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Monitoring house prices from a financial stability perspective – the BIS experience

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Reflecting the importance of these indicators for dealing with financial stability issues, the BIS disseminates statistics on property prices for a wide range of countries. This data collection has been reinforced since the 2007/08 financial crisis, not least in the context of the Data Gaps Initiative endorsed by the G-20. Moreover a growing attention is being paid to the long-term trends in property prices, which are an important element in determining the evolution of financial cycles across countries.

1. Property prices and financial stability issues

Property prices and the real economy

House prices have attracted a lot of policy attention because they can have a decisive influence on the state of the economy as well as on the financial system.

As regards the real economy, it is widely recognised that higher wealth, including housing wealth, tends to boost household demand and in particular private consumption. At the level of theory, if households are wealthier, and expect this to be a permanent feature, they will be inclined to consume more.[2] At the empirical level, many studies have indeed found that movements in the prices of tangible assets such as houses do have, both in the short and in the longer run, a significant impact on household spending.[3]

There are however uncertainties about the exact importance of such wealth effects, and in particular on the specific roles played by housing wealth compared to financial wealth. Nevertheless, the general conclusion is that property price movements can have a significant impact: their developments can lead to sizeable changes in household wealth and thereby in household consumption. This can reflect a direct effect, as higher prices tend to raise the value of homeowners' assets relative to their liabilities: they can thus realise capital gains when they sell their home, and use this money to consume more. Apart from this "housing turnover"

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[2] See Carnot *et al.* (2011) for a description of how wealth effects influence private consumption in typical macroeconomic models.

[3] For recent empirical work on US data see Case *et al.* (2013).

channel (ie the actual selling of the house at a price above its earlier acquisition price), in many countries (and prominently in the United States) households can also benefit from an indirect effect of house prices, by taking out equity gains without selling their collateral (ie their houses): they will simply be able to borrow more against the (higher) value of their houses. It is generally estimated that the development of the mortgage industry as well as the liberalisation of financial services has amplified this trend in many economies. Indeed, housing equity withdrawal – the extraction of housing wealth through borrowing against housing collateral in excess of investment in residential property – is generally considered to have added substantially to household purchasing power in recent periods of rising house prices.[4]

These mechanisms can have quite a disturbing impact on the real economy. [5] First, wealth effects are hard to measure. Perceived rise in house prices in general in a country may well lead households to think they are richer while, in fact, the value of their own house may evolve differently. One reason is that tangible assets such as houses are not very liquid and are not exchanged on a market like financial assets are. Information on house prices is also scattered, so that prices can differ largely from one site to another; and, within the same location, they will vary depending on characteristics that are hard to assess precisely (size, quality, environment etc). The price discovery mechanism is therefore rather uncertain.

Second, developments in house prices may well trigger false expectations among households. Higher prices can induce them to think that they are "richer". But if the nominal value of houses goes up while the actual stock of fixed assets remain the same, this increase in wealth merely reflects redistribution among homeowners and the others. While households selling their houses may realise sizeable capital gains, new buyers would have to spend more for the same housing services. And non-homeowners will have to pay higher rents in the longer run as rents will progressively have to adjust to higher prices. Even homeowners keeping their homes do often not realise that the housing services they provide to themselves (ie owners' imputed rents) have seen their prices going up relative to other goods and services. So, in principle, the higher cost of housing services should reduce the relative demand for other products, at least for those households who do not own their houses. The fact that during episodes of rising house prices the opposite is observed (ie consumption of all goods and services goes up) is a disturbing element in this context.

Property prices, debt and the financial system

One reason for the apparent puzzle above is that the impact of higher prices is usually associated with an increase in debt, either to buy a house or to borrow against the higher value of households' current house. This increase in debt will in turn support household demand. If this allows for a more efficient intertemporal smoothing of consumption, the total impact on the economy could be positive. For instance, if households are credit-constrained, higher prices would help them to borrow more, and improve their long-term consumption patterns. This would lead

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[4] See Debelle (2004) for a general overview of the impact of housing equity withdrawal in advanced economies, as well as BIS (2005; Chapter II: The global economy).

