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How distinct are financial cycles from business cycles?

By ▶ **Gerhard Rünstler**[1]

One foundation for developing new macroprudential policy in addition to traditional macroeconomic stabilisation policy is that financial cycles differ from business cycles. This article identifies properties of credit and housing cycles, shows how they relate to GDP cycles, and compares the reliability of real-time estimates.

Financial cycles and macroprudential policy

Systemic instability during the financial crisis led policymakers to develop macroprudential approaches to financial supervision and regulation. An important aspect of those macroprudential policies is "taming" the financial cycle (e.g. Bank of England, 2009). If the properties of financial cycles are sufficiently different from those of regular business cycles, then monetary and fiscal policy are imperfect instruments for addressing them and the case for macroprudential policy as a separate third stabilisation policy is strengthened. Moreover, calibrating macroprudential policy measures will depend on the properties of financial cycles.

In this respect, credit volumes and house prices are two key financial cycle variables, as historical evidence suggests that many financial crises have been preceded by credit and housing booms (Jorda et al., 2014). Whilst empirical work by central bank researchers has started to document how their behaviour differs from business cycles, the emerging stylised facts have by no means been digested by the scientific economics community.

Drehmann et al. (2012) report that house price and credit cycles are considerably longer than business cycles. While business cycles are usually assumed to be between two and eight years in length, the study finds that financial cycles range from eight to 20 years. Drehmann et al. thus conclude that business and financial cycles are "distinct phenomena". However, the results emerge partly by construction, as the study pre-specifies rather than estimates the length of cycles. Schüler et al. (2015) use a more flexible approach for determining cycle length, present composite financial cycle indicators that also include bond and equity prices, and cover a wider set of euro area countries. They find significant cross-country heterogeneity in the length and amplitude of financial cycles across the euro area countries. Claessens et al. (2012) report that turning points occur more often in GDP than in house prices and credit volumes, but major recessions still coincide with troughs in the financial series. Their regression analysis adds that financial disruptions make recessions longer and deeper. Beyond that, limited attention has so far been paid by the literature to co-movements between financial and business cycles, and widely used macroeconomic theories do not reflect most of the above facts.

This article summarises the analysis of Rünstler and Vlekke (2016), who use a model-based multivariate time-series approach to estimate the cyclical components in credit volumes, house prices and GDP.[2] The approach goes beyond the aforementioned studies based on univariate band-pass filters in three respects.

First, it allows for the key properties of financial cycles, such as their length and persistence, to be estimated. Second, it enables the degree of co-movement between the business cycle and financial cycles to be estimated at different cycle lengths. Finally, as macroprudential policymakers have to assess potential measures with real-time indicators of financial cycles (which are based on past data only), the study also examines the uncertainty of real-time estimates. The quarterly data used cover the United States and five major European economies (France, Germany, Italy, Spain and the United Kingdom) from 1973 to 2014.

