Banks' risk and Real Estate Market Dynamics:
Are real estate banks riskier?

by

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Are Real Estate Banks More Affected by Real Estate Market Dynamics?
Evidence from the Main European Countries

Abstract

Literature focuses the attention prevalently on the effect of a change in the property prices on the macro-variables and the monetary aggregates. Only few studies considers the effects of the real estate market trend on the banks' lending policy and bank's performance taking into account bank's characteristics. These studies never control for the type of the bank and the loan purpose.

Considering a representative sample of European banks and using the BIS property index for the reference country of the bank, we study the relationship between the property market trend and the bank performance / risk exposure. Following the approach proposed by Blasko and Sinkey (2006), we test for the existence of any significant difference respect to other banks and the different role of real estate market trend in explaining a change in the bank risk exposure. Empirical evidences demonstrate that real estate banks do not perform always the worse (the better) respect to not REBs and the sensitivity to real estate market trend is lower for specialized banks with respect to others.

1. Introduction

Real estate market trend could affect the value of both the direct exposures in property loans and the real estate collaterals of loans, therefore banks' performance and/or risk could change significantly in the case of real estate market collapse or expansion (i.a. Wheaton, 1999). During the current financial crisis the decrease of the real estate market determines a strong decrease in loans with respect to the pre-crisis period (Ivashina and Sharfstein, 2010) due to the change in the credit market equilibrium and the effects on the individuals' wealth.

The effect of the real estate market trend on the credit market is affected by the response of the demand to the new market conditions. If the demand of the real estate financing does not change over time, in a real estate market upturn (downturn), the credit market will experience an increase (decrease) of the collateral value of lending exposure and the decrease (increase) of the bank riskiness will decrease (Kiyotaki and Moore, 1997). If debtors modify their exposure due the lower (higher) cost of lending and the easier (tighter) access to financing opportunities after the real estate market change, the probability of default of the bank will increase (decrease) (Koetter and Poghosyan, 2010). The assumption of stable demand for real estate lending could be considered residual because, according to the lifecycle model of household consumption (Ando and Modigliani, 1963), households may react to an increase (decrease) in property prices by increasing (decreasing) their spending and borrowing so as to smooth consumption over the life cycle (Hoffman, 2004).

Studies on the main market players in the banking sector demonstrate that real estate banks could be more riskier respect to other banks (Blasko and Sinkey, 2006) even if results could change with the proxy used for evaluation the bank risk change (Giannotti, Gibilaro and Mattarocci, 2011) and the criterion for identifying the real estate banks (Eisenbeis et al. 1996). No studies allow to evaluate if the

higher or lower risk of real estate banks could be explained by the trend of the real estate market in which they are prevalently exposed.

The paper aims to contribute to the existing literature evaluating the role of real estate market trends in explaining the higher or lower riskiness and profitability of the real estate banks providing some empirical evidence on the European banking groups over a five year time horizon. Results obtained demonstrate that real estate banks are, independently with respect to the proxy used, not more exposed to the real estate risk. Result support the hypothesis presented in literature (Eisenbeis and Kwast, 1991) that an higher specialization of the lender allow to reduce losses especially in the medium and long term time horizon and this lower exposure could be partially ascribed to a less sensitivity to the real estate market dynamics.

The paper is structured as it follows: section 2 presents a detailed literature review on the role of real estate market trend for both the performance of the lending portfolio and the overall bank while section 3 provides empirical evidence in support of the thesis of the lower sensitivity of real estate banks' performance and risk measures to the real estate market trend. The last section summarizes conclusion and main policy implications of the results achieved.