[5] Cf BIS (2002) for a related discussion on borrowing conditions, wealth effects and household spending (Chapter II: Developments in the advanced industrial economies).

to a better allocation of resources in the economy and possibly to stronger long-term growth: typically less finance constrains today can bring consumption closer to its "optimal" level, leading to higher input and more resources to repay debt afterwards. However, such potential long-term benefits are uncertain and hard to assess. And, in addition, experience suggests that the main consequence of higher prices is to excessively boost demand and leverage in unsustainable way: this means that after the upswing households generally realise that they are less rich then they thought, and that they have to repay their debt.

While house price fluctuations can have a destabilising effect on the real economy, by boosting demand and raising leverage in a way that cannot be sustained, BIS work suggests that their impact of the financial system may be even more debilitating. Here again the mechanism at stake is that property prices usually play an important role in determining the value of collateral that can be mobilised by economic agents to access finance. This can have a self-reinforcing effect: rapid increases in credit, particularly mortgage, drive up property prices, which in turn increase collateral values and thus the amount of credit the private sector can obtain. This mutually reinforcing interaction between financing constraints and perceptions of value and risks has typically been an important driver of financial bubbles.[6] For many years the BIS has worked on these issues, highlighting the importance of asset prices development – esp. property prices – in driving so-called financial cycles.[7]

2. Property prices in BIS statistics

International recommendations

The 2007/08 financial crisis underscored the importance of having sufficient statistical information to address financial stability issues (Borio, 2013). The G-20 accordingly requested the IMF and the Financial Stability Board (FSB) to identify the related main data gaps and to provide proposals to address them. These proposals were part of the 20 recommendations of the Data Gaps Initiative (DGI), endorsed by the G-20 Ministers of Finance and Central Bank Governors in 2009.[8] This initial step was followed by regular annual DGI progress reports to the G-20.[9]

One of the key data gaps identified in this context related to property prices. It was emphasised that "*data on the stock of dwellings, the associated price levels and their changes over time are critical ingredients for understanding household wealth, its evolution over time, and for the vulnerability of households' financial position*." Moreover it was recognised that "*where data exist, their international comparability is limited*."

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[6] For a short introduction on the financial cycle, see BIS (2014a; Chapter IV: Debt and the financial cycle: domestic and global).

[7] See the review by Borio and M Drehmann (2009) of the leading indicators of banking system distress, extended to incorporate explicitly property prices.

[8] IMF and FSB (2009). For an analysis of the DGI initiative, see also Heath (2013).

[9] See for instance IMF and FSB (2014) for the last progress report.

To address these issues, it was agreed to work on two important areas, forming the basis of the 19th DGI recommendation. One was to enhance the methodological underpinning of house prices statistics, by developing a Handbook on real estate price indices;[10] this work was led by Eurostat under the auspices of the Inter-Secretariat Working Group on Price Statistics representing various international organisations. A second area was to improve the availability and dissemination of country data on property prices. The BIS and its member central banks were explicitly requested to investigate dissemination on the BIS website of publicly available data on real estate prices. And the IAG[11] was asked to include this information in the Principal Global Indicators (PGI) website maintained by the IMF.

BIS dissemination work

The BIS and its member central banks had collected a large number of real estate price indicators from various countries around the world well before the DGI recommendations were issued. In 1989 the BIS already started to collect residential property price for research purposes.[12] The BIS data collection has also been useful to a number of international institutions for setting up their own databases, in particular the ECB,[13] the OECD research data base,[14] and the IMF's Global House Price Index.[15]

Over the years, the various national data providers have been invited to agree that the BIS also disseminates these data to the general public. Following the approval of the relevant central banks, the BIS started in July 2010 a regular monthly publication of residential property prices. The coverage of these statistics has increased from 37 countries at that time to 56 to date, among which 18 of the G20 countries. The number of series published today by the BIS is above 300, as series can refer to different types of dwellings and/or areas.[16]

The BIS property price statistics currently include three data sets. The first is a detailed data set on nominal residential property prices for 56 countries. For each country, several original series are available at different frequencies. The data differ significantly from country to country - for instance, in terms of type of property, area covered, property vintage, compilation method, and quality and/or seasonal adjustments. [17] This first data set is updated on a monthly basis.

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10 Cf Eurostat (2013).

11 The Inter-Agency Group on Economic and Financial Statistics (IAG), comprises the Bank for International Settlements (BIS), the European Central Bank (ECB), Eurostat, the International Monetary Fund (IMF, Chair), the Organisation for Economic Co-operation and Development (OECD), the United Nations (UN) and the World Bank (WB). It was established in 2008 to coordinate statistical issues and data gaps highlighted by the global crisis and to strengthen data collection.

