Cost of Bank Capital: Evidence from European Banks

Armen Arakelyan*
and
Artashes Karapetyan†

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Abstract

Under the assumption of efficient and perfect capital markets, theory suggests that, while lower capital will be accompanied by lower cost of equity, overall cost of capital will remain unchanged. We investigate the implications of higher bank capital using data from all listed European banks. Our results suggest that bank equity is sharply increasing in leverage. We find that while less leverage reduces equity risk, there is still a role for the low risk anomaly: lower risk banks have the same or higher returns than higher risk banks.

Keywords: Bank regulation, cost of equity, cost of capital

*CUNEF, C/Serrano Anguita 8, 28004 Madrid, Spain. Tel: +34 914 480 891, e-mail: armen@cunef.edu.

†Norges Bank, Financial Stability Research, Bankplassen 2, P.O. Box 1179 Sentrum, Norway. Tel: + 47 22 31 62 52, e-mail: Artashes.Karapetyan@norges-bank.no.

1 Introduction

Highly leveraged financial institutions create negative externalities: a small decrease in the asset value of a highly leveraged bank can lead to distress and potential insolvency. In an interconnected financial system, this can cause the system to freeze, and may lead to severe repercussions for the rest of the economy. To minimize social damage, governments often spend large amounts on bailouts and recovery efforts. Avoidance of such systemic risk and the associated social costs is a major objective of financial regulation. Since market participants act in their own interests and tend to pay too little attention to systemic concerns, financial regulation and supervision are intended to step in and safeguard the functioning of the financial system.

After the experience of the recent financial crisis policy makers and academics have been actively debating about requirements that banks reduce their leverage. The purpose of using relatively more equity funding is to avoid that variations in asset values lead to distress and insolvency. However, most bankers consider equity as a costly source of bank finance: since equity is more costly than debt, then more of it will increase the weighted average cost of capital. However, a handful of early and more recent studies have argued that the overall cost of capital will remain unchanged despite changes in capital structure. Admati et al. (2011) consider arguments of expensigve equity as fallacy and bring up the classical example of Modigliani-Miller: since the increase in capital provides further protection to shareholders reducing their risk, they will require lower rates of return in the more capitalized bank

Thus whether or not whether or not higher capital requirements affect banks overall cost of capital (and therefore lending rates and economic activity) is an empirical concern. In this paper we address this concern by using comprehensive data from listed European Banks. Our main objective is to evaluate the capital requirements and the risk-return relationship in the banking stock market.

Similar to Baker and Wurgler (2013), we estimate, first, the impact of leverage on bank equity

risk and, an second, the relation between equity risk and cost of bank equity or the overall cost of capital. Empirical evidence on the risk return relationship has been mixed. Our motivation stems particularly from here: the potential interaction of capital requirements and the low risk anomaly within the stock market: While stocks have on average earned higher returns than less risky asset classes like corporate bonds, which in turn have earned higher returns than government bonds or other riskless assets, the risk-return relationship within the stock market has historically been flat or even inverted.

Fama and French (1992), Baker, Bradley, and Wurgler (2011) find a flat or negative relationship between a stocks systematic risk, as measured by its stock market beta, and its subsequent returns. Similar patterns of negative relationship have also been documented between idiosyncratic risk and returns in the U.S. as well as many international stock markets (see, for instance, Ang, Hodrick, Ying, and Zhang (2009)). These studies suggest that there is a low risk anomaly on average within the stock market. Therefore, a relevant question for bank capital regulation is whether this holds within banks specifically.Indeed, the low risk anomaly might not be present in banks at all. All of these studies suggest that risk is not necessarily rewarded, and the relevant question is whether or not this is the case for the banking stocks in Europe. Does the cost of equity fall with capital requirements as the Modigliani-Miller logic predicts? Or does it not fall by enough, or actually increase, as bankers and the low risk anomaly would imply? Baker and Wurgler (2013) bring supporting evidence from the U.S.. We conclude the same from banks across all Western European economies in the period from 1980 to 2013, and to the best of our knowledge this is the first attempt to do so.