2. Literature review

Preliminary analysis of the role of the real estate market trend on the banking sector considered if a change in the value of the assets owned or the value of the credit collaterals could affect the market value of bank shares. Empirical evidences demonstrate that the market price of banks' shares discount also the risk related to the real estate market trend and the sensitivity to the market could be different on the basis of some bank features (i.a. size) (i.a. Allen et al., 1995)

Looking at bank relationships data, literature studies the main drivers that could explain the relationship between bank performance and the real estate market trend. The attention is prevalently focused on the relationship between the banks' customers default risk and the market trend and the main driver identified is the difference between the current house market value and the remaining debt that when it is lower than zero the customer is obliged or could have an incentive to declare the default (Deng et al., 2000) and so the cost and the amount of lending is defined on the basis of the probability that, due to the real estate market dynamics, the put option offered to debtors becomes in the money (Koh et al., 2005). An higher number of customers that exercise the put option will imply liquidity problem for the bank and can cause the bank default.

Empirical evidences demonstrate that the real estate price dynamics affects the amount of lending offered by the banks even if the relationship could be more or less significant on the basis of the market analysed and the time horizon considered (i.a. Inoguchi, 2011). Moreover also the characteristics of the bank could explain an higher or lower sensitivity to the real estate market dynamics and normally the effect is higher (lower) the worse (better) are the bank fundamentals (i.a. Peek and Rosengren, 1994) and the effect could be overstated (understated) if in the time horizon horizon analysed there is a regulatory change that affect more the real estate lending respect to other lending solutions (Peek and Rosengren, 1996).

Empirical evidence demonstrates that the type of customers served and the type of products offered could vary on the basis of the bank specific features and normally specialized real estate banks presents unique features with respect to other lenders (i.a. Reichert, 1991). Especially if the regulators define different rules for the different types of real estate lending solutions, the impact of a real estate market change could be different for banks specialized in housing finance, in the commercial real estate lending and construction lending (Weber and Devaney, 1999).

The analysis of the real estate bank performance is normally released considering the distinctive characteristics of banks more exposed in the real estate sector with respect to other banks available. Preliminary evidence proposed in literature demonstrates that real estate banks could be more riskier respect to other banks (Blasko and Sinkey, 2006) but results are not always confirmed when the time horizon considered and the proxy selected for evaluation the bank risk change (Giannotti, Gibilaro and Mattarocci, 2011) or when we adopt a different criterion for identifying the real estate banks (Eisenbeis et al. 1996). Only few analyses proposed in literature consider the role of the real estate market trend in determining the risk and revenues of the banks (Igan and Pinheiro, 2010) and there are no studies that allow evaluating if a specialized real estate bank is more or less affected by the market trend with respect to all other banks.

3. Empirical analysis

3.1. Sample

We construct a sample of banks based in Europe with data available on the Bankscope database for the time period 2004-2011 and we collect for them all the information available from the income statement and the balance sheet[1]. In order to distinguish between real estate banks and other banks we compute the following measure:

$$\% \ Real \ Estate_{it} = \frac{Real \ Estate \ Loans_{it}}{Overall \ Loans_{it}} \tag{1}$$

Following the approach proposed by Eisenbes and Kwast (1991), we classify in the year t a bank as a real estate bank if the role of real estate lending ($\% \ Real \ Estate_{it}$) is higher than 40%. Summary statistics on the two subsamples (REBs and not REBs) for each year are provided in table 1.

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[1] Data from 2004 to 2006 are used only for constructing the left-hand side variable in the regression analysis

Table 1. Role of REBs and not REBs in the sample

Real Estate Banks					
	2007	2008	2009	2010	2011
Number	43	161	163	162	166
Total assets	3,239,729.8	3,977,323.4	3,238,684.7	3,476,400.4	4,467,402.4
Average Total Assets	75,342.55	24,703.87	19,869.23	21,459.26	27,075.17
Not Real Estate Banks					
	2007	2008	2009	2010	2011
Number	940	823	822	826	822
Total assets	56,404,342	70,861,970	81,591,761	96,917,431	120,437,628
Average Total Assets	59,372.99	85,170.64	98,303.33	116,207.95	144,930.96

Source: Bankscope data processed by the authors

Banks considered in each year are more than 900 and the role of real estate banks in the sample increases over time from around 4.5% in the 2007 to more than 16% in 2011. In 2007 the size of the REBS was bigger than other banks while in the last years the average size of the new banks classified in this category decrease significantly and so in 2011 the total assets of the REBs are significantly lower with respect to other banks (around the 3% of the overall asset managed by the banks in the sample.

