Is Basel the right gateway for a more efficient debt market? An International Comparison

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Abstract

Current literature does not agree on the impact that Basel regulation is having onto the banking system, small and medium size enterprises (SMEs) and the single country economies. Moreover, recent crises cast some doubts on the efficacy of the regulation itself. With this paper, we investigate this issue by comparing the credit allocation capabilities of different countries. In particular we compare two Anglo-Saxon Countries (the USA and the UK) with a group of eight European Countries where Basel rules are fully implemented. We find that, without the competition of well-developed risk capital markets, Basel regulation struggles to be effective.

Keywords: SMEs financing, Basel III, Ratings, Certainty Equivalent

JEL classification: G32, M10, G28

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1. Introduction

The objective of this study is to evaluate the efficacies of the most current developments of Basel regulation on both the banking system, small and medium size enterprises (SMEs) as well as the overall economy of ten Countries: a group of eight European Countries where Basel regulation is fully implemented (Germany, France, Italy, Spain, Hungary, Poland, the Czech Republic and Slovakia) and two Anglo-Saxon Countries where the above regulation is only partially implemented. In fact, if on one hand, the main objectives of Basel III are those of strengthening transparency and accountability, enhancing sound regulation, promoting integrity in financial markets, reinforcing international cooperation and reforming international financial institutions; on the other hand, the G20 leaders committed to ensuring that regulation is efficient, does not impede financial innovation and supports the expansion of trade in financial services[2]. We aim to contribute to the current literature debate with two research questions. The first one is a comparison of two systems (the European and Anglo-Saxon ones) with different levels of application of the regulation itself and different corporate financial systems (the Anglo Saxon Countries being more capital market oriented while the European Countries being more banking centered). The second one is a comparison within the European Countries, where the expectation is the harmonization of rules and regulations. The comparison is performed by intersecting two dimensions: the level of bank's financing, which is a proxy for the true banks' credit allocation ability and an innovative rating methodology (Mantovani et al., 2014). The higher the intersection, the more efficient the country in allocating credit to SMEs. We find several interesting results. First, we observe heterogeneity in the mix of explanatory variables for the asset-side capability of firms to perform in the long run. This has potential implications for the banking system because the current framework of Basel regulation is a one size fits all solution and banks of different Countries may require different credit ratings solution dependent on the inner characteristics of the corporate system of the specific country.

[2] Declaration, Summit on Financial Markets and the World Economy, Washington, 15 November 2008, par. 9

Second, we find that in the two Anglo-Saxon Countries (USA, UK) the allocation efficacy of the banks system is higher than that of Europe. This may mean that the competition of capital markets is stronger than regulation itself.

The rest of the paper is organized as follows: section 2 presents a brief literature review, section 3 elaborated the model of analysis, section 4 presents the empirical results while section 5 concludes.

2. Market failures and Basel regulations: a literature review

The Basel Banking Accords are norms issued by the Basel Committee on Banking Supervision (BSBC) under the Bank of International Settlements (BIS) in Basel, Switzerland. As of the writing of this article, the most current rules are known as Basel III, which have the aim to improve the resilience of financial markets[3]. However, given two financial crisis and the current difficulties that European Countries are incurring to grow their economies (in part due to banks' difficulties to lend), current literature is investigating the efficacies of Basel regulations. Specifically there are two streams of thought concerning the economic implications that such new regulations can have on SMEs. On one side, Blundell-Wignall and Atkinson (2010), Cardone-Riportella et al. (2011), KPMG (2011), Kaserer (2012) and Schizas (2011a, 2011b), report a negative impact of Basel III onto SMEs. Specifically, Blundell-Wignall and Atkinson (2010) state that Basel III will cause banks to move from SMEs investing to safer forms of capital such as government bonds. They go a step further and suggest that it is important to develop a Rating System with default probabilities calculated on longer periods. We agree with them and question whether, given current low yield levels, it is prudent to classify government bond investing as "safe."

Cardone-Riportella et al. (2011) study a sample of Spanish SMEs and conclude that Basel III has important implication for SME borrowers. KPMG (2011) studies the possible issues and implications of the new regulation and comments that the new tier 1 definition and its higher requirements will

[3] Basel Committee on Banking Supervision, 2004, 2010, Bank for International Settlements

cause credit shrinkage, higher costs with smaller banks being the one mostly affected. Schizas (2011a, 2011b) demonstrates that, although there is no doubt of the need to ensure financial stability, or of the substantial benefits that Basel III will bring to SMEs, the forced deleveraging of European banks is likely to affect SME lending. Finally, Kaserer (2012) underlines that, there is an unleveled playing field between the way loans to SMEs and loans to larger companies are being treated. Since SME loan portfolios tend to have a greater granularity and defaults are less linked to changes in macro-economic conditions, SME loan portfolios tend to show more stability. While this is reflected in the Basel II and III accord by lower risk weights for smaller loans, the study provides evidence that the regulatory asset-correlation for smaller companies exceeds the effective asset-correlation by approximately 40%, whereas for larger companies this difference is much lower. This leads to a higher than necessary regulatory capital requirement for smaller companies. On the other hand, works by Delimatsis (2012), Dullman and Scheule (2003) and Dietsch and Petey (2004) show that large banks will be those to suffer more from Basel III requirements, which will in turn benefit smaller banks and SMEs. Specifically, Delimatsis (2012), citing evidence that large banks have lower Tier 1 capital[4], concludes that smaller banks are actually better positioned with respect to the new capital requirements than larger banks. Additionally, both Dullman and Scheule (2003) and Dietsch and Petey (2004) show that larger corporations are riskier by observing a positive cross asset correlation as well as a positive relation between the above correlation and the probability of default. All of the above studies, focus mainly on the implication of Basel regulation to banks' capital requirement and little has been written on the issue of modelling credit risk specifically for SMEs. We aim to contribute to this debate by investigating two levels of efficacy of the Basel agreements: among Countries where regulation is different and within Countries where regulation is applied. In fact, our first research question investigates how a set of Countries, where Basel accords are implemented partially[5] (UK

[4]Barclays Capital and Reuters 'Top banks face $100 billion Basel shortfall: report', 22 November 2010, available at: http://www.reuters.com/article/2010/11/22/us-banks-basel-idUSTRE6AL0A220101122

[5] FSI Survey, Basel II, 2.5 and III Implementation, Financial Stability Institute, Bank for International Settlments, July 2014

and USA), compares to a set of Countries where Basel regulation has been fully implemented (Italy, France, Spain, Germany, Slovakia, Hungary and the Czech Republic). The comparison analysis relates to the level of overlap between the amounts of financing actually received by companies (which, for the second group of Countries is a proxy for Basel regulation) and the merit of credit as assigned by an innovative forward looking rating systems as proposed by Mantovani et al. (2014).

Basell II introduced the possibility for banks to develop their own Internal Rating Based systems (IRB) next to the choice of directly using the Standardized Approach (SA), which relies on credit ratings of borrowers assigned by "external credit assessment institution (ECAIs)". Both the above methods find their fundamentals on the concepts of probability of default, exposure at default and loss given default, which are well documented in the literature starting from the seminal work by Beaver (1967), Altman (1968) and Ohlson (1980) down to the more recent model by Altman and Sabato (2007), which is specific to SMEs. We think that one of the main short-coming of these models is the fact that the horizon of analysis is limited to 12 months forwards. As stated above, we answer our first research question by using the methodology developed by Mantovani et al. (2014), which is forward looking by its nature and does not limit the risk assessment of a company to a one year horizon. We think that this is particularly important to the universe of SMEs because, often times, successful ideas with a high profitability potential, require a longer time horizon to develop. Another area of investigation of this study is the level of efficiency of the financial system in the different Countries. In fact, the second research question, investigates the allocative contribution given by the Basel regulation within a group of Countries where regulation itself is applied: Italy, France, Spain, Slovakia, Hungary and the Czech Republic. These Countries are classified based on their level of capital allocation efficiency. We define capital allocation efficiency based on the Separation Theorem by Fisher (1930), which states that, given perfect and complete capital markets, the production decision is governed solely by the profit-maximization objective, while the consumption decision is governed solely by utility maximization. The two decisions are hence separated and independent, meanwhile the governance of risks is done by financial markets.

3. The Model of Analysis

In order to answer to our first research question, we rank firms in each Country according to their asset-side capability to perform in the long run. Such a capability is based on an integrated view of each firm to generate operating returns in terms of ROI as defined in Eq. 1

$$ROI_t = \frac{EBIT_t}{(FIAS_t + WKCA_t + FIAS_{t-1} + WKCA_{t-1})/2} \quad \text{Eq. 1}$$

Where $EBIT$ = Earnings before interest and taxes; $FIAS$ = Fixed Assets; $WKCA$ = Working Capital

The sustainability of the corporate performance is depicted in terms of the ROI - T(ROI) difference, which is a proxy of the long term merit of credit for the firm according to Mantovani et al. (2014). T(ROI) is the long term threshold ROI adjusted on a series of ratios that aim to capture ex ante corporate risk (see Appendix). T(ROI) is based on the confident equivalent, an original evolution of certainty equivalent proposed by Lintner (1965) to assess values incomplete markets.

To rank the firms' merit of credit, the zero level of the proxy [ROI - T(ROI)] is considered. The higher the gap, the higher is the merit of credit. Then, this ranking is intersected with two indicators arranged around their median levels: 1) the Intensity of Indebtedness (Eq. 2), as a proxy for the efficiency of the banking system to allocate the **quantity** of credit; 2) Price of Financing (Eq.3), as a proxy for the efficiency of the banking system to determine the **price** of credit allowances.

$$\text{Intensity of Indebtedness} = DEB/OPRE_t = \frac{[(NFP_t^* + NFP_{t-1}^*)/2]}{OPRE_t} \quad \text{Eq.2}$$

$$\text{Price of Financing} = INT/DEB_t = \frac{INTE_t}{[(GFP_t^* + GFP_{t-1}^*)/2]} \quad \text{Eq. 3}$$

Where: GFP = Gross Financial Position = Loans + Long term debt; $OPRE$ = Operating Revenue
$SHFD$ = Total Shareholder Funds

This comparison will result with a set of two matrices made of four quadrants. They allow us to determine the overlap between the true banks' credit allocation ability (horizontal matrix direction), with the optimal allocation as determined by the integrated rating methodology (vertical matrix direction). The two matrices are reported in the following box.

Table 1: Overlaps between Long Term Merit of Credit and Intensity of Indebtedness

		ROI - T(ROI)	
		Positive	**Negative**
DEB/OPRE$_t$	**Higher**	**1.** Firms with positive rating that raise more financial resources than sample average	**2.** Firms with negative rating that raise more financial resources than sample average
	Lower	**3.** Firms with positive rating that raise less financial resources than sample average	**4.** Firms with negative rating that raise less financial resources than sample average

Table 2: Overlaps between Long Term Merit of Credit and Price of Financing

		ROI - T(ROI)	
		Positive	**Negative**
INT/DEB$_t$	**Lower**	**1.** Firms with positive rating that pay less for their raised financial resources	**2.** Firms with negative rating that pay less for their raised financial resources
	Higher	**3.** Firms with positive rating that pay more for their raised financial resources	**4.** Firms with negative rating that pay more for their raised financial resources

Countries are ranked according to three evidences emerging from the two matrixes:

1) **Risk of Default** (II quadrant of the quantity matrix), which indicates the percentage of firms that are given credit by the banking system, while the rating system assigns to them a negative ranking. This indicator reflects the potential "bad debt" for the banking system of the Country.

2) **Missing opportunities** (III quadrant of the quantity matrix), which indicates the percentage of firms which are not given credit by the banking system, while the rating system assigns to

them a positive ranking. This indicator represents the potential "missing opportunities" for a Country. This is why we adjusted it by the real expected GDP growth of each Country.

3) **Inefficient Debt Pricing** (quadrant II over the sum of quadrants II & III of the price matrix), which indicates the percentage of firms that underpay their financial risks (quadrant II) over the total amount of mispriced bank allowances (quadrants II and III).

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For research question two, we initially perform a series of panel regression to verify the level of efficiency of each of the eight European Countries under analysis, according to two steps.

As first, the Fisher Separation Theorem (1930) is tested. The Capital Allocation Efficiency is supposed when there is no significant relationship between the return on investment ($ROI_{i,t}$) and the current mix of risks within a corporation but, at the same time, there is a significant relationship (adjusted R-squared greater than 10%) between the intensity of indebtedness (Eq. 2) and corporate risks. In fact, in this situation, investment and financing decisions are independent. Entrepreneurs can be indifferent toward risks in their decision processes, since the investors control the level of risk by building up portfolio adjusted to their risk tolerance. To test this first block of the efficiency puzzle, we run two regressions: the former between $ROI_{i,t}$ (Eq.1) and set of proxies of corporate risks; the latter between the Intensity of Indebtedness (Eq.2) and the set of proxies.

As second, the financing efficiency, according to Fama (1970) standards, is considered. The strong form of efficiency cannot be detected, because the relations between expected returns and expected risks cannot be easily tested at the empirical level. Hence, only three tests are conducted: (i) semi strong form of efficiency, when financing decisions are dependent only on the current level of risks; (ii) weak form of efficiency, when financing decisions are also related to past risks; (iii) absence of efficiency, when there is no relationship between firm financing and its risks meanwhile there is evidence of a strong autocorrelation with past financing.

Following are the three panel regression models adopted for both the first step (ROI as dependent variable) and the second one (Intensity of Indebtedness as dependent variable):

i. Semi strong form of efficiency: $Y_{i,t} = \beta_0 + \beta_1 X_{i,t} + \varepsilon_{i,t}$

ii. Weak form of efficiency: $Y_{i,t} = \beta_0 + \beta_1 X_{i,t} + \beta_2 X_{i,t-1} + \varepsilon_{i,t}$

iii. Absence of efficiency: $Y_{i,t} = \beta_0 + \beta_1 Y_{i,t-1} + \beta_2 X_{i,t} + \varepsilon_{i,t}$

If a Country is not efficient at the first step, any regression for Intensity of Indebtedness will show low levels of adjusted R-squared. In this case, corporate managers have to intervene to adjust unfit equilibrium and higher than 10% adjusted R-squared in regressions for ROI are expected. The same Country should miss the second step as well, showing higher adjusted R-squared for the second and the third regressions ("weak" and "absence") if compared with the first ("semi-strong"), when run over the Intensity of Indebtedness.

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Finally, we try to match empirical evidence from the two research questions. We compare the level of efficiency of the financial system with the of overlap between the true banks' credit allocation capacity and the forward looking credit allocation methodology, as it results from investigations for research question one. If different but coherent evidences will emerge for the European and Anglo-Saxon Countries, than the Basel Regulation may not be the right gateway to an efficient debt market.

4. The empirical results

The sample under analysis covers data extracted from ORBIS database (edited by Bureau van Dijk[6]) for ten Countries: the United States of America (USA), the United Kingdom (UK), Italy, France, Spain, Germany, Hungary, the Czech Republic, Poland and Slovakia. Specifically, it includes

[6] Bureau van Dijk provides complete balance sheet data in the Global Standard Format for global companies. This limits the possibility to have detailed data for a specific company.

manufacturing and service firms with unconsolidated balance sheet data for total assets, operating revenues, fixed assets, shareholder's funds, cost of employees, over the period from 2006 to 2012[7]. The sample is made of 101'557 firms: 5'577 firms in USA, 25'288 firms in UK, 16'857 firms in France, 14'075 firms in Italy, 7'673 firms in Spain, 9'266 in Germany, 6'850 firms in Hungary, 12'832 firms in Czech Republic, 1'915 firms in Poland and 1'224 firms in Slovakia. For each company, a panel of 6 years data are considered: 603'765 firm years observations, as a total. Table 3 reports descriptive statistics for the sample, as detailed Country by Country.

Tables 3: Descriptive statistics for the final sample

Italy	Mean	Weighted Mean	Median	Standard Deviation
$CA/FIAS_t$	8.06	7.39	2.63	25.06
CA/CL_t	1.69	1.71	1.23	37.31
$WKCA/OPRE_t$	0.23	0.23	0.19	0.33
$WKCA/FIAS_t$	2.97	2.86	0.80	11.71
$CRED\text{-}DEBD_t$	130.03	127.78	77.64	189.88
$DEBLT_t$	0.24	0.26	0.00	2.68
$FCFC/OPRE_t$	0.08	0.08	0.07	0.19
$FCFO/OPRE_t$	0.00	0.00	0.02	0.63
LEV_t	1.30	1.31	1.10	10.57
DOL_t (volume)	6.72	6.96	5.08	44.12
DOL_t (price)	4.97	4.74	3.46	12.34
$FIAS/OPRE_t$	0.51	0.49	0.20	1.37
$INTE/DEB_t$	-0.14	-0.11	0.04	2.53
$DEB/OPRE_t$	0.19	0.19	0.09	0.59
$DEB/EBITDA_t$	1.85	1.89	1.02	28.55
$DEB/EQUITY_t$	1.82	1.77	0.39	7.65
ROE_t	0.08	0.07	0.05	1.44
ROI_t	0.13	0.12	0.07	1.02
Adjusted ROI_t	0.21	0.20	0.14	1.54
$EBIT/INT_t$	183.41	178.72	2.99	2354.44
ROS_t	0.04	0.04	0.04	0.15
TAX_t	0.37	0.38	0.37	1.97
$AV/STAF_{t-1}$	1.59	1.55	1.39	5.56
$AV/EMPL_t$	59.80	59.59	51.14	46.75
$RLFA_t$	10.9729	10.732	6.32	19.2818

France	Mean	Weighted Mean	Median	Standard Deviation
$CA/FIAS_t$	38.91	38.64	4.89	388.53
CA/CL_t	4.59	1.61	1.33	4962.96
$WKCA/OPRE_t$	0.24	0.19	0.11	9.63
$WKCA/FIAS_t$	9.41	9.13	0.85	111.71
$CRED\text{-}DEBD_t$	34271.30	41925.00	189.48	700871.00
$DEBLT_t$	0.14	0.15	0.00	4.67
$FCFC/OPRE_t$	0.07	0.07	0.07	18.14
$FCFO/OPRE_t$	12.39	6.11	0.04	3951.62
LEV_t	1.06	1.05	1.01	2.08
DOL_t (volume)	9.55	8.82	4.77	312.38
DOL_t (price)	2.97	3.12	2.10	5.31
$FIAS/OPRE_t$	1.90	1.29	0.09	76.72
$INTE/DEB_t$	-0.04	-0.05	0.00	7.36
$DEB/OPRE_t$	-0.11	-0.07	-0.05	26.91
$DEB/EBITDA_t$	-1.77	-1.57	-0.58	65.71
$DEB/EQUITY_t$	-0.53	-0.32	-0.28	93.10
ROE_t	0.21	0.20	0.16	3.69
ROI_t	0.25	0.25	0.13	24.28
Adjusted ROI_t	0.30	0.31	0.20	26.89
$EBIT/INT_t$	1842.79	2275.80	10.65	35075.90
ROS_t	-0.02	0.01	0.04	9.80
TAX_t	0.16	0.16	0.22	5.98
$AV/STAF_{t-1}$	2.05	2.24	1.19	20.22
$AV/EMPL_t$	n.a.	n.a.	n.a.	n.a.
$RLFA_t$	94.6566	85.999	6.26461	1327.06

[7] The period of analysis was chosen in order to develop a rating methodology that identifies risks-returns relations in a through-the-cycle perspective (five years of rating).

