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The Excess Capital Hypothesis and the Experience of Spanish Banks from 1999 to 2016

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INTRODUCTION

Credit crises have become a major force influencing the global economy and commercial banking industry. For example, the collapse of housing markets in the United States and several countries in Western Europe in 2008 and 2009 continue to have adverse impacts even into the mid-2010s.

This crisis is not the first one in real estate, as other notable collapses include the real estate crisis in Japan in the late 1980s and the collapse of commercial real estate in the United States between 1989 and 1992. In fact, the cyclical nature of real estate expansion leading to speculation and eventually to collapse has come to dominate the banking industry in developed countries in the 20th and 21st centuries. Given the enormous social costs of these crises, it is surprising that few substantive explanations for their causes have emerged.

Stevenson (2010) reviewed the cyclical pattern of loan losses experienced by U.S. commercial banks since the 1970s and observed that there are repeated patterns of credit expansion and contraction that are correlated with these loan losses. Stevenson argued the correlation is one of causation and observed that there are consistent patterns of behavior among lenders and borrowers that lead to excessive credit expansion and borrowing, compromising of underwriting standards, lending to inherently unqualified borrowers, and eventually defaults, losses and, in extreme cases, market collapse (also see Stevenson, 2014).

THE EXCESS CAPITAL HYPOTHESIS

This explanation of lending, over-lending, defaults and loss is the Excess Capital Hypothesis (ECH) (Stevenson, 1994a, 1995, 2010, 2014). In periods of economic expansion, banks lend to meet demand by creditworthy borrowers. However, once the latent demand of those borrowers is met, banks continue to lend, seeking to maintain levels of interest income in their loan portfolios. To do so, lenders offer credit to weaker borrowers. Late in a lending cycle, credit standards are compromised and returns on loans fall as banks reduce the price of loans to induce demand. The shift from creditworthy borrowers to less-than-creditworthy borrowers produces an exponential increase in the risk of default, since non-investment grade corporate borrowers have geometrically higher rates of default than investment grade borrowers and sub-prime retail borrowers have geometrically higher default rates than prime borrowers.

The assumptions of the ECH give rise to five predictions that can be tested:

1. Leverage increases for borrowers during periods of liquidity and excess capital, especially among weaker borrowers.

2. In the periods of excess capital, there is a weakening of lending and underwriting standards by banks.

3. There are correlations between rates of loan growth and the level of non-performing loans and between loan growth rates and net loan charge-offs with temporal lags.

4. Banks change their tolerance for risk as charge-offs increase.

5. As markets return to more stable levels of liquidity, loans to the most risky borrowers are not renewed which, in turn, causes a liquidity crunch for those customers.

Stevenson (2010) demonstrated that the ECH is a reasonable explanation of the cyclical nature of loan losses in the U.S. commercial banking industry over the period of 1970 to 2009.

This paper tests these predictions against the dynamics of Spanish loan markets in the 2000s. It is divided into several sections. The following segment reports on similar ideas that other researchers have advanced on loan market cycles in Spain. The remainder of the paper examines how the experience of Spanish loan markets in the 2000s matches the predictions of the ECH.

PREVIOUS RESEARCH ON CREDIT CYCLES IN SPANISH LOAN MARKETS

The tenets of the ECH and their application to lending markets in Spain are not new. For example, Fernandez de Lis et al. (2000) made several observations about Spanish banking that are consistent with the ECH. The first is that bank lending in Spain is strongly pro-cyclical with credit growing faster than GDP in economic expansions and more slowly in recessions. Fernandez de Lis et al. (2000) indicate that, in times of plenty, there is an "excessive" accumulation of debt. Debt growth is correlated with gross domestic product (GDP) growth.