Our methodology borrows mainly from Baker and Wurgler (2013), Ang et al (2009) and Fama and French (2012, 1992). We face two main empirical challenges: the endogeneous choice of capital related to the riskiness of banks' assets, and the international nature of our study. To address the first one, we follow Baker and Wurgler (2013) and proceed in two steps in the

regression analysis: the first step is to relate bank equity risk estimated from markets to capital ratios from annual accounting data. In the second step, we regress realized returns on equity to bank equity betas. In some of the analysis we also look at idiosyncratic risk in addition to beta. Our most important finding is that while the expected relation in the first is confirmed, in the second we see know rward for higheer risk. The two steps together will also allow us to calibrate the effect of increased capital requirements on the cost of equity as well as on weighted average cost of capital.

Since we are studying international stocks, we have to make certain assumption on the extent of integration of asset markets across countries.There may be problems if there is absence of integrated asset pricing in the region we cover. Even if we have the correct asset pricing model, let's assume for instance CAPM, and spposing we have integrates asset pricing. In this case betas with respect to the whole region's market portfolio explain expected returns on all assets, but then local version of CAPM should not work. For example, betas with respect to the U.K. market portfolio should not explain expected returns on all U.K. assets. On the other hand if pricing is not regionally integrated, the international CAPM should fail if a local CAPM prices assets in each market. Following Fama and French (2012), we will assume that the Europan region is integrated enough and can be treated as one market.

To construct the market portfolio we follow the literature and weight the corresponding countries: Europe's market portfolio is computed as value weighted sum of the country factors.

Banking literature typically studies loan portfolios of banks, where the prices of loans are hard to measure on a market basis on a high enough frequency.[1] In this regard, our paper is

[1]Securities markets are often referred to as "frictionless" and "continuous", meaning that transaction costs are low, information is easily accessible and that transactions may take place frequently. Real markets, on the other hand, are characterized by high transaction costs, information may be difficult to obtain and transactions take place infrequently. Examples of real markets are the market for sale of loan portfolios and the market for extension of credit to households or enterprises.Market values will typically respond almost instantaneously to new information. Book values and book return often reflect the profitability from operating in real markets. Book values and book return will therefore respond slower to new information and new conditions than securities markets. One implication of the different market characteristics is that it is easier to predict book return than market return in the short term.One implication of the various market

different from the typical banking literature, and in methodology closer to asset pricing literature of mainly non-financial firms, as well as the few recent studies on banking equity. From the latter group, perhaps closest to our paper is Baker and Wurgler (2013) and Kashyap and Stein (2010), who did similar analysis for the U.S.. [2]

2 Betas, equity, and return

Standard theory of the firm predicts that lower leverage reduces risk and therefore cost of equity, under the assumptions of perfect and efficient capital markets[3]. In this paper, we confirm the first part of the theory, namely that the risk of bank goes down as leverage decreases. Our measures of capitalization show that the most capitalized banks have the lowest equity betas . [4] Interestingly, this differences are affected by two factors. First, they would be more pronounced if banks with riskier assets did not choose to have larger capital; because riskier assets increase bankruptcy probability, banks will want to increase their capital cushion. Thus, such a move is endogenous, and reduces the slope between capital ratios and beta.

Second, from some point on some of the asset risk is eventually borne by debtholders. This is true for highly leveraged banks; if a highly leveraged bank further increases its leverage, it is likely to increase its bankruptcy probability and therefore the risk for debtholders. But because debt risk rises, beta of debt will rise too, thus giving room for a more attenuated rise in equity's beta.

characteristics is that it is easier to predict book return than market return. Another implication is that expected market return on securities never will be negative, since it is voluntary to buy the securities. The price of securities will adjust too in order to obtain the required expected return. Expected book return, on the other hand, may be negative. While negative book return is not sustainable in the long run, negative book return may be expected during transitional periods when firms are returning to profitability after having been hit by negative shocks.

[2]King (2009) estimates cost of equity in a single factor CAPM model, while Maccario et al (2002). Estimate banks' cost of equity using analyst earnings' forecast.

[3]Modilgiani-Miller irrelevance predicts that the overall cost of capital is unchanged

[4]In fact, this is also true for idiosyncratic risk measures.