12 See Borio *et al.* (1994).

13 Cf the ECB Statistical Data Warehouse on http://sdw.ecb.europa.eu/ (selection Economic Concepts / Prices, output, demand and labour market / Prices).

14 See http://www.oecd.org/eco/outlook/focusonhouseprices.htm.

15 IMF (2014).

16 See BIS's page on property prices statistics on http://www.bis.org/statistics/pp.htm.

17 See Scatigna *et al.* (2014) for a presentation of the BIS work, as well as Scatigna and Szemere (2014) for a review of the main cross-country differences and also of the difficulty to focus on a single indicator even within a single country like Germany.

The BIS has also compiled selected indicators. This second dataset of selected series has been derived from the first, detailed data set to facilitate access for users and enhance comparability. It constitutes some sort of "reference series" for nominal and real residential property prices (real series being the nominal price series deflated by the consumer price index), available for 56 countries at a quarterly frequency, both in levels and in growth rates - ie four series per country. The BIS has based its selection on the Handbook on Residential Property Prices, its own experience and the expertise of the various central banks. An economic analysis based on the selected indicators is also released on a quarterly basis by the BIS, with a particular focus on longer-term developments.[18]

A third data set comprises the long series on nominal residential property prices compiled by the BIS for 18 advanced economies at a quarterly frequency, starting in 1970 (this data set is currently being expanded to include a number of emerging market countries). For each country, a single series is available, based on the existing sources on a best effort basis and the use of statistical techniques when needed to extend the series.

This long-term data set has proved to be very useful for the kind of analyses performed by the BIS that focus on how long-term developments in asset prices can influence financial stability conditions. This approach is somewhat different from "traditional" analyses which often place a greater value on enhancing the quality of house prices data and their comparability across countries. Such enhancements are certainly very much welcome, and the BIS selected series referred above put indeed a premium on cross-country comparability. But in practice there is a trade-off between the greater quality/comparability of the data and the length of their time span. Analysing financial stability issues often requires focusing on long-term series that are constructed using various sources. The "price to pay" is to accept to deal with imperfect data, ie data that are of a lower quality and/or are less comparable across countries and/or are not homogeneous over time (because of the need to extend the series using various inputs). These drawbacks are compensated by the usefulness of having the BIS long-term data set that is available for a period of time that is long enough to cover the (long) financial cycles and identify "turning points".

Another point to note in this debate is that trying to have perfectly comparable data for house prices may well turn out to be an indefinite quest. Despite all international harmonisation efforts, data still differ widely among countries in terms of type of dwellings: in some cases the data available reflect the price of land and not of actual dwellings; for other countries, property prices data for the main cities may be more interesting than country-wide aggregates, for instance when housing price developments in large cities (eg London) are known to have important consequences for financial institutions in particular.

3. Examples of analyses

Long-term developments in house prices

The stock of housing change only slowly over time, suggesting that house prices should display interesting patterns over the long run. For instance,

