Croatian Banks' Exposure to the Real Estate Risk: A Market Based Approach

Nora Srzentic

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Motivation

- Real estate market and loans developments

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- ▶ Real estate market and loans developments
- ▶ No existing research, return-based model

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- Start of the calculation of the Hedonic real estate prices index

Overview

Stylized facts
Retail and real estate loans

Stylized facts
Real estate loans in Total Retail Loans

Real Estate Loans in Total Retail Loans

Stylized facts
Investments into tangible assets

Investments into Tangible assets

[3]

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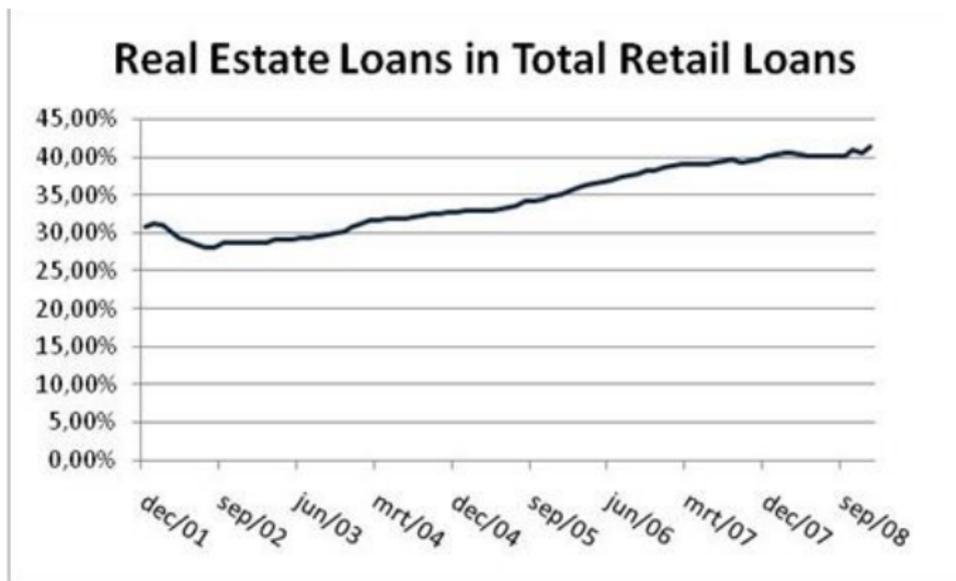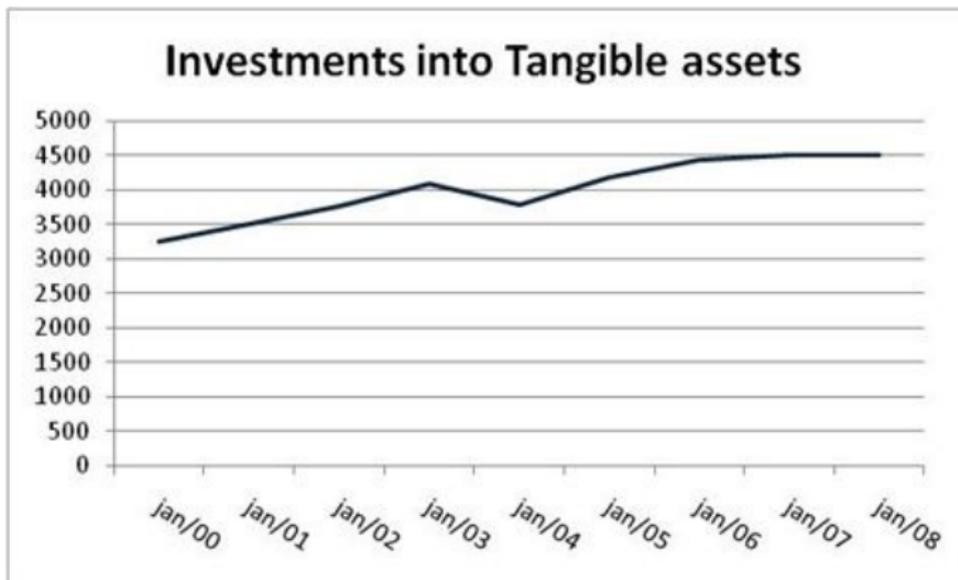
[3]Source:Annual reports of the CNB