According to the second part of the theoretical argument, a reduction of beta should be reflected in a reduction of the cost of equity. We however show that this is not the case. The reduction of beta is generally invariant to returns, in line with empirical evidence on the low risk anomaly. While in efficient capital markets banks with higher capital ratios should have lower equity returns, capital structure is endogenous due to risk aversion and bankruptcy costs, rendering the cross-sectional analysis of capital ratios and beta erroneous.

To understand the causal effect of an increase in (exogenous) capital requirements we take into account the endogenous choice of (risky) banks for (high) capital, similar to Baker and Wurgler (2013). These effects will tend to reduce the effect of higher capital (as caused by regulation) on equity beta. But if one ignores the latter and still finds the expected relationship between capital and empirical equity betas, then it means that the exogenous effects will be at least as large.

The main arguments in the discussion of whether increased equity ratios will make the cost of capital higher, may be summarised by looking at the equation relating the cost of capital to the cost of equity, the cost of equity and the equity ratio

$$\beta_{Asset} = \frac{E}{D+E}\beta_{Equity} + \frac{D}{D+E}\beta_{Debt}$$

In this equation the cost of equity is typically higher than the cost of debt. What is often referred to as the Miller and Modigliani (MM) argument , is that the left hand side of this equation does not change if the equity ratio changes. If the equity share is increased, the volatility of equity is reduced and so is the cost of equity. The cost of debt, on the other hand, will either remain unchanged or decrease. Even though the individual elements of the right hand side of the equations will (or may, in case of debt) change, the sum of the elements will not change. What seems to be banks' argument is that the left hand side of the equation does change when the equity share is increased. In other words, the cost of capital is not fixed. Increasing the equity ratio will make the cost of capital higher because "cheap" debt is replaced by "expensive" equity.

Even though the cost of equity is reduced, this reduction will not be large enough to avoid that an increase in the cost of capital. Bankers use this line of reasoning when arguing against stricter capital regulation and against stricter capital regulation in one country than another.

To understand further how we think about the two step analysis of the impact on cost of capital, let's , yields

$$\beta_{Equity} = \frac{D+E}{E}\beta_{Asset} - \frac{D}{E}\beta_{Debt} \tag{1}$$

The relationship between leverage and equity beta is linear whenever debt is riskless, and the slope is equal to the asset beta. As mentioned before, whenever leverage is very high and debt is no longer riskless, further increase in leverage will increase debt beta, and therefore equity beta will not increase at the same pace: the increases is now partially borne by debtholders. Such effect is in addition, and amplifies the reducing effect of endogenous capital selection.

3 Data

We construct our data using several sources. We take all firms classified as banks in Datastream. We take end of month prices of the shares of all listed banks in Eurozone, the U.K., Switzerland, Scandinavia and Iceland. All accounting data including Tier 1 ratios and equity ratios are obtained from Worldscope via Datastream. Country level variables (i.e., exchange rates, local market returns, the regional market return S&P 500, risk free rates) come from IHS Global Insight. In total we have 236 banks from E.U. and several other industrialized European countries. We obtain monthly stock prices and returns for over 30 years, from 1980 to 2013, which in total bring about over 80000 observations.

Table 1 shows the number of banks in each country and each period.

Our main variables start from July 1980 up to July 2013. For, part of the analysis we will

focus on the later part of the period: only at the cost of a shorter time period further important variables, for instance Tier 1 capital ratio, become available. Our primary sample includes bank-months for which we can calculate a valid beta, with at least 12 monthly holding period return observations during the last 24 months, a nonmissing price, shares outstanding, a valid market capitalization, and at least one holding period return following a valid beta. Our main accounting variables are equity ratio and Tier 1 capital[5].

We us all listed banking firms available in the Banking section in Datastream from 1980 until 2013. Annual accounting data are taken from Datastream. Similar to Fama and French (1992), we ensure that the accounting variables are known prior to the returns that they are used to explain, by matching the accounting data for all *fiscal* yearends in calendar year $t-1$ (1990-2013) with the returns for July of year t to June of year $t+1$. We use the firm's share price at the end of December of year $t-1$ to compute its book-to-market, *leverage and earning-price ratios for* $t-1$. Finally, we use the firm's share price for June of year t to measure its size. Firms will thus be included in the return tests for July of year t if they have a Datastream stock price for December of year $t-1$ and June for year t. Additionally, *they must have returns monthly returns for at least 18 of the 24 months* preceding July of year t.