Spain	Mean	Weighted Mean	Median	Standard Deviation
$CA/FIAS_t$	6.62	7.08	1.13	34.64
CA/CL_t	5.64	4.57	1.61	25.86
$WKCA/OPRE_t$	0.77	0.63	0.25	6.50
$WKCA/FIAS_t$	3.51	3.75	0.46	25.97
$CRED\text{-}DEBD_t$	-7.09	-5.24	-15.49	143.18
$DEBLT_t$	0.51	0.53	0.63	12.23
$FCFC/OPRE_t$	0.17	0.15	0.12	5.72
$FCFO/OPRE_t$	-0.21	-0.17	0.05	8.64
LEV_t	1.60	1.52	1.07	19.19
DOL_t (volume)	5.67	6.01	3.13	43.64
DOL_t (price)	3.93	4.38	2.78	18.05
$FIAS/OPRE_t$	5.22	3.93	0.47	22.19
$INTE/DEB_t$	-0.12	-0.07	0.04	9.38
$DEB/OPRE_t$	1.38	1.13	0.17	8.65
$DEB/EBITDA_t$	2.65	2.39	1.36	36.60
$DEB/EQUITY_t$	0.95	0.86	0.24	15.37
ROE_t	0.06	0.07	0.05	3.17
ROI_t	0.10	0.11	0.05	6.03
Adjusted ROI_t	0.12	0.13	0.09	5.43
$EBIT/INT_t$	24.58	24.85	2.61	109.08
ROS_t	0.04	0.04	0.05	5.95
TAX_t	0.14	0.10	0.21	9.36
$AV/STAF_{t-1}$	3.79	3.50	1.55	14.82
$AV/EMPL_t$	n.a.	n.a.	n.a.	n.a.
$RLFA_t$	35.199	30.436	12.148	73.5458

Germany	Mean	Weighted Mean	Median	Standard Deviation
$CA/FIAS_t$	16.44	13.27	1.25	178.71
CA/CL_t	34.27	32.16	1.84	722.22
$WKCA/OPRE_t$	0.15	0.15	0.11	0.40
$WKCA/FIAS_t$	4.95	4.09	0.30	72.96
$CRED\text{-}DEBD_t$	1747.11	1476.60	20.73	43704.40
$DEBLT_t$	0.49	0.47	0.32	5.30
$FCFC/OPRE_t$	0.09	0.09	0.09	0.38
$FCFO/OPRE_t$	0.02	0.02	0.04	0.71
LEV_t	1.36	1.33	1.09	10.51
DOL_t (volume)	8.99	9.98	4.16	163.37
DOL_t (price)	3.99	3.90	2.67	75.48
$FIAS/OPRE_t$	7.17	3.13	0.27	726.14
$INTE/DEB_t$	-1.17	-1.20	0.04	17.09
$DEB/OPRE_t$	0.47	0.36	0.03	4.89
$DEB/EBITDA_t$	1.21	1.03	0.33	14.22
$DEB/EQUITY_t$	0.67	0.57	0.06	9.78
ROE_t	0.17	0.16	0.06	2.62
ROI_t	0.16	0.14	0.08	5.51
Adjusted ROI_t	0.28	0.27	0.15	5.00
$EBIT/INT_t$	1420.66	1281.60	3.71	65250.60
ROS_t	0.05	0.06	0.05	2.61
TAX_t	0.20	0.19	0.15	5.04
$AV/STAF_{t-1}$	4.99	3.12	1.36	134.27
$AV/EMPL_t$	110.21	95.62	68.65	225.88
$RLFA_t$	74.069	52.111	8.53863	1450.34

UK	Mean	Weighted Mean	Median	Standard Deviation
$CA/FIAS_t$	73.16	61.73	2.45	902.54
CA/CL_t	7.05	6.77	1.31	157.89
$WKCA/OPRE_t$	0.20	0.19	0.08	1.39
$WKCA/FIAS_t$	11.92	10.25	0.29	276.70
$CRED\text{-}DEBD_t$	61.61	62.38	42.47	86.97
$DEBLT_t$	0.39	0.39	0.03	2.99
$FCFC/OPRE_t$	0.08	0.09	0.08	0.86
$FCFO/OPRE_t$	0.05	0.06	0.05	1.55
LEV_t	0.79	0.88	1.02	40.49
DOL_t (volume)	5.21	5.42	3.36	68.01
DOL_t (price)	4.15	4.09	2.62	14.65
$FIAS/OPRE_t$	2.92	2.72	0.16	38.68
$INTE/DEB_t$	0.04	0.04	0.04	0.96
$DEB/OPRE_t$	1.72	1.57	0.15	10.19
$DEB/EBITDA_t$	2.36	2.35	0.91	33.26
$DEB/EQUITY_t$	4.04	4.84	0.18	606.54
ROE_t	0.84	0.47	0.11	89.47
ROI_t	0.16	0.16	0.08	19.34
Adjusted ROI_t	0.37	0.34	0.17	10.42
$EBIT/INT_t$	131.51	124.51	3.07	1653.19
ROS_t	0.01	0.02	0.05	2.54
TAX_t	0.18	0.18	0.22	1.82
$AV/STAF_{t-1}$	1.86	1.85	1.30	6.38
$AV/EMPL_t$	86474.70	87789.00	54900.80	200312.00
$RLFA_t$	103.085	91.619	6.62797	820.71

USA	Mean	Weighted Mean	Median	Standard Deviation
$CA/FIAS_t$	3.47	2.85	0.88	9.67
CA/CL_t	2.97	2.90	1.82	8.18
$WKCA/OPRE_t$	0.14	0.15	0.12	0.22
$WKCA/FIAS_t$	1.18	0.98	0.28	3.53
$CRED\text{-}DEBD_t$	n.a.	n.a.	n.a.	n.a.
$DEBLT_t$	0.50	0.55	0.00	2.54
$FCFC/OPRE_t$	-0.03	0.03	0.11	1.07
$FCFO/OPRE_t$	-0.19	-0.12	0.02	1.24
LEV_t	1.07	1.11	1.01	1.74
DOL_t (volume)	1.86	2.14	1.18	6.08
DOL_t (price)	3.86	4.77	2.33	32.00
$FIAS/OPRE_t$	1.72	1.58	0.49	6.92
$INTE/DEB_t$	-0.33	-0.11	0.05	7.44
$DEB/OPRE_t$	-0.04	0.00	0.05	9.24
$DEB/EBITDA_t$	0.79	0.93	0.53	16.11
$DEB/EQUITY_t$	0.11	0.17	0.01	12.32
ROE_t	0.14	0.09	0.08	8.61
ROI_t	0.06	0.06	0.07	1.11
Adjusted ROI_t	n.a.	n.a.	n.a.	n.a.
$EBIT/INT_t$	-2.30	17.63	2.27	404.07
ROS_t	-1.85	-0.82	0.04	27.79
TAX_t	0.12	0.15	0.08	0.59
$AV/STAF_{t-1}$	6.13	10.17	1.34	46.88
$AV/EMPL_t$	n.a.	n.a.	n.a.	n.a.
$RLFA_t$	20.364	17.986	10.5891	71.3343

Poland	Mean	Weighted Mean	Median	Standard Deviation
$CA/FIAS_t$	8.04	5.89	1.50	31.62
CA/CL_t	2.46	2.27	1.57	3.07
$WKCA/OPRE_t$	0.13	0.13	0.11	0.16
$WKCA/FIAS_t$	2.79	2.07	0.52	13.32
$CRED\text{-}DEBD_t$	489.13	464.54	41.37	1810.57
$DEBLT_t$	0.24	0.23	0.00	1.22
$FCFC/OPRE_t$	0.09	0.09	0.08	0.13
$FCFO/OPRE_t$	0.05	0.04	0.04	0.26
LEV_t	1.16	1.16	1.04	1.24
DOL_t (volume)	6.49	7.04	3.51	50.87
DOL_t (price)	n.a.	n.a.	n.a.	n.a.
$FIAS/OPRE_t$	0.59	0.66	0.20	1.12
$INTE/DEB_t$	-0.25	-0.29	0.00	15.80
$DEB/OPRE_t$	0.01	0.01	-0.01	0.27
$DEB/EBITDA_t$	0.10	0.06	-0.04	8.85
$DEB/EQUITY_t$	0.05	0.05	-0.03	1.17
ROE_t	0.20	0.17	0.13	0.63
ROI_t	0.25	0.21	0.12	0.80
Adjusted ROI_t	0.32	0.28	0.21	0.96
$EBIT/INT_t$	172.61	184.94	10.08	763.80
ROS_t	0.06	0.06	0.05	0.10
TAX_t	0.19	0.18	0.19	0.49
$AV/STAF_{t-1}$	2.17	2.21	1.52	3.25
$AV/EMPL_t$	27047.90	26523.00	19851.40	24765.70
$RLFA_t$	46.182	50.543	7.24761	204.238

Czech Republic	Mean	Weighted Mean	Median	Standard Deviation
$CA/FIAS_t$	8.84	8.20	1.56	53.59
CA/CL_t	2.92	2.84	1.74	4.12
$WKCA/OPRE_t$	0.14	0.14	0.09	0.59
$WKCA/FIAS_t$	1.85	1.80	0.38	9.70
$CRED\text{-}DEBD_t$	291.90	300.98	13.02	2385.10
$DEBLT_t$	0.16	0.16	0.00	7.31
$FCFC/OPRE_t$	0.09	0.09	0.08	0.22
$FCFO/OPRE_t$	0.01	0.02	0.03	0.43
LEV_t	1.18	1.18	1.05	1.75
DOL_t (volume)	6.70	6.59	4.22	28.57
DOL_t (price)	4.22	4.47	2.98	7.90
$FIAS/OPRE_t$	0.72	0.63	0.22	3.06
$INTE/DEB_t$	0.02	0.02	0.02	2.90
$DEB/OPRE_t$	0.02	0.02	-0.02	0.86
$DEB/EBITDA_t$	-0.26	-0.16	-0.23	16.15
$DEB/EQUITY_t$	0.03	0.06	-0.07	2.69
ROE_t	0.17	0.15	0.09	5.88
ROI_t	0.35	0.32	0.11	4.91
Adjusted ROI_t	0.45	0.42	0.19	5.01
$EBIT/INT_t$	103.97	116.48	6.52	1149.30
ROS_t	0.05	0.05	0.04	0.16
TAX_t	0.12	0.13	0.14	0.27
$AV/STAF_{t-1}$	1.71	1.71	1.38	2.91
$AV/EMPL_t$	21.60	22.58	16.90	17.91
$RLFA_t$	19.954	17.913	7.4422	112.91

Hungary	Mean	Weighted Mean	Median	Standard Deviation
$CA/FIAS_t$	4.55	32.16	1.17	24.36
CA/CL_t	1.92	2.36	1.32	2.34
$WKCA/OPRE_t$	0.15	0.19	0.13	0.14
$WKCA/FIAS_t$	1.20	6.92	0.40	4.19
$CRED\text{-}DEBD_t$	355.04	3938.40	26.17	2070.80
$DEBLT_t$	0.09	0.15	0.00	0.68
$FCFC/OPRE_t$	0.10	0.08	0.08	0.12
$FCFO/OPRE_t$	0.04	-0.02	0.04	0.18
LEV_t	1.28	1.20	1.09	2.87
DOL_t (volume)	7.34	19.68	3.96	62.67
DOL_t (price)	5.18	4.13	3.66	11.23
$FIAS/OPRE_t$	0.44	0.90	0.29	0.56
$INTE/DEB_t$	-0.17	-2.05	0.05	2.82
$DEB/OPRE_t$	-0.02	0.07	-0.02	0.20
$DEB/EBITDA_t$	-0.19	0.65	-0.25	7.39
$DEB/EQUITY_t$	-0.07	0.13	-0.08	1.12
ROE_t	0.18	0.93	0.11	1.11
ROI_t	0.14	0.24	0.09	0.54
Adjusted ROI_t	0.22	0.32	0.17	0.59
$EBIT/INT_t$	268.35	292.38	4.44	5633.74
ROS_t	0.06	0.01	0.05	0.10
TAX_t	0.09	0.15	0.07	0.34
$AV/STAF_{t-1}$	2.17	19.50	1.58	5.29
$AV/EMPL_t$	22588.00	31543.00	16086.50	26255.90
$RLFA_t$	11.0551	47.735	7.36826	55.2886

Slovakia	Mean	Weighted Mean	Median	Standard Deviation
$CA/FIAS_t$	4.25	4.00	1.08	9.64
CA/CL_t	1.76	1.75	1.28	1.62
$WKCA/OPRE_t$	0.16	0.16	0.12	0.51
$WKCA/FIAS_t$	1.16	1.14	0.36	3.53
$CRED\text{-}DEBD_t$	941.33	842.07	53.20	4473.58
$DEBLT_t$	0.17	0.18	0.00	0.67
$FCFC/OPRE_t$	0.14	0.14	0.11	0.49
$FCFO/OPRE_t$	0.01	0.01	0.04	0.77
LEV_t	1.23	1.23	1.06	1.22
DOL_t (volume)	6.46	6.50	3.46	30.06
DOL_t (price)	4.69	4.61	3.33	7.66
$FIAS/OPRE_t$	1.05	1.02	0.35	4.44
$INTE/DEB_t$	-0.14	3508.60	0.02	3.12
$DEB/OPRE_t$	0.02	-0.16	-0.01	0.62
$DEB/EBITDA_t$	-0.13	0.03	-0.07	11.98
$DEB/EQUITY_t$	0.14	-0.04	-0.02	2.16
ROE_t	0.16	0.18	0.09	0.64
ROI_t	0.17	0.15	0.08	1.00
Adjusted ROI_t	0.31	0.15	0.20	1.70
$EBIT/INT_t$	168.73	0.29	6.11	6013.07
ROS_t	0.05	203.52	0.05	0.35
TAX_t	0.14	0.05	0.16	0.25
$AV/STAF_{t-1}$	2.67	0.14	1.54	8.14
$AV/EMPL_t$	n.a.	n.a.	n.a.	n.a.
$RLFA_t$	10.0654	2.6924	5.8829	21.6425

Table 3 presents descriptive statistics on the sample without outliers[8]. We calculate means, weighted means, median, standard deviations for all the non-anomalous firms. Indexes' formulas are reported in the Appendix.

In order to answer to the first research question, we need to calculate T(ROI) (Mantovani et al. 2014). Under a methodological point of view, this consists of applying a set of panel regressions to each of the ten Countries under analysis in order to find which model has the highest predictive power to estimate the future confident equivalent around ROI. Following is a list of five different regressions, all tested even by including the autoregressive component of the dependent variable (bis version). The dependent variable is represented by the return on investment ($ROI_{i,t}$) or by the difference over two years of the return on investment ($\Delta ROI_{i,t}$). The independent variables (the vectors $X_{i,t}$ and $\Delta X_{i,t}$) are a set of indices that are typically used to describe the risk profile of a corporation. They include operational risks, such as the degree of operating leverage and the absolute intensity of working capital, technological risks such as the absolute intensity of fixed assets and financial risks such as financial leverage and long term debt rate (see Appendix). To compute T(ROI), we select the regression with the highest adjusted R-squared, between the following ones:

A. $ROI_{i,t} = \beta_0 + \beta_i X_{i,t} + \varepsilon_{i,t}$

A-bis : $ROI_{i,t} = \beta_0 + \beta_i X_{i,t} + \beta_j ROI_{i,t-1} + \varepsilon_{i,t}$

B. $ROI_{i,t} = \beta_0 + \beta_i X_{i,t-1} + \varepsilon_{i,t}$

B-bis : $ROI_{i,t} = \beta_0 + \beta_i X_{i,t-1} + \beta_j ROI_{i,t-1} + \varepsilon_{i,t}$

C. $\Delta ROI_{i,t} = \beta_0 + \beta_i X_{i,t-1} + \varepsilon_{i,t}$

C-bis : $\Delta ROI_{i,t} = \beta_0 + \beta_i X_{i,t-1} + \beta_j \Delta ROI_{i,t} + \varepsilon_{i,t}$

D. $\Delta ROI_{i,t} = \beta_0 + \beta_i \Delta X_{i,t} + \varepsilon_{i,t}$

D-bis : $\Delta ROI_{i,t} = \beta_0 + \beta_i \Delta X_{i,t} + \beta_j \Delta ROI_{i,t-1} + \varepsilon_{i,t}$

[8] We define outliers as values outside the interval of (median – 2*standard deviation; median + 2*standard deviation). Firms that have outlier indexes over any year from 2007 to 2012 are excluded from the analysis.

E. $\Delta ROI_{i,t} = \beta_0 + \beta_i \Delta X_{i,t-1} + \varepsilon_{i,t}$

E-bis : $\Delta ROI_{i,t} = \beta_0 + \beta_i \Delta X_{i,t-1} + \beta_j \Delta ROI_{i,t-1} + \varepsilon_{i,t}$

Table 4 presents the regression (out of the five identified) that we select for each Country, as being the best predicting one to calculate T(ROI).

The first thing that we observe is that each Country has a different regression with the best fit. For instance, for France and Spain we select regression *D-bis* (return on investment, ROI, of the prior year) while for Poland, Hungary, Germany and the USA we prefer regression *A-bis*. It is worth noting, that Germany is the Country with the lowest predictive regression (the highest R-squared found is 3%). It is clear, that future research will need to add "qualitative" components to increase model predictability. Additionally, for Italy we select regression *C-bis*, for the UK we select regression *B-bis* while the Czech Republic and Slovakia are the only Countries without the autoregressive component in the regression with the highest adjusted R-squared (regression A for Czech Republic and regression B for Slovakia). For instance, for Italy, we observe that regression *C-bis*, in his highest predictive version, retains 11 highly significant ratios that capture mainly technology features of risk such as the current equilibrium of assets and both the relative and absolute intensity of working capital and the rate of return component of risk such as the margin of free cash flow, the return on equity and sales and the tax rate. Of notice, is the fact that the significant risk ratios are all defined at year t-1. A similar mix of risks, with only marginal differences, is present in regression *A-bis* for the USA. The only difference between regressions A and C is the way that the return on investment (ROI) is calculated: for regression C (selected for Italy), it is done on a year over year basis ($\Delta ROIi,t$), while for regression A (USA), it is the simple ROI at time t. Differently, for France, regression *D-bis* retains 6 ratios representing technology, financial strategy, operating risks and rate of return . All of them are calculated on a year over year basis. The Countries with the least amount of significant ratios are Slovakia (4) and Spain (1). The four significant ratios for Slovakia represent of all the categories

indicated in the Appendix table (technology, financial strategy, operations and rate of return) and are those of the prior year of analysis.

