Procyclicality and the Search for Early Warning Indicators

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In the paper "Procyclicality and the Search for Early Warning Indicators", Hyun Song Shin analyzes three sets of indicators which could provide warning of financial vulnerability in the market.

The Global Financial Crisis, has provided us with valuable lessons and gave rise to a significant amount of research on this topic. The notion that a crisis should be warned of in advance has led to the search for financial indicators which could accurately and timely foretell an imminent crisis. Indeed, learning of the onset of a crisis in advance would be more than valuable for policy makers and market agents; therefore, proper identification of early warning indicators is essential. In his paper, Shin proposes and analyzes three sets of early warning indicators which could have signaling properties: market price based warning indicators, the credit to GDP gap measurement indicator, and banking sector liability aggregates.

The first sets of indicators, which include CDS spreads, implied volatility and other price-based measures of distress, are good reflectors of concurrent market conditions, but have no signaling properties. In other words, although these indicators can be used in real time, they only react procyclically after the onset of crises or credit events.

Another popular early warning indicator is the credit to GDP gap ratio, measured as the difference of the credit to GDP ratio from its normalized longterm trend. This measurement has been adopted by the Basel III framework to provide policy guidance on managing the "countercyclical capital buffer" and can signal signs of excessive credit growth in the economy. However, due to the nature of its use, the credit to GDP gap ratio has been heavily criticized for the following three reasons:

1. It cannot be used in real time;

2. It is hard to find a uniform threshold for excessive credit growth across countries;

3. There are some calculation issues where in some cases, the revision to the estimated GDP was larger than the gap itself.

Despite these disadvantages, presumably the most significant characteristic of the credit to GDP gap measurement lies in that it can indicate the current stage of the "financial cycle". The financial cycle is to do with the boom and bust cycles of the financial markets, and tend to be larger in amplitude and longer in length than the business cycles of the economy. And the most interesting aspect of these cycles is that almost each financial cycle peak is followed by either a crisis or a recession. For this reason, the credit to GDP gap ratio should not be dismissed as ineffective in indicating build-up of financial vulnerabilities in the market.

Finally, the last early warning indicator is the ratio of the non-core banking liabilities to the core liabilities (NCL/CL). The author, Shin, claims that this measurement is superior to the previous two indicators in that it can be used in real-time, has high signaling properties and its measurement is considerably straightforward. Because a bank acts as a financial intermediary between depositors and borrowers, when credit is growing rapidly, banks will quickly use up the usual types of funds such as household deposits and start to draw on more non-core sources of funding to meet the growing demand for credit. Since credit booms increase risk appetite in the market, banks will be more willing to borrow from abroad to fill in this gap in funding, thus exposing themselves to exchange rate risks.

According to research, an increase in banking sector non-core liabilities is not only indicative of a credit boom related market vulnerabilities, but is also usually followed by sharp domestic currency depreciation. Therefore, this indicator is highly efficient in signaling both banking and currency crises.

Table 1: Comparison of three sets of early warning indicators

Indicator	*Informative*	*Signaling capacity*	*Calculation*	*Real time?*	*Suitable for:*
Market price-based	*Yes*	*No*	*Simple*	*Yes*	*Market analysis*
Credit/GDP gap	*Yes*	*Yes*	*Complex*	*No*	*Developed countries*
NCL/CL ratio	*Yes*	*Yes*	*Medium*	*Yes*	*EMEs*

The three sets of indicators can be summed up in Table 1, where they are compared across various criteria such as signaling properties, whether the calculations are simple and where it is most suitable for use. As we can see from the table above, the three sets of indicators are highly informative in different ways and in different contexts. The conclusion, therefore, is that no early warning indicator is perfect and works always and everywhere.

References

[1] "Procyclicality and the Search for Early Warning Indicators", Hyun Song Shin, IMF Working Paper No.13/258, December 20, 2013