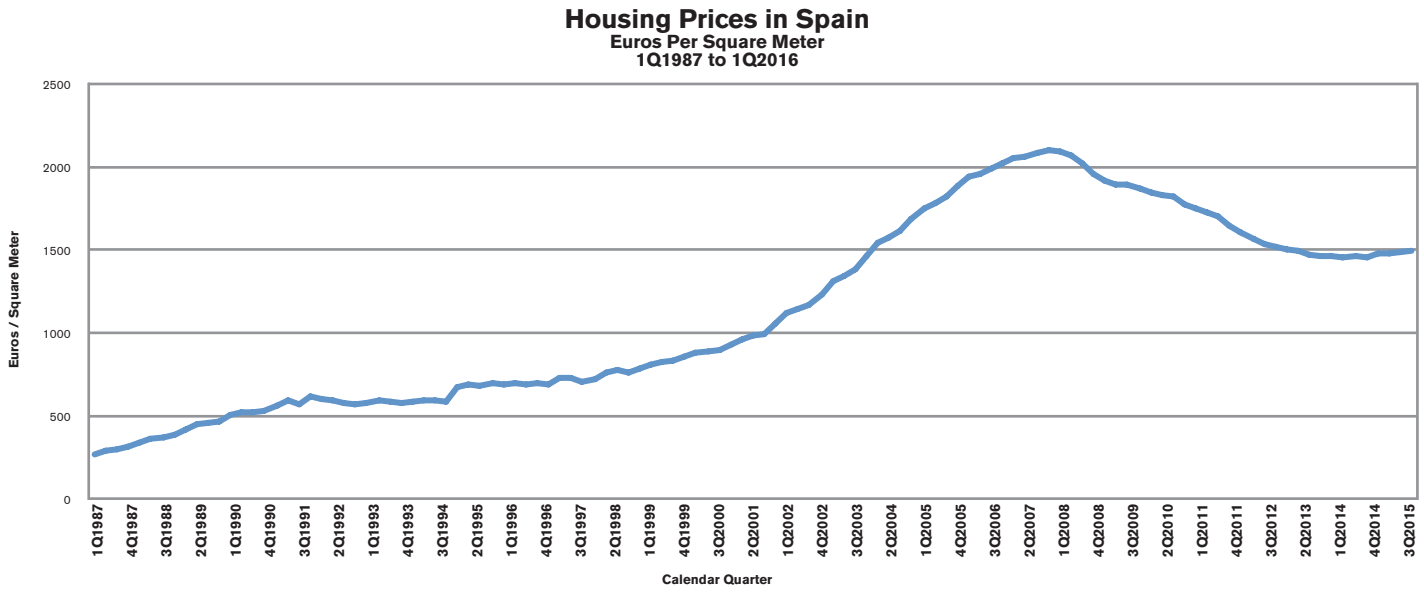
This pattern gives rise to the second observation. In Spain, there is a cyclical pattern in the ratio of debt to GDP. During the periods of "excess" debt, the ratio increases and it shrinks in recessions, when the excess debt is corrected (Fernandez de Lis et al., 2000). Therefore, the rate of change in debt is greater than that of the economy. Banks tend to over lend in economic booms, possibly due to the rising value of assets and collateral (Saurina and Jiminez, 2006). When the booms end and asset values contract, banks typically tighten lending standards and reduce the availability of loans.

Third, Fernandez de Lis (2000) shows a strongly significant and positive relationship between the growth of credit in Spain and problem loans with a lag of approximately three years. This relationship is supported by Saurina and Jimenez (2006), although they indicate that the lag is closer to four years (see also Salas and Saurina, 2002).

Separately, Saurina and Jimenez (2006) demonstrate that in periods of credit expansion, Spanish banks relax their requirements for collateral and in periods of credit contractions, collateral requirements increase. The authors ascribe these changes to loosening of credit standards during the expansions and they suggest that during the booms, riskier borrowers are able to obtain funds due to lowered credit standards.

THE CREDIT CRISIS OF THE LATE 2000S IN SPAIN

The credit crisis in Spain began in the third quarter of 2008 when the national gross domestic product contracted for the first time in 15 years and by February of 2009, the country was officially in recession. For the full year 2009, GDP shrank by 3.7 percent and, although GDP grew in 2010 (0.1 percent) and 2011 (0.7 percent), it shrank again in 2012 (-2.1 percent).



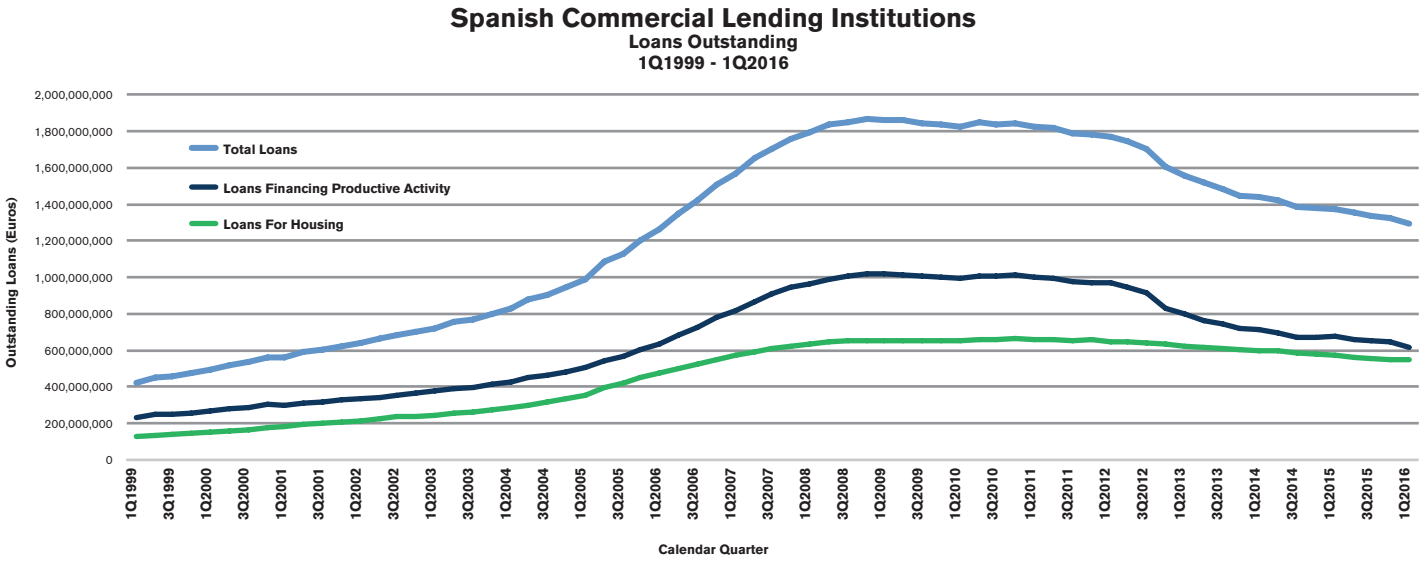
(Source: Miisetrio de Foento, Spain)