Table 4 – Regression statistics for the ten Countries

ITALY	Regression C-bis
Variable	$\Delta ROIt$
const	0.0008
	(0.71985)
$CA/FIAS_{t-1}$	-0.0001 *
	(0.08044)
CA/CL_{t-1}	-0.0037 ***
	(0.0000)
$WKCA/OPRE_{t-1}$	0.0082 ***
	(0.00011)
$WKCA/FIAS_{t-1}$	-0.0011 ***
	(0.0000)
$CRED\text{-}DEBD_{t-1}$	0.0000 ***
	(0.00003)
$FCFC/OPRE_{t-1}$	0.0090 ***
	(0.00456)
$FIAS/OPRE_{t-1}$	-0.0016 ***
	(0.0000)
ROE_{t-1}	0.0123 ***
	(0.0000)
$EBIT/INT_{t-1}$	0.0000 ***
	(0.0000)
ROS_{t-1}	-0.1194 ***
	(0.0000)
TAX_{t-1}	0.0015 *
	(0.05165)
ΔROI_{t-1}	-0.2495 ***
	(0.0000)
R-squared	0.759498
Adj. R-squared	0.759419
P-value (F-stat)	0.000000
Hannan-Quinn	245515.6000

FRANCE	Regression D-bis
Variable	ΔROI_t
const	-0.0092
	(0.5922)
$\Delta CA/FIAS_t$	-0.0014 ***
	(0.0000)
$\Delta WKCA/OPRE_t$	0.0021 **
	(0.0176)
$\Delta DEB/OPRE_t$	-0.0128 ***
	(0.0000)
$\Delta DEB/EQUITY_t$	-0.0031 ***
	(0.0061)
ΔROE_t	0.0396 **
	(0.0163)
ΔROS_t	0.1586 ***
	(0.0001)
ΔROI_{t-1}	-0.4417 ***
	(0.0000)
R-squared	0.2728
Adj. R-squared	0.2726
P-value (F-stat)	0.0000
Hannan-Quinn	271205

SPAIN	Regression D-bis
Variable	ΔROI_t
const	-0.0242
	(0.71852)
$\Delta CRED\text{-}DEBD_t$	0.0022 ***
	(0.00127)
ΔROI_{t-1}	-0.4923 ***
	(0.0000)
R-squared	0.243998
Adj. R-squared	0.243906
P-value (F-stat)	0
Hannan-Quinn	117772.8

UK	Regression B-bis
Variable	ROI_t
const	-0.0281
	(0.64764)
$CA/FIAS_{t-1}$	-0.0070 ***
	(0.00004)
$WKCA/OPRE_{t-1}$	0.2696 ***
	(0.00064)
$FCFC/OPRE_{t-1}$	0.5155 ***
	(0.00000)
DOL_{t-1} (price)	0.0246 ***
	(0.00000)
$FIAS/OPRE_{t-1}$	0.2783 ***
	(0.00000)
$DEB/OPRE_{t-1}$	0.2076 ***
	(0.00000)
$DEB/EBITDA_{t-1}$	0.0041 ***
	(0.00047)
ROS_{t-1}	10.3426 ***
	(0.00000)
$AV/STAF_{t-1}$	-0.1011 ***
	(0.00000)
$AV/EMPL_{t-1}$	0.0000 ***
	(0.00000)
ROI_{t-1}	-0.1081 ***
	(0.0000)
R-squared	0.2408
Adj. R-squared	0.2401
P-value (F-stat)	0.0000
Hannan-Quinn	110812.2

USA	Regression A-bis
Variable	ΔROI_t
const	0.0589 ***
	(0.0000)
$CA/FIAS_t$	-0.0365 ***
	(0.0000)
CA/CL_t	-0.0050 **
	(0.0148)
$WKCA/OPRE_t$	-0.1253 ***
	(0.0000)
$WKCA/FIAS_t$	0.0820 ***
	(0.0000)
$FCFO/OPRE_t$	0.0767 ***
	(0.0000)
$FIAS/OPRE_t$	0.0415 ***
	(0.0000)
$DEB/OPRE_t$	-0.1411 ***
	(0.0000)
$EBIT/INT_t$	0.0001 ***
	(0.0000)
ROS_t	0.3028 ***
	(0.0000)
ROI_{t-1}	0.3551 ***
	(0.0000)
R-squared	0.4880
Adj. R-squared	0.4869
P-value (F-stat)	0.0000
Hannan-Quinn	20204

Table 4 presents the model which was selected for each Country. The selected model is the one among five (D,E,F,G,H), which presents the highest adjusted Rsquared. Regressions are estimated for the sample without outliers (86.079 firms).

Table 4cont – Regression statistics for the ten Countries

POLAND	Regression A-bis
Variable	ROI_t
const	0.0369 ***
	(0.0000)
CA/CL_t	0.0087 ***
	(0.0000)
$WKCA/OPRE_t$	-0.1153 ***
	(0.0000)
$FIAS/OPRE_t$	-0.0261 ***
	(0.0000)
ROE_t	0.2796 ***
	(0.0000)
$EBIT/INT_t$	0.0000 ***
	(0.0014)
ROS_t	0.8866 ***
	(0.0000)
ROI_{t-1}	0.1529 ***
	(0.0000)
R-squared	0.7874
Adj. R-squared	0.7865
P-value (F-stat)	0.0000
Hannan-Quinn	8244

CZECH REPUBLIC	Regression D
Variable	ΔROIt
const	0.0453 ***
	(0.0000)
CA/FIASt	-0.0027 ***
	(0.0000)
CA/CLt	0.0141 ***
	(0.0000)
WKCA/OPREt	-0.0616 ***
	(0.0000)
WKCA/FIASt	0.0029 ***
	(0.0000)
LEVt	-0.0015 *
	-0.07913
DOL_t (price)	-0.0032 ***
	(0.0000)
FIAS/OPREt	-0.0089 **
	-0.02272
ROEt	0.0085 ***
	(0.0000)
ROSt	1.2591 ***
	(0.0000)
TAXt	0.0527 ***
	-0.00035
AV/EMPLt	0.0011 ***
	-0.00642
ROIt-1	0.0040 ***
	(0.0000)
R-squared	0.946344
Adj. R-squared	0.946315
p-value (F-stat)	0.000000
Hannan-Quinn	152867.3

HUGARY	Regression A-bis
Variable	ROIt
const	0.0536
	(0.0000)
CA/FIAS	0.0042 ***
	(0.0000)
WKCA/OPRE	-0.1120 ***
	(0.0000)
WKCA/FIAS	-0.0057 ***
	(0.0000)
DEBLT	-0.0023 ***
	(0.00015)
FCFO/OPRE	-0.0442 ***
	(0.0000)
FIAS/OPRE	-0.0537 ***
	(0.0000)
DEB/OPRE	-0.0438 ***
	(0.0000)
DEB/EBITDA	-0.0002 *
	(0.05860)
ROE	0.0120 ***
	(0.0000)
ROS	1.5907 ***
	(0.0000)
AV/EMPL	0.0000 ***
	(0.00152)
ROI	0.1253 ***
	(0.0000)
R-squared	0.649411
Adj. R-squared	0.648851
P-value (F-stat)	0.000000
Hannan-Quinn	36476.52

SLOVAKIA	Regression B
Variable	ROI_t
const	0.0229
	(0.53141)
$WKCA/FIAS_{t-1}$	0.0353 ***
	(0.00762)
LEV_{t-1}	0.0255 ***
	(0.00028)
DOL_{t-1} (price)	-0.0075 **
	(0.02385)
ROE_{t-1}	0.5903 ***
	(0.0000)
R-squared	0.082612
Adj. R-squared	0.081339
P-value (F-stat)	0.000000
Hannan-Quinn	24475.9100

GERMANY	Regression A-bis
Variable	ROIt
const	-0.0240
	(0.2688)
$CA/FIAS_t$	0.0040 ***
	(0.00075)
$FCFC/OPRE_t$	1.2716 ***
	(0.0000)
FIAS/OPREt	-0.0589 *
	(0.05858)
ROE_t	0.0452 ***
	(0.00026)
$EBIT/INT_t$	0.0000 ***
	(0.00261)
$AV/EMPL_t$	0.0002 ***
	(0.0000)
ROIt-1	0.3466 ***
	(0.0000)
R-squared	0.033205
Adj. R-squared	0.032963
P-value (F-stat)	0.000000
Hannan-Quinn	275318.9000

Table 4 presents the model which was selected for each Country. The selected model is the one among five (D,E,F,G,H), which presents the highest adjusted Rsquared. Regressions are estimated for firms without outliers (86.079) firms.

Once T(ROI) is calculated, firms are ranked based on the variable [ROI – T(ROI)], which is a proxy for their long term merit of credit. The ranking is compared to the effective debt allocation by banks. Table 5 presents the resulting matrices which intersect the above three dimensions, whereas Table 6 presents ranking of the Countries based on three different indicators: Risk of Default, Missing Opportunities and Inefficient Debt Pricing.

Table 5: Allocative matrices

ITALY

		Rating	
		positive	negative
DEBT/OPRE	higher	4189	2989
	lower	3569	3105

		Rating	
		positive	negative
DEBT/OPRE	higher	30.24%	21.58%
	lower	25.77%	22.42%

		Rating	
		positive	negative
INTE/DEBT	lower	2002	1541
	higher	2294	1718

		Rating	
		positive	negative
INTE/DEBT	lower	26.50%	20.40%
	higher	30.36%	22.74%

FRANCE

		Rating	
		positive	negative
DEBT/OPRE	higher	4138	4026
	lower	3881	4295

		Rating	
		positive	negative
DEBT/OPRE	higher	25.32%	24.64%
	lower	23.75%	26.29%

		Rating	
		positive	negative
INTE/DEBT	lower	2930	3095
	higher	3963	4021

		Rating	
		positive	negative
INTE/DEBT	lower	20.92%	22.09%
	higher	28.29%	28.70%

SPAIN

		Rating	
		positive	negative
DEBT/OPRE	higher	1208	1095
	lower	1591	1367

		Rating	
		positive	negative
DEBT/OPRE	higher	22.96%	20.81%
	lower	30.24%	25.98%

		Rating	
		positive	negative
INTE/DEBT	lower	1199	1059
	higher	1516	1315

		Rating	
		positive	negative
INTE/DEBT	lower	23.56%	20.81%
	higher	29.79%	25.84%

UNITED KINGDOM

		Rating	
		positive	negative
DEBT/OPRE	higher	2699	3278
	lower	4362	2436

		Rating	
		positive	negative
DEBT/OPRE	higher	21,13%	25,66%
	lower	34,14%	19,07%

		Rating	
		positive	negative
INTE/DEBT	lower	3206	2633
	higher	3037	2567

		Rating	
		positive	negative
INTE/DEBT	lower	28,02%	23,01%
	higher	26,54%	22,43%

GERMANY

		Rating	
		positive	negative
DEBT/OPRE	higher	1359	3142
	lower	1952	2177

		Rating	
		positive	negative
DEBT/OPRE	higher	15.75%	36.41%
	lower	22.62%	25.23%

		Rating	
		positive	negative
INTE/DEBT	lower	979	2392
	higher	1902	2499

		Rating	
		positive	negative
INTE/DEBT	lower	12.60%	30.78%
	higher	24.47%	32.15%

USA

		Rating	
		positive	negative
DEBT/OPRE	higher	559	410
	lower	348	427

		Rating	
		positive	negative
DEBT/OPRE	higher	32.05%	23.51%
	lower	19.95%	24.48%

		Rating	
		positive	negative
INTE/DEBT	lower	457	382
	higher	441	444

		Rating	
		positive	negative
INTE/DEBT	lower	26.51%	22.16%
	higher	25.58%	25.75%

POLAND

		Rating	
		positive	negative
DEBT/OPRE	higher	294	380
	lower	396	355

		Rating	
		positive	negative
DEBT/OPRE	higher	20.63%	26.67%
	lower	27.79%	24.91%

		Rating	
		positive	negative
INTE/DEBT	lower	277	322
	higher	304	331

		Rating	
		positive	negative
INTE/DEBT	lower	22.45%	26.09%
	higher	24.64%	26.82%

CZECH REPUBLIC

		Rating	
		positive	negative
DEBT/OPRE	higher	1470	2590
	lower	1476	1442

		Rating	
		positive	negative
DEBT/OPRE	higher	21.07%	37.12%
	lower	21.15%	20.66%

		Rating	
		positive	negative
INTE/DEBT	lower	1002	1397
	higher	1252	1842

		Rating	
		positive	negative
INTE/DEBT	lower	18.24%	25.43%
	higher	22.79%	33.53%

HUNGARY

		Rating	
		positive	negative
DEBT/OPRE	higher	717	1188
	lower	457	578

		Rating	
		positive	negative
DEBT/OPRE	higher	24.39%	40.41%
	lower	15.54%	19.66%

		positive	negative
INTE/DEBT	lower	382	634
	higher	532	838

		positive	negative
INTE/DEBT	lower	16.01%	26.57%
	higher	22.30%	35.12%

SLOVAKIA

		Rating	
		positive	negative
DEBT/OPRE	higher	212	403
	lower	271	255

		Rating	
		positive	negative
DEBT/OPRE	higher	18.58%	35.32%
	lower	23.75%	22.35%

		Rating	
		positive	negative
INTE/DEBT	lower	144	239
	higher	209	287

		Rating	
		positive	negative
INTE/DEBT	lower	16.38%	27.19%
	higher	23.78%	32.65%

Table 5 presents allocative matrices for each country based on the total sample (101.557 firms).

Table 6: Allocative rankings

LEVEL OF DEBT

Ranking	Country	Risk of Default (II Quadrant)	Ranking	Country	Missing Opportunities (III Quadrant)
1	Spain	20.81%	1	USA	6.33%
2	Italy	21.58%	2	Hungary	6.91%
3	USA	23.51%	3	Czech Rep	8.29%
4	France	24.64%	4	Slovakia	8.33%
5	UK	26.00%	5	Poland	9.26%
6	Poland	26.67%	6	Spain	12.60%
7	Slovakia	35.32%	7	Germany	12.93%
8	Germany	36.41%	8	UK	13.60%
9	Czech Republic	37.12%	9	France	16.97%
10	Hungary	40.41%	10	Italy	27.12%

PRICE OF DEBT

Ranking	Country	Inefficient Debt Pricing (II/II & III Quadrant)
1	Italy	40.18%
2	Spain	41.13%
3	France	43.85%
4	UK	46.00%
5	USA	46.42%
6	Poland	51.44%
7	Czech Republic	52.74%
8	Slovakia	53.35%
9	Hungary	54.37%
10	Germany	55.71%

Table 6 presents allocative rankings for each country based on the total sample (101.557 firms)

Table 7, helps us to classify each Country according to the two steps of efficiency as identified in the section describing the model of analysis (financing efficiency and capital allocation efficiency).

Table 7: Results of the test of efficiency of Financial System on a Country by Country basis

