Since the beginning of the great financial crisis real estate variables have gained unprecedented attention. Developments in real estate proved to be at the root of the building up of imbalances, especially in advanced countries, eventually leading to painful adjustments with negative effects on the real economy. As a result, research has focussed more and more on models that include asset prices and in particular real estate assets. Given that the analysis of the characteristics of these variables is relatively new, with this paper we aim at adding empirical evidence to fill this gap. In particular we want to define some "stylised facts" about real estate variables looking purely at the data. Previous empirical works have focused mostly on residential property prices. With this paper, we will include both residential and commercial property markets. We make use of the recently published database on residential property price series by the BIS[1] and the commercial property prices database internally compiled.

In what follows we start by investigating how do comovements within real estate cycles relate to comovements within cycles of real activity variables over time.We first look at real estate variables cycles among a group of 12 European countries. This first part of the paper tries to answer the following question: how are real estate property prices series synchronized across our sample of countries and do these patterns compare with that of other real activity variables such as GDP and credit?

We then move on looking at how these patterns change when we take into account cross-comovements between variables. In other words we want to understand how the real estate series, taken as a whole across all countries, relate to the other real variables also taken as a whole across the whole sample.

Finally we break down the results by country. We group the countries according to their similarities in real estate markets in both the long and the short run and we see if there have been changes in the group of countries that move more closely together over different cycles.

In order to address all these questions we make use of the tools developed in Croux , Forni and Reichlin (2001). In particular, we use a measure of dynamic correlation and cohesion, concepts based on frequency domain analysis. Dynamic correlation allows us to distinguish between short-run and long-run dynamics, ie to separate long , medium and short cycles which represent short-term fluctuations rather than persistent movements. Previous applications of this technique were limited to study aggregate macro variables across countries, see Croux , Forni and Reichlin (2001).

We find some interesting stylized facts regarding both residential and commercial property markets. First, cohesion within commercial property prices is generally higher than cohesion within residential property price series. Besides, when comparing these patterns to those of real activity variables, they show more similarity with the pattern of credit to the private sector than to that of GDP. This result supports the idea of pro-cyclicality of credit and real estate markets.

Second, when we turn to cross-cohesion we observe again how important is to take into account dynamics. Residential property prices co-move in fact quite highly with GDP but only in the long-run, showing static correlations of around zero at short-term frequencies. Commercial property prices also show high cross-cohesion with real economy variables, but rather than GDP it is industrial production that shows a higher degree of co-movement.

Third, when breaking down the results by country, making use of the cluster analysis we find some interesting results. First, in residential property markets the comovements across European countries in the sample has changed dramatically post-1999 (at all frequencies spectrum). Second, in commercial property markets, countries are clustered more closely together in the long run and no significant change is observed by looking at the sample periods.

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[1] See http://www.bis.org/statistics/pp.htm