In figure 1, the sample is divided into three equal parts based on pre-ranking beta sorts, top, middle, and bottom, market weighted. The sample includes banks for which we can calculate a valid beta, with at least 12 observations of monthly holding period return within the last 24 months, a valid market capitalization, has a nonmissing price and shares outstanding, and at least

[5]Regulatory capital consists of other elements than equity. Basel III uses the categories Tier 1 and Tier 2 capital for regulatory capital. There is a comprehensive list of criteria that instruments must qualify in order to be accepted as regulatory capital. Tier 1 consists of Common Equity Tier 1 (CET1) and Additional Tier 1 (AT1) capital. AT1 capital is hybrid capital with "equity-like" characteristics. The minimum regulatory capital requirements are expressed as a minimum level of the ratio of regulatory capital to risk weighted assets. Banks may therefore improve their regulatory capital ratios by increasing the regulatory capital or by reducing risk weighted assets. There is therefore not a one-to-one relationship between higher regulatory capital requirements and higher equity ratios. Basel III, however, does imply that most banks have to increase their equity levels. In addition, Basel III introduces a minimum requirement for the equity ratio.

one holding period return following a valid beta. Pre-ranking beta is computed by regressing a minimum of 12 months and a maximum of 24 months of trailing holding period returns on the European market return $S\&P350$ in excess of the value weigthed weighted risk free rate for. In figure 2, we report the same statistics but for equally weighted portfolios.

4 Methodology

We construct our returns series across time and banks. We use the cross sectional regression methodology developed by Fama and MacBeth (1973) in our empirical tests. This is a two-stage methodology: the first stage involves a set of time series regression of each portfolio's return (the construction of which is outlined below) on the relevant factors of interest. Thus, in the first stage we have a set of regressions equal in number to the number of portfolios we will construct for analysis. the second stage involves a series of regressions equal in number to the number of time series over which we analyze the markets.

4.1 Construction of Portfolios

The construction of the dynamic portfolios follows from Fama and French (1992) and Baker and Wurgler (2013). We use different factors for breakpoints: In June of each year all European banks listed in datastream are sorted by equity ratio as well as Tier 1 ratio (i.e., market equity or ME) to determine the breakpoints for capitalization. We will be using five breakpoints of equity ratios (unlike Fama and French who use ten ratios for their main factor, size of the firms), since we do not have large enough number of banks. [6]

[6]However our results are similar when we use ten size deciles.

5 Empirical Analysis

Table 2 provides summary statistics by pre-ranking betas, from July 1980 to June 2013. Pre-ranking beta is computed by regressing a minimum of 12 months and a maximum of 24 months of trailing holding period returns on the European market return $S\&P350$ in excess of the risk free rate of the weighted risk free rate. Pre-ranking Root Mean Squared Errors (RMSE) are calculated based on the residuals from these regressions. In the first panel, we report means and medians by dividing the sample within each month into low (bottom 33.3%), medium (middle 33.3%), and high (top 33.3%) portfolios according to pre-ranking beta. The second panel reports means and medians of RMSE for the same portfolios. Book-to-market ratio is the ratio of book equity values (reported annually) to market capitalization, i.e. share price times shares outstanding.

5.1 Equity cost and capital ratio

To obtain a precise estimate of the linear relationship between post ranking beta and equity capital we can go beyond decile sorts. For idiosyncratic risk in particular, which cancels out in portfolios, we must look at the full cross section of beta and root mean squared error measured at the stock level. Table 3 shows regression results of forward beta and idiosyncratic risk on inverse equity capital, the specification suggested by equation (1), for all banks. In both panels, the dependent variable is the post ranking beta. The first column uses the ratio of total equity divided by average assets as the independent variable. The second column uses Tier 1 ratio. This sample runs from 1992, the first date when Tier 1 is available.

We use the Fama-MacBeth (1973) procedure, which gives equal weight to each cross section, in the estimation, and we also use two-dimensional clustering, which corrects the standard errors of a single regression for correlated residuals for different time periods for the same firm or for different firms at a point in time.