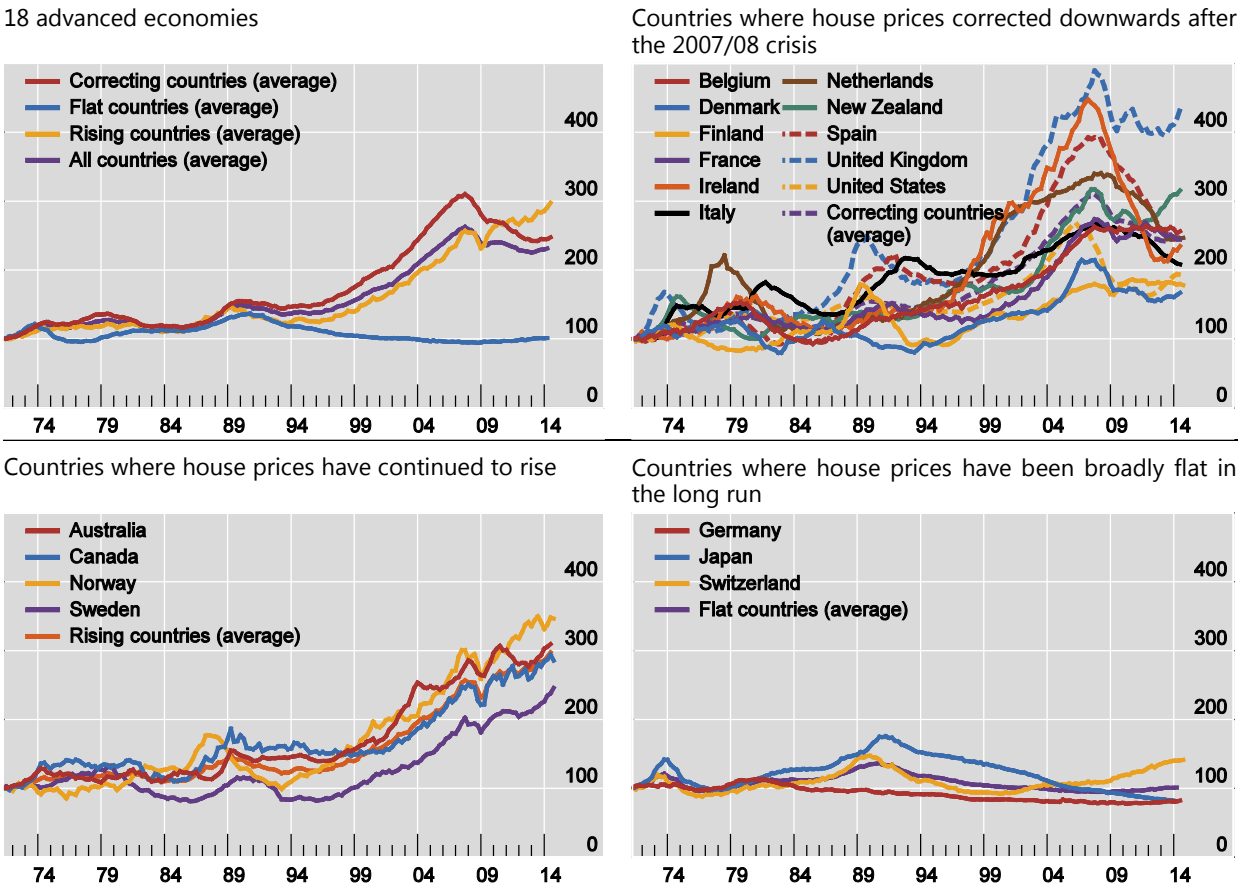
[18] See for instance BIS (2014b).

households tend to keep their houses for a long period before selling it. House price adjustments[19] then tend to be delayed and take more time than "traditional" economic variables. Standard monitoring exercises, which typically focus on the recent few years and the near-term horizon, have therefore to be complemented by a longer-term view when assessing the evolution of house prices. In addition, assessing current house price movements deserve to be put in historical perspective, by comparison with past house price cycles.

Indeed the long-term series compiled by the BIS for most advanced economies show some quite interesting patterns. Three groups of countries can be identified from this perspective (cf Graph 1).

Real house prices in 18 advanced economies – long-term series

Q1 1971 = 100; deflated by CPI. Graph 1



Source: National data; BIS.

A first group (the "*correcting countries*") includes the vast majority of industrial countries that have seen a sharp downward correction in their house prices after the

[19] There are multiple factors driving house prices (impact of macro factors in particular interest rates as well as of national policies such as homeownership subsidies, tax deductibility etc). For an introduction on the modelling of asset prices, see Carnot *et al.* (2010), and for a very recent analysis of the influence of fundamental factors on house prices, see Goldman Sachs Global Macro Research (2014).