ITALY	Semi-strong		Weak		Absence	
Variable	ROI_t	$DEB/OPRE_t$	ROI_t	$DEB/OPRE_t$	ROI_t	$DEB/OPRE_t$
const	0.0812 ***	0.0163 ***	0.0160	0.1527 ***	0.0583 ***	-0.0076 **
	(0.0000)	(0.0000)	(0.2402)	(0.0000)	(0.0000)	(0.0145)
$CA/FIAS_t$	0.0010 ***	-0.0014 ***	0.0009 ***	-0.0008 ***	0.0008 ***	-0.0004 ***
	(0.0002)	(0.0000)	(0.0029)	(0.0000)	(0.0031)	(0.0000)
$CA/FIAS_{t-1}$			0.0008 **	-0.0007 ***		
			(0.0118)	(0.0000)		(0.0000)
CA/CL_t	0.0002	-0.0016 ***	0.0043	-0.0211 ***	0.0001	-0.0005 ***
	(0.5327)	(0.0000)	(0.1758)	(0.0000)	(0.6637)	(0.0000)
CA/CL_{t-1}			0.0074	-0.1039 ***		
			(0.1311)	(0.0000)		(0.0000)
$WKCA/OPRE_t$	-0.0562 ***	0.3126 ***			-0.0420 ***	0.1613 ***
	(0.0000)	(0.0000)			(0.0012)	(0.0000)
$WKCA/OPRE_{t-1}$			-0.0844 ***	0.4303 ***		
			(0.0000)	(0.0000)		(0.0000)
$WKCA/FIAS_t$	-0.0005	0.0026 ***	-0.0016 **	0.0032 ***	-0.0005	0.0008 ***
	(0.3454)	(0.0000)	(0.0242)	(0.0000)	(0.3660)	(0.0001)
$WKCA/FIAS_{t-1}$						
$CRED\text{-}DEBD_t$	0.0000 *	0.0000 ***	-0.0002 ***	0.0001 ***	0.0000 **	0.0000 **
	(0.0720)	(0.0000)	(0.0001)	(0.0000)	(0.0182)	(0.0278)
$CRED\text{-}DEBD_{t-1}$			0.0001 ***	-0.0001 ***		
			(0.0035)	(0.0000)		(0.0000)
$DEBLT_t$	-0.0013	0.0039 ***	-0.0046 *	0.0144 ***	-0.0045 *	0.0065 ***
	(0.2332)	(0.0000)	(0.0844)	(0.0000)	(0.0572)	(0.0000)
$DEBLT_{t-1}$			-0.0001	0.0029 ***		
			(0.9088)	(0.0000)		(0.0000)
$FCFC/OPRE_t$	0.1187 ***	-0.0238 **	0.0976 ***	0.2389 ***	0.0874 ***	0.0137
	(0.0000)	(0.0466)	(0.0019)	(0.0000)	(0.0005)	(0.1238)
$FCFC/OPRE_{t-1}$			0.0674 **	0.0185		
			(0.0439)	(0.2367)		
$FCFO/OPRE_t$	0.0560 ***	0.0363 ***	0.0673 ***	-0.1498 ***	0.0557 ***	-0.0051
	(0.0001)	(0.0000)	(0.0001)	(0.0000)	(0.0001)	(0.3217)
$FCFO/OPRE_{t-1}$			0.0370 *	-0.0881 ***		
			(0.0505)	(0.0000)		(0.0000)
LEV_t	0.0001	0.0003 **	-0.0003	0.0007 **	-0.0001	0.0003 *
	(0.7476)	(0.0196)	(0.6482)	(0.0213)	(0.8566)	(0.0764)
LEV_{t-1}			0.0000	0.0003		
			(0.9534)	(0.1189)		
DOL_t (volume)	0.0000	0.0000	-0.0001	-0.0001	0.0000	0.0000
	(0.6330)	(0.4937)	(0.4951)	(0.3839)	(0.6805)	(0.7894)
DOL_{t-1} (volume)			0.0000	0.0000		
			(0.6629)	(0.5681)		
DOL_t (price)	-0.0006 **	0.0006 ***	-0.0024 ***	0.0007 ***	-0.0012 ***	0.0011 ***
	(0.0231)	(0.0000)	(0.0000)	(0.0051)	(0.0086)	(0.0000)
DOL_{t-1} (price)			0.0002	0.0001		
			(0.4335)	(0.6339)		
$FIAS/OPRE_t$	0.0010	0.3075 ***			0.0086	0.1414 ***
	(0.8537)	(0.0000)			(0.1259)	(0.0000)
$FIAS/OPRE_{t-1}$			-0.0375 ***	0.2713 ***		
			(0.0000)	(0.0000)		(0.0000)
INT/DEB_t	-0.0009	0.0047 ***	-0.0009	0.0107 ***	-0.0006	0.0067 ***
	(0.5498)	(0.0000)	(0.7658)	(0.0000)	(0.8054)	(0.0000)
INT/DEB_{t-1}			-0.0041	0.0034 ***		
			(0.1055)	(0.0045)		
$DEB/OPRE_t$	-0.0302 ***		0.0299 **		-0.0134	
	(0.0024)		(0.0231)		(0.2049)	
$DEB/OPRE_{t-1}$						0.6855 ***
						(0.0000)
$DEB/EBITDA_t$	-0.0001	0.0012 ***	0.0000	0.0006 ***	0.0000	0.0004 ***
	(0.4378)	(0.0000)	(0.8688)	(0.0000)	(0.8465)	(0.0000)
$DEB/EBITDA_{t-1}$			-0.0001	0.0006 ***		
			(0.5006)	(0.0000)		(0.0000)
$DEB/EQUITY_t$	-0.0010 **		-0.0010		-0.0013 **	
	(0.0185)		(0.1664)		(0.0268)	
$DEB/EQUITY_{t-1}$			-0.0006			
			(0.3152)			
ROE_t	0.0025	-0.0012	0.0011	-0.0009	-0.0017	0.0019 **
	(0.2562)	(0.2844)	(0.6761)	(0.4832)	(0.4354)	(0.0160)
ROE_{t-1}			-0.0044	-0.0043 ***		
			(0.1096)	(0.0007)		
ROI_t		-0.0073 **		0.0097 **		0.0085 ***
		(0.0450)		(0.0266)		(0.0025)
ROI_{t-1}				0.0003	0.1332 ***	
				(0.9470)	(0.0000)	
Adjusted ROI_t		-0.0012		-0.0042		-0.0019
		(0.6356)		(0.1992)		(0.3278)
Adjusted ROI_{t-1}				-0.0030		
				(0.3154)		
$EBIT/INT_t$	0.0000 ***	0.0000 ***	0.0000 **	0.0000	0.0000 ***	0.0000
	(0.0000)	(0.0000)	(0.0150)	(0.6371)	(0.0000)	(0.2816)
$EBIT/INT_{t-1}$			0.0000	0.0000 ***		
			(0.5039)	(0.0000)		(0.0000)
ROS_t	0.8520 ***	-0.3512 ***	0.5403 ***	-0.7695 ***	0.7111 ***	-0.4900 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ROS_{t-1}			0.4017 ***	0.2796 ***		
			(0.0000)	(0.0000)		(0.0000)
TAX_t	0.0013	-0.0008	0.0014	-0.0024 *	0.0014	0.0003
	(0.4216)	(0.3157)	(0.5879)	(0.0510)	(0.5141)	(0.6555)
TAX_{t-1}			0.0021	-0.0034 **		
			(0.5112)	(0.0243)		
$AV/STAF_t$	0.0007	-0.0004 *	0.0666 ***	-0.0268 ***	0.0004	-0.0003 *
	(0.1680)	(0.0765)	(0.0000)	(0.0000)	(0.3900)	(0.0745)
$AV/STAF_{t-1}$			-0.0260 ***	0.0435 ***		
			(0.0044)	(0.0000)		(0.0000)
$AV/EMPL_t$	0.0003 ***	-0.0004 ***	0.0000	-0.0004 ***	0.0004 ***	-0.0001 **
	(0.0002)	(0.0000)	(0.9612)	(0.0000)	(0.0001)	(0.0149)
$AV/EMPL_{t-1}$			0.0000	0.0000		
			(0.8244)	(0.6004)		
$RLFA_t$	-0.0004 **	0.0001	-0.0002	0.0003 *	-0.0010 ***	-0.0020 ***
	(0.0139)	(0.4219)	(0.6838)	(0.0910)	(0.0004)	(0.0000)
$RFLA_{t-1}$			-0.0002	-0.0002 *		
			(0.3542)	(0.0571)		
R-squared	0.037129	0.462948	0.044951	0.506130	0.054264	0.757095
Adj. R-squared	0.036626	0.462667	0.043527	0.505376	0.053619	0.756930
p-value (F-stat)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Hannan-Quinn	89694.59	27417.2300	56293.2700	13334.2200	69646.3400	-3642.7930

FRANCE	Semi-strong		Weak		Absence	
Variable	ROIt	DEB/OPREt	ROIt	DEB/OPREt	ROIt	DEB/OPREt
const	0.2089 ***	-1.1750 ***	0.1958 ***	-0.2808 ***	0.2021 ***	-1.2465 ***
	(0.0003)	(0.0000)	(0.0054)	(0.0000)	(0.0002)	(0.0000)
$CA/FIAS_t$	0.0001	0.0001	0.0001	0.0002 ***	0.0001	0.0001
	(0.4868)	(0.4326)	(0.4245)	(0.0000)	(0.3668)	(0.4301)
$CA/FIAS_{t-1}$			-0.0001	-0.0003 ***		
			(0.7943)	(0.0033)		
CA/CL_t	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.9937)	(0.9470)	(0.9929)	(0.7918)	(0.9933)	(0.9621)
CA/CL_{t-1}			0.0000	-0.0001		
			(0.9780)	(0.4274)		
$WKCA/OPRE_t$	-0.0459	9.1369 ***	-0.0566	4.4031 ***	-0.0403	9.3322 ***
	(0.5376)	(0.0000)	(0.6462)	(0.0000)	(0.5412)	(0.0000)
$WKCA/OPRE_{t-1}$			-0.0697	-2.5842 ***		
			(0.6648)	(0.0000)		
$WKCA/FIAS_t$	0.0004	-0.0092 ***	0.0003	-0.0034 ***	0.0004	-0.0093 ***
	(0.6637)	(0.0000)	(0.8582)	(0.0000)	(0.6581)	(0.0000)
$WKCA/FIAS_{t-1}$			0.0007	-0.0020 ***		
			(0.6991)	(0.0001)		
$CRED\text{-}DEBD_t$	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.7679)	(0.8334)	(0.8202)	(0.2818)	(0.7924)	(0.9849)
$CRED\text{-}DEBD_{t-1}$			0.0000	0.0000		
			(0.4484)	(0.3855)		
$DEBLT_t$	-0.0023	0.0061	-0.0016	0.0041	-0.0018	0.0065
	(0.8219)	(0.6697)	(0.8614)	(0.1081)	(0.8339)	(0.6810)
$DEBLT_{t-1}$			-0.0038	0.0103 ***		
			(0.7414)	(0.0014)		
$FCFC/OPRE_t$						
$FCFC/OPRE_{t-1}$						
$FCFO/OPRE_t$	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.9882)	(0.9431)	(0.9887)	(0.9697)	(0.9870)	(0.9161)
$FCFO/OPRE_{t-1}$			-0.0054	-1.1273 ***		
			(0.8383)	(0.0000)		
LEV_t	0.0031	0.0007	0.0018	-0.0035	0.0019	0.0152
	(0.8882)	(0.9822)	(0.9344)	(0.5607)	(0.9260)	(0.6800)
LEV_{t-1}			-0.0009	-0.0089		
			(0.9666)	(0.1197)		
DOL_t (volume)	0.0000	-0.0001	0.0000	0.0000	0.0000	0.0000
	(0.9881)	(0.8582)	(0.9970)	(0.6072)	(0.9878)	(0.8994)
DOL_{t-1} (volume)			0.0000	0.0000		
			(0.9101)	(0.7684)		
DOL_t (price)	-0.0063	0.0158	-0.0026	0.0028	-0.0046	0.0209
	(0.4988)	(0.2324)	(0.7977)	(0.3239)	(0.5837)	(0.1734)
DOL_{t-1} (price)			-0.0058	0.0076 **		
			(0.6172)	(0.0190)		
$FIAS/OPRE_t$	0.0005	-0.1895 ***	0.0034	-1.0040 ***	0.0004	-0.1953 ***
	(0.6215)	(0.0000)	(0.3903)	(0.0000)	(0.6140)	(0.0000)
$FIAS/OPRE_{t-1}$			0.0071	0.8077 ***		
			(0.7380)	(0.0000)		
INT/DEB_t	0.0005	0.0002	0.0004	-0.0007	0.0008	-0.0013
	(0.9384)	(0.9825)	(0.9680)	(0.8051)	(0.9390)	(0.9404)
INT/DEB_{t-1}			-0.0002	-0.0001		
			(0.9765)	(0.9535)		
$DEB/OPRE_t$	0.0008				0.0007	
	(0.7949)				(0.7918)	
$DEB/OPRE_{t-1}$			-0.0060			0.5330 ***
			(0.8915)			(0.0000)
$DEB/EBITDA_t$	0.0000	-0.0002	-0.0001	0.0006	-0.0001	0.0021
	(0.9999)	(0.8967)	(0.9334)	(0.1149)	(0.9595)	(0.3177)
$DEB/EBITDA_{t-1}$			0.0002	0.0007 ***		
			(0.7739)	(0.0018)		
$DEB/EQUITY_t$	-0.0002		0.0001		0.0001	
	(0.9269)		(0.9756)		(0.9604)	
$DEB/EQUITY_{t-1}$			0.0013			
			(0.4644)			
ROE_t	0.0079	0.0325	0.0175	-0.0006	0.0167	0.1430 **
	(0.6696)	(0.2181)	(0.6101)	(0.9498)	(0.5942)	(0.0127)
ROE_{t-1}			0.0135	-0.0076		
			(0.4277)	(0.1113)		
ROI_t		0.0017		-0.0003		0.0021
		(0.7950)		(0.8167)		(0.8159)
ROI_{t-1}				-0.0003	0.0009	
				(0.8160)	(0.8114)	
Adjusted ROI_t						
Adjusted ROI_{t-1}						
$EBIT/INT_t$	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.5695)	(0.9328)	(0.7548)	(0.3262)	(0.5833)	(0.9834)
$EBIT/INT_{t-1}$			0.0000	0.0000		
			(0.9173)	(0.3363)		
ROS_t	0.0067	-0.3592 ***	0.0763	1.0988 ***	0.0061	-0.3738 ***
	(0.3661)	(0.0000)	(0.2190)	(0.0000)	(0.3446)	(0.0000)
ROS_{t-1}			0.0413	0.0062		
			(0.5847)	(0.7451)		
TAX_t	0.0025	0.0091	0.0020	0.0005	0.0023	0.0047
	(0.8756)	(0.6875)	(0.8931)	(0.9090)	(0.8682)	(0.8490)
TAX_{t-1}			0.0031	0.0007		
			(0.8458)	(0.8738)		
$AV/STAF_t$	0.0062	0.0172 *	0.0024	0.0054 ***	0.0049	0.0167
	(0.3897)	(0.0935)	(0.7251)	(0.0050)	(0.4322)	(0.1350)
$AV/STAF_{t-1}$			0.0177	-0.0035		
			(0.2324)	(0.4086)		
$AV/EMPL_t$						
$AV/EMPL_{t-1}$						
$RLFA_t$	0.0000	0.0003 ***	0.0000	0.0007 ***	0.0000	0.0000
	(0.9395)	(0.0008)	(0.8629)	(0.0000)	(0.9435)	(0.9533)
$RFLA_{t-1}$			0.0000	-0.0004 ***		
			(0.9520)	(0.0000)		
R-squared	0.000090	0.486743	0.000309	0.985400	0.000119	0.505914
Adj. R-squared	-0.000355	0.486526	-0.000861	0.985384	-0.000444	0.505646
p-value (F-stat)	0.999968	0.000000	1.000000	0.000000	0.999968	0.000000
Hannan-Quinn	342121.1	375997.7364	251153.7000	160213.3683	271621.1000	315068.2105

SPAIN	Semi-strong		Weak		Absence	
Variable	ROIt	DEB/OPREt	ROIt	DEB/OPREt	ROIt	DEB/OPREt
const	0.0557 *	-0.0438 ***	0.0648 ***	-0.1069 ***	0.0527	0.0342 **
	(0.0779)	(0.0024)	(0.0000)	(0.0000)	(0.1273)	(0.0396)
$CA/FIAS_t$						
$CA/FIAS_{t-1}$			0.0015 ***	-0.0005		
			(0.0072)	(0.7675)		
CA/CL_t	0.0005	-0.0049 ***	0.0009 **	-0.0158 ***	0.0005	-0.0067 ***
	(0.8171)	(0.0000)	(0.0429)	(0.0000)	(0.8228)	(0.0000)
CA/CL_{t-1}			-0.0031 ***	-0.0089 ***		
			(0.0000)	(0.0000)		
$WKCA/OPRE_t$	0.0106	0.5276 ***	-0.0120 *	0.8323 ***	0.0105	0.4640 ***
	(0.5818)	(0.0000)	(0.0593)	(0.0000)	(0.6038)	(0.0000)
$WKCA/OPRE_{t-1}$			0.0103 **	-0.0671 ***		
			(0.0392)	(0.0000)		
$WKCA/FIAS_t$	0.0007	-0.0020 **	0.0001	-0.0008	0.0008	-0.0023 **
	(0.6813)	(0.0177)	(0.8430)	(0.3394)	(0.6908)	(0.0145)
$WKCA/FIAS_{t-1}$			-0.0014 *	-0.0040 *		
			(0.0984)	(0.0954)		
$CRED\text{-}DEBD_t$	0.0001	0.0009 ***	0.0001 **	0.0004 ***	0.0001	0.0011 ***
	(0.4957)	(0.0000)	(0.0189)	(0.0046)	(0.5219)	(0.0000)
$CRED\text{-}DEBD_{t-1}$			-0.0001 *	0.0006 ***		
			(0.0812)	(0.0000)		
$DEBLT_t$	0.0000	0.0005	0.0000	0.0004	0.0000	0.0005
	(0.9940)	(0.5687)	(0.9328)	(0.5773)	(0.9952)	(0.6130)
$DEBLT_{t-1}$			0.0000	0.0007		
			(0.9862)	(0.3771)		
$FCFC/OPRE_t$	0.0134	0.2851 ***	-0.0067	-0.0825 **	0.0134	-0.2014 ***
	(0.8209)	(0.0000)	(0.6250)	(0.0346)	(0.8301)	(0.0000)
$FCFC/OPRE_{t-1}$			0.0034	0.3906 ***		
			(0.7752)	(0.0000)		
$FCFO/OPRE_t$	0.0179	0.1373 ***	0.0076	0.3552 ***	0.0175	0.5056 ***
	(0.6888)	(0.0000)	(0.4309)	(0.0000)	(0.7165)	(0.0000)
$FCFO/OPRE_{t-1}$			0.0042	0.0003		
			(0.5215)	(0.9855)		
LEV_t	-0.0001	-0.0005	-0.0002	0.0004	-0.0001	-0.0003
	(0.9580)	(0.4447)	(0.4195)	(0.5124)	(0.9627)	(0.6944)
LEV_{t-1}			0.0001	-0.0013 **		
			(0.7260)	(0.0224)		
DOL_t (volume)	0.0000	0.0000	0.0000	0.0004 **	0.0000	0.0001
	(0.9918)	(0.8955)	(0.8086)	(0.0488)	(0.9691)	(0.6904)
DOL_{t-1} (volume)			0.0000	0.0000		
			(0.9635)	(0.9191)		
DOL_t (price)	-0.0005	-0.0014 *	-0.0003	-0.0007	-0.0011	-0.0018 **
	(0.7614)	(0.0737)	(0.1540)	(0.3216)	(0.5657)	(0.0440)
DOL_{t-1} (price)			-0.0002	0.0003		
			(0.4466)	(0.6254)		
$FIAS/OPRE_t$	-0.0059	0.1640 ***			-0.0056	0.1472 ***
	(0.4461)	(0.0000)			(0.4906)	(0.0000)
$FIAS/OPRE_{t-1}$			-0.0021	0.1770 ***		
			(0.1918)	(0.0000)		
INT/DEB_t	0.0000	0.0019	0.0001	0.0011	0.0001	0.0021
	(0.9860)	(0.1130)	(0.8119)	(0.2788)	(0.9809)	(0.1193)
INT/DEB_{t-1}			0.0001	0.0016		
			(0.7048)	(0.1226)		
$DEB/OPRE_t$	-0.0075		-0.0121 ***		-0.0072	
	(0.6837)		(0.0005)		(0.7087)	
$DEB/OPRE_{t-1}$						0.0722 ***
						(0.0000)
$DEB/EBITDA_t$	0.0000	0.0035 ***	0.0000	0.0030 ***	0.0000	0.0026 ***
	(0.9897)	(0.0000)	(0.8906)	(0.0000)	(0.9965)	(0.0000)
$DEB/EBITDA_{t-1}$			0.0000	0.0019 ***		
			(0.9822)	(0.0000)		
$DEB/EQUITY_t$	0.0000		-0.0005		0.0001	
	(0.9864)		(0.1127)		(0.9739)	
$DEB/EQUITY_{t-1}$			0.0000			
			(0.9327)			
ROE_t	-0.0010	-0.0067	0.0010	-0.0048	-0.0014	-0.0065
	(0.9133)	(0.1240)	(0.3953)	(0.1548)	(0.8920)	(0.1249)
ROE_{t-1}			0.0017	-0.0068		
			(0.2661)	(0.1270)		
ROI_t		-0.0016				
		(0.6836)				
ROI_{t-1}					-0.0102	
					(0.2429)	
Adjusted ROI_t				-0.0633 ***		-0.0835 ***
				(0.0028)		(0.0024)
Adjusted ROI_{t-1}				-0.0017		
				(0.6329)		
$EBIT/INT_t$	0.0001	-0.0008 ***	0.0003 ***	-0.0005 ***	0.0001	-0.0008 ***
	(0.7611)	(0.0000)	(0.0000)	(0.0000)	(0.8540)	(0.0000)
$EBIT/INT_{t-1}$			0.0002 ***	-0.0006 ***		
			(0.0000)	(0.0000)		
ROS_t	0.3857 ***	-0.4561 ***	0.5302 ***	0.0989	0.3705 **	-0.2971 ***
	(0.0055)	(0.0000)	(0.0000)	(0.2128)	(0.0122)	(0.0000)
ROS_{t-1}			0.0305	-0.1927 **		
			(0.2537)	(0.0117)		
TAX_t	0.0006	0.0180 ***	0.0009	0.0026	0.0006	-0.0022
	(0.9464)	(0.0000)	(0.6041)	(0.6044)	(0.9581)	(0.7480)
TAX_{t-1}			0.0005	0.0232 ***		
			(0.7035)	(0.0000)		
$AV/STAF_t$	-0.0014	0.0218 ***	0.0025	0.0441 ***	-0.0015	0.0260 ***
	(0.7833)	(0.0000)	(0.1027)	(0.0000)	(0.7816)	(0.0000)
$AV/STAF_{t-1}$			-0.0031 **	-0.0158 ***		
			(0.0326)	(0.0002)		
$AV/EMPL_t$						
$AV/EMPL_{t-1}$						
$RLFA_t$	0.0000	0.0036 ***	-0.0001	0.0009 **	0.0000	0.0025 ***
	(0.9907)	(0.0000)	(0.5697)	(0.0204)	(0.9558)	(0.0000)
$RFLA_{t-1}$			0.0000	0.0012 ***		
			(0.8973)	(0.0024)		
R-squared	0.000796	0.493470	0.092487	0.562188	0.000814	0.503958
Adj. R-squared	-0.000667	0.492763	0.088836	0.560470	-0.000872	0.503012
p-value (F-stat)	0.953674	0.000000	0.000000	0.000000	0.979677	0.000000
Hannan-Quinn	71831.22	49357.2600	6284.5110	27802.5200	66557.5200	37318.6700