Figure 1: Housing Prices in Spain

Prior to this dramatic economic contraction, there was a massive growth in real estate prices that ultimately formed a classic asset bubble (Figure 1). From 1987 to 1991, housing prices more than doubled and, despite relatively constant prices from 1992 to 1996, the growth in housing prices between 1997 and 2007 was enormous (e.g., three-fold increase between 1Q1997 and 1Q2008). Beginning in 2008, prices began to fall and by mid-2013, prices reached levels 30 percent below their peak and have remained relatively stable since.

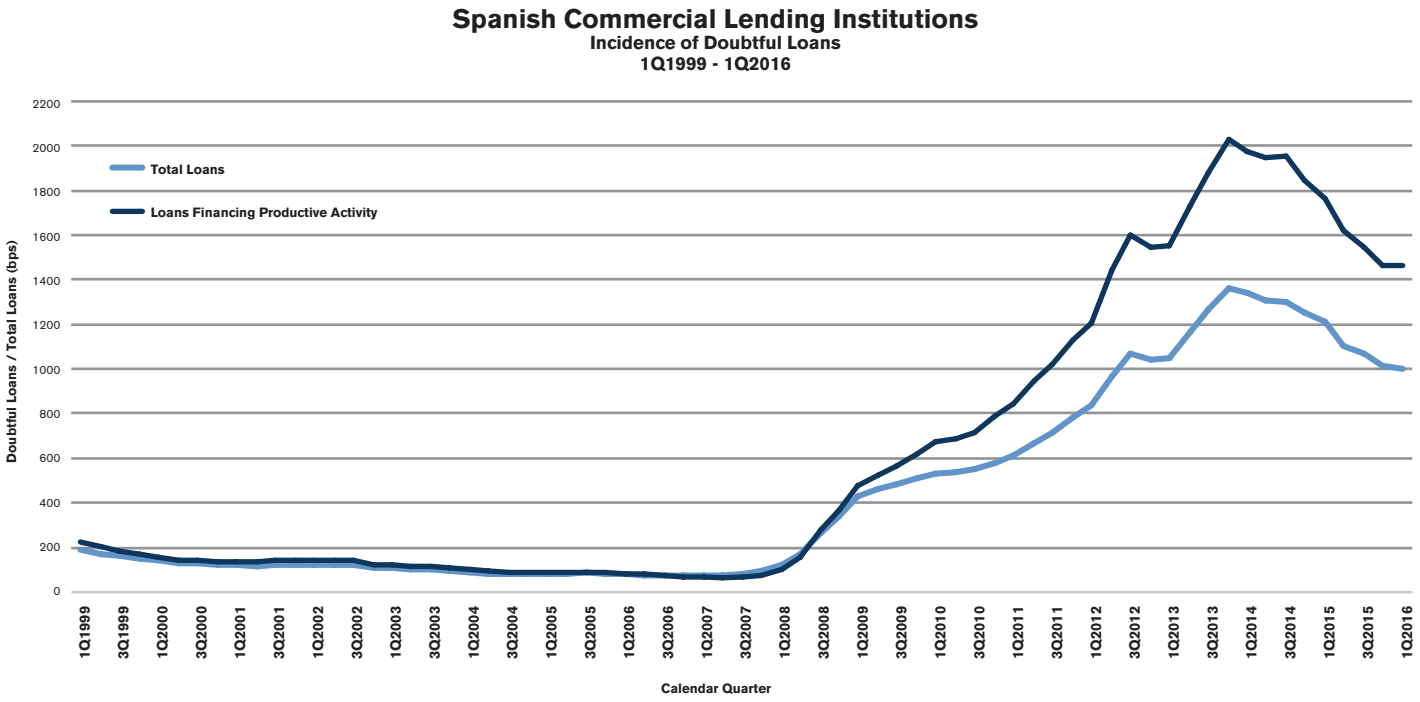
An equally dramatic growth in loans occurred at the same time (Figure 2). Total loans at commercial lending institutions grew exponentially and, by the end of 2008, total loans outstanding were more than 4.4 times the level than at the start of 1999. Since 2008, total loans have fallen by 27 percent.

Two subsets of this total follow similar patterns (Figure 2). From 1997 to 2008, loans financing productive activity grew by nearly 350 percent and since 2008 have fallen by 35 percent.