In order to study the role of real estate market in determining the performance and the risk of the banks, we consider the country of each bank and we collect from the Bank of International Settlement website the more representative index available for the residential real estate market (Table 2).

The more represented countries in the sample are Italy, Germany, Great Britain, Spain and France and only very small countries (like Cyprus and Malta) are represented only by one bank. The sample composition is quite coherent with the overall market statistics on the number of intermediaries even if the size and total assets of the banks that work in each country are not comparable and the main countries represented are Great Britain, Italy, France and Belgium (Table 2).

Table 2. Banks classified for the country of origin

	N° banks					Total assets (mln €)				
	2007	2008	2009	2010	2011	2007	2008	2009	2010	2011
Austria	7	7	7	7	7	261318	275912	281434	278422	294397
Belgium	12	12	12	12	12	1611564	1433098	1214155	1127752	1120560
Cyprus	1	1	1	1	1	189	185	184	227	494
Denmark	4	4	4	4	4	33992	36751	38893	37054	34947
Finland	8	8	8	8	8	219845	304829	312652	381812	507387
France	61	61	61	61	61	2248406	2450645	2391416	2408160	2518255
Germany	145	145	145	145	145	653641	672789	624892	570989	549454
Great Britain	75	75	75	75	75	3787197	4246144	3386228	3561472	3800054
Greece	4	4	4	4	4	3840	4242	4521	4203	3462
Ireland	10	10	10	10	10	713384	1152421	887180	806830	878992
Italy	520	520	520	520	520	2951407	3212075	3168357	3264681	3359549
Luxembourg	6	6	6	6	6	238630	224741	205005	195774	165602
Malta	1	1	1	1	1	3306	4544	3493	2763	2992
Netherlands	10	10	10	10	10	208297	235375	218205	218307	225300
Norway	43	43	43	43	43	12816	14627	15660	18860	21078
Portugal	15	15	15	15	15	820844	884324	1030298	1229968	1118644
Spain	59	59	59	59	59	106497	113820	112417	112535	115193
Sweden	8	8	8	8	8	130030	150179	144612	164960	187196
Switzerland	8	8	8	8	8	99538	98815	100503	99945	112570
Turkey	9	9	9	9	9	45289	58497	69248	84600	108496

Source: Bankscope data processed by the authors

3.2 Methodology

Following the approach proposed by Blasko and Sinkey (2006), we compute a measure of the default risk for each bank in the sample using the following formula:

$$ZRisk_t = \frac{Average\ ROA_{t-3,t} + CAP_t}{\sigma ROA_{t-3,t}} \tag{2}$$

where following the approach proposed by Hannan and Hanweck (1988) the $Average\ ROA_{t-3,t}$ and $\sigma ROA_{t-3,t}$ are respectively the mean and standard deviation of the ROA in the last four years while the capitalization rate (CAP_t) is the ratio between equity capital and overall capital. An higher value of the index signals an higher quality of the banks' assets an revenues and an higher capability to support any (negative) change of the ROA using the current ROA and amount of stable funding (Shares). We compute some summary statistics for REBs and not REBS and we compute a standard Kolmogorov-Smirnov test for the not parametric comparison among distributions of the of the risk measure for the two types of banks.