Figure 1: Private home ownership and financial cycle properties
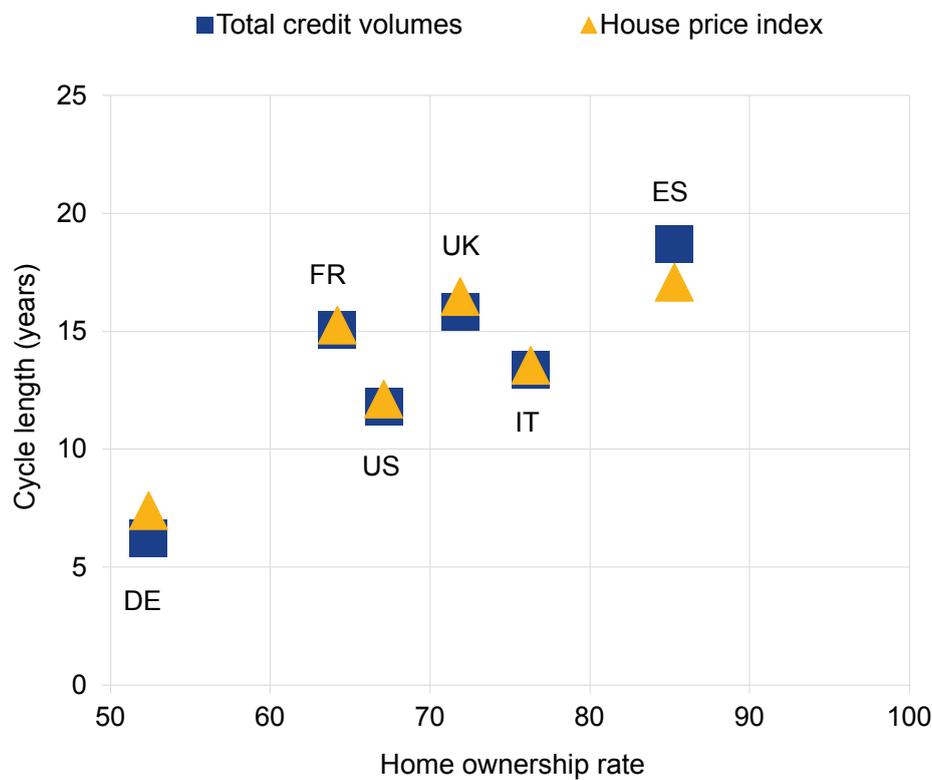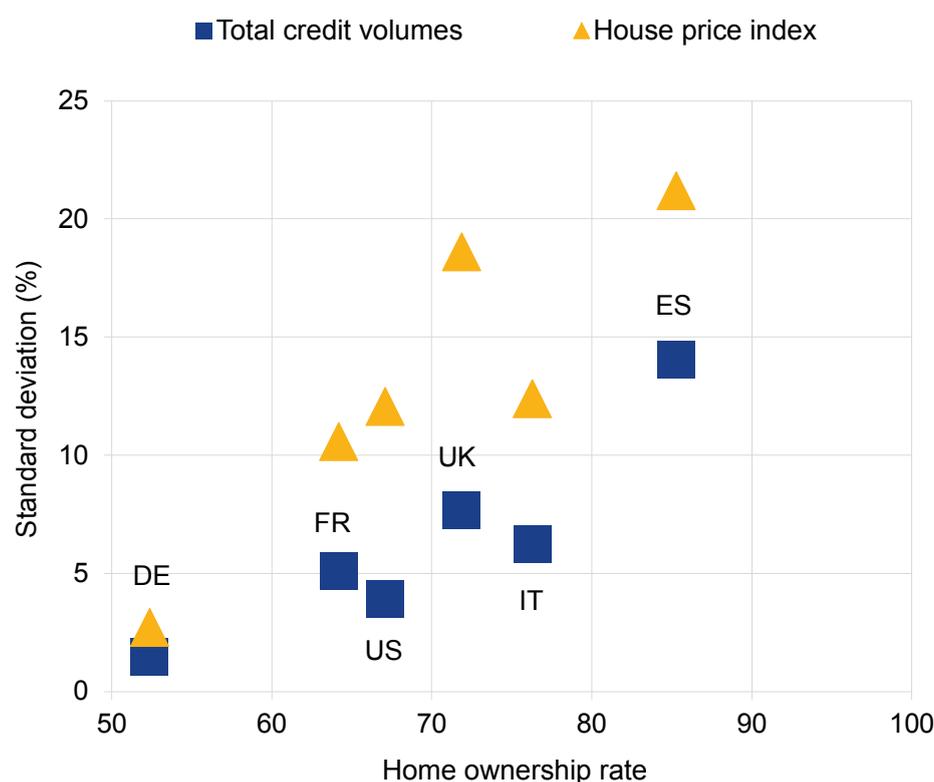
Properties of credit and housing cycles and their relationship with GDP cycles

The more robust methodology confirms two findings of the previous studies. First, credit volumes and residential property prices show pronounced medium-term cycles, which are longer than the two to eight years of regular business cycles. Second, important differences across countries arise. Figure 1 plots the estimated lengths and standard deviations of credit and house price cycles against the rate of private home ownership in the six sample countries. In general (in France, Italy, Spain, the United Kingdom and the United States), the average length of financial cycles ranges from 13 to 18 years. The standard deviations of house price cycles (for the same countries) range from 10% to 20%.