5.2 Returns and cost of equity

Table 4 runs cross-sectional Fama-MacBeth regressions of monthly returns on beta deciles. Under the CAPM, the coefficient on beta should reveal the market risk premium. Following Baker and Wurgler (2013), because of measurement error and skewness in beta, book-to-market, and momentum, we run these regressions using deciles instead of raw values. In the univariate as well as multivariate regressions, where we make the familiar assumption that size, book-to-market, and return momentum are risk factors that need to be controlled for, we fail to find any meaningful relationship between beta and returns.

Therefore, theory does not match the data on stock returns for banks. We indeed documented that less leverage does reduce equity risk and equity beta, but we are unable to see that lower beta translates into lower returns. The evidence above suggests that lower risk banks have the same or higher returns than higher risk banks.

6 Discussion and Concluding remarks

There are a number of reasons for regulatory increase in minimum capital requirements: agency problems in banks, asymmetric information, international coordination, bank governance, tax benefits of debt, government subsidies, shadow banking, and so on. Despite the costly frictions, there is a pervasive view underlying most discussions of capital regulation that equity is expensive, and that equity requirements, while having substantial benefits in mitigating problems causing instability, impose costs on the financial system and possibly on the economy. Bankers, policy makers and regulators are particularly concerned by assertions that increased equity requirements would restrict bank lending and would impede economic growth. Possibly as a result of such pressure, the proposed Basel III requirements, while moving in the direction of increasing capital, still allow banks to remain very highly leveraged.

However, the view on the impact of capital requirements on cost of capital is two-faceted. Many economists still maintain that weighted average cost of capital will remain unchanged. Following Modigliani and Miller, Admati et al. (2011) claim that because the increase in capital provides downside protection that reduces shareholders risk, shareholders will require a lower expected return to invest in a better capitalized bank.

We find that this theory does not match the data on stock returns for banks. While the evidence does show that less leverage reduces equity risk, there is still a role for the low risk anomaly: we document that lower risk banks have the same or higher returns than higher risk banks. The evidence contained in European market data suggests that reducing equity beta will not reduce the cost of equity.