In order to verify the robustness of results achieved using the Z Risk measure, we consider also other measures proposed by the authors in order to evaluate the risk and the qualities of the banks. More in detail measures considered are the following[2]:

ROE_{it}	Return on Equity at time t for the bank i
NII_{it}	Net Interest Income with the respect to the overall income at time t for the bank i
$Tier\ 1_{it}$	The TIER 1 capital requirement at time t for the bank i defined on the basis of the amount and quality of outstanding debt
LLP_{it}	Loan loss provisions with respect to the overall loans at time t for the bank i
PDL_{it}	Total of past due credits over 90 day with respect to the overall loans at time t for the bank i
IRD_{it}	Amount of derivative exposure with respect to total assets at time t for the bank i
$RSAL_{it}$	Difference between rate-sensitive assets and rate sensitive liabilities with respect to total asset at time t for the bank i

The same summary statistics and the tests are provided for all these variables for the two subsample REB and REBs.

In order to study the relationship between the bank default risk and the real estate market trend we perform a panel regression analysis of the risk exposure with the bank characteristics including two variables on the role of real estate lending[3]. In formulas:

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[2] We include all the variables identified by authors as possible explanation of different failure exposures for the bank but we exclude data about portfolio composition and some aggregate values.
[3] We apply a random effect linear panel regression analysis in order to include specific dummy variables for each country considered in the sample.

$$ZRisk_{it} = \alpha_{it} + \sum_{k=1}^{n} \beta^k Bank\ Feature_{it}^k$$
$$+ \sum_{l=1}^{m} \beta^k Country\ Dummy_{it}^l + \gamma_{it}\%\ Real\ Estate_{it} + \varepsilon_{it} \tag{3}$$

$$ZRisk_{it} = \alpha_{it} + \sum_{k=1}^{n} \beta^k Bank\ Feature_{it}^k + \sum_{l=1}^{m} \beta^k Country\ Dummy_{it}^l$$
$$+ \gamma_{it} Dummy\ Real\ Estate_{it} + \varepsilon_{it} \tag{4}$$

where the n Bank Features considers for each firm are coherent with the empirical evidence provided by Blasko and Sinkey (2006). The m country dummies assume value one for the bank i if the hosting country is the country l and zero otherwise[4].

Real estate variables used for the analysis are both $\%\ Real\ Estate_{it}$ and $Dummy\ Real\ Estate_{it}$. The first measure is the ratio between real estate loans and the overall loans for the bank i at time t while the latter is a dummy variable that assume value one if the role of real estate loans on the overall portfolio is higher than 40% for the bank i at time t.

In order to evaluate the real estate market trend affects more the REBs with respect to other bank we include in the equations (3) and (4) a variable related to the real estate market trend of the reference market for each bank and we analyze the role of this variable in explain the risk of all banks and only for REBs. In formulas:

$$ZRisk_{it} = \alpha_{it} + \sum_{k=1}^{n} \beta^k Bank\ Feature_{it}^k$$
$$+ \sum_{l=1}^{m} \beta^k Country\ Dummy_{it}^l + \gamma_{it} Dummy\ Real\ Estate_{it} \tag{5}$$
$$+ \tau_{it} Real\ Estate\ Mkt_t + \varepsilon_{it}$$

$$ZRisk_{it} = \alpha_{it} + \sum_{k=1}^{n} \beta^k Bank\ Feature_{it}^k + \sum_{l=1}^{m} \beta^k Country\ Dummy_{it}^l + \gamma_{it}\%\ Real\ Estate_{it}$$
$$+ \tau_{it} Real\ Estate\ Mkt_t + \varepsilon_{it} \tag{6}$$

where the $Real\ Estate\ Mkt_t$ variable represent the BIS's index value for all dwellings at time t for the country that hosted the headquarters of the bank. If τ_{it} is significant the model demonstrate that the increase performance of the real estate market modify the risk exposure of the bank.