The analysis adds, however, the important point that financial cycles are larger and longer for countries with higher home ownership rates, notably Spain and the United Kingdom. By contrast, in line with its very low home ownership rate, Germany stands out with very small and short cycles (with a standard deviation of about 2% and a length of about seven years).

Second, credit and house price cycles show little correlation with the standard business cycles of two to eight years, but are highly correlated with medium-term GDP cycles longer than eight years. In the multivariate estimates, the GDP cycles emerge as mixtures of a standard business cycle and a medium-term cycle. Earlier literature has already documented the presence of such medium-term GDP cycles (Comin and Gertler, 2006), although they have so far not been linked to financial cycles. House price cycles turn out to be largely independent of standard business cycles but closely related to medium-term GDP cycles. Credit cycles show some correlation with standard business cycles.[3] These patterns are illustrated in Figure 2: the major peaks and troughs of GDP cycles are aligned with those of house price cycles, but additional business cycle fluctuations arise.

Figure 2: Estimates of GDP and financial cycles (percentage deviations from trend)

United States

Legend: GDP — Credit volumes — House prices

United Kingdom
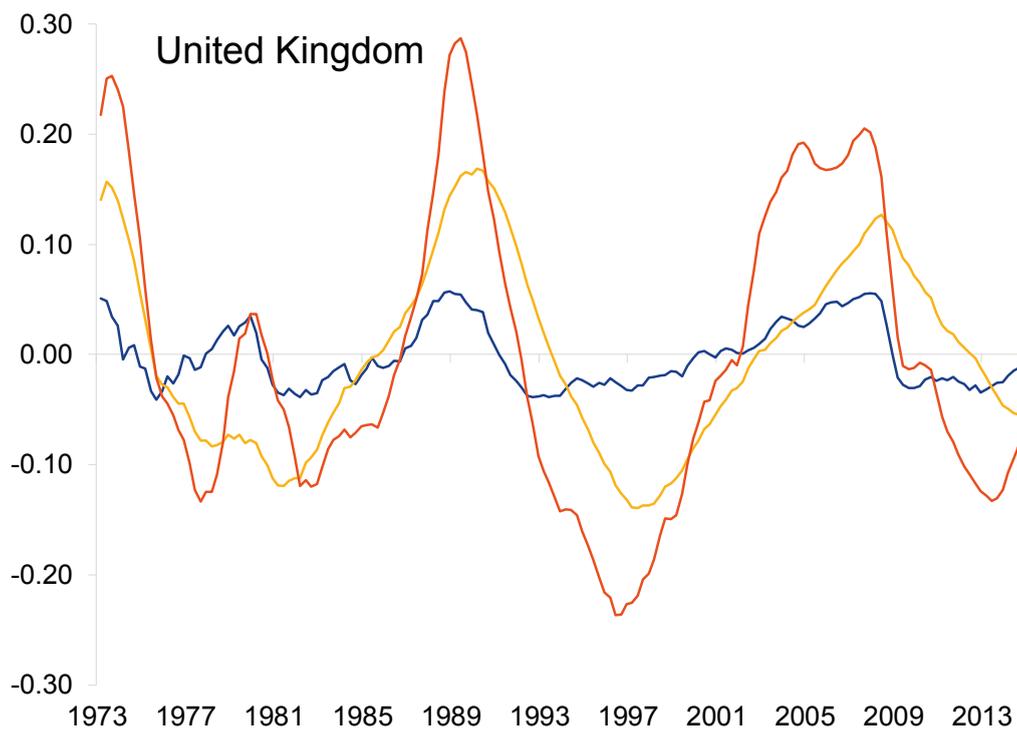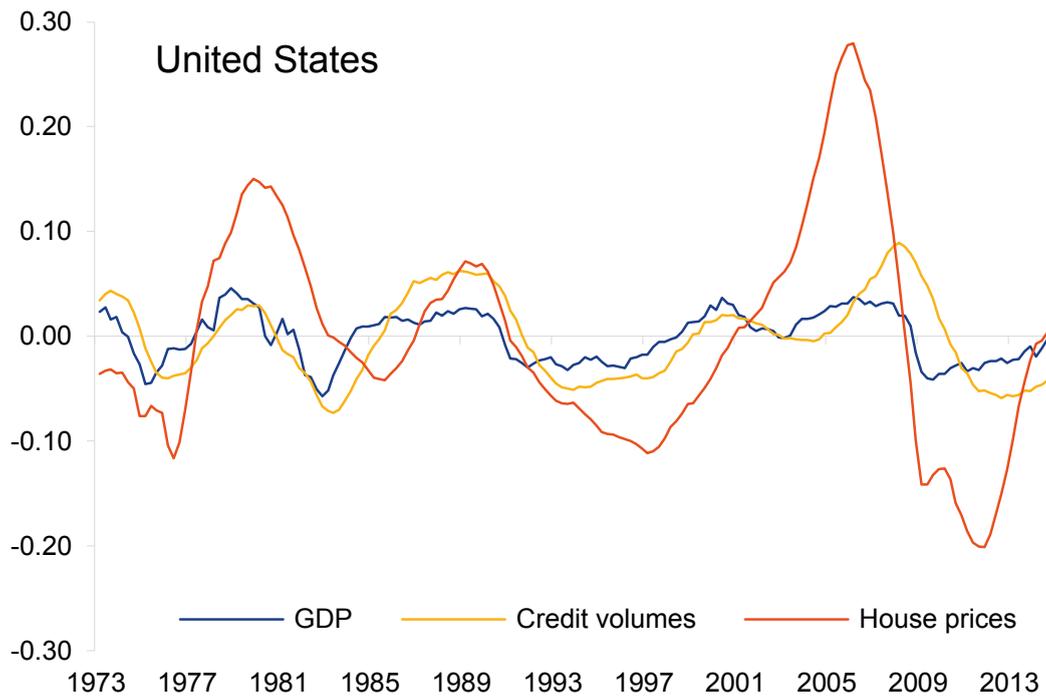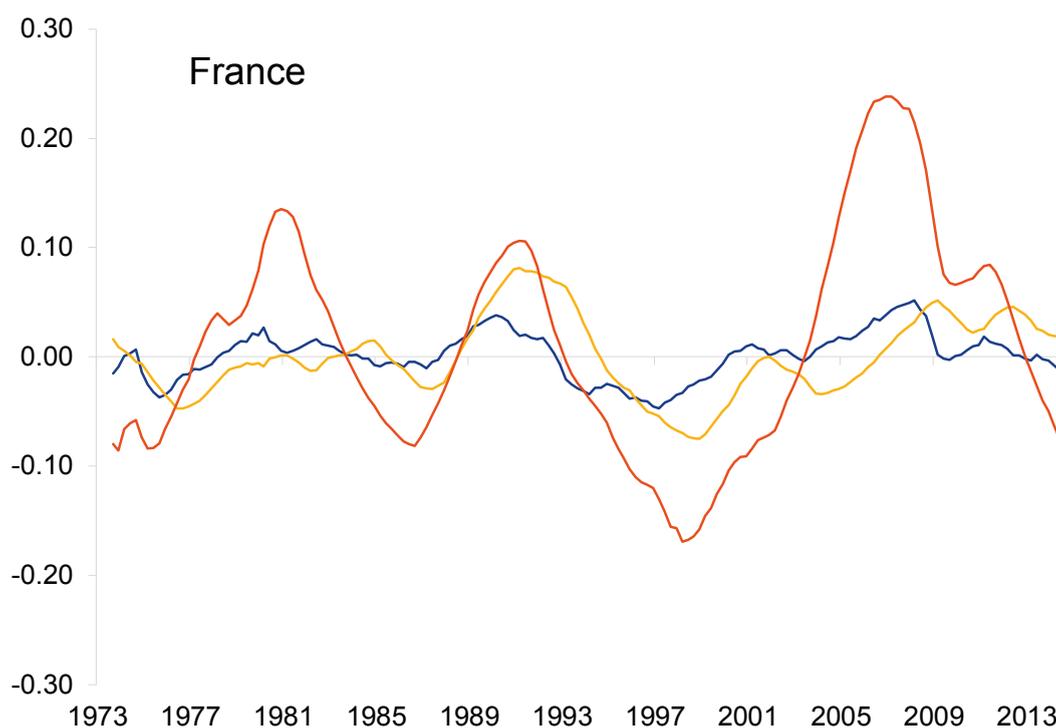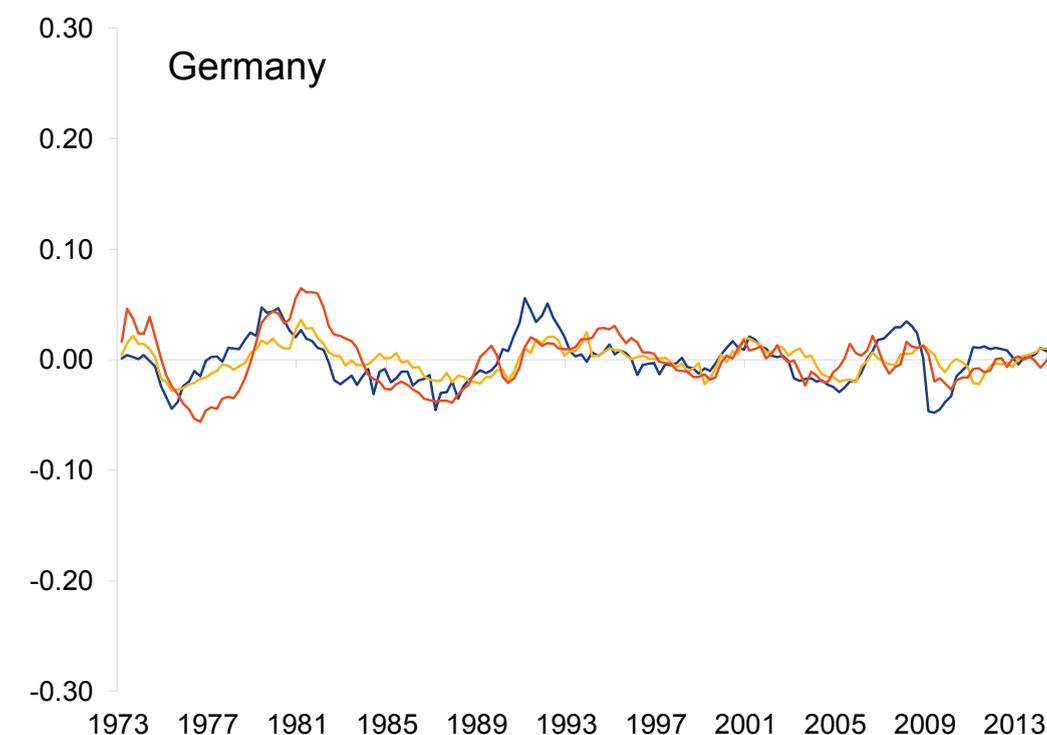
Third, the uncertainty of real-time estimates of house price cycles is of approximately the same order as for business cycles. Estimates of long cycles are subject to higher uncertainty, but house price cycles are also large, which reduces the uncertainty of estimates. Figure 3 presents the results from a simulation exercise that assesses the uncertainty ratios of real-time estimates from two types of filter. The uncertainty ratio is defined as the standard error of the estimate relative to the standard deviation of the original data. In line with studies on the business cycle (Rünstler, 2002; Basistha and Startz, 2008), the multivariate model-