(Source: Bank of Spain)

Figure 2: Spanish Commercial Lending Institutions – Loans Outstanding



(Source: Bank of Spain)

Figure 3: Spanish Commercial Lending Institutions – Incidence of Doubtful Loans

Loans for housing experienced a five-fold increase from 1999 to 2008; however, the subsequent decline has been relatively modest (15 percent).

Importantly, loans for housing make up a large percent of loans used for productive activity. Over the period 1Q1999 to 1Q2016, housing debt averaged 69.2 percent of loans for productive activity (as weighted by the amount outstanding in each category) and the ratio of housing debt to total productive debt increased from 55.6 percent in 1Q1999 to 87.3 percent in 3Q2014. The ratio of housing debt to total debt ranged from 30.4 percent in 1Q1999 to a maximum of 42.3 percent in 3Q2014; from 1Q1999 to 1Q2016, this ratio averaged 36.0 percent. In Spain, much of private debt is dedicated to financing housing and the debt used to finance housing has become a very large share of total debt.

The history of doubtful loans, or those for which repayment is no longer expected, occurs in two distinct stages (Figure 3). From 1999 through the first half of 2008, the ratio of doubtful loans to totals was 2 percent or less and declined over this period. Suddenly, in the second half of 2008, the incidence of doubtful loans exploded. For loans financing productive activity, the increase was from 64 basis points (bps) in 2Q2007 to a temporary maximum of 1,603 bps in 3Q2012 and a final maximum of 2,031 bps in 4Q2013. For total loans, the ratio increased from 72 bps in 4Q2006 to a temporary maximum of 1,071 bps in 3Q2012 and a final maximum of 1,362 bps in 4Q2013. The incidence of doubtful loans in both categories fell by approximately 27 percent through 1Q2016.

> “THE ECH EXPLAINS WELL THE DYNAMICS OF THE 2007 – 2010 CREDIT CRISIS IN SPAIN THAT CONTINUES TODAY WITH A NUMBER OF THE PREDICTIONS OF THE ECH BORNE OUT DURING THIS PERIOD.”

While the Bank of Spain does not publish statistics on default rates, this increase in doubtful loans is clearly the result of dramatic increases in default rates for residential and commercial loans that occurred from late 2007 to 2012.

CORRELATION OF LOAN GROWTH AND DOUBTFUL LOANS

The ECH holds that loan growth is best understood when scaled to GDP; when the rate of loan growth exceeds economic growth, banks will lend to increasingly risky borrowers whose increasingly greater probabilities of default will eventually lead to loan losses (Stevenson, 1994a, 1995, 2010). In applying these ideas to the Spanish economy and banking system, this paper draws its data from several sources. Data on GDP for Spain are taken from the World Bank and data on the characteristics of lending by Spanish banks are taken from the Bank of Spain.[1]

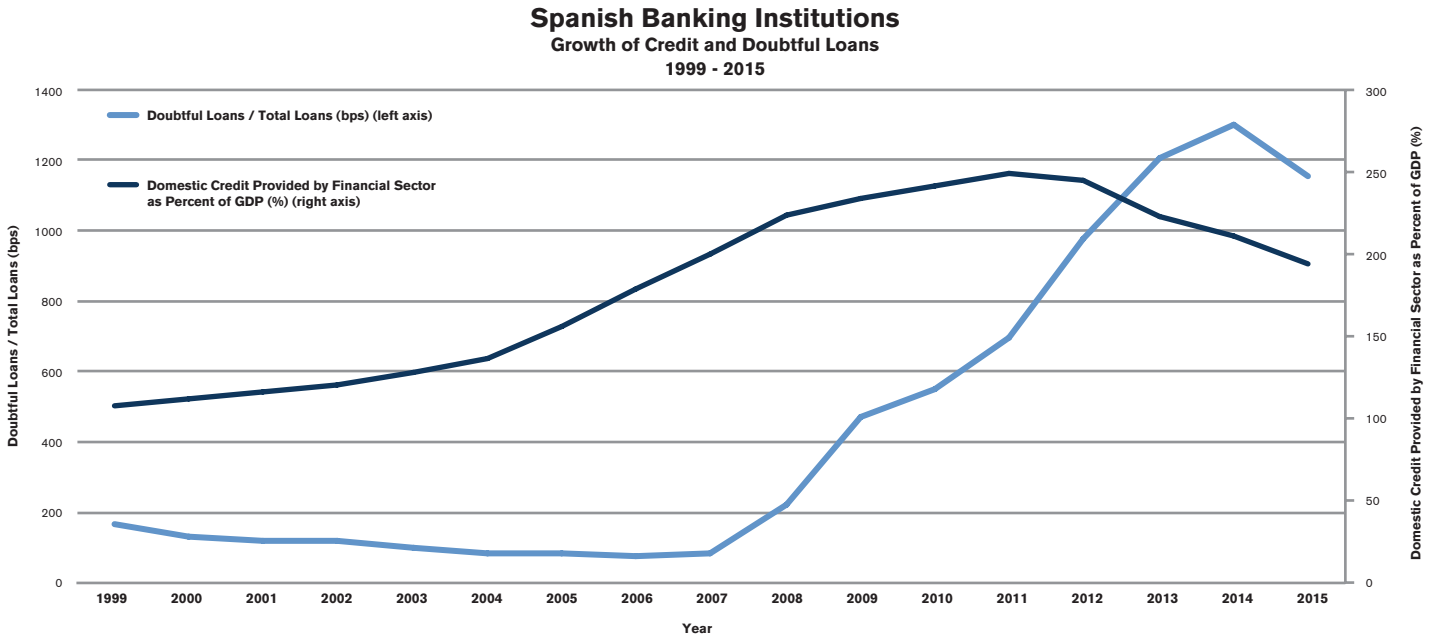
Figure 4 shows the pattern of domestic credit provided by the financial sector as a percent of GDP in the Spanish economy from 1999 to 2015 compared to the incidence of doubtful loans. When scaled to GDP, the strikingly rapid growth in domestic credit becomes apparent. In 1999, this ratio is 1.03 and by 2011, it has more than doubled to 2.48 (Figure 4).