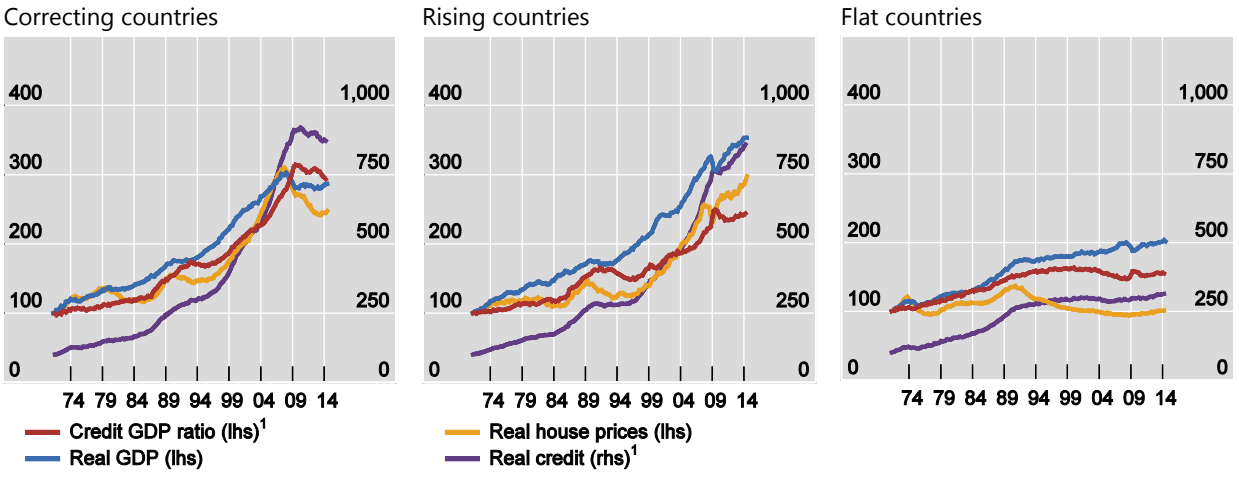
2007/08 crisis. This correction was particularly important for countries such as Ireland and Spain, and also the United States and the United Kingdom. Interestingly, this sudden adjustment was not the first one observed in the recent decades: several countries also experienced some house price bubble/bust patterns in the late 1970s and again at the end of the 1980s. But what was quite unprecedented in the 2007/08 episode was (i) the amplitude of the variation in house prices compared to previous episodes, (ii) the synchronicity of these movements observed across many industrial countries, and (iii) the fact that, even after their sharp correction, house prices remained at relatively high levels from an historical perspective (cf in particular the United Kingdom and, to a lesser extent, the United States).

The second group (the "*rising countries*") includes the very few countries where house prices have been barely affected during the 2007/08 crisis, such as Australia, Canada and Sweden. The rhythm of house price increases appears to have slowed a little after 2007, but prices have generally continued to trend upwards. Although they look at relatively high levels from an historical perspective, they have not experienced the kind of very rapid growth that characterised the various countries of the first group in the run up to the 2007/08 crisis.

The third group of countries comprises Japan, Germany and Switzerland, where real house prices have been relatively subdued over the past few decades. The bubble observed in Japan in the late 1980s, which has been identified by many observers as a key factor explaining Japan's subsequent financial crisis, looks relatively modest compared to the recent developments observed in advanced economies. Similarly, a significant increase in house prices appears to be under way in Switzerland, but this upturn looks relatively limited both from an historical perspective in Switzerland (for instance, it compares to the previous expansion observed in the 1980s) as well as from a cross-country perspective.

House prices, credit and GDP

Q1 1971 = 100 Graph 2



[1] Q2 1971 = 100.

Sources: OECD; national data; BIS.

Property prices and the business cycle

Another interesting aspect from a long-term perspective is how house prices relate to the business cycles. As analysed above, one widely-shared but debated view is that in some countries households can benefit from wealth effect by better smoothing their consumption over time. If this was economically efficient it should raise the intertemporal allocation of resources in the economy and, at the end, improve long-term well-being. The long-term data set maintained by the BIS can shed some light on this issue.

The data presented in Graph 2 provide a visual comparison of house price developments and the state of the business cycle, proxied by the evolution of real GDP. The evidence is quite mixed. On the one hand, the *correcting countries* (that is the vast majority of industrial countries) appear to have experienced a relatively parallel increase in house prices and GDP in the past few decades; but the growth in house prices was much stronger from the one of output in the years leading to the 2007/08 financial crisis. And the disconnection was even more noticeable after the crisis, when house prices collapsed while output behaved better.

Perhaps the most striking evidence relates to the "*flat countries*", where real GDP has evolved in recent decades in a quite different way from house prices. Such a disconnect between strong output growth and weaker house prices was also apparent during earlier episodes in the "*rising countries*", for instance in the 1990s, as well as in the "*correcting countries*" (cf in the early 1980s and in the 1990s).