based filter also provides more precise estimates for the house price cycle than the univariate band-pass filter. The uncertainty ratio amounts to approximately 1.5 for the univariate filter, but remains close to 1 for the model-based filter. A value of 1 implies that, around peaks and troughs, the cyclical position is correctly identified most of the time.

Figure 3: Uncertainty of real-time estimates of business and house price cycles
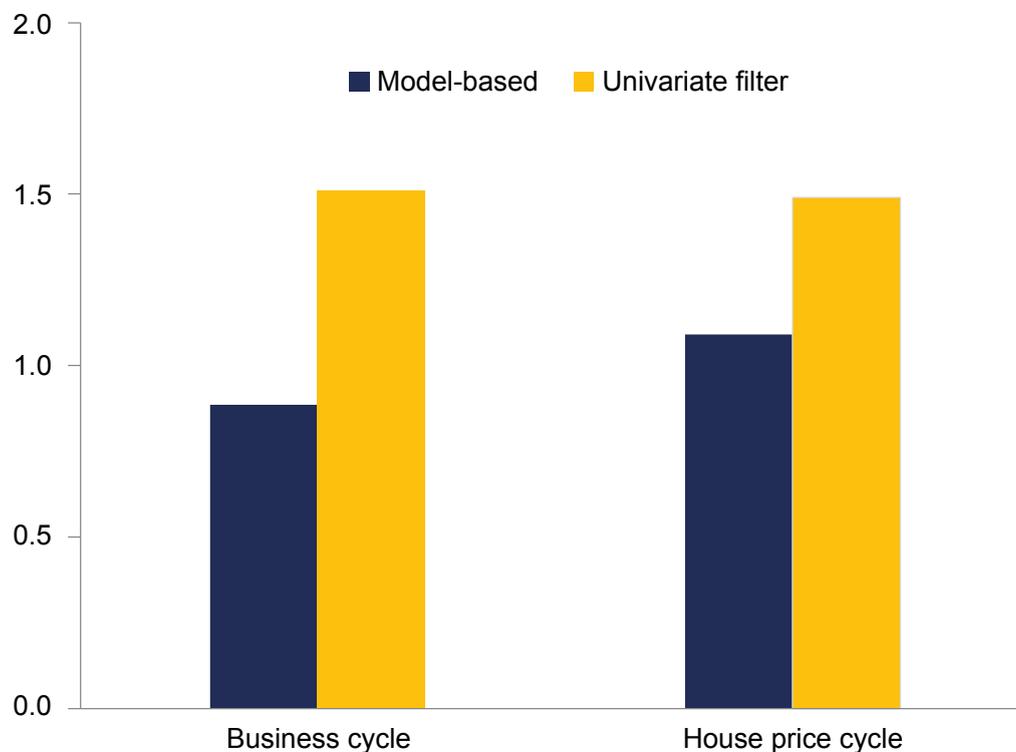
Conclusions

Applying a multivariate time-series approach to credit, house prices and GDP enables the analysis of how financial cycles align with GDP cycles across different frequencies. Results for the United States and five large European economies suggest that (i) there are important differences in the length and size of financial cycles across countries, but in most countries financial cycles are, on average, longer and larger than GDP cycles; and (ii) the correlation of financial and GDP cycles is limited at the usual business cycle frequency of two to eight years, but elevated at lower frequencies. The study also finds that the precision of real-time estimates of credit and house price cycles is roughly comparable to that of business cycles.

One interpretation of these results is that the material differences between both types of cycle (and the precision with which financial cycles can be estimated) justify a macroprudential stabilisation policy that differs from monetary and fiscal policy. The dependencies at lower frequencies, however, suggest that it is also important to take the links between macroprudential and traditional stabilisation policy into account. It should be emphasised that the above analysis does not address the causal relationships between financial and GDP cycles, the nature of the underlying shocks or specific transmission channels. Future research addressing these three points would further deepen the understanding of why and how financial cycles differ from business cycles and what the policy implications are.

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[1]Disclaimer: This article was written by Gerhard Rünstler (Principal Economist, Monetary Policy Research Division, Directorate General Research). Comments by Philipp Hartmann and Geoff Kenny are acknowledged. The views expressed herein are those of the author and do not necessarily represent the views of the European Central Bank and the Eurosystem.

[2]This approach, based on multivariate unobserved component models, has also been widely used for estimating the output gap (see, for example, Rünstler, 2002, and Jarocinski and Lenza, 2016).

[3]For data availability reasons, the analysis uses total credit volumes, which include not only mortgage loans but also loans to non-financial corporations and debt securities. The latter are likely to be more sensitive to business cycle conditions than the former. Therefore, a narrower measure of mortgage or household credit may be less correlated with business cycles.

> **Media contacts**