GERMANY	Semi-strong		Weak		Absence	
Variable	ROI_t	$DEB/OPRE_t$	ROI_t	$DEB/OPRE_t$	ROI_t	$DEB/OPRE_t$
const	0.0295	-0.1844 ***	0.0047	-0.1248 ***	-0.0409	-0.1287 ***
	(0.2850)	(0.0000)	(0.8802)	(0.0000)	(0.1292)	(0.0000)
$CA/FIAS_t$	0.0038 ***	0.0000	0.0072 ***	0.0000	0.0042 ***	0.0000
	(0.0000)	(0.5633)	(0.0000)	(0.9205)	(0.0000)	(0.6977)
$CA/FIAS_{t-1}$						
CA/CL_t	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.8381)	(0.6782)	(0.7892)	(0.8447)	(0.8373)	(0.8769)
CA/CL_{t-1}			0.0000	0.0000		
			(0.8926)	(0.4656)		
$WKCA/OPRE_t$	-0.0198	0.6916 ***			0.0247	0.5321 ***
	(0.8309)	(0.0000)			(0.7828)	(0.0000)
$WKCA/OPRE_{t-1}$			-0.0886	0.4574 ***		
			(0.4018)	(0.0000)		
$WKCA/FIAS_t$	-0.0052 ***	-0.0001	-0.0099 ***	0.0002	-0.0058 ***	-0.0001
	(0.0000)	(0.2178)	(0.0000)	(0.2302)	(0.0000)	(0.5288)
$WKCA/FIAS_{t-1}$			-0.0008	-0.0001		
			(0.1326)	(0.2425)		
$CRED\text{-}DEBD_t$	0.0000 ***	0.0000 ***	0.0000 ***	0.0000 ***	0.0000 ***	0.0000 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$CRED\text{-}DEBD_{t-1}$			0.0000 ***	0.0000 ***		
			(0.0000)	(0.0000)		
$DEBLT_t$	-0.0006	0.0022 ***	-0.0006	0.0024 ***	-0.0005	0.0026 ***
	(0.8557)	(0.0001)	(0.8600)	(0.0000)	(0.8764)	(0.0000)
$DEBLT_{t-1}$			-0.0008	0.0022 ***		
			(0.8245)	(0.0001)		
$FCFC/OPRE_t$	1.2531 ***	-0.0848 ***	1.3108 ***	-0.0166	1.3332 ***	0.0403 **
	(0.0000)	(0.0000)	(0.0000)	(0.4771)	(0.0000)	(0.0206)
$FCFC/OPRE_{t-1}$			0.324498 **	0.188336 ***		
			(0.0260)	(0.0000)		
$FCFO/OPRE_t$	-0.0136	0.1828 ***	-0.0670	-0.0350 ***	-0.0499	0.0868 ***
	(0.7739)	(0.0000)	(0.1841)	(0.0000)	(0.2965)	(0.0000)
$FCFO/OPRE_{t-1}$			0.0686	-0.0716 ***		
			(0.3572)	(0.0000)		
LEV_t	-0.0002	0.0005	-0.0005	0.0003	0.0000	0.0004
	(0.9405)	(0.1659)	(0.8585)	(0.4394)	(0.9925)	(0.3283)
LEV_{t-1}			-0.0001	0.0012 ***		
			(0.9565)	(0.0029)		
DOL_t (volume)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.9316)	(0.2202)	(0.9209)	(0.1762)	(0.8500)	(0.1591)
DOL_{t-1} (volume)			0.0000	0.0000		
			(0.9996)	(0.2308)		
DOL_t (price)	0.0003	0.0000	0.0003	0.0000	0.0004	0.0000
	(0.4281)	(0.5252)	(0.4817)	(0.9877)	(0.3424)	(0.8852)
DOL_{t-1} (price)			0.0002	0.0000		
			(0.7302)	(0.8830)		
$FIAS/OPRE_t$	0.0162	0.3751 ***			0.0241	0.2900 ***
	(0.3573)	(0.0000)			(0.1657)	(0.0000)
$FIAS/OPRE_{t-1}$			0.017829	0.28849 ***		
			(0.3534)	(0.0000)		
INT/DEB_t	-0.0006	0.0005 **	0.0002	0.0004	-0.0004	0.0005 **
	(0.6325)	(0.0149)	(0.8568)	(0.1265)	(0.7032)	(0.0147)
INT/DEB_{t-1}			0.0000	0.0003		
			(0.9762)	(0.2299)		
$DEB/OPRE_t$	-0.0063		0.0202		-0.0131	
	(0.8402)		(0.5886)		(0.7024)	
$DEB/OPRE_{t-1}$						0.0419 ***
						(0.0000)
$DEB/EBITDA_t$	-0.0014	0.0044 ***	-0.0014	0.0050 ***	-0.0014	0.0049 ***
	(0.3338)	(0.0000)	(0.3617)	(0.0000)	(0.3453)	(0.0000)
$DEB/EBITDA_{t-1}$			-0.0012	0.0044 ***		
			(0.4501)	(0.0000)		
$DEB/EQUITY_t$	-0.0012		-0.0013		-0.0009	
	(0.5563)		(0.5959)		(0.6698)	
$DEB/EQUITY_{t-1}$			-0.0021			
			(0.3621)			
ROE_t	0.0237 ***	-0.0002	0.0180 **	-0.0009	0.0213 ***	-0.0019
	(0.0006)	(0.8432)	(0.0229)	(0.5108)	(0.0024)	(0.1082)
ROE_{t-1}			0.0142 *	0.0002		
			(0.0580)	(0.9016)		
ROI_t						
ROI_{t-1}					0.2487 ***	
					(0.0000)	
Adjusted ROI_t		-0.0001		0.0006		-0.0005
		(0.9555)		(0.5674)		(0.6071)
Adjusted ROI_{t-1}				-0.0004		
				(0.7266)		
$EBIT/INT_t$	0.0000 ***	0.0000	0.0000 ***	0.0000	0.0000 ***	0.0000
	(0.0000)	(0.8474)	(0.0000)	(0.8481)	(0.0000)	(0.8168)
$EBIT/INT_{t-1}$			0.0000 ***	0.0000		
			(0.0015)	(0.6224)		
ROS_t						
ROS_{t-1}						
TAX_t	0.0002	-0.0003	-0.0002	-0.0002	-0.0002	-0.0004
	(0.9582)	(0.6386)	(0.9708)	(0.7804)	(0.9514)	(0.5455)
TAX_{t-1}			-0.0005	0.0000		
			(0.9015)	(0.9858)		
$AV/STAF_t$	-0.0004	-0.0001	0.0001	-0.0001	-0.0006	0.0000
	(0.6062)	(0.3921)	(0.8813)	(0.3445)	(0.4483)	(0.9057)
$AV/STAF_{t-1}$						
$AV/EMPL_t$	-0.0002	0.0001 ***	-0.0002	0.0000	-0.0001	0.0000 **
	(0.1724)	(0.0006)	(0.3756)	(0.7671)	(0.2293)	(0.0363)
$AV/EMPL_{t-1}$			-0.0002	0.0001 **		
			(0.3224)	(0.0356)		
$RLFA_t$	0.0000	-0.0001 ***	0.0000	-0.0001 ***	0.0000	-0.0001 ***
	(0.7674)	(0.0000)	(0.7412)	(0.0000)	(0.6978)	(0.0000)
$RFLA_{t-1}$			0.0000	0.0000		
			(0.8838)	(0.5674)		
R-squared	0.0157	0.4675	0.0387	0.3752	0.0718	0.4026
Adj. R-squared	0.0151	0.4672	0.0372	0.3743	0.0710	0.4021
p-value (F-stat)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hannan-Quinn	172850.1	59436.7700	129471.2000	39371.7700	141967.7000	42106.9300

UK	Semi-strong		Weak		Absence	
Variable	ROI_t	$DEB/OPRE_t$	ROI_t	$DEB/OPRE_t$	ROI_t	$DEB/OPRE_t$
const	0.1291 ***	0.0198	0.1914 ***	0.0123	0.1515 ***	-0.0021
	(0.0002)	(0.2112)	(0.0000)	(0.4823)	(0.0002)	(0.9001)
$CA/FIAS_t$	0.0000	0.0000	0.0007 **	-0.0001	0.0003	0.0001
	(0.7288)	(0.7625)	(0.0291)	(0.5419)	(0.4057)	(0.5932)
$CA/FIAS_{t-1}$			-0.0007	0.0005		
			(0.2236)	(0.2015)		
CA/CL_t	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.9760)	(0.9104)	(0.8534)	(0.8835)	(0.9913)	(0.7772)
CA/CL_{t-1}			0.0000	0.0000		
			(0.8939)	(0.9235)		
$WKCA/OPRE_t$	-0.0627	0.5407 ***	-0.1263 *	0.4260 ***	-0.0469	0.4789 ***
	(0.5259)	(0.0000)	(0.0698)	(0.0000)	(0.6772)	(0.0000)
$WKCA/OPRE_{t-1}$						
$WKCA/FIAS_t$			-0.0014	0.0005	-0.0001	-0.0001
			(0.1885)	(0.4674)	(0.9322)	(0.8495)
$WKCA/FIAS_{t-1}$			0.0015	-0.0012		
			(0.3304)	(0.2254)		
$CRED\text{-}DEBD_t$						
$CRED\text{-}DEBD_{t-1}$						
$DEBLT_t$	-0.0045	0.0068	-0.0040	0.0032	-0.0048	0.0045
	(0.6279)	(0.1141)	(0.5520)	(0.4534)	(0.6673)	(0.3410)
$DEBLT_{t-1}$			-0.0486 ***	0.0028		
			(0.0000)	(0.4723)		
$FCFC/OPRE_t$	-0.0130	0.9164 ***	-0.0063	0.6633 ***	-0.0158	0.6071 ***
	(0.9343)	(0.0000)	(0.9536)	(0.0000)	(0.9285)	(0.0000)
$FCFC/OPRE_{t-1}$			-0.0908	0.3219 ***		
			(0.4051)	(0.0000)		
$FCFO/OPRE_t$	-0.0091	0.1488 ***	-0.0087	-0.1117 ***	-0.0068	0.1984 ***
	(0.8434)	(0.0000)	(0.7961)	(0.0000)	(0.8967)	(0.0000)
$FCFO/OPRE_{t-1}$			0.0090	0.4771 ***		
			(0.8152)	(0.0000)		
LEV_t	-0.0003	-0.0002	-0.0001	0.0001	-0.0002	0.0000
	(0.8863)	(0.8144)	(0.9577)	(0.8842)	(0.9531)	(0.9707)
LEV_{t-1}			-0.0005	-0.0002		
			(0.8141)	(0.9061)		
DOL_t (volume)	0.0000	-0.0001	0.0000	0.0000	0.0000	-0.0001
	(0.9860)	(0.5224)	(0.9041)	(0.8360)	(0.9480)	(0.6491)
DOL_{t-1} (volume)			-0.0001	-0.0004		
			(0.8290)	(0.1908)		
DOL_t (price)	0.0001	-0.0007	0.0002	0.0002	-0.0002	-0.0008
	(0.9572)	(0.3805)	(0.9024)	(0.7603)	(0.9282)	(0.3610)
DOL_{t-1} (price)			0.0001	0.0015		
			(0.9448)	(0.1026)		
$FIAS/OPRE_t$	0.0149	0.2961 ***		0.3975 ***	0.0179	0.2391 ***
	(0.2725)	(0.0000)		(0.0000)	(0.2431)	(0.0000)
$FIAS/OPRE_{t-1}$			0.0037			
			(0.7354)			
INT/DEB_t	-0.0030	0.0118	-0.0031	0.0081	-0.0027	0.0082
	(0.8990)	(0.2774)	(0.8411)	(0.4065)	(0.9148)	(0.4473)
INT/DEB_{t-1}			-0.0069	0.0094		
			(0.7125)	(0.4261)		
$DEB/OPRE_t$	-0.0527 ***		-0.0315 **		-0.0562 **	
	(0.0054)		(0.0314)		(0.0169)	
$DEB/OPRE_{t-1}$						0.2317 ***
						(0.0000)
$DEB/EBITDA_t$	-0.0001	0.0017 ***	-0.0002	0.0018 ***	-0.0001	0.0009 *
	(0.8741)	(0.0000)	(0.8203)	(0.0000)	(0.9105)	(0.0516)
$DEB/EBITDA_{t-1}$			-0.0004	0.0009 **		
			(0.5418)	(0.0201)		
$DEB/EQUITY_t$	0.0001		0.0000		0.0000	
	(0.9000)		(0.9362)		(0.9381)	
$DEB/EQUITY_{t-1}$			0.0000			
			(0.8977)			
ROE_t	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.9480)	(0.9472)	(0.9699)	(0.9903)	(0.9514)	(0.9925)
ROE_{t-1}			0.0000	0.0000		
			(0.9773)	(0.9455)		
ROI_t				-0.0285 ***		
				(0.0001)		
ROI_{t-1}				-0.0185 ***	-0.2769 ***	
				(0.0004)	(0.0000)	
Adjusted ROI_t		-0.0080 **				-0.0064 *
		(0.0189)				(0.0718)
Adjusted ROI_{t-1}						
$EBIT/INT_t$	0.0000	0.0000 ***	0.0000 *	0.0000 *	0.0000	0.0000 ***
	(0.7269)	(0.0000)	(0.0591)	(0.0885)	(0.6137)	(0.0030)
$EBIT/INT_{t-1}$			0.0001 ***	0.0000 **		
			(0.0016)	(0.0363)		
ROS_t	0.8288 ***	0.5294 ***	0.7018 ***	-0.3611 ***	0.9255 ***	0.4242 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ROS_{t-1}			0.1445	0.0710		
			(0.2318)	(0.3486)		
TAX_t	0.0027	-0.0085	0.0011	-0.0095	0.0024	-0.0039
	(0.8589)	(0.2225)	(0.9211)	(0.1885)	(0.8946)	(0.6131)
TAX_{t-1}			-0.0049	-0.0023		
			(0.6572)	(0.7379)		
$AV/STAF_t$	-0.0149	0.0050	-0.0075	-0.0018	-0.0168	0.0068
	(0.1361)	(0.2723)	(0.2660)	(0.6710)	(0.1240)	(0.1371)
$AV/STAF_{t-1}$			-0.0076	-0.0104 ***		
			(0.2020)	(0.0057)		
$AV/EMPL_t$	0.0000 **	0.0000 ***	0.0000 **	0.0000 **	0.0000 **	0.0000 ***
	(0.0340)	(0.0000)	(0.0166)	(0.0464)	(0.0190)	(0.0002)
$AV/EMPL_{t-1}$						
$RLFA_t$	0.0000	-0.0001 ***	0.0000	0.0000	0.0000	-0.0001 ***
	(0.8478)	(0.0001)	(0.8188)	(0.3134)	(0.7755)	(0.0000)
$RFLA_{t-1}$			0.0000	-0.0002 ***		
			(0.5492)	(0.0000)		
R-squared	0.004781	0.229427	0.020045	0.396618	0.067862	0.362054
Adj. R-squared	0.003211	0.228269	0.016076	0.394236	0.065913	0.360733
p-value (F-stat)	0.000003	0.000000	0.000000	0.000000	0.000000	0.000000
Hannan-Quinn	64534.18	43754.0300	38771.3100	29604.3800	54461.5600	34151.1400