7 References

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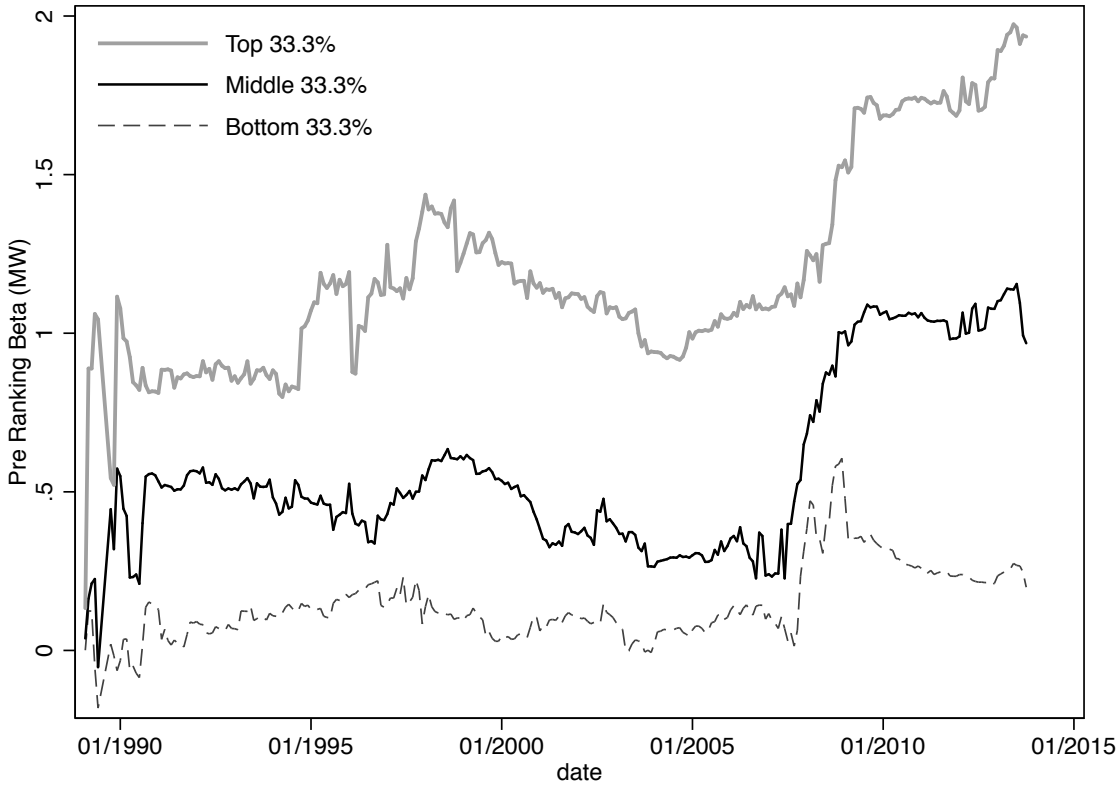
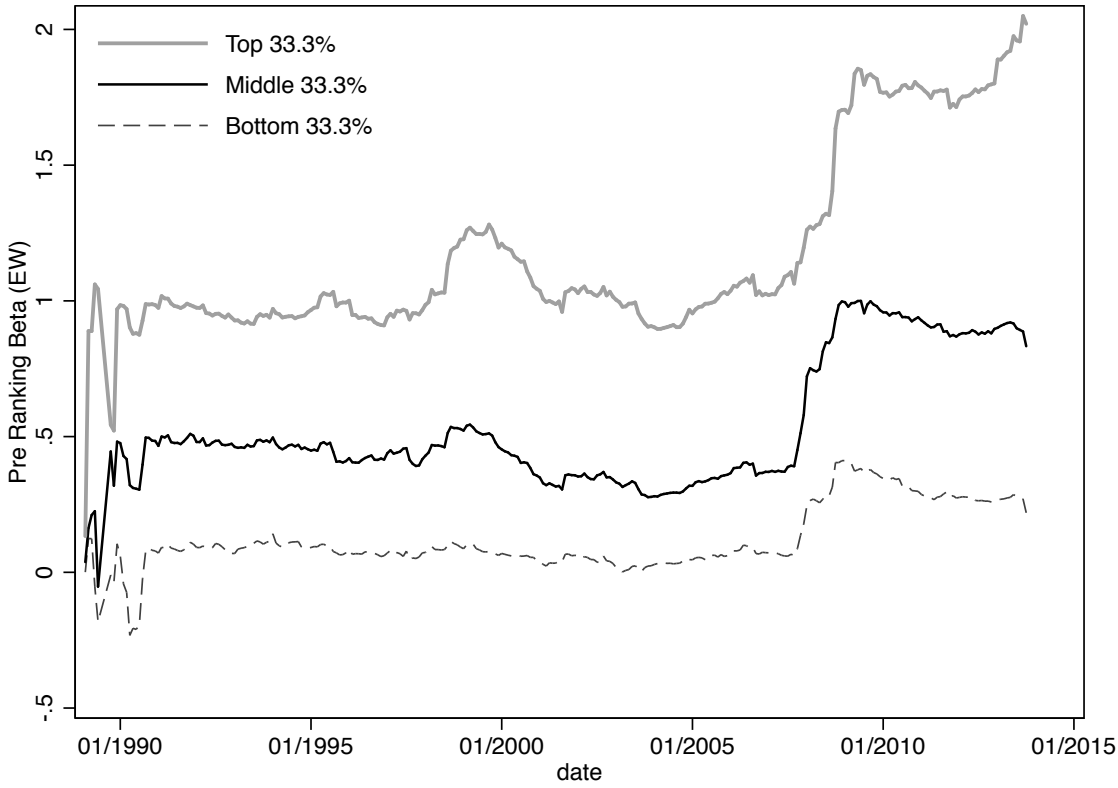
Figure 1: Pre-Ranking Beta, Market-Weighted



Observation are from January 1988 to October 2013. The sample is divided into three equal parts based on pre-ranking beta sorts, top, middle, and bottom, market weighted. Included banks are all the banks listed in Datastream section banks. The sample includes banks for which we can calculate a valid beta, with at least 12 observations of monthly holding period return within the last 24 months, a valid market capitalization, has a nonmissing price and shares outstanding, and at least one holding period return following a valid beta. Pre-ranking beta is computed by regressing a minimum of 24 months and a maximum of 60 months of trailing holding period returns on the European market return $S\&P350$ in excess of the country weighted risk free rate.