It is apparent that the growth in indebtedness far outpaced economic growth during this period.

As noted previously, the ECH holds that there are correlations between rates of loan growth and the level of non-performing loans and between loan growth rates and net loan charge-offs with temporal lags. That is, rapid growth in loans relative to GDP occurs earlier than growth in defaults and charge-offs because the loan growth in excess of economic growth means that loan capital flows to riskier borrowers whose default probabilities increase exponentially and periodically manifest themselves in credit crises. The greater the amount of excess capital lent to these non-investment grade borrowers, the more significant the crisis.

In the United States, the lags between loan growth and loan losses average 18 months to two years (Stevenson, 1994a, 1995, 2010). In Spain, there are longer lags between rapid loan growth and the emergence of troubled and doubtful loans; the lags range from three to five years[2] (see Figure 4), a result consistent with Salas and Saurina (2002) and Saurina and Jimenez (2006).

It is worth noting that, since 2011, the ratio of domestic credit provided by Spanish financial institutions has shrunk and, with the lag anticipated by the ECH, so too has the ratio of doubtful loans to total loans (Figure 4).

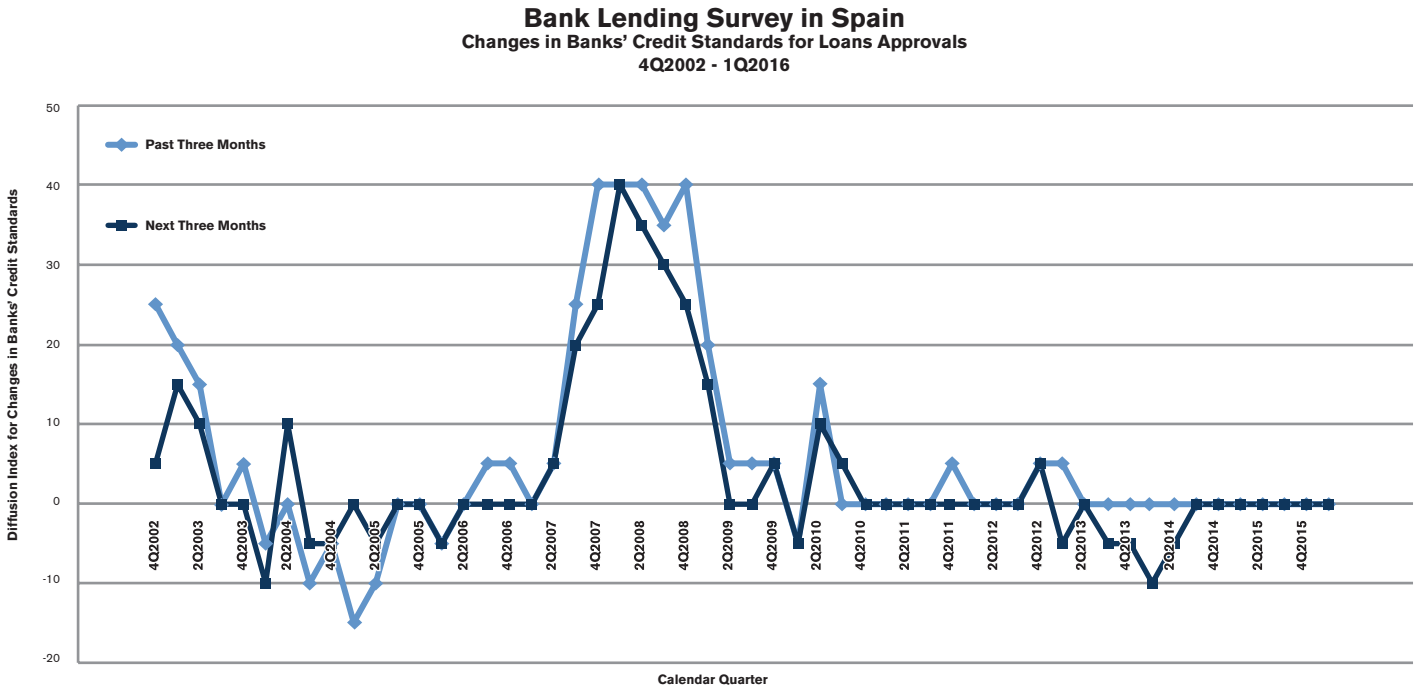


(Source: Bank of Spain and World Bank)