USA	Semi-strong		Weak		Absence	
Variable	ROI	PFN/FATT	ROI	PFN/FATT	ROI	PFN/FATT
const	0.2864 ***	-0.6616 **	-0.2173 **	-0.0463	-0.1587 *	-1.1857 ***
	(0.0004)	(0.0188)	(0.0126)	(0.7882)	(0.0741)	(0.0000)
$CA/FIAS_t$	0.0149 ***	-0.0016			-0.0130 ***	0.0059
	(0.0012)	(0.9191)			(0.0031)	(0.6342)
$CA/FIAS_{t-1}$			-0.0169			
			(0.1397)			
CA/CL_t	0.0527 ***	-0.2441 ***	0.0636 **	-0.0387	0.0484 **	0.0831
	(0.0066)	(0.0003)	(0.0295)	(0.5124)	(0.0167)	(0.1483)
CA/CL_{t-1}			0.0013	-0.1476 ***		
			(0.9658)	(0.0092)		
$WKCA/OPRE_t$	0.1161	4.3035 ***	-0.5373 *	3.4167 ***	0.0343	1.7945 ***
	(0.4620)	(0.0000)	(0.0682)	(0.0000)	(0.8569)	(0.0004)
$WKCA/OPRE_{t-1}$			-0.0832	-1.7572 ***		
			(0.7388)	(0.0006)		
$WKCA/FIAS_t$	0.0238 **	-0.1256 ***	0.0456 ***	0.0409	0.0175	-0.1212 ***
	(0.0388)	(0.0016)	(0.0093)	(0.3053)	(0.1223)	(0.0001)
$WKCA/FIAS_{t-1}$				-0.0234		
				(0.6232)		
$CRED\text{-}DEBD_t$						
$CRED\text{-}DEBD_{t-1}$						
$DEBLT_t$	0.0026	-0.0479	-0.0023	0.0267	0.0001	0.0029
	(0.8436)	(0.2948)	(0.8171)	(0.1934)	(0.9943)	(0.9342)
$DEBLT_{t-1}$			0.0073	0.0308		
			(0.5102)	(0.1693)		
$FCFC/OPRE_t$				-3.5554 ***		
				(0.0000)		
$FCFC/OPRE_{t-1}$						
$FCFO/OPRE_t$			0.0276		-0.0017	-1.4271 ***
			(0.5558)		(0.9792)	(0.0000)
$FCFO/OPRE_{t-1}$			0.1899 ***	0.3810 ***		
			(0.0000)	(0.0000)		
LEV_t	0.0209	0.0445	0.0070	0.1395 **	-0.0058	0.0836
	(0.5280)	(0.6970)	(0.8176)	(0.0216)	(0.8698)	(0.3949)
LEV_{t-1}			0.0151	0.0515		
			(0.5660)	(0.3270)		
DOL_t (volume)	0.0055	0.0160	0.0025	0.0056	0.0011	0.0146
	(0.2788)	(0.3573)	(0.5334)	(0.4785)	(0.8313)	(0.2983)
DOL_{t-1} (volume)			0.0015	0.0042		
			(0.7026)	(0.5911)		
DOL_t (price)	0.0020	0.0028	0.0012	0.0006	0.0014	-0.0011
	(0.2959)	(0.6765)	(0.4733)	(0.8638)	(0.4895)	(0.8404)
DOL_{t-1} (price)			0.0002	0.0011		
			(0.9151)	(0.7564)		
$FIAS/OPRE_t$	0.1039 ***	1.0343 ***	0.0206	0.9700 ***	0.0646 **	0.4679 ***
	(0.0014)	(0.0000)	(0.4838)	(0.0000)	(0.0463)	(0.0000)
$FIAS/OPRE_{t-1}$				-0.3551 ***		
				(0.0003)		
INT/DEB_t	0.0161	0.0529	-0.0018	-0.0204	0.0125	-0.0498
	(0.2943)	(0.3210)	(0.8887)	(0.4483)	(0.4746)	(0.3173)
INT/DEB_{t-1}			0.0257 **	0.0487 **		
			(0.0212)	(0.0315)		
$DEB/OPRE_t$	0.0259 **				0.0933 ***	
	(0.0212)				(0.0000)	
$DEB/OPRE_{t-1}$			0.0161			1.1844 ***
			(0.6866)			(0.0000)
$DEB/EBITDA_t$	0.0002	-0.0032	0.0009	0.0015	-0.0003	-0.0008
	(0.8826)	(0.5759)	(0.7080)	(0.7533)	(0.8306)	(0.8513)
$DEB/EBITDA_{t-1}$			0.0002	0.0022		
			(0.8883)	(0.3690)		
$DEB/EQUITY_t$	0.0006		-0.0011		-0.0009	
	(0.9177)		(0.8140)		(0.8773)	
$DEB/EQUITY_{t-1}$			0.0011			
			(0.7912)			
ROE_t	0.0055	0.0397	-0.0031	-0.0216	0.0142	-0.1106 *
	(0.7724)	(0.5464)	(0.8513)	(0.5175)	(0.5008)	(0.0594)
ROE_{t-1}			-0.0012	-0.0376		
			(0.9321)	(0.1921)		
ROI_t		0.3110 **		0.1700		0.8045 ***
		(0.0209)		(0.1550)		(0.0000)
ROI_{t-1}				0.4047 ***	-0.1968 ***	
				(0.0022)	(0.0000)	
Adjusted ROI_t						
Adjusted ROI_{t-1}						
$EBIT/INT_t$	0.0001	0.0001	0.0001 **	0.0001	0.0001	0.0000
	(0.1041)	(0.5455)	(0.0354)	(0.2077)	(0.2498)	(0.9091)
$EBIT/INT_{t-1}$			0.0000	0.0000		
			(0.6128)	(0.7331)		
ROS_t	0.4282 ***	-0.9018 ***			0.9938 ***	-1.1199 ***
	(0.0000)	(0.0000)			(0.0000)	(0.0000)
ROS_{t-1}						
TAX_t	0.0962	-0.1543	0.0906	0.0286	0.0253	0.1478
	(0.3065)	(0.6347)	(0.2649)	(0.8599)	(0.7978)	(0.5883)
TAX_{t-1}			0.1067	0.0436		
			(0.1327)	(0.7609)		
$AV/STAF_t$	0.0006	0.0013	0.0002	0.0033 **	-0.0003	0.0031
	(0.4452)	(0.6160)	(0.7771)	(0.0496)	(0.7164)	(0.1162)
$AV/STAF_{t-1}$			0.0010	0.0014		
			(0.2411)	(0.4260)		
$AV/EMPL_t$						
$AV/EMPL_{t-1}$						
$RLFA_t$	0.0004	-0.0102	0.0065 **	-0.0067	0.0010	0.0005
	(0.8751)	(0.1859)	(0.0155)	(0.2241)	(0.7298)	(0.9441)
$RFLA_{t-1}$			-0.0001	-0.0008		
			(0.9524)	(0.8687)		
R-squared	0.237000	0.415845	0.279489	0.946497	0.391429	0.712475
Adj. R-squared	0.215002	0.399913	0.215360	0.941735	0.367980	0.702038
p-value (F-stat)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Hannan-Quinn	1799.332	3483.5050	1614.2680	1569.5990	1439.3900	2620.5660

POLAND	Semi-strong		Weak		Absence	
Variable	ROIt	DEB/OPREt	ROIt	DEB/OPREt	ROIt	DEB/OPREt
const	0.0621 ***	-0.0411 ***	0.0481 **	-0.0316 **	0.0535 ***	-0.0173 ***
	(0.0350)	(0.0006)	(0.0154)	(0.0492)	(0.0001)	(0.0036)
$CA/FIAS_t$	0.0091 ***	0.0004				0.0000
	(0.3276)	(0.6222)				(0.9941)
$CA/FIAS_{t-1}$			0.0044 **	0.0050 ***		
			(0.0447)	(0.0038)		
CA/CL_t	0.0048 ***	-0.0282 ***	0.0095 *	-0.0181 ***	0.0108 ***	-0.0058 ***
	(0.1154)	(0.0000)	(0.0786)	(0.0000)	(0.0001)	(0.0000)
CA/CL_{t-1}			0.0073	-0.0289 ***		
			(0.2483)	(0.0000)		
$WKCA/OPRE_t$	-0.1624 ***	0.2027 ***			-0.2464 ***	0.0647 ***
	(0.0000)	(0.0000)			(0.0000)	(0.0020)
$WKCA/OPRE_{t-1}$			-0.3053 ***	0.2284 ***		
			(0.0000)	(0.0000)		
$WKCA/FIAS_t$	-0.0154 ***	-0.0006			0.0002	-0.0001
	(0.1237)	(0.6588)			(0.7979)	(0.9518)
$WKCA/FIAS_{t-1}$			0.0078	-0.0044		
			(0.1254)	(0.2820)		
$CRED\text{-}DEBD_t$	0.0000 ***	0.0000			0.0000 ***	0.0000
	(0.1936)	(0.1466)			(0.0007)	(0.5014)
$CRED\text{-}DEBD_{t-1}$			0.0000	0.0000		
			(0.5963)	(0.4038)		
$DEBLT_t$	-0.0024	0.0273 ***	0.0017	0.0231 ***	-0.0027	0.0121 ***
	(0.9734)	(0.0000)	(0.8351)	(0.0006)	(0.5996)	(0.0000)
$DEBLT_{t-1}$			0.0008	0.0209 ***		
			(0.9023)	(0.0001)		
$FCFC/OPRE_t$	-0.0589 *	-0.1035 *	-0.1550	-0.0040	-0.0706	-0.0552 *
	(0.2913)	(0.0871)	(0.1215)	(0.9603)	(0.3312)	(0.0854)
$FCFC/OPRE_{t-1}$			0.0738	-0.2231 **		
			(0.4914)	(0.0102)		
$FCFO/OPRE_t$	0.0195	-0.0453 **	0.0342	-0.1062 ***	0.0339	-0.1518 ***
	(0.3964)	(0.0229)	(0.3802)	(0.0007)	(0.2027)	(0.0000)
$FCFO/OPRE_{t-1}$			0.0176	-0.1578 ***		
			(0.6102)	(0.0000)		
LEV_t	-0.0006	0.0114 ***	-0.0049	0.0048	-0.0030	0.0023
	(0.5168)	(0.0026)	(0.3960)	(0.3087)	(0.4712)	(0.1894)
LEV_{t-1}			-0.0048	0.0059		
			(0.3928)	(0.1978)		
DOL_t (volume)	0.0000	0.0004 ***	0.0000	0.0005 ***	0.0000	0.0001 **
	(0.8435)	(0.0071)	(0.9566)	(0.0061)	(0.9020)	(0.0454)
DOL_{t-1} (volume)			0.0000	0.0003		
			(0.8573)	(0.1625)		
DOL_t (price)						
DOL_{t-1} (price)						
$FIAS/OPRE_t$	-0.0450 ***	0.0751 ***			-0.0377 ***	0.0150 ***
	(0.0003)	(0.0000)			(0.0000)	(0.0000)
$FIAS/OPRE_{t-1}$			-0.0393 ***	0.0789 ***		
			(0.0002)	(0.0000)		
INT/DEB_t	0.0000	0.0001	0.0000	0.0001	0.0000	0.0000
	(0.8829)	(0.7833)	(0.9059)	(0.7501)	(0.9503)	(0.8115)
INT/DEB_{t-1}			0.0001	0.0001		
			(0.8516)	(0.6543)		
$DEB/OPRE_t$	0.0145				-0.0076	
	(0.0457)				(0.7779)	
$DEB/OPRE_{t-1}$			-0.0360			0.8764 ***
			(0.3519)			(0.0000)
$DEB/EBITDA_t$	-0.0001	0.0062 ***	0.0017 **	0.0045 ***	0.0007	0.0004
	(0.0841)	(0.0000)	(0.0367)	(0.0000)	(0.2918)	(0.1508)
$DEB/EBITDA_{t-1}$			-0.0002	0.0037 ***		
			(0.8101)	(0.0000)		
$DEB/EQUITY_t$	-0.0121 ***		-0.0364 ***		-0.0121 ***	
	(0.0122)		(0.0056)		(0.0090)	
$DEB/EQUITY_{t-1}$			0.0340 **			
			(0.0133)			
ROE_t	0.2315 ***	-0.0138	0.2589 ***	-0.0275	0.2618 ***	-0.0057
	(0.0000)	(0.3885)	(0.0000)	(0.1547)	(0.0000)	(0.4838)
ROE_{t-1}			0.0787 ***	-0.0110		
			(0.0029)	(0.6143)		
ROI_t		-0.0306 ***		0.0025		0.0022
		(0.0062)		(0.9201)		(0.8184)
ROI_{t-1}				-0.0316 **	0.2026 ***	
				(0.0131)	(0.0000)	
Adjusted ROI_t						
Adjusted ROI_{t-1}						
$EBIT/INT_t$	0.0000 ***	0.0000 ***	0.0000 *	0.0000 ***	0.0000 ***	0.0000
	(0.0453)	(0.0000)	(0.0618)	(0.0044)	(0.0000)	(0.9523)
$EBIT/INT_{t-1}$			0.0000 **	-0.0001 ***		
			(0.0136)	(0.0001)		
ROS_t	1.5505 ***	0.8674 ***	1.6094 ***	0.6874 ***	1.1718 ***	0.2078 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0001)
ROS_{t-1}			-0.4446 **	0.6966 ***		
			(0.0136)	(0.0000)		
TAX_t	-0.0065 *	0.0043	-0.0084	-0.0013	-0.0101	0.0031
	(0.6687)	(0.7333)	(0.6796)	(0.9360)	(0.5035)	(0.6417)
TAX_{t-1}			0.0064	-0.0144		
			(0.7598)	(0.3937)		
$AV/STAF_t$	0.0000	-0.0010	-0.0006	0.0035	-0.0006	0.0005
	(0.9970)	(0.5311)	(0.8711)	(0.2090)	(0.7683)	(0.5037)
$AV/STAF_{t-1}$			0.0005	-0.0032		
			(0.8693)	(0.2178)		
$AV/EMPL_t$	0.0000	0.0000	0.0000	0.0000 **	0.0000 **	0.0000
	(0.0000)	(0.6272)	(0.8858)	(0.0262)	(0.0380)	(0.2177)
$AV/EMPL_{t-1}$			0.0000 **	0.0000		
			(0.0300)	(0.1291)		
$RLFA_t$	0.0000	-0.0004 ***			0.0000	0.0000
	(0.8959)	(0.0000)			(0.5548)	(0.2116)
$RFLA_{t-1}$			0.0000	-0.0002 ***		
			(0.6711)	(0.0001)		
R-squared	0.2418	0.2929	0.3921	0.4224	0.5058	0.8811
Adj. R-squared	0.2335	0.2856	0.3734	0.4052	0.4991	0.8794
p-value (F-stat)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hannan-Quinn	2471.0422	-334.9776	302.1363	-225.7265	-87.0048	-2791.7920

CZECH REPUBLIC	Semi-strong		Weak		Absence	
Variable	ROIt	DEB/OPREt	ROIt	DEB/OPREt	ROIt	DEB/OPREt
const	0.1023	0.0576 ***	0.1240 ***	0.0624 ***	0.1111 ***	0.0295 ***
	(0.0001)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$CA/FIAS_t$	0.0095	-0.0006 ***	0.0109 ***	-0.0002	0.0072 ***	-0.0002 **
	(0.0000)	(0.0000)	(0.0000)	(0.3472)	(0.0000)	(0.0152)
$CA/FIAS_{t-1}$			0.0015 ***	-0.0011 ***		
			(0.0030)	(0.0000)		
CA/CL_t	0.0035	-0.0217 ***	0.0113 ***	-0.0128 ***	0.0050	-0.0090 ***
	(0.3884)	(0.0000)	(0.0042)	(0.0000)	(0.1086)	(0.0000)
CA/CL_{t-1}			-0.0049	-0.0131 ***		
			(0.2527)	(0.0000)		
$WKCA/OPRE_t$	-0.2007 ***	0.0021	-0.1395 *	0.2375 ***	-0.2108 ***	0.0260 ***
	(0.0004)	(0.8977)	(0.0667)	(0.0000)	(0.0000)	(0.0041)
$WKCA/OPRE_{t-1}$			-0.0826	-0.2550 ***		
			(0.2796)	(0.0000)		
$WKCA/FIAS_t$	-0.0172 ***	0.0013 **	-0.0219 ***	0.0006	-0.0132 ***	0.0005 *
	(0.0000)	(0.0184)	(0.0000)	(0.3531)	(0.0000)	(0.0897)
$WKCA/FIAS_{t-1}$			-0.0004	0.0021 ***		
			(0.8127)	(0.0066)		
$CRED\text{-}DEBD_t$						
$CRED\text{-}DEBD_{t-1}$						
$DEBLT_t$	0.0002	0.0012 **	0.0002	0.0007	0.0003	0.0001
	(0.9186)	(0.0128)	(0.8427)	(0.1484)	(0.7750)	(0.6236)
$DEBLT_{t-1}$			0.0001	0.0008 *		
			(0.9577)	(0.0716)		
$FCFC/OPRE_t$	-0.0310	0.0503 **	-0.0210	0.2495 ***	-0.0456	-0.0025
	(0.7061)	(0.0318)	(0.7538)	(0.0000)	(0.4839)	(0.8585)
$FCFC/OPRE_{t-1}$			-0.0703	0.0702 **		
			(0.2740)	(0.0108)		
$FCFO/OPRE_t$	-0.0090	0.1844 ***	0.0051	0.0489 ***	0.0335	0.0282 ***
	(0.7964)	(0.0000)	(0.8650)	(0.0002)	(0.2564)	(0.0000)
$FCFO/OPRE_{t-1}$			0.0337	0.0248 **		
			(0.2031)	(0.0287)		
LEV_t	-0.0041	0.0011	-0.0029	-0.0009	-0.0032	-0.0023 **
	(0.5502)	(0.5910)	(0.5541)	(0.6622)	(0.5182)	(0.0306)
LEV_{t-1}			-0.0034	-0.0007		
			(0.5134)	(0.7557)		
DOL_t (volume)	0.0000	0.0000	0.0002	0.0000	0.0001	-0.0001
	(0.9158)	(0.8000)	(0.5975)	(0.9972)	(0.7974)	(0.3473)
DOL_{t-1} (volume)			-0.0005	-0.0001		
			(0.2044)	(0.7295)		
DOL_t (price)	-0.0035 **	0.0003	-0.0048 ***	-0.0005	-0.0038 ***	-0.0001
	(0.0220)	(0.5046)	(0.0000)	(0.3406)	(0.0005)	(0.6599)
DOL_{t-1} (price)			0.0014	0.0016 ***		
			(0.2600)	(0.0015)		
$FIAS/OPRE_t$	0.0018	0.1111 ***			-0.0024	0.0251 ***
	(0.8076)	(0.0000)			(0.6602)	(0.0000)
$FIAS/OPRE_{t-1}$			-0.0053	0.0986 ***		
			(0.3917)	(0.0000)		
INT/DEB_t	0.0001	0.0017	-0.0001	0.0013	0.0001	0.0003
	(0.9787)	(0.1367)	(0.9635)	(0.2300)	(0.9699)	(0.6541)
INT/DEB_{t-1}			0.0000	0.0010		
			(0.9962)	(0.3999)		
$DEB/OPRE_t$	-0.0096		-0.0077		0.0019	
	(0.6555)		(0.6472)		(0.9092)	
$DEB/OPRE_{t-1}$						0.7966 ***
						(0.0000)
$DEB/EBITDA_t$	-0.0006	0.0028 ***	-0.0005	0.0022 ***	-0.0006	0.0004 ***
	(0.4504)	(0.0000)	(0.3653)	(0.0000)	(0.3030)	(0.0005)
$DEB/EBITDA_{t-1}$			-0.0008	0.0022 ***		
			(0.1857)	(0.0000)		
$DEB/EQUITY_t$	-0.0023		0.0014		-0.0033	
	(0.6040)		(0.6690)		(0.3187)	
$DEB/EQUITY_{t-1}$			-0.0020			
			(0.5483)			
ROE_t	0.0049 ***	0.0006	0.0045 ***	0.0005	0.0055 ***	0.0002
	(0.0063)	(0.2425)	(0.0002)	(0.3298)	(0.0000)	(0.4262)
ROE_{t-1}			0.0007	-0.0002		
			(0.7890)	(0.8315)		
ROI_t		-0.0009				
		(0.6116)				
ROI_{t-1}					0.0403 ***	
					(0.0000)	
Adjusted ROI_t				-0.0033		0.0012
				(0.2471)		(0.3653)
Adjusted ROI_{t-1}				-0.0006		
				(0.6973)		
$EBIT/INT_t$	0.0000 ***	0.0000 **	0.0000 ***	0.0000	0.0000 ***	0.0000
	(0.0002)	(0.0389)	(0.0000)	(0.2380)	(0.0000)	(0.8312)
$EBIT/INT_{t-1}$			-0.0001 ***	0.0000		
			(0.0000)	(0.2507)		
ROS_t	1.5899 ***	-0.6063 ***	1.3121 ***	-0.7867 ***	1.5576 ***	-0.2865 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ROS_{t-1}			0.0701	-0.2046 ***		
			(0.4468)	(0.0000)		
TAX_t	0.1114 **	-0.0402 ***	0.0723 **	-0.0126	0.0698 **	-0.0014
	(0.0117)	(0.0014)	(0.0295)	(0.3777)	(0.0353)	(0.8455)
TAX_{t-1}			-0.0161	-0.0433 ***		
			(0.5977)	(0.0010)		
$AV/STAF_t$	-0.0053	0.0166 ***	-0.0012	0.0216 ***	-0.0058	-0.0015 *
	(0.2565)	(0.0000)	(0.8079)	(0.0000)	(0.1036)	(0.0540)
$AV/STAF_{t-1}$			-0.0042	0.0077 ***		
			(0.3772)	(0.0002)		
$AV/EMPL_t$	0.0020 **	0.0004 *	0.0035 ***	0.0006	0.0015 ***	0.0004 ***
	(0.0101)	(0.0800)	(0.0000)	(0.1168)	(0.0099)	(0.0006)
$AV/EMPL_{t-1}$			-0.0022 ***	-0.0004		
			(0.0076)	(0.2237)		
$RLFA_t$	-0.0002 *	-0.0010 ***	0.0000	-0.0005 ***	-0.0002 **	-0.0002 ***
	(0.0568)	(0.0000)	(0.7913)	(0.0000)	(0.0273)	(0.0000)
$RFLA_{t-1}$			-0.0002	-0.0006 ***		
			(0.2768)	(0.0000)		
R-squared	0.034016	0.160913	0.077124	0.166210	0.066527	0.770272
Adj. R-squared	0.033183	0.160221	0.075051	0.164380	0.065521	0.770035
p-value (F-stat)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Hannan-Quinn	110779.4	43750.6800	64195.2100	30938.6800	76241.6300	7710.9350

