, 2017). For example, asset prices tend to be more dominant drivers of risk in the short run, while measures of credit and liquidity are more indicative of medium-term risks to economic growth.

[5] This is consistent with what is commonly found in the literature (Debuque-Gonzales and Gochoco-Bautista, 2013).
[6] Among others, an important implication of a model not underpinned by a structural model is its vulnerability to the Lucas critique.

Given the highly complex financial environment, the FCI is just one of many indicators to facilitate the assessment on financial conditions

The Bank has incorporated the use of the FCI in its analysis of financial conditions. However, the development of reliable economic models remains an on-going process in monetary policy research. At the Bank, no single indicator or model is used exclusively in our assessment of financial and economic conditions. Rather, the Bank recognises the models' strengths and limits, and has adopted a more holistic approach to policy-making by considering important structural features of the economy that may not be adequately captured by these models.

A wide range of tools is used by the Bank to analyse domestic financial conditions. To this end, information from various segments within the financial system is assessed thoroughly to ensure a robust assessment on financial conditions. Typically, the assessment covers various indicators of both price and quantity that can provide additional insights on conditions in the banking system and financial markets. Such indicators, including movements in funding costs, liquidity adequacy and trading volatility, are critical to evaluate potential stresses that may arise from the price discovery and intermediation process in financial markets. The Bank also undertakes frequent engagements with industry players to validate and understand potential risks to financial markets. Other tools including the foreign exchange market pressure index has been used to assess developments in the exchange rate markets, while the financial cycle indicator has been constructed to assess potential signs of credit excesses. In addition, the Bank has further advanced its analysis by utilising granular data on household and corporate debt to enrich the assessment on distributional risks that may have important implications on overall financial conditions. Ultimately, the Bank relies on a comprehensive assessment of the financial system and economy to ensure appropriate, well-informed policy decisions.

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