Figure 4: Spanish Banking Institutions – Growth Credit and Doubtful Loans

[1] http://www.bde.es/webbde/en/estadis/infoest/bolest4.html

[2] The lag structure for correlations between the ratio of domestic credit provided by the financial sector to GDP and the ratio of doubtful loans to total loans is 0.641 in the current period, 0.772 with a one-year lag, 0.883 with a two-year lag, 0.947 with a three-year lag, 0.972 with a four-year lag, 0.980 with a five-year lag, 0.969 with a six-year lag and 0.947 with a seven-year lag.



(Source: Bank of Spain)

Figure 5: Bank Lending Survey in Spain – Changes in Banks' Credit Standards for Loan Approvals

TIGHTENING AND RELAXATION OF LENDING STANDARDS

The ECH also predicts that excess capital emerges in the economy when banks relax lending and underwriting standards, permitting loans to borrowers that, in periods of normal or lowered liquidity, would not receive credit (Stevenson, 1994, 2010, 2014). Stevenson (2014) reported a cyclical pattern of loose credit standards at U.S. banks being associated with aggressive lending and loan gross in excess of economic growth followed by tightening of credit standards and lowered loan growth. There is also a strong correlation between the tightening of credit standards by U.S. banks and subsequent defaults by borrowers who received credit in the period of excess capital and loose lending standards.

The Bank of Spain participates in the quarterly survey of European banks on lending and underwriting practices conducted with all national banks in the euro area and with the European Central Bank. This Bank Lending Survey, as overseen by the Bank of Spain, seeks to obtain information on lending conditions and the changes in banks' supplies of loans.

Figure 5 presents the changes in credit standards among Spanish banks from late 2002 to mid-2013. A striking cyclical pattern appears in these self-reported results in which there is a waning of credit standards from 2002 to 2004, relatively loose standards from 2004 to 2007, a dramatic tightening of standards from 2007 to 2010, followed by stability in the standards in 2007 to 2009, and a return to looser standards in 2010 to 2013. This result is consistent with the findings of Saurina and Jimenez (2006).

The cyclical waxing and waning of credit standards is important for two reasons. First, the pattern seen in Spain is quite similar to that seen in U.S. banks (Stevenson, 2014) and likely is common among all banks in Western economies.

Second, there is a strong association between the tightening of credit standards that follows a period of loose lending and excess capital and the dramatic increases in doubtful loans both in Spain (Figures 3 and 4) and in the U.S. (Stevenson 2010, 2014). The ECH holds that loans made in the period of excess capital and loose lending standards end up being the loans most likely to default when banks cut back on lending. Those borrowers are those with the highest probabilities of default and if external capital is retrained or if their own operating profits fall, these borrowers are likely the first to default, creating a credit crisis.

The dramatic tightening of credit standards in Figure 5 corresponds very closely to the banks' perceptions of risk in the Spanish economy and for specific entities (Figure 6). Given this close association, it seems reasonable that the changes in the perceptions of risk are one reason why banks change their underwriting standards. In particular, the tightening of credit standards in 2007 and 2008 coincided with dramatic increases in the perception of risk in the Spanish economy.