HUNGARY	Semi-strong		Weak		Absence	
Variable	ROIt	DEB/OPREt	ROIt	DEB/OPREt	ROIt	DEB/OPREt
const	0.1079 ***	0.0214 ***	0.0958 ***	0.0193 ***	0.0663 ***	0.0027
	(0.0000)	(0.0000)	(0.0000)	(0.0062)	(0.0000)	(0.3779)
$CA/FIAS_t$	0.0071 ***	-0.0007 *	0.0041 ***	-0.0006	0.0033 ***	0.0004 *
	(0.0000)	(0.0632)	(0.0000)	(0.2709)	(0.0000)	(0.0778)
$CA/FIAS_{t-1}$			-0.0015 ***	0.0005		
			(0.0059)	(0.4313)		
CA/CL_t	0.0057 *	-0.0385 ***	0.0069 ***	-0.0174 ***	0.0053 ***	-0.0121 ***
	(0.0914)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
CA/CL_{t-1}			-0.0007	-0.0284 ***		
			(0.7320)	(0.0000)		
$WKCA/OPRE_t$	-0.2420 ***	0.2738 ***	-0.2345 ***	0.3024 ***	-0.1827 ***	0.1186 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
$WKCA/OPRE_{t-1}$						
$WKCA/FIAS_t$	-0.0074 ***	0.0001	-0.0053 ***	0.0001	-0.0043 ***	-0.0007
	(0.0016)	(0.9425)	(0.0000)	(0.9248)	(0.0000)	(0.1836)
$WKCA/FIAS_{t-1}$			0.0041 ***	-0.0013		
			(0.0001)	(0.2757)		
$CRED\text{-}DEBD_t$	0.0000 ***	0.0000 *	0.0000 ***	0.0000	0.0000 ***	0.0000
	(0.0000)	(0.0985)	(0.0000)	(0.2926)	(0.0000)	(0.9336)
$CRED\text{-}DEBD_{t-1}$			0.0001 ***	0.0000 **		
			(0.0000)	(0.0385)		
$DEBLT_t$	-0.0048	0.0265 ***	-0.0034 *	0.0239 ***	-0.0032	0.0098 ***
	(0.3598)	(0.0000)	(0.0940)	(0.0000)	(0.1373)	(0.0000)
$DEBLT_{t-1}$			-0.0015	0.0221 ***		
			(0.4499)	(0.0000)		
$FCFC/OPRE_t$	-0.0258	0.0923 ***	-0.1297 ***	0.1406 ***	-0.1078 ***	0.1098 ***
	(0.7038)	(0.0002)	(0.0000)	(0.0000)	(0.0001)	(0.0000)
$FCFC/OPRE_{t-1}$			-0.0390	0.1958 ***		
			(0.1401)	(0.0000)		
$FCFO/OPRE_t$	0.0235	-0.0161	0.0675 ***	-0.0619 ***	0.0549 ***	-0.1189 ***
	(0.5534)	(0.2624)	(0.0000)	(0.0004)	(0.0008)	(0.0000)
$FCFO/OPRE_{t-1}$			0.0171	-0.1099 ***		
			(0.2507)	(0.0000)		
LEV_t	-0.0009	0.0042 ***	-0.0007	0.0045 ***	-0.0011	0.0013 ***
	(0.6603)	(0.0000)	(0.4472)	(0.0000)	(0.1945)	(0.0080)
LEV_{t-1}			-0.0006	0.0033 ***		
			(0.4965)	(0.0006)		
DOL_t (volume)	0.0000	0.0001 ***	0.0000	0.0001 ***	0.0000	0.0000 *
	(0.9236)	(0.0008)	(0.8626)	(0.0100)	(0.2571)	(0.0856)
DOL_{t-1} (volume)			0.0000	0.0001 ***		
			(0.4780)	(0.0013)		
DOL_t (price)	0.0006	0.0011 ***	-0.0002	0.0007 ***	0.0006 ***	0.0003 **
	(0.2786)	(0.0000)	(0.3641)	(0.0028)	(0.0039)	(0.0298)
DOL_{t-1} (price)			-0.0003	0.0009 ***		
			(0.2249)	(0.0005)		
$FIAS/OPRE_t$	-0.0811 ***	0.1492 ***			-0.0609 ***	0.0374 ***
	(0.0000)	(0.0000)			(0.0000)	(0.0000)
$FIAS/OPRE_{t-1}$			-0.0813 ***	0.1048 ***		
			(0.0000)	(0.0000)		
INT/DEB_t	0.0000	0.0025 ***	-0.0013 *	0.0012	-0.0012 *	0.0006
	(0.9921)	(0.0003)	(0.0797)	(0.1521)	(0.0961)	(0.1799)
INT/DEB_{t-1}			0.0026 ***	0.0024 **		
			(0.0026)	(0.0107)		
$DEB/OPRE_t$	-0.0158				0.0042	
	(0.6028)				(0.7202)	
$DEB/OPRE_{t-1}$			-0.0118			0.7448 ***
			(0.3230)			(0.0000)
$DEB/EBITDA_t$	-0.0002	0.0043 ***	-0.0001	0.0028 ***	-0.0002	0.0011 ***
	(0.7485)	(0.0000)	(0.5234)	(0.0000)	(0.5290)	(0.0000)
$DEB/EBITDA_{t-1}$			-0.0001	0.0033 ***		
			(0.7275)	(0.0000)		
$DEB/EQUITY_t$	-0.0049		-0.0069 ***		-0.0062 ***	
	(0.2466)		(0.0003)		(0.0003)	
$DEB/EQUITY_{t-1}$			0.0014			
			(0.3887)			
ROE_t	0.0098 **	-0.0011	0.0079 ***	-0.0012	0.0078 ***	0.0027 ***
	(0.0112)	(0.4210)	(0.0000)	(0.3849)	(0.0000)	(0.0011)
ROE_{t-1}			0.0043 ***	-0.0040 ***		
			(0.0017)	(0.0075)		
ROI_t						
ROI_{t-1}				0.0148	0.2085 ***	
				(0.4695)	(0.0000)	
Adjusted ROI_t		-0.0038		-0.0159		-0.0051 **
		(0.2671)		(0.1239)		(0.0117)
Adjusted ROI_{t-1}				-0.0340 **		
				(0.0260)		
$EBIT/INT_t$	0.0000 ***	0.0000 ***	0.0000	0.0000	0.0000	0.0000
	(0.0092)	(0.0076)	(0.9304)	(0.1253)	(0.5622)	(0.5922)
$EBIT/INT_{t-1}$			0.0000	0.0000 **		
			(0.6581)	(0.0344)		
ROS_t	1.8025 ***	-0.0075	1.8853 ***	-0.0330	1.6564 ***	-0.0502 **
	(0.0000)	(0.8127)	(0.0000)	(0.4608)	(0.0000)	(0.0145)
ROS_{t-1}			-0.0417	-0.0828		
			(0.2999)	(0.1015)		
TAX_t	0.0151	-0.0566 ***	0.0064	-0.0462 ***	-0.0059	-0.0149 ***
	(0.4909)	(0.0000)	(0.4416)	(0.0000)	(0.4703)	(0.0024)
TAX_{t-1}			0.0054	-0.0463 ***		
			(0.5583)	(0.0000)		
$AV/STAF_t$	-0.0058 ***	0.0061 ***	0.0092 ***	0.0102 ***	0.0000	-0.0002
	(0.0062)	(0.0000)	(0.0004)	(0.0002)	(0.9733)	(0.8524)
$AV/STAF_{t-1}$			-0.0085 ***	0.0080 ***		
			(0.0008)	(0.0034)		
$AV/EMPL_t$	0.0000	0.0000 ***	0.0000	0.0000	0.0000	0.0000 ***
	(0.6155)	(0.0000)	(0.6950)	(0.3774)	(0.5485)	(0.0000)
$AV/EMPL_{t-1}$			0.0000	0.0000 ***		
			(0.1997)	(0.0000)		
$RLFA_t$	0.0001	-0.0002	0.0010 ***	-0.0002	-0.0009 ***	0.0002 **
	(0.8680)	(0.1386)	(0.0004)	(0.5974)	(0.0000)	(0.0245)
$RFLA_{t-1}$			-0.0012 ***	0.0003		
			(0.0009)	(0.4495)		
R-squared	0.091866	0.314432	0.514979	0.356344	0.461101	0.762839
Adj. R-squared	0.089668	0.312845	0.511903	0.352262	0.459379	0.762178
p-value (F-stat)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Hannan-Quinn	14917.25	-4390.0230	-4712.3840	-3675.2310	-4146.5260	-12542.0500

SLOVAKIA	Semi-strong		Weak		Absence	
Variable	ROIt	DEB/OPREt	ROIt	DEB/OPREt	ROIt	DEB/OPREt
const	-0.0483	0.0674 ***	-0.0994 **	0.0192	-0.0725 **	-0.0037
	(0.1216)	(0.0002)	(0.0224)	(0.3809)	(0.0365)	(0.7900)
$CA/FIAS_t$	0.0060 ***	-0.0036 ***	-0.0009	-0.0012	0.0040 *	0.0011
	(0.0021)	(0.0014)	(0.7977)	(0.5206)	(0.0667)	(0.2032)
$CA/FIAS_{t-1}$			0.0103 **	-0.0006		
			(0.0105)	(0.7720)		
CA/CL_t	0.0336 ***	-0.0418 ***	0.0217	-0.0322 ***	0.0296 **	-0.0144 ***
	(0.0017)	(0.0000)	(0.2160)	(0.0003)	(0.0116)	(0.0024)
CA/CL_{t-1}			0.0214	-0.0127		
			(0.2682)	(0.1901)		
$WKCA/OPRE_t$	-0.0456	0.1062 ***			-0.0467	0.1110 ***
	(0.1369)	(0.0000)			(0.1730)	(0.0000)
$WKCA/OPRE_{t-1}$			-0.0525	0.2621 ***		
			(0.2097)	(0.0000)		
$WKCA/FIAS_t$	0.0064	0.0047	0.0168 **	0.0018	0.0096 *	-0.0006
	(0.2190)	(0.1134)	(0.0297)	(0.6383)	(0.0901)	(0.7842)
$WKCA/FIAS_{t-1}$			-0.0151 *	-0.0022		
			(0.0914)	(0.6316)		
$CRED\text{-}DEBD_t$	0.0000 ***	0.0000 ***	0.0000 ***	0.0000 ***	0.0000 ***	0.0000
	(0.0002)	(0.0001)	(0.0003)	(0.0000)	(0.0000)	(0.8300)
$CRED\text{-}DEBD_{t-1}$			0.0000	0.0000 ***		
			(0.5002)	(0.0012)		
$DEBLT_t$	-0.0125	0.0909 ***	-0.0132	0.0951 ***	-0.0111	0.0262 **
	(0.5311)	(0.0000)	(0.6473)	(0.0000)	(0.6703)	(0.0130)
$DEBLT_{t-1}$			-0.0057	0.0613 ***		
			(0.8065)	(0.0000)		
$FCFC/OPRE_t$	-0.0045	0.0933 ***	0.0150	-0.0536 **	0.0081	0.1942 ***
	(0.9019)	(0.0000)	(0.7708)	(0.0355)	(0.8353)	(0.0000)
$FCFC/OPRE_{t-1}$			0.0191	0.0341		
			(0.6824)	(0.1417)		
$FCFO/OPRE_t$	-0.0568 **	-0.1902 ***	-0.0720 **	-0.0711 ***	-0.0567 **	-0.1226 ***
	(0.0184)	(0.0000)	(0.0142)	(0.0000)	(0.0341)	(0.0000)
$FCFO/OPRE_{t-1}$			-0.0040	-0.2397 ***		
			(0.9134)	(0.0000)		
LEV_t	-0.0009	0.0063	0.0045	-0.0008	0.0025	-0.0077
	(0.9389)	(0.3328)	(0.7235)	(0.9018)	(0.8401)	(0.1274)
LEV_{t-1}			-0.0005	0.0156 **		
			(0.9685)	(0.0151)		
DOL_t (volume)	0.0000	-0.0001	0.0001	-0.0001	0.0001	-0.0002
	(0.9276)	(0.5989)	(0.8393)	(0.7177)	(0.8875)	(0.3332)
DOL_{t-1} (volume)			0.0002	0.0000		
			(0.7800)	(0.9839)		
DOL_t (price)	-0.0007	0.0001	-0.0014	0.0004	-0.0006	0.0003
	(0.6813)	(0.9305)	(0.5295)	(0.7123)	(0.7466)	(0.6880)
DOL_{t-1} (price)			0.0007	0.0004		
			(0.8063)	(0.7984)		
$FIAS/OPRE_t$	-0.0007	0.0330 ***	-0.0041	0.0380 ***	0.0004	0.0027 *
	(0.8347)	(0.0000)	(0.3770)	(0.0000)	(0.9150)	(0.0925)
$FIAS/OPRE_{t-1}$						
INT/DEB_t	0.0003	0.0017	-0.0001	0.0010	0.0001	0.0002
	(0.9500)	(0.5106)	(0.9888)	(0.6605)	(0.9870)	(0.9147)
INT/DEB_{t-1}			-0.0009	0.0007		
			(0.9118)	(0.8755)		
$DEB/OPRE_t$	-0.0054		0.0419		0.0035	
	(0.8594)		(0.4170)		(0.9147)	
$DEB/OPRE_{t-1}$			0.0048			0.8070 ***
			(0.9338)			(0.0000)
$DEB/EBITDA_t$	0.0003	0.0254 ***	-0.0008	0.0202 ***	-0.0001	0.0108 ***
	(0.8769)	(0.0000)	(0.7727)	(0.0000)	(0.9694)	(0.0000)
$DEB/EBITDA_{t-1}$			-0.0007	0.0114 ***		
			(0.7852)	(0.0000)		
$DEB/EQUITY_t$	0.0113		0.0162 *		0.0183 **	
	(0.1031)		(0.0686)		(0.0239)	
$DEB/EQUITY_{t-1}$			-0.0022			
			(0.7899)			
ROE_t	0.0602 ***	0.0170	0.0338	0.0299 **	0.0280	-0.0085
	(0.0045)	(0.1647)	(0.2095)	(0.0267)	(0.2674)	(0.3996)
ROE_{t-1}			0.1156 ***	0.0157		
			(0.0000)	(0.1900)		
ROI_t		0.0014		0.0126		0.0045
		(0.8884)		(0.2035)		(0.5494)
ROI_{t-1}				0.0145	0.1539 ***	
				(0.2194)	(0.0000)	
Adjusted ROI_t	0.3205 ***	-0.0016	0.2939 ***	-0.0025	0.2848 ***	-0.0004
	(0.0000)	(0.7635)	(0.0000)	(0.6433)	(0.0000)	(0.9170)
Adjusted ROI_{t-1}			-0.0353 ***	0.0014		
			(0.0005)	(0.8027)		
$EBIT/INT_t$	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.4166)	(0.4096)	(0.5808)	(0.5956)	(0.3206)	(0.7096)
$EBIT/INT_{t-1}$			0.0000	0.0000		
			(0.5662)	(0.2870)		
ROS_t	0.2724 ***	-0.1722 ***	0.2586 ***	-0.2216 ***	0.2381 ***	-0.2180 ***
	(0.0000)	(0.0000)	(0.0004)	(0.0000)	(0.0001)	(0.0000)
ROS_{t-1}			0.1504 *	-0.1846 ***		
			(0.0575)	(0.0000)		
TAX_t	0.1171 **	-0.0318	0.0947	-0.0059	0.0850	0.0051
	(0.0354)	(0.3221)	(0.1280)	(0.8509)	(0.1522)	(0.8311)
TAX_{t-1}			-0.0008	0.0897 ***		
			(0.9902)	(0.0078)		
$AV/STAF_t$	0.0002	0.0002	0.0002	0.0003	0.0001	-0.0002
	(0.9260)	(0.8191)	(0.9215)	(0.7586)	(0.9496)	(0.8169)
$AV/STAF_{t-1}$			0.0003	0.0004		
			(0.8981)	(0.7623)		
$AV/EMPL_t$						
$AV/EMPL_{t-1}$						
$RLFA_t$	0.0005	-0.0012 ***	0.0006	0.0003	0.0008	0.0014 ***
	(0.5174)	(0.0054)	(0.7064)	(0.7093)	(0.3373)	(0.0000)
$RFLA_{t-1}$			0.0002	-0.0006		
			(0.8721)	(0.3725)		
R-squared	0.363443	0.318200	0.337766	0.451243	0.342806	0.685537
Adj. R-squared	0.359119	0.313772	0.326841	0.442611	0.337213	0.682958
p-value (F-stat)						
Hannan-Quinn	8316.553	4576.2110	6986.3930	3273.8060	7134.6100	1947.5130

Table 7 presents statistics estimated for regressions for the degree of efficiency with a panel OLS model. Dependent variables are ROI, the Intensity of Indebtedness and the debt-to-equity ratio. Independent variables are risk indexes excluding multi-collinear ones. Regressions are estimated for firms without outliers (86'079 firms).