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[4] In the sample selected the reference countries are: Austria, Belgium Switzerland, Cyprus, Germany, Denmark, Spain, Finland, France, Great Britain, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Sweden, San Marino and Turkey

In order to evaluate if REBS are more or less affect by the real estate market dynamics, we perform the same regression constructing two real estate market variables, once for the REBS and another for not REBs. In formulas:

$$ZRisk_{it} = \alpha_{it} + \sum_{k=1}^{n} \beta^k Bank\ Feature_{it}^k$$
$$+ \sum_{l=1}^{m} \beta^k Country\ Dummy_{it}^l + \gamma_{it} Dummy\ Real\ Estate_{it}$$
$$+ \partial_{it}(Dummy\ Not\ Real\ Estate_{it} \times Real\ Estate\ Mkt_t)$$
$$+ \theta_{it}(Dummy\ Real\ Estate_{it} \times\ Real\ Estate\ Mkt_t) + \varepsilon_{it} \tag{7}$$

$$ZRisk_{it} = \alpha_{it} + \sum_{k=1}^{n} \beta^k Bank\ Feature_{it}^k + \sum_{l=1}^{m} \beta^k Country\ Dummy_{it}^l + \gamma_{it}\% Real\ Estate_{it}$$
$$+ Dummy\ Not\ Real\ Estate_{it} \times \partial_{it} Real\ Estate\ Mkt_t + Dummy\ Real\ Estate_{it}$$
$$\times \theta_{it}\ Real\ Estate\ Mkt_t + \varepsilon_{it} \tag{8}$$

$$ZRisk_{it} = \alpha_{it} + \sum_{k=1}^{n} \beta^k Bank\ Feature_{it}^k$$
$$+ \sum_{l=1}^{m} \beta^k Country\ Dummy_{it}^l + \gamma_{it} Dummy\ Real\ Estate_{it}$$
$$+ \varphi_{it}(\% Real\ Estate_{it} \times Real\ Estate\ Mkt_t) + \varepsilon_{it} \tag{9}$$

$$ZRisk_{it} = \alpha_{it} + \sum_{k=1}^{n} \beta^k Bank\ Feature_{it}^k + \sum_{l=1}^{m} \beta^k Country\ Dummy_{it}^l + \gamma_{it}\% Real\ Estate_{it}$$
$$+ \varphi_{it}(Real\ Estate\ Mkt_t \times \% Real\ Estate_{it}) + \varepsilon_{it} \tag{10}$$

In the equations 7 and 8, the Dummy Not Real Estate$_t$ assumes value one if the role of real estate loans on the overall portfolio is lower than 40% for the bank i at time t. If ∂_{it} is less significant with respect to θ_{it}, not REBs are more affected by the real estate market dynamics while if results are the opposite REBs are more affected by the market dynamics respect to unspecialized banks. The first type of results support the hypothesis that an higher level of specialization allows reducing the risk assumed in the real estate sector due to the higher expertise and the larger amount of resources invested in the market analysis (e.g. Eisenbeis and Kwast, 1991) while the second type of result demonstrate that an higher exposure to the real estate market causes always an increase of the sensitivity to its market dynamics due to a disaster myopia (e.g. Herring and Watcher, 2003).

Formulas (9) and (10) evaluate if the sensitivity to the market trend is not related to specialization of the bank but it is linearly correlated to the amount of exposure in the real estate lending. If φ_{it} is statistical significant and bigger than the τ_{it} computed in formulas (5) and (6), any increase of the real estate lending will impact on bank risk of default in the event of a real estate market crisis.

3.3. Results

A preliminary analysis of the differences between REBS and not REBs is realizes considering some summary statistics on the two subsamples (Table 3).