Figure 2: Pre-Ranking Beta, Equally-Weighted



Observation are from January 1988 to October 2013. The sample is divided into three equal parts based on pre-ranking beta sorts, top, middle, and bottom, equally weighted. Included banks are all the banks listed in Datastream section banks. The sample includes banks for which we can calculate a valid beta, with at least 12 observations of monthly holding period return within the last 24 months, a valid market capitalization, has a nonmissing price and shares outstanding, and at least one holding period return following a valid beta. Pre-ranking beta is computed by regressing a minimum of 24 months and a maximum of 60 months of trailing holding period returns on the European market return $S\&P350$ in excess of the country weighted risk free rate.

Table 1: Banks by Country and Year

	1988 - 1993	1993 - 1998	1998 - 2003	2003 - 2008	2008 - 2013	Total
Austria	8	9	10	10	7	16
Belgium	13	12	9	6	4	16
Cyprus	2	4	4	4	4	4
Denmark	55	47	46	43	39	63
Estonia	0	2	2	1	0	2
Finland	6	9	6	3	3	10
France	43	50	42	28	24	63
Germany	29	26	25	17	12	37
Greece	15	18	18	13	13	22
Iceland	0	0	4	5	1	6
Ireland	4	5	5	4	3	5
Italy	44	51	49	32	22	68
Luxembourg	4	4	4	2	1	4
Malta	0	0	4	4	4	4
Netherlands	11	8	8	5	3	16
Norway	19	31	31	27	23	44
Portugal	14	13	11	6	5	19
Slovakia	0	2	2	4	5	5
Slovenia	0	1	2	2	2	4
Spain	25	24	21	18	14	32
Sweden	12	7	5	4	4	16
Switzerland	36	35	26	26	27	46
United Kingdom	11	14	14	16	13	24
Total	351	372	348	280	233	526

Number of banks in each country by five-year time periods and overall, from Janaury 1988 to October 2013. Included banks are all the banks listed in Datastream section banks. The sample includes banks for which we can calculate a valid beta, with at least 12 observations of monthly holding period return within the last 24 months, a valid market capitalization, has a nonmissing price and shares outstanding, and at least one holding period return following a valid beta.

Table 2: Summary Statistics: Datastream

Summary statistics by pre-ranking betas, from January 1988 to October 2013. Included banks are all the banks listed in Datastream section banks. The sample includes banks for which we can calculate a valid beta, with at least 12 observations of monthly holding period return within the last 24 months, a valid market capitalization, has a nonmissing price and shares outstanding, and at least one holding period return following a valid beta. Pre-ranking beta is computed by regressing a minimum of 24 months and a maximum of 60 months of trailing holding period returns on the European market return $S\&P350$ in excess of the risk free rate of the weighted risk free rate. Pre-ranking Root Mean Squared Errors (RMSE) are calculated based on the residuals from these regressions. In the first panel, we report means and medians by dividing the sample within each month into low (bottom 33.3%), medium (middle 33.3%), and high (top 33.3%) portfolios according to pre-ranking beta. The second panel reports means and medians of RMSE for the same portfolios. Book-to-market ratio is the ratio of book equity values (reported annually) to market capitalization, i.e. share price times shares outstanding.

Panel A: Pre-Ranking Beta Sorts

	1			2			3			Total		
	N	mean	med	N	mean	med	N	mean	med	N	mean	med
Pre-Ranking Beta	22349	0.12	0.11	22257	0.52	0.46	22158	1.16	1.06	66764	0.60	0.48
20% Percentiles	22340	0.26	0.20	22250	0.67	0.58	22151	1.63	1.56	66741	0.85	0.62
Pre-Ranking RMSE	22348	4.90	4.48	22257	6.40	5.97	22158	8.05	7.48	66763	6.45	6.03
20% Percentiles	22340	6.28	5.48	22250	7.74	6.61	22151	10.24	8.57	66741	8.08	6.62
Tier 1 Ratio	5886	12.34	12.23	6746	10.28	9.41	9295	9.50	8.60	21927	10.50	9.60
Equity Ratio	18373	8.33	7.32	19550	7.73	6.45	20038	6.09	4.91	57961	7.36	6.03
Book-to-Market Ratio	18305	1.17	0.97	19606	1.18	0.87	20166	1.02	0.73	58077	1.12	0.85
Market Cap	22007	6380.02	194.32	22193	11682.16	510.90	22086	36358.21	3214.57	66286	18143.72	576.65

