FINANCIAL INTEGRATION OF THE SPANISH MORTGAGE MARKET AND CAPITAL MARKETS♣

Roman Ferrer♠, Cristobal Gonzalez♠, and Paz Jorda

Department of Actuarial and Financial Mathematics. University of Valencia. Spain.
(Roman.Ferrer@uv.es; Cristobal.Gonzalez@uv.es; Paz.Jorda@uv.es)

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ABSTRACT: The spectacular development of the Spanish mortgage market during the last decade has increased the concern about its financial integration with other capital markets. This paper examines the degree of integration between the mortgage market and two capital markets such as the public debt market and the money market in the Spanish case. With this purpose, different time series techniques in a context of cointegration have been used. The results reveal that there exists an important degree of integration between the mortgage market and the general capital markets in Spain. Both the public debt market and the money market have turned into essential references for the mortgage market though the linkage with the money market is stronger.

KEYWORDS: integration, mortgage market, capital markets, cointegration, interest rates.

1 Introduction

During the last two decades, the Spanish mortgage market has undergone very important changes within the framework of the deregulation of the thrift industry. Law 2/1981 during the eighties, and Laws 19/1992 and 2/1994 during the nineties, have contributed to bring about a high degree of development of the Spanish mortgage market. As an example, the radical expansion experienced by Spanish secondary mortgage market during the last decade has lead it up to the point of currently being the second European market by issuance of MBS, and the second European Pfandbriefe market. This development has attracted considerable attention concerning the financial integration of the Spanish mortgage market with capital markets in general.

Along last years a sizeable amount of literature examining the degree of integration between the mortgage market and the larger capital markets has been published. The most important branch of research of this topic has used cointegration analysis, or closely related time series techniques, to study the linkages between mortgage rates and other capital market rates (see, for example, Devaney et al., 1992; Goebel and Ma, 1993; Rudolph and Griffith, 1997; or Sa-Aadu et al., 2000). All of these studies, exclusively focused on the U.S. market, have concluded that the mortgage market has become more integrated into the capital markets through time.

This is the first paper to assess the integration between mortgage market and general capital markets for the Spanish case, so it can help to check whether the results obtained for the U.S. market can be translated to the less developed European mortgage markets, such as the Spanish one. As an additional contribution, the use of techniques of persistence profile and generalized forecast error variance decomposition to analyze the degree of integration between the markets, together with the more familiar Johansen cointegration and Granger causality procedures, can provide more robustness to the results.

2 Data used

The sample period extends from January 1993 to July 2005 and is made up of 151 monthly observations. The interest rate series published by the Bank of Spain for mortgage loans with maturity of over three years as offered by banks (MRB), savings banks (MRS), and the credit institutions as a whole (MRW) have been taken as the representative variables of the mortgage market. With respect to the capital markets, two interest rate series have been used: the 10-year Spanish government bond average monthly yield (GBY) and the 1-year EURIBOR average monthly rate (EURIB). All the interest rate data have been obtained from historical database for financial markets published by the Bank of Spain.

3 Empirical results

In general, the results of the different procedures applied reveal that there exists an important degree of integration between the mortgage market and the general capital markets in Spain during the period of study. Specifically, the changes undergone by the capital market rates exert a significant influence on the mortgage rates, while the same thing does not happen in reverse.

The Johansen cointegration analysis shows the existence of comovements in the long-run between the mortgage rates and the capital market rates. The presence of cointegration implies that the same forces affecting the general capital markets are affecting the mortgage market and it can be interpreted as an unambiguous sign of a significant degree of integration between both markets. The results obtained with the

Granger causality test and the generalized variance decomposition confirm this finding through convincing evidence of unidirectional causality running from the broader capital markets to the mortgage market. Finally, the estimated persistence profiles have shown a reasonably high speed of adjustment to the long-run equilibrium situation. This evidence corroborates that the mortgage and capital markets are closely related, and that economic forces act rapidly so that discrepancies in the equilibrium relationships are short-lived.

Furthermore, it must be pointed out that the linkage with the mortgage market is stronger for the money market than for the public debt market. This result may have its origin in the peculiar structure of the Spanish mortgage market during last years. On the one hand, an important part of the funds needed to fix up new mortgages by the financial institutions has been taken from the interbank market motivated by the declining of bank deposits due to the low interest rates environment during last years in Spain. On the other hand, the Spanish mortgage market is nowadays characterised by an overwhelming prevalence of adjustable-rate mortgages over the fixed-rate ones, being a money market rate, such the 1-year EURIBOR, the most popular mortgage official reference rate for adjustable-rate mortgages.

Therefore, the evidence presented confirms the widely extended idea that along recent years the public debt market and, especially, the money market have become essential references for the Spanish mortgage market. These results are totally consistent with similar studies carried out in a financial system with a highly developed mortgage market such the U.S. (see, for instance, Rahman et al., 1997; Rudolph and Griffith, 1997; Allen et al., 1999; Sa-Aadu et al., 2000; and Ambrose and Buttimer, 2005).

Finally, it should be also pointed out that the finding of a considerable degree of market integration can have important implications for different economic agents. From an economic policy level, integrated financial markets improve the ability of regulators for an effective transmission of monetary policy measures to the real economy. From the borrowers' point of view, more integrated markets imply quicker adjustments of mortgage rates to changes in capital market rates. Furthermore, significant market integration allows for the portfolio managers to easily develop strategies for interest rate risk management. Finally, market integration also facilitates the valuation of non-liquid mortgage-backed securities and mortgage bonds using interest rates of closely risk-related securities.

References

ALLEN, M., RUTHERFORD, R. & WILEY, M. 1999. The Relationships between mortgage rates and capital-market rates under alternative market conditions. *Journal of Real Estate Finance and Economics.*, **19**, **3**, 211-221.

AMBROSE, B.W. & BUTTIMER, R.J. 2005. GSE Impact on Rural Mortgage Markets. *Regional Science and Urban Economics.*, **35**, **4**, 417-443.

DEVANEY, M.; PICKERILL, K. & KRAUSE, F. 1992. Cointegration and causal relations in mortgage and capital markets. *Journal of Financial Services Research.*, **5**, **4**, 341-353.

GOEBEL, P. & MA, K.C. 1993. The integration of mortgage markets and capital markets. *Journal of the American Real Estate and Urban Economics Association*., **21**, **4**, 511-538.

RAHMAN, M.; MUSTAFA, M. & KURTH, M. 1997. Integration and causality in US mortgage and T-bond markets. *Applied Economics Letters.*, **4**, **7**, 445-447.

RUDOLPH, P. & GRIFFITH, J. 1997. Integration of the Mortgage Market into the National Capital Markets: 1963-1993. *Journal of Housing Economics.*, **6**, **2**, 164-183.

SA-AADU, J., SHILLING, J. & WANG, G. 2000. A Test of Integration and Cointegration of Commercial Mortgage Rates. *Journal of Financial Services Research.*, **18**, **1**, 45-61.