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We turn now to the second research question of the study, where we attempt at grading the efficacy of Basel regulation within the European aggregate where Basel regulation is fully applied. Based on the panel regressions results, we find that Germany, only, presents a semi-strong form of efficiency. We notice that this is the only Country where regression (i) has the highest adjusted R-squared (46%), if regressed on the Intensity of Indebtedness. Hence, we can say that, in Germany, financing decisions are related mainly to the current level of risks. In fact, when moving to regression (ii) for the weak and (iii) for the absence form of efficiency, R-squared decreases. At the second step of efficiency (i.e. Separation Theorem), Germany confirms efficiency. In fact, on one hand, financing decisions are strongly correlated with the mix of business risks and, on the other hand, the investment decisions are not correlated with risks. In this context, the management can take decisions in a risk neutral framework, since the appetite for risk of the financial system selects the investment worthiness.

Out of the European aggregate, France and Spain are the second ranked countries according to both the first and second steps of efficiency. As far as the financing efficiency is concerned, we classify the two Countries as having a "weak form of efficiency." If we compare the adjusted R-squared in regression applied to Intensity of Indebtedness, the regression (ii) has the highest one (France: 98%; Spain: 56%). Hence, we can say that in these Countries financing decisions relate to both current and past risks. Additionally, in these two Countries, there is also capital allocation efficiency given that the separation between investment and financing decisions works.

Poland, Czech Republic, Hungary and Slovakia, are the worst ones in terms of financing efficiency. In fact, the regression (iii) has the highest adjusted R-squared (Poland: 88%; Czech Republic: 77%; Hungary: 76%; Slovakia: 69%). This means that banks are not interested in present or past risks but they decide according to an incremental approach, by considering their past decisions, only.

Additionally, the separation between investing and financing decisions is not present. Both decisions are correlated with the mix of business risks.

Italy is an intermediate and anomalous case: while there is no financing efficiency (the regression on the "absence of efficiency" has the highest R-squared equal to 76%), the separation of investing and financing decisions seems to work. In fact, investing decisions are neutral toward risks while financing relate strongly with past decisions.

Given the above classification, we compare results on efficiency with the ranking based on three indicators: Risk of Default, Opportunity Cost and Inefficient Debt Pricing.

Looking at the first ranking ("Risk of Default" indicator), we find evidence that the more efficient Countries inside the Basel compliant ones have a better debt allocating system, if compared to the less efficient ones. In fact, Spain, France and UK are among the top five Countries while all the eastern European Countries (not efficient) are among the bottom five ones. The only exceptions are Germany and Italy. In the case of Germany, we note that the ranking results need to be considered with caution because the calculation of the long term merit of credit proxy is obtained through a a low R-squared regression model. In fact, as indicated in Table 4, the highest predictive model reaches an R-squared of only 3%). Future research will attempt at improving the Rating methodology for Germany by adding qualitative factors to narrow the gaps. In the case of Italy, additional research, shows that if we split the sample between the manufacturing and service sectors, we notice that Italian manufacturing firms would be ranked number six, while the service sector ones would confirm a high position that is number one.

By looking at the "Missing Opportunities" indicator, the situation is slightly different. The continental Europe Countries seems to be the worst in terms of this rank. Finally, in terms of "Inefficient Debt Pricing" we confirm that the efficient Countries inside the Basel compliant ones have a better debt allocating system if compared to the less efficient Countries. Germany and Italy are still anomalous.

5. Discussion and conclusions

To discuss the results from the intersection of the level of efficiency of each Country (Table 7) and the rankings (Table 6), it is important to control for some specificities of the Anglo Saxon Countries (UK and USA) versus the European Countries. In fact, while analyzing the data we observed that the UK and the USA are both significantly bigger than Europe as an aggregate as well as they have a lower level of debt financing compared to the European aggregate. To confirm this observation, we perform two t-test of difference on both size[9] and the gross level of debt (Eq.4) of three groups of Countries: USA, UK and Europe.

$$\text{Gross Debt} - \text{to} - \text{equity ratio} = GDEB/EQUITY_t = GFP_t \ /SHFD_t \qquad \text{Eq. 4}$$

The second control is required since the financial systems of the Anglo-Saxon Countries (i.e. USA and UK, where Basel regulation is not fully applied) are more market-oriented than those of the other Countries (more banking-oriented) . Accordingly, the use of equity in corporate financing is wider. Companies using more equity should have lower than level-1 debt-to-equity ratio. This is direct consequence of the expectation that Anglo-Saxon Countries may have more developed equity capital markets (e.g. private equity and stock listing). Equity may compete with banks in fund provisioning and, this way, being more disciplinant in controlling the corporate risk sharing inside the financial system than the Basel practices are. In fact, should we find out that the Anglo-Saxon Countries present a lower amount of debt financing and, at the same time, a bigger efficiency in its allocation, we will be able to grade more the true efficacy of Basel regulation.

[9] Company size is calculated based on the Commission Recommendation 2003/361/EC of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises. Companies can be classified with a number from 1 to 4, where number 1 indicates micro firms, number 2 small firms, number 3 medium firms and number 4 big firms. Based on this Recommendation we can classify: micro firms (1) if they have less than 10 employees and total assets less than 2.000.000 € or operating revenue less than 2.000.000; small firms (2) if they have employees less than 50 and total assets less than 10.000.000 € or operating revenue less than 10.000.000 €; medium firms (3) if they have employees less than 250 and total assets less than 43.000.000 € or operating revenue less than 50.000.000 €; in the other cases we classify enterprises as big firms (4).

One issue with comparing sample means is the fact that the UK average value for the gross debt-to-equity ratio (Eq. 4) is biased by few outliers (see Figure 1, 2 and 3 in the Appendix). For this reason, we truncate the sample by eliminating 10% of the outer tails (5% of each side of the distribution, hence retaining 90% of the data).

The hypothesis of the t-test is as follows: $\begin{cases} H_0: \mu_i \leq \mu_j \\ H_1: \mu_i > \mu_j, \end{cases}$

Where μ represents the average size of the company (Table 8) and the gross level of debt to equity ratio (Table 9) in our sample.

Table 8: t-test of difference on sample means-Size

Sample	Sample mean (complete sample)
UK	2,75
USA	3,04
EU	2,13

Compared samples	*t*- stat	95% confidence interval	*p* -value
UK vs USA	-22,0335	[-0.3889, +∞]	1,0000
UK vs EU	86,9303	[0.6003, +∞]	0,0000
USA vs EU	61,9755	[0.9476, +∞]	0,0000

Table 9: t-test of difference on sample means-GDEB/EQUITY

Sample	Sample mean (complete sample)	90% sample in the middle (quantiles)
EU	1,36	na
UK	8,93	0,95
USA	-0,14	na

Samples without "anoumalous" firms

Compared samples	t-stat	95% confidence interval	p-value
UK vs USA	1,724243728	[-∞, 2.1363]	0,9577
UK vs EU	-2,031546821	[-∞, -0.0771]	0,0211
USA vs EU	-2,254599271	[-∞, -0.40502]	0,0121

Table 8 shows confirmation that both the USA and the UK are bigger in size than the European aggregate of Countries.

Additionally, Table 9 confirms that both the US and the UK have lower bank debt financing practices as compared to Europe. This implies that these two Anglo-Saxon Countries have more developed capital markets (via private equity or public markets), which are key competitors to the banking system. This has key implications on the efficacy of Basel regulations as we shall see from the results of our rankings.

The empirical data for both the UK and the US are classifiable as having a weak form of financing efficiency given that the regression on this form of efficiency is the one with the highest R squared (UK:39%, USA:94%, Table 7). Differently, while the UK is also efficient from a capital allocation perspective, the USA is not, given that both investing and financing decisions are correlated with the mix of business risks. Most important, in terms of Country rankings, from Tables 10 and 11 we note that both the USA and the UK rank in the first positions of the rankings (to be compared with Table 6) based on the “Risk of Default” when we look at the dimension adjusted rankings for the USA (Risk of Defaults = 17.49%) and the debt-to-equity adjusted rankings for the UK (Risk of Defaults = 17.69%).

Table 10: Rankings adjusted by dimension – USA

		Rating				Rating	
		positive	negative			positive	negative
DEBT/OPRE	higher	465	305	DEBT/OPRE	higher	26.66%	17.49%
	lower	203	264		lower	11.64%	15.14%
		Rating				Rating	
		positive	negative			positive	negative
INTE/DEBT	lower	380	322	INTE/DEBT	lower	30.84%	26.14%
	higher	288	242		higher	23.38%	19.64%

Table 11: Rankings adjusted by debt-to-equity ratio - UK

			Rating				Rating	
			positive	negative			positive	negative
DEB/EQUITY <1	DEBT/OPRE	higher	1486	1645	DEBT/OPRE	higher	15.98%	17.69%
		lower	3858	2310		lower	41.49%	24.84%
			Rating				Rating	
			positive	negative			positive	negative
	INTE/DEBT	lower	2248	1726	INTE/DEBT	lower	27.47%	21.09%
		higher	2394	1816		higher	29.25%	22.19%

			Rating				Rating	
			positive	negative			positive	negative
DEB/EQUITY ≥ 1	DEBT/OPRE	higher	1213	1633	DEBT/OPRE	higher	34.90%	46.98%
		lower	504	126		lower	14.50%	3.62%
			Rating				Rating	
			positive	negative			positive	negative
	INTE/DEBT	lower	958	907	INTE/DEBT	lower	29.40%	27.83%
		higher	643	751		higher	19.73%	23.04%

What we can conclude from this observation is that, in the Anglo-Saxon world, where Basel regulation is implemented and applied with limitations the allocation efficacy of the banks system is better than the European aggregate one.

We leave the reader and future research with two suggestions:

1. Given our finding of heterogeneity in the mix of explanatory variables for the asset side capability of firms to perform in the long run, the one size fits all Basel solution for the banking system may be limiting in the correct credit evaluation system

2. Unless there is competition from the risk capital markets, Basel regulation appears to have difficulties in its credit allocation efficacy.

Appendix (extract from Mantovani et al., 2014)

Index	Unit	Formula derived from ORBIS	Definition
Technology features			
$CA/FIAS_t$	%	$CUAS_t/FIAS_t$	Current rate of assets
CA/CL_t	%	$CUAS_t/CULI_t$	Current equilibrium
$WKCA/FIAS_t$	%	$WKCA_t/FIAS_t$	Relative intensity of working capital
$FIAS/OPRE_t$	%	$\frac{[(FIAS_t + FIAS_{t-1})/2]}{OPRE_t}$	Absolute intensity of fixed assets
$RLFA_t$	--	$\frac{[(FIAS_t + FIAS_{t-1})/2]}{DEPR_t}$	Residual Life of Fixed Assets
Financial strategy			
$DEB/EBITDA_t$	--	$\frac{[(NFF_t + NFF_{t-1})/2]}{EBTA_t}$	Years for debt re-financing
$DEBLT_t$	%	$CUAS_t/NFF_t$	Long term debt rate
$DEB/EQUITY_t$	--	$NFF_t/SHFD_t$	Debt-to-equity ratio
$GDEB/EQUITY_t$		$GFF_t/SHFD_t$	Gross Debt-to-equity ratio
$DEB/OPRE_t$	--	$\frac{[(NFF_t + NFF_{t-1})/2]}{OPRE_t}$	Intensity of indebtedness
LEV_t	--	$\frac{OPPL_t}{OPPL_t - INTE_t}$	Financial leverage
$INTE/DEB_t$	%	$\frac{INTE_t}{[(NFF_t + NFF_{t-1})/2]}$	Financial interest rate
Operating risks			
$WKCA/OPRE_t$	%	$\frac{[(WKCA_t + WKCA_{t-1})/2]}{OPRE_t}$	Absolute intensity of working capital
$DOL - volume_t$	--	$AV_t/OPPL_t$	Degree of operative leverage on volume changes
$DOL - price_t$	--	$\left[\frac{DCU}{(MCU - x)} - 1\right] * 100$	Degree of op. lev. on price changes of x (x=1%)
$CRED - DEBT_t$	dd	$\frac{(CRED_t + CRED_{t-1})/2}{MATE_t/365} - \frac{(DEBT_t + DEBT_{t-1})/2}{OPRE_t/365}$	Difference between delays on payments to creditors and payments from debtors
Rate of return			
ROI_t	%	$\frac{OPPL_t}{[(CIN_t + CIN_{t-1})/2]}$	Return on Investment
Adjusted ROI_t	%	$\frac{EBTA - [OPPIN + STOCK]}{[(CIN_t + CIN_{t-1})/2]}$	Alternative Return on Investment
ROE_t	%	$\frac{PL_t}{[(SHFD_t + SHFD_{t-1})/2]}$	Return on Equity
ROS_t	%	$OPPL_t/OPRE_t$	Return on Sales
$AV/STAF_t$	%	$AV_t/STAF_t$	Work productivity (cost of employees)
$AV/EMPL_t$	%	$AV/EMPL_t$	Work productivity (number of employees)

$EBIT/INT_t$	--	$OPPL_t/INTE_t$	Interest Coverage
$FCFC/OPRE_t$	%	$\frac{C\_PL_t/IN}{\frac{EBTA_t + WKCA_t - 1}{OPRE_t}} - WKCA_t$	Margin of Free Cash Flow Characteristic
$FCFO/OPRE_t$	%	$\frac{FCFC_t - (DEPR_t + FIAS_t - FIAS_{t-1})}{OPRE_t}$	Margin of Free Cash Flow Operative
TAX_t	%	$TAXA_t/OPPL_t$	Tax rate

Self elaborated account values

$*NFP_t$	€	$LOAN_t + LTDB_t - CASH_t$	Net Financial Position
$**GFP_t$	€	$LOAN_t + LTDB_t$	Gross Financial Position
$***MDCU_t$	%	$AV_t/OPRE_t$	Contribution Margin
$****CIN_t$	€	$FIAS_t + WKCA_t$	Total Net Investments

Figure 1: Log-density of GDEB/EQUITY in Europe

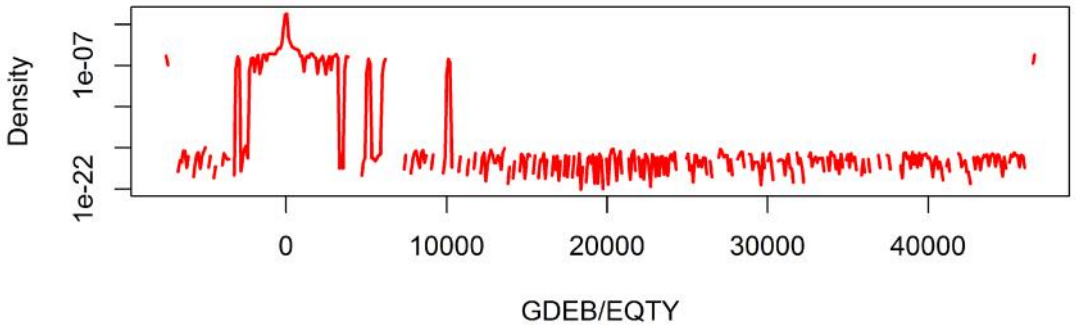


Figure 2: Log-density of GDEB/EQUITY in USA

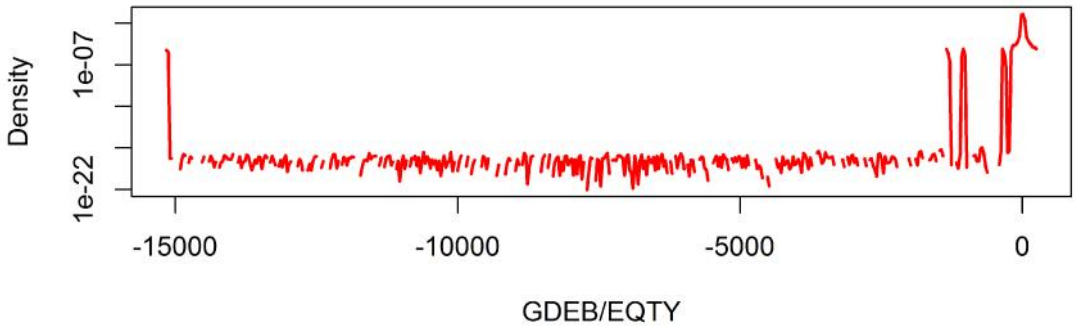
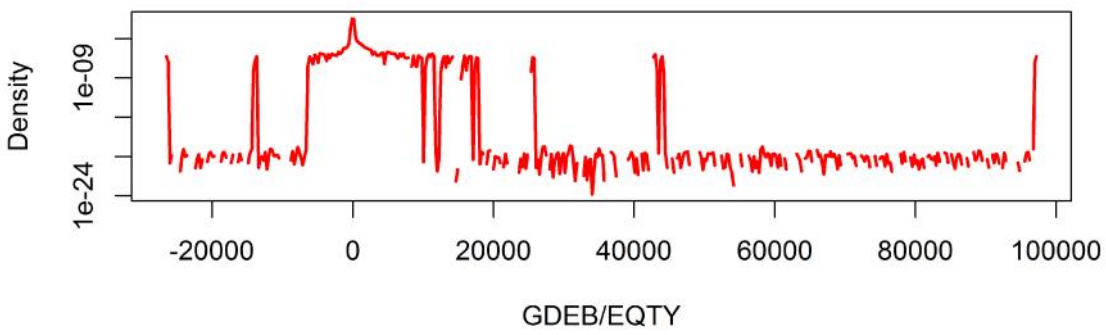


Figure 3: Log-density of GDEB/EQUITY in UK



Figures 1, 2 and 3 show the estimated probability density for GDEB/EQUITY for European Counties, the USA and the UK. The y-axis has been set to logarithmic scale so that outliers can be easily noted. All densities are roughly centered around zero, but anomalous values are differently distributed across Europe, USA and UK. Such outliers, especially in the case of UK, significantly bias the sample average of the indicator.

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