Table 3. Summary statistics and Kolmogorov Smirnov Test comparison between REBS and not REBS

	REBs			Not REBS			Kolmogorov Smirnov test	
	Mean	Median	Dev.St.	Mean	Median	Dev.St.	Value	Test
$ZRisk_{it}$	15.05	3.52	34.84	6.53	3.10	20.48	0.17	0.00
$Tier\ 1_{it}$	0.11	0.10	0.09	0.16	0.14	0.12	0.29	0.00
ROE_{it}	0.03	0.03	0.21	0.05	0.05	0.22	0.17	0.00
NII_{it}	0.02	0.01	0.05	0.02	0.03	0.09	0.14	0.00
LLP_{it}	0.02	0.01	0.05	0.03	0.02	0.04	0.32	0.00
PDL_{it}	0.00	0.00	0.04	0.00	0.00	0.01	0.01	1.00
IRD_{it}	0.01	0.00	0.03	0.03	0.00	0.77	0.28	0.00
$RSAL_{it}$	-0.10	-0.06	0.18	-0.02	0.00	1.99	0.49	0.00

Source: Bankscope data processed by the authors

Even if some difference could be pointed out between REBs and not REBS, these differences are not statistically significant on the basis of the Kolmogorov – Smirnov Test excluding the past due that are more variable for REBs.
The analysis of the relationship between bank features and real estate market dynamics allows identifying results coherent with the literature available on the main drivers of bank risk (Table 4).

Table 4. The role of real estate in explain the bank risk

The explained variable is the ZRisk and the regression model is a panel random effect and the explained variables are both banking features and real estate market trend. In the regression we include also a set of country dummy variables in order to consider also the specific characteristics of the country of origin of each bank

	(3)	(4)	(5)	(6)
$Tier\ 1_{it}$	0.01	0.01	0.01	0.01
ROE_{it}	0.13***	0.13***	0.11**	0.11***
NII_{it}	2.40***	2.38***	2.18***	2.17***
LLP_{it}	-0.18	-0.19	-0.18	-0.18
PDL_{it}	-0.46	-0.51	-0.37	-0.42
IRD_{it}	-0.01	-0.01	-0.01	-0.01
$RSAL_{it}$	-0.01	-0.01	-0.01	-0.01
$Dummy\ Real\ Estate_{it}$	0.04	-	0.04	-
$\%\ Real\ Estate_{it}$	-	-0.07	-	-0.01
$Real\ Estate\ Mkt_t$	-	-	0.29***	0.29***
α_{it}	-6.49	-6.43	-6.33	-6.27
$Country\ Dummies$	Yes	Yes	Yes	Yes
Observations	2798	2798	2798	2798
Groups	634	634	634	634
R^2	0.11	0.10	0.11	0.11
Notes: * t-test significant at 90% level ** t-test significant at 95% level *** t-test significant at 95% level				

Source: Bankscope data processed by the authors

The statistical fitness of the model (from 10% to 11%) is coherent with results obtained by Blasko and Sinkey (2006) that in their best model are able to obtain a fitness of the model lower that 15%. Results are not surprising because the explained variable is significant volatile due to the relevant changes registered in the ROA during the time horizon considered.

Looking at the bank determinant of its risk, the main driver is represented by the Net Interest income that represents the only variable that is statistical significant in all the models considered and the relationship is positive because, as expected, an increase of the income related to the core business of the bank reduce its risk (and so an increase of the ZRisk). Another driver of the bank risk could be identified in the ROE measure that is positively related to the bank safeness but its relevance decrease significantly once the real estate market trend variable is added to the analysis.

Looking at difference between REBs and not REBS, the dummy variable is more significant with respect to the percentage of real estate lending because below a threshold the incidence of any real estate lending policy is not sufficient in order to modify the bank risk. The real estate exposure affects positively the risk of the bank (the relationship with Z-score is negative) supporting the hypothesis demonstrated by some authors in literature that REBs are normally riskier than other banks (i.e. Blasko and Sinkey, 2006).

Even if it does not imply a significant change in the statistical fitness of the model, the choice to include the real estate market variable (model 4 and 5) is relevant for explaining the value of the Z-risk

of a bank. A positive (negative) change in the market trend implies a decrease (increase) of the probability of default of the bank and the relationship is statistically significant for the sample analysed. If we consider separately the role of real estate market trend for REBs and not REBs, some interesting results could be pointed out on the different role of real estate market trend in explaining bank risk (Table 5).