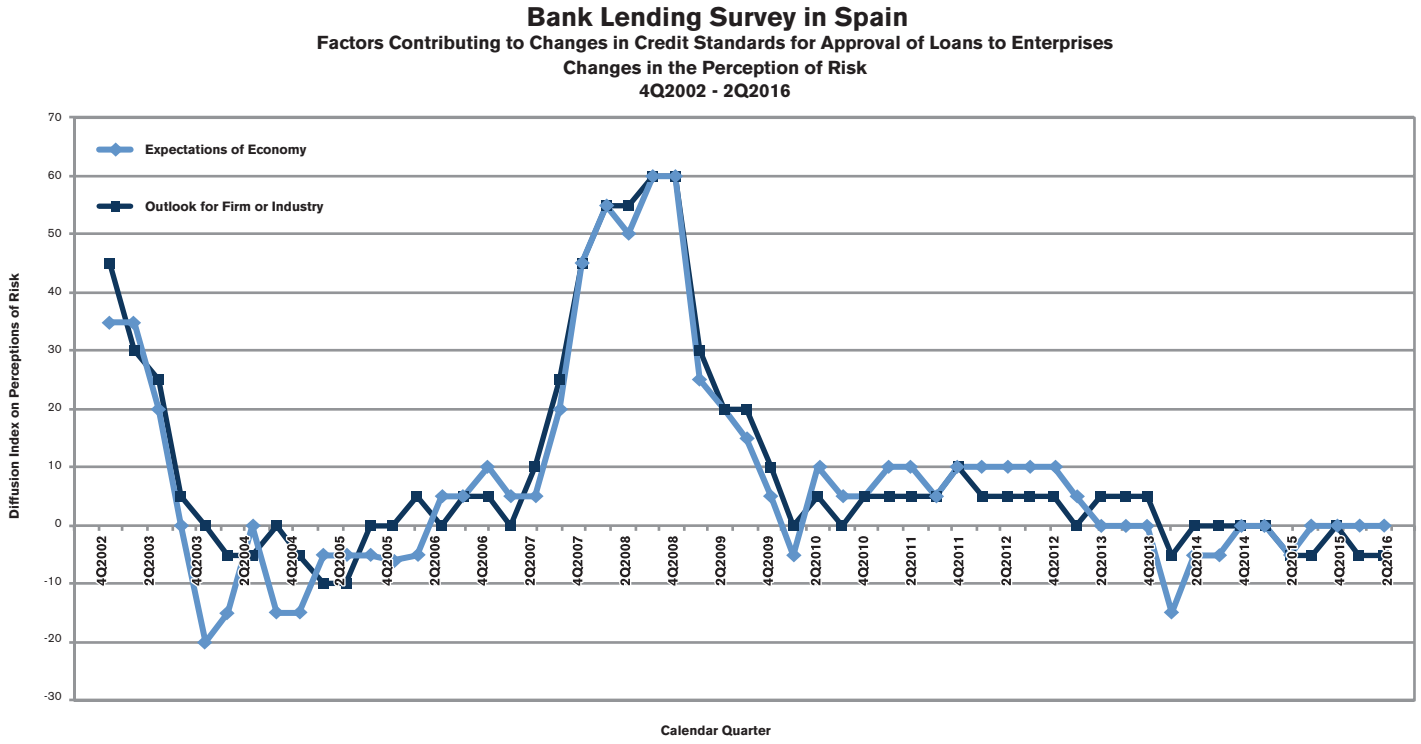
IMPLICATIONS FOR BANK MANAGERS AND REGULATORS

The ECH gives rise to a number of useful risk management tools for banks. First, the rate of loan growth (or the growth of credit) to GDP is an early warning signal to bankers in Spain, the United States and other western economies of impending defaults and losses on loans. When loan growth outpaces the rate of economic growth, it is likely because underwriting standards have been loosened (maybe even compromised) and capital has flowed to borrowers with high probabilities of default. If the bank does not want to realize the consequences of those high probabilities, it should tighten its own underwriting standards so as to elevate the credit quality in its own loan portfolios above that of its competitors and the market generally.

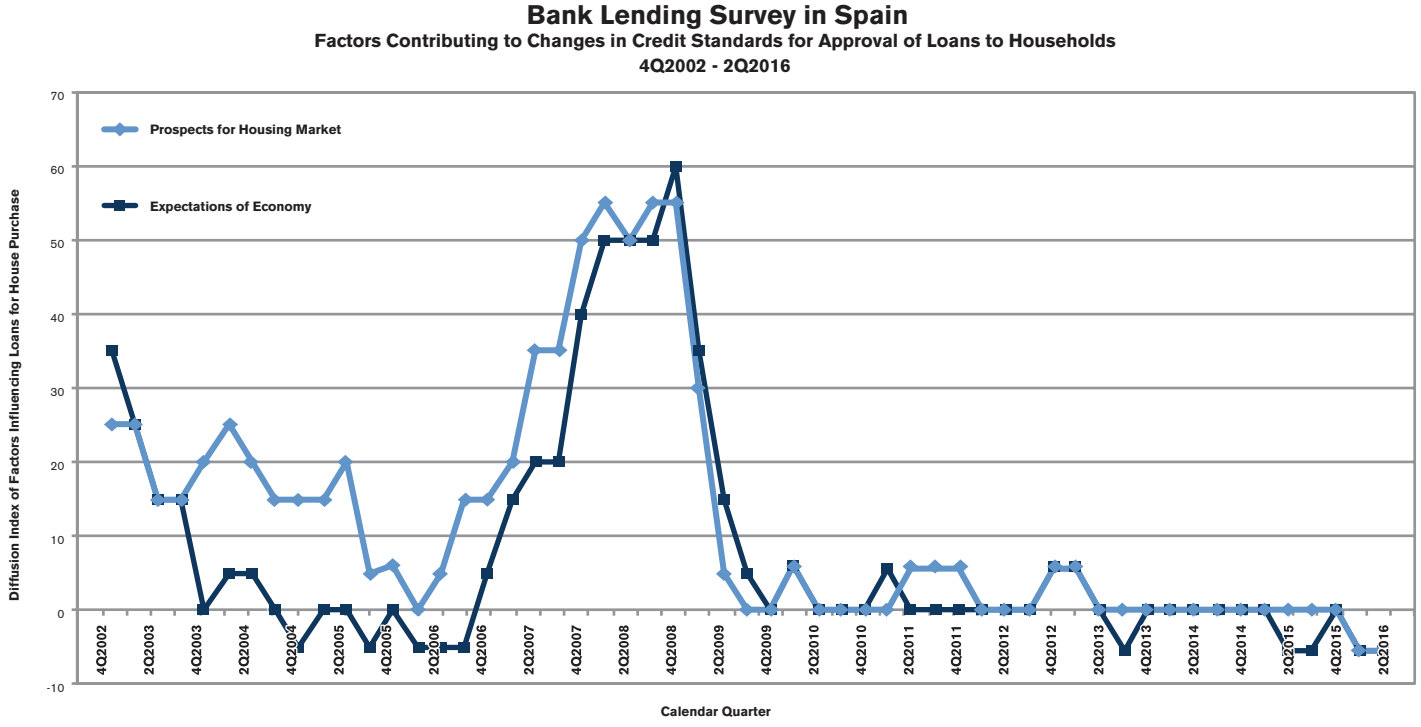
This response means, of course, that the bank will behave as a contrarian (see Stevenson, 1994b) and will actively forgo loan growth and revenue growth today for higher credit quality and better loan loss experience in the future. In short, slowing the rate of loan growth is a prudent action for bankers to take when the rate of credit expansion exceeds that of economic growth. Such action would likely be counter-cyclical in nature including tightening of lending just when other banks' lending standards are loosest.