Stylized facts
Hedonic real estate price index

Hedonic real estate price index

Stylized facts
CROBEX returns
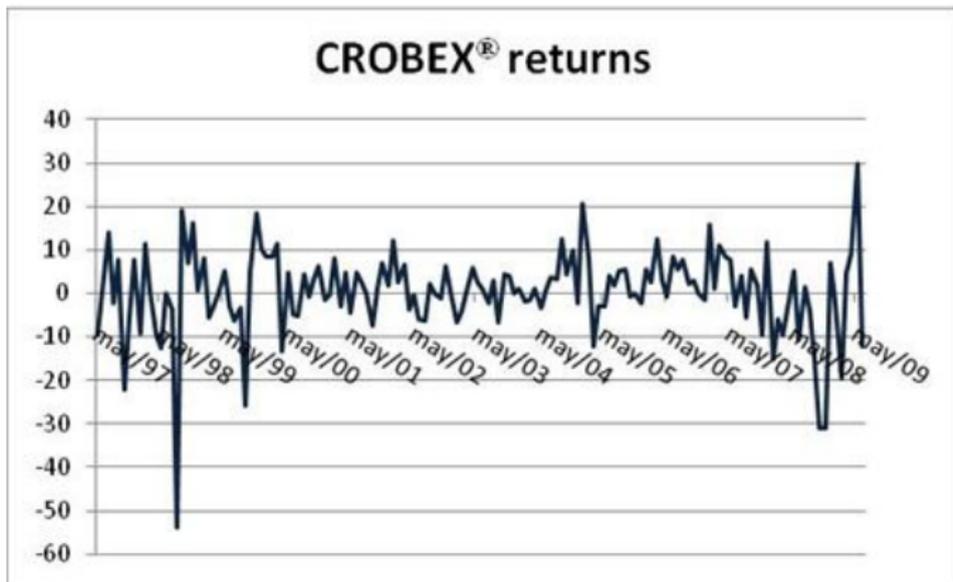
CROBEX® returns

[5]

Research questions

- ▶ Are Croatian banks' returns sensitive to the developments on the real estate market?

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- ▶ What is the direction of that sensitivity?
- ▶ Is the possible sensitivity based on the characteristics of the banks?
- ▶ Were there shifts in the possible sensitivity?

Stylized facts
Research questions
Methodology
Results
Conclusions

Model
Data set

Model

$$R_{B,t} = const + \beta_1 R_{M,t} + \beta_2 i_t + \beta_3 RI_t + u_t$$

Orthogonalization

$$R_{B,t} = const + \phi_1 R_{M,t} + \phi_2 i_t + \phi_3 RI_t + \phi_4 D_t RI_t + \mu_t$$

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$RIS_j = const + \alpha_1 RIL_j + \alpha_2 RII_j + v_j$
$RIS_j = const + \beta_1 RIL_j + \mu_j$
$RIS_j = const + \gamma_1 RII_j + e_j$

where
RII=Investments into real estate within tangible assets /Total
assets
RIL=Retail real estate loans/Total assets

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▶ Monthly, interpolated where necessary

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- Monthly, interpolated where necessary
- May 1997 - May 2009

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- Monthly, interpolated where necessary
- May 1997 - May 2009
- Thomson Datastream, Bankscope, Annual Financial Reports, Annual Reports and Bulletin of the CNB

Results of Equation 1

$$R_{B,t} = const + \beta_1 R_{M,t} + \beta_2 i_t + \beta_3 RI_t + u_t$$

	Constant	Market coefficient	Interest rate coefficient	Real estate coefficient	R^2
Interest rate on kuna with foreign currency clause					
Coefficient	0,656	0,4624***	-0,03796	-0,0853**	0,2134
Probability	0,8	0,000	0,88	0,0195	
Interest rate on T-bills in kuna on 182 days					
Coefficient	0,277	0,4638***	0,003	-0,06*	0,2027
Probability	0,88	0,000	0,99	0,0584	

Results of Equation 2

$$R_{B,t} = const + \phi_1 R_{M,t} + \phi_2 i_t + \phi_3 RI_t + \phi_4 D_t RI_t + \mu_t$$

	Constant	Market coefficient	Interest rate coefficient	Real estate coefficient	D*Real estate coefficient	R^2
Interest rate on kuna with foreign currency clause						
Coefficient	4,49	0,427***	-0,3233	0,055	-0,221**	0,2433
Probability	0,141	0,000	0,2604	0,4256	0,02	
Interest rate on T-bills in kuna on 182 days						
Coefficient	4,122	0,425***	-0,292	0,084	-0,227**	0,2276
Probability	0,105	0,000	0,321	0,224	0,0215	

Results of Equation 3,4 and 5

$$RIS_j = const + \alpha_1 RIL_j + \alpha_2 RII_j + v_j$$
$$RIS_j = const + \beta_1 RIL_j + \mu_j$$
$$RIS_j = const + \gamma_1 RII_j + e_j$$

	Constant	RIL	RII	R^2
Equation 3				
Coefficient	-0,217165***	1,010362***	-0,476097	0,3153
Probability	0,000	0,001	0,8082	
Equation 4				
Coefficient	-0,222545***	1,017862***	-	0,3139
Probability	0,000	0,001	-	
Equation 5				
Coefficient	-0,130079***	-	-1,238132	0,009
Probability	0,000	-	0,5917	

Conclusions

▶ Croatian banks' stock returns are positively related to the general stock market movements, insensitive to the movements in interest rates and negatively related to the real estate market movements

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Conclusions

- ▶ Croatian banks' stock returns are positively related to the general stock market movements, insensitive to the movements in interest rates and negatively related to the real estate market movements

- ▶ Banks that have higher share of real estate loans in the retail loans portfolio are more sensitive to the real estate market developments

- ▶ In the post-2004 period sensitivity of the banks' stock returns to the real estate market developments decreased

Thank you for your attention!

Nora Srzentic
Department of Financial Economics
Faculty of Economics and Business Administration
Ghent University
Nora.Srzentic@UGent.be