1, 2, 3 are top, middle, bottom 33.3% percentiles of each variable, respectively

Panel B: Pre-Ranking RMSE Sorts

	1			2			3			Total		
	N	mean	med	N	mean	med	N	mean	med	N	mean	med
Pre-Ranking Beta	22348	0.31	0.20	22256	0.62	0.56	22157	0.87	0.82	66761	0.60	0.48
20% Percentiles	22340	0.47	0.34	22250	0.87	0.79	22151	1.21	0.94	66741	0.85	0.62
Pre-Ranking RMSE	22348	3.78	3.90	22256	6.12	5.96	22157	9.46	8.82	66761	6.45	6.03
20% Percentiles	22340	4.80	4.65	22250	6.79	6.58	22151	12.70	12.86	66741	8.08	6.62
Tier 1 Ratio	6688	11.36	11.09	7812	10.22	9.09	7427	10.03	9.32	21927	10.50	9.60
Equity Ratio	19770	7.63	6.25	19743	7.22	6.14	18447	7.21	5.74	57960	7.36	6.03
Book-to-Market Ratio	19629	1.15	0.92	19845	1.06	0.81	18602	1.14	0.81	58076	1.12	0.85
Market Cap	22137	6128.38	344.94	22153	25767.47	786.25	21993	22560.52	851.26	66283	18144.39	576.72

1, 2, 3 are top, middle, bottom 33.3% percentiles of each variable, respectively

Table 3: Bank Capital and Forward Systematic and Idiosyncratic Risk

Bank Capital and Post-ranking Betas. The table reports regression results of post-ranking beta on measures of bank capital. In both panels, the dependent variable is the post ranking beta. The first column uses the ratio of total equity divided by average assets as the independent variable. This sample runs from 1988. The second column uses Tier 1 ratio. This sample runs from 1992, the first date when Tier 1 is available.

Panel A1: Fama-MacBeth, Dependent Variable is Forward Beta (EW)

	Equity to Assets		Tier 1 Ratio	
	Coeff	se(Coeff)	Coeff	se(Coeff)
Inverse Capital Ratio	0.616	0.011	5.089	0.177
Intercept	0.578	0.002	0.357	0.025
T	287		170	
Average R^2 (%)	0.025		0.077	

Panel A2: Fama-MacBeth, Dependent Variable is Forward Beta (MW)

	Equity to Assets		Tier 1 Ratio	
	Coeff	se(Coeff)	Coeff	se(Coeff)
Inverse Capital Ratio	0.621	0.010	5.615	0.223
Intercept	0.593	0.002	0.350	0.032
T	287		170	
Average R^2 (%)	0.026		0.095	

Table 4: Returns and Beta: Fama-MacBeth Regressions

Regressions of excess returns on pre-ranking beta deciles. Pre-ranking beta is computed by regressing a minimum of 24 months and a maximum of 60 months of trailing holding period returns on the European market return $S\&P350$ in excess of the risk free rate of the weighted risk free rate.

	Univariate		Multivariate	
	Coeff	se(Coeff)	Coeff	se(Coeff)
Pre-Ranking Beta (20% Percentiles)	-0.20	0.25	-0.40	0.24
Log (Market Cap)			0.18	0.03
Book-to-Market Ratio (20% Percentiles)			0.04	0.03
Intercept	0.19	0.12	-0.86	0.25
T	287		287	
Average R^2 (%)	0.086		0.118	

	Univariate		Multivariate	
	Coeff	se(Coeff)	Coeff	se(Coeff)
Pre-Ranking Beta	0.32	0.95	-0.60	0.35
Log (Market Cap)			0.18	0.03
Book-to-Market Ratio			0.06	0.06
Intercept	0.15	0.16	-0.81	0.25
T	296		287	
Average R^2 (%)	0.108		0.127	