Property prices, asset prices and the credit cycle

A third area where house prices can provide useful information from a long-term perspective is the interaction with other asset prices and with the development of financial cycles.[20] The BIS has set up a long-term data base of credit[21] to the private sector, which, combined with the long-term property prices series, can provide interesting lessons.

The charts presented in Graph 2 for advanced economies seem to support BIS long-standing analyses that asset prices in general and the credit-to-GDP ratio tend to interact in the longer run – that is at the time horizon of the financial cycles.[22] In the *correcting countries*, the evolutions of house prices both before and after the 2007/08 crisis have been mirrored by similar developments in the credit-to-GDP ratio, although this was less the case in the preceding decades. In the *flat countries*, characterised by subdued developments in house prices compared to other countries, the credit-to-GDP ratio has evolved in a very slow manner over the past few decades. Lastly, the *rising countries* have experienced a relatively stabilisation in their credit-to-GDP ratio since 2007/08, supporting the view that the expansion in house prices that continues to be observed recently may not be so "unsustainable" from an historical perspective.

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[20] See Goodhart and Hofmann (2008) for an assessment of the linkages between house prices, monetary variables and the macroeconomy.

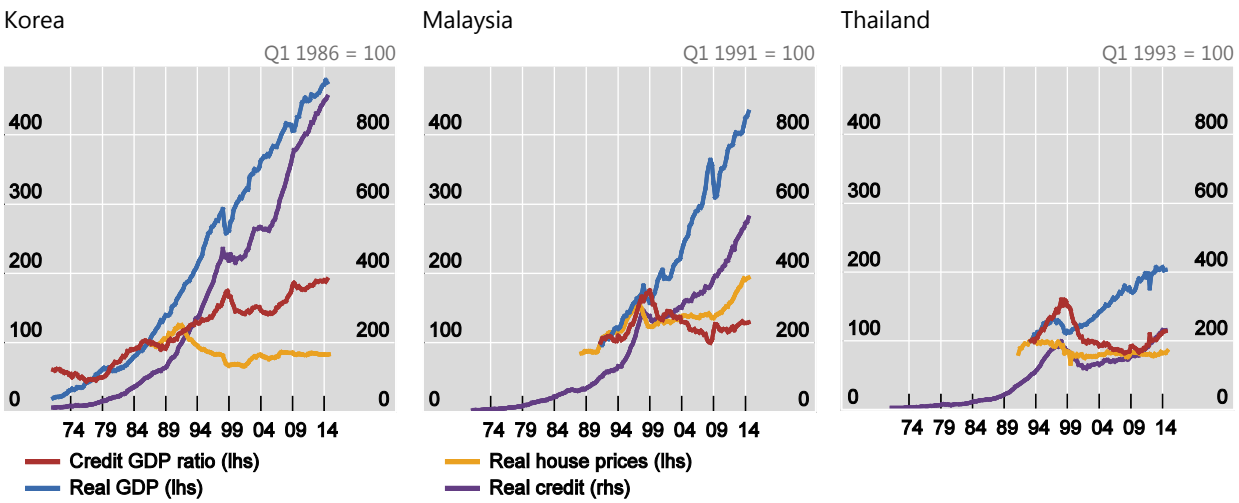
[21] In addition to the research work on house prices mentioned above, see Dembiermont *et al.* (2013) for a presentation of BIS work on long-term credit series.

[22] See Drehmann (2013) for an analysis of credit-to-GDP gaps as early warning indicators for systemic banking crises and for identifying emerging vulnerabilities.

As regards emerging Asia, there are limited long series available. Graph 3 shows the same indicators as in Graph 2 for South Korea, Malaysia and Thailand. While house prices have tended to go up significantly in Asia in recent years, in the longer run the evolution has been less impressive compared to advanced economies, at least for the three economies considered in Graph 3. One can also note that the trends in real house prices do not seem to have moved in sync with (strong) economic growth over the past few decades. Lastly credit-to-GDP ratios seem to exhibit useful information content in these countries too.

House prices, credit and GDP

Graph 3



Source: National data.

The analyses and possible relationships presented above would deserve to be more formally tested, and there is indeed a lot of ongoing work conducted at the BIS in identifying and measuring the contribution of asset prices to the formation of the financial cycles. The important point is that the long-term house prices database maintained by the BIS is an important and useful element to be considered in this work.

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