Second, loan growth relative to economic growth is a metric that banks can use in stress testing, particularly based on its utility as an early warning tool. Specifically, both banks and regulators can use this metric to define hypothetical credit crises characterized by rapid build-ups in economy-wide debt that is driven by system-wide relaxation of underwriting standards and is concentrated in sectors dominated by non-investment grade borrowers. The stress scenario should also include the contraction of the system-wide debt when defaults emerge and credit standards tighten, leading to the wave of defaults that defines the credit crisis.

PANEL A



PANEL B



(Source: Bank of Spain)

Figure 6: Bank Lending Survey in Spain

The value of such a stress test is to determine which banks have sufficient capital and managerial strength to survive in the crisis.

International regulators recognize the value of loans / GDP and similar measures ("credit / GDP") to monitor the health of lending markets and to set capital standards for regulated banks. In December 2010, the Basel Committee on Bank Supervision published global regulator standards for capital adequacy at banks, including a countercyclical capital buffer (CCyB). As noted in a summary paper from the Bank for International Settlements (BIS):

"The countercyclical capital buffer aims to ensure that banking sector capital requirements take account of the macro-financial environment in which banks operate. Its primary objective is to use a buffer of capital to achieve the broader macroprudential goal of protecting the banking sector from periods of excess aggregate credit growth that have often been associated with the build-up of system-wide risk. Due to its countercyclical nature, the countercyclical capital buffer may also help to lean against the build-up phase in the credit cycle in the first place. In downturns, the regime should help to reduce the risk that the supply of credit will be constrained by regulatory capital requirements that could undermine the performance of the real economy and result in additional credit losses in the banking system." (BIS, 2016; see also BIS, 2010)

At least 17 countries, including Spain and several other European countries, have adopted the principles of the CCyB although most have set the actual buffer, capital add-on, at 0.00 percent of credit risk-weighted assets, meaning that the CCyB is a good idea but not one that the regulatory authorities wish to implement. Only Sweden and Hong Kong have an actual, non-zero CCyB (1.00 percent and 0.625 percent, respectively).

The ECH and the CCyB are related concepts and this paper suggests that Spanish regulators should not only adopt the concept of the CCyB but actually have the level of the CCyB set to a value above zero.

CONCLUSIONS

The ECH explains well the dynamics of the 2007 – 2010 credit crisis in Spain that continues today with a number of the predictions of the ECH borne out during this period. Loose credit standards in the first half of the 2000s gave rise to excessive lending, particularly in the market for home mortgages, and that growth in lending far outpaced the growth in the Spanish economy. When banks finally became aware of the risk in the economy and the housing market, they significantly tightened credit standards, withdrawing capital from the market. This tightening was strongly correlated with a dramatic increase in the level of doubtful loans. The result was a lagged relationship between outstanding loans scaled to GDP and the incidence of doubtful loans, with the lag ranging from three to five years. This analysis is consistent with observations made by earlier analysts of the Spanish banking system.

The ECH is consistent with the CCyB of the Basel Committee on Bank Supervision now implemented in a large number of countries across the globe, including Spain. It will bear watching if the CCyB actually is implemented beyond the concept stage and if, when implemented, actually performs in a way to protect banking systems from the consequences of the ECH. Even if the CCyB is not implemented beyond the concept stage, there is every good reason for strong bank managers to understand the consequences of the ECH and take appropriate countercyclical or contrarian steps themselves, including tightening underwriting standards even when peers do not. Minimally, banks should develop stress tests that incorporate the principles of the ECH so that they can assure themselves and their regulators that they can survive the next credit crisis induced by excess capital.

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