Table 5. The role of real estate in explain the bank risk for REBs and not REBs

The explained variable is the ZRisk and the regression model is a panel random effect and the explained variables are both banking features and real estate market trend. In the regression we include also a set of country dummy variables in order to consider also the specific characteristics of the country of origin of each bank.

	(7)	(8)	(9)	(10)
$Tier\ 1_{it}$	0.01	0.01	0.01	0.01
ROE_{it}	0.11***	0.11***	0.13***	0.13***
NII_{it}	2.20***	2.18***	2.39***	2.37***
LLP_{it}	-0.18	-0.19	-0.19	-0.20
PDL_{it}	-0.38	-0.44	-0.44	-0.50
IRD_{it}	-0.01	-0.01	-0.01	-0.01
$RSAL_{it}$	-0.01	-0.01	-0.01	-0.01
$Dummy\ Real\ Estate_{it}$	0.04	-	0.04	-
$\%\ Real\ Estate_{it}$	-	-0.01	-	-0.01
$Dummy\ Real\ Estate_{it} \times Real\ Estate\ Mkt_t$	0.54	0.55	-	-
$Dummy\ Not\ Real\ Estate_{it} \times Real\ Estate\ Mkt_t$	0.26**	0.25**	-	-
$\%\ Real\ Estate_{it} \times Real\ Estate\ Mkt_t$			0.41	0.43
α_{it}	14.17	-6.25	14.18	14.19
$Country\ Dummies$	Yes	Yes	Yes	Yes
Observations	2798	2798	2798	2798
Groups	634	634	634	634
R^2	0.11	0.11	0.10	0.10

Notes:
* t-test significant at 90% level   ** t-test significant at 95% level   *** t-test significant at 95% level

Source: Bankscope data processed by the authors

The comparison between models (5) and (7) and models (6) and (8) demonstrates the market trend is more relevant for Not REBs with respect to REBs because ZRisk of the banks is always positive related with the real estate market dynamics but it is statistically significant only for not REBs. Evidence supports the hypothesis that the effect of a real estate market trend are more relevant for not REBs because probably REBs are better in evaluating real estate loans in order to overcome potential losses related to the real estate lending opportunities.

Looking at the interaction term between the real estate lending and the market trend (model 9 and 10), there is no linear relationship between the exposure and the sensitivity to the market trend. The more or

less relevance of the real estate market is related more the specialization of the bank (REB vs not REB) than to the amount of real estate lending offered.

Conclusions

Real estate market trend is one of the drivers of the bank riskiness and, even if also some bank features explain the default risk of the bank, any change of the real estate market could cause a significant change in the bank's riskiness. The role of the market trend is not independent with the respect of the specialization of the bank in the real estate sector and, due the higher expertise in the sector, normally Real estate banks are those that are less affected by any positive or negative market dynamics.

Looking at the literature on the diversification of the lending portfolio of a bank, evidences provided support the hypothesis that the reduction of the bank risk is not always related only to the degree of diversification (i.a. Demsetz and Strahan, 1997). Tighter capital constraints for specialized real estate banks are not justified on the assumed higher risk assumed by those banks and specific knowledge available for the management of these banks could be useful for selecting the best debtors in order to reduce their risk exposure.

Due to the high heterogeneity of lending contracts in the real estate sector, a more detailed analysis of contract characteristics could be useful in order to understand better if the lower risk of REBs is related only to management procedure and skills that are not available for other banks or it is simply related to contract features that could be used and applied also by other banks in order to reduce the sensitivity of not REBs to the real estate market trend. Moreover, literature demonstrates also the existence of significant differences in the market trend of different real estate investment (i.a. Davis and Zhu, 2004) and a more detailed analysis of the type of real estate lending (residential vs industrial/commercial) offered by each bank could allow to test if a choice to focus respect to diversify in the real estate lending can allow to reduce more the sensitivity of the bank risk to the real estate market trend.

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