Box 2

ASSET PRICE BOOMS, CREDIT BUBBLES AND FUTURE FINANCIAL STRESS – ASSESSING SYSTEMIC RISKS IN EMERGING MARKETS

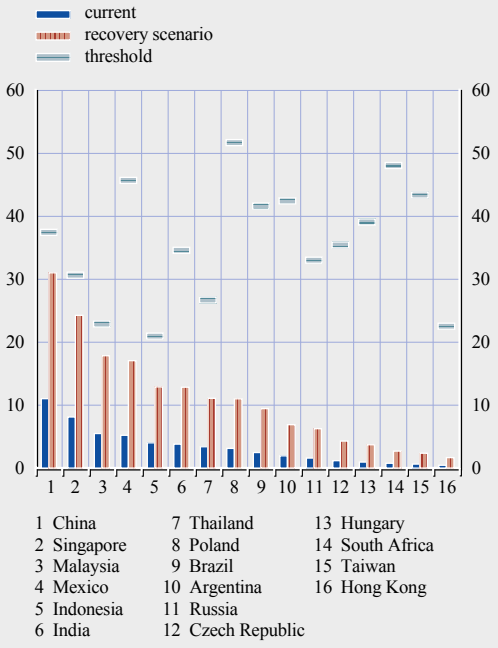
To many observers, the recent increases in equity, bond and property prices in emerging markets appear to be unjustifiably strong, particularly when coupled with credit booms in certain economies such as China. This box explores whether vulnerabilities that could lead to a systemic event – an event involving a high level of financial instability and thus potentially negative real economic consequences – in key emerging economies are currently building up. From a policy perspective, this is important as a systemic event in a key emerging economy could potentially spill over to global financial markets and undermine the recovery of the global economy.

A three-step approach was taken to evaluate systemic risks and identify potential vulnerabilities and asset-price misalignments that have, in the past, led to systemic events. First, a country-specific financial stress index (FSI), including proxies for counterparty and liquidity risks in money markets, negative equity price developments and realised volatilities in foreign exchange,

equity and money markets, was created to capture systemic risk.[1] An indicator variable was then defined to capture episodes of extreme financial stress, or so-called systemic events, with a value of unity when the FSI was above a pre-defined country-specific threshold that has been associated with potentially negative real economy consequences in the past.[2] Then, a binary choice model was used to estimate the country-specific probability of a systemic event occurring within a time horizon of two to eight quarters, as a function of the growth in domestic asset prices (equity) and bank credit, asset price valuation levels, and the level of leverage in the economy (proxied by the ratio of domestic credit to GDP).[3] Finally, to evaluate whether the estimated country-specific probability of a systemic event was high enough to warrant concern, the approach proposed by Bussière and Fratzscher was followed.[4] Optimal thresholds for the probabilities were designed to take into account the relative preference of policy-makers (or observers) to fail to predict systemic events rather than issue false alarms. More specifically, country-specific thresholds were reported from the point of view of a "neutral" external observer that is equally concerned about issuing false alarms as about missing systemic events.[5] The predicted probabilities were then evaluated against the country-specific thresholds to determine what the neutral observer would call a systemic event.

Chart A Probability of a systemic event within six quarters, current assessment and recovery scenario

(percentage)



Sources: Bloomberg, Thomson Reuters Datastream, Haver Analytics and ECB calculations.
Notes: The horizontal lines refer to thresholds at which a "neutral" observer would find it optimal to warn of a potential systemic event occurring within six quarters. Last observation refers to the fourth quarter of 2009; projections up to the second quarter of 2011.

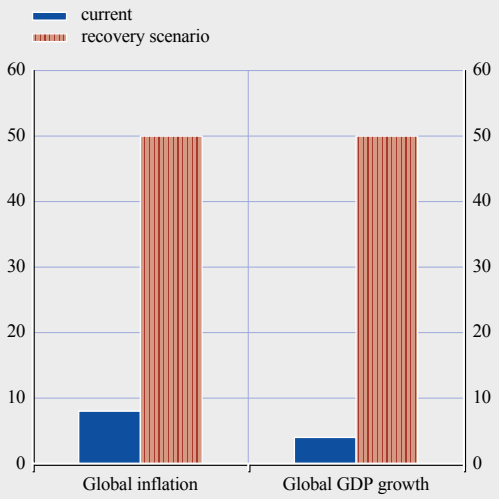
The main results are shown in Chart A, which displays the current estimated probabilities of a systemic event within a time horizon of six quarters, as well as the country-specific thresholds at which a "neutral" observer would call an event systemic. Chart A also gives the estimated probabilities under an alternative recovery scenario. The overall message that emerges from the analysis is that the probability of a systemic event is generally low across key emerging economies. According to these estimates, domestic factors, mainly asset price and credit developments, point

1 See Box 1 in ECB, *Financial Stability Review*, December 2009.
2 In the benchmark scenario, the threshold is set to 90% of the country-specific distribution of the FSI. In order to avoid selection bias by choosing only cases where extreme financial stress has led to negative real economic consequences, cases where extreme financial stress has not necessarily led to a negative economic outcome were also considered. This controls for policy actions that may have prevented the negative economic outcome.
3 Domestic macroeconomic conditions, including real GDP growth, CPI inflation, current account and government balances, were controlled for, and the interactions between global asset prices and credit developments, as well as the global macroeconomic environment and domestic conditions, were modelled. The model does not, however, consider property prices due to data limitations. The addition of property prices to the model specification could increase the probability of a systemic event in some countries.
4 See M. Bussière and M. Fratzscher, "Low probability, high impact: policy making and extreme events", *Journal of Policy Modelling*, No 30, 2008.
5 More generally, policy-makers could have different preferences, as the cost of missing crises normally differs from that of issuing false alarms.

towards a build-up of vulnerabilities in certain emerging Asian economies and, in particular, China.[6] Besides domestic factors, however, global factors, such as the overheating of the macroeconomic environment, asset-price misalignments, and booming credit conditions, are also important determinants of systemic risks in emerging markets.[7] Currently, the low global macroeconomic risks, i.e. the absence of macroeconomic overheating on account of sizeable output gaps and the low inflation environment, are the main factors that balance the contributions of strong increases in domestic equity prices and credit to the probability of a systemic event in key emerging markets.

Chart B Global macro variables, current values and recovery scenario

(percentile of the distribution)



Sources: Bloomberg, Thomson Reuters Datastream, Haver Analytics and ECB calculations.
Note: Last observation refers to the fourth quarter of 2009.

To understand how the situation could evolve if the economic recovery in the global economy accelerates, Chart A also shows the probability of a systemic event under the assumption that, ceteris paribus, global growth and inflation return to their median values (see Chart B). Under this scenario, the balancing effect of the currently weak global macroeconomic environment would recede and the probability of a systemic event would increase across emerging markets, especially in emerging Asia.

In conclusion, systemic risks in emerging economies are generally low, but could increase in the medium term. A systemic event in a key emerging economy could increase risks to euro area financial stability through spill-over effects. It is reassuring, therefore, that policy interventions in several emerging economies are already being introduced to counter the over-heating of domestic conditions.

6 In the case of China, potential imbalances may not result in serious financial tensions, as the banking system remains largely state-owned and as authorities maintain sufficient financial resources to cope with adverse developments. Moreover, the domestic financial system is insulated from international events, limiting the scope for spill-overs

7 It is often mentioned that in the build up to the 2008/09 financial crisis, the favourable macro-financial environment contributed to excessive risk-taking, and thus also to a rise in fragilities.