## Table of Contents

Ab	breviations	19
I.	Introduction	21
	A. Background	21
	B. Concerns over Ratings' Regulatory Function in the	
	Institutional Investment Context	22
	1. Regulation of Rating Over-Reliance in Asset Management	22
	2. Credit Rating Downgrades as Threat to Financial Stability	23
	<ol><li>Investment Guidelines as Subject of Regulation and Supervision</li></ol>	24
	•	
	C. Research Questions	25
	D. Methodology and Approach	25
II.	Regulation of Credit Ratings as Subject of Research	29
	A. Emergence, Economic Function and Characteristics of	
	Credit Ratings	29
	1. Historic Development	29
	2. Ratings as Intermediated Market Information	30
	(i) Role of Creditworthiness Information for Financial Markets	30
	(ii) Function of Credit Rating Agencies as Information	30
	Intermediary for Market Participants	32
	3. Market for Intermediated Financial Information as	
	Structural Determinant	33
	4. Credit Ratings Agencies within the Efficient Market	
	Hypothesis	35
	<ol><li>Credit Ratings between Transaction and Information Markets</li></ol>	36
	6. Summary	38
	B. Characteristics of Credit Ratings and Credit Rating Agencies	
	within Information System of Capital Markets	38
	1. Assessment of Default Probability	39
	•	



9

	2.	Third Party Role between Emitter and Investor	40
		(i) Subjective Third-Party Opinion	40
		(ii) Relative Grading of Creditworthiness	41
		(iii) Symbolical Expression of Credit Rating	43
	3.	Characteristics of the Credit Rating Industry	44
		(i) Investor Pays vs. Issuer Pays Model	44
		(ii) The Rating Process: Solicited vs. Unsolicited Ratings	46
	4.	Rating Objects	48
		(i) Issuer Rating	48
		(ii) Issuance Rating	49
		(a) Bonds	49
		(b) Structured Financial Products	50
		(c) Preferred Stock	51
		(d) Sovereigns	51
	5.	Summary: Credit Ratings as Universal and Subjective	
		Third-Party Opinions on Credit Risk	52
C.	Th	e Regulatory Function of Credit Ratings	53
	1.	Regulation of Banks - Basel I, II & III	53
	2.	Regulation of Market Access	55
	3.	Regulation of Institutional Investors	56
		(i) Insurances & Pension Funds	57
		(ii) Money Market Funds	58
		(a) US Money Market Funds	59
		(b) EU Money Market Funds	60
	4.	Private Rulemaking as a Distinct Regulatory Use Case	61
		(i) Debt Contract Triggers	62
		(a) Types of Debt Contract Rating Triggers	62
		(b) Implications of Debt Contract Rating Triggers	63
		(ii) Rating-Based Risk Limits and Strategies within	
		Investment Mandates	64
		(iii) Summary: Credit Ratings' Regulatory Function with	
		Evident Trigger Effects	65
D.	Fir	nancial Crises as Initiators for the Regulation of Ratings	
		d Rating Over-Reliance	65
		The Role of Credit Ratings in Corporate and Sovereign	
		Crises	66
		(i) East-Asian Financial Crisis	66

(ii) Corpor	ate Bankruptcies: Enron and WorldCom	67
(iii) The 200	08 Financial Crisis - Structured Finance and	
Soverei	gn Debt	69
(a) US	Residential House Financing - Mortgage-	
Bac	ked Securities and Collateralized Debt	
Obl	ligations	69
(b) Wid	le-Ranging Rating Downgrades Following	
Col	lapse of US Housing Market	71
(iv) Soverei	gn Rating Downgrades as Crisis Contagion	72
2. Alternating	Views on the Role of Credit Rating Agencies	74
(i) Cogniti	ve Biases and Skewed Incentives	75
(ii) Parallel	s in Proposed Policy Implications	77
3. Failure of Ci	redit Rating Agencies	79
(i) Flawed	Rating Processes and Models as Source of	
Error		79
(ii) Inaccur	ate Ratings as Result of Flawed Models and	
Process	es	81
4. Misconcepti	ons of Credit Ratings' Meaning – Rating	
Over-Relian	ce	82
<ol><li>Structural ar</li></ol>	nd Situational Determinants of Downgrade	
Consequenc	es	84
(i) Structu	ral Implications of Debt Markets	84
(ii) Market	Timing Implications	85
(iii) Contagi	ion through Credit Rating Agencies' Rules	87
(iv) Liquidit	ty Squeeze Resulting from Sell-Offs	88
6. Summary: C	Consequences to Downgrades Following	
Ratings' Fail	ed Information Function Fortified through	
Rating Over	-Reliance and Disadvantageous Structural	
and Situation	nal Determinants	90
III D. 1 c D c		
	'Regulatory Function – The Case of Rating nin Mutual Fund Investment Guidelines	93
		93
<del>-</del>	redit Rating Agencies' Information Function	
in the US and E	urope	94
	e of Conduct and Reputation	95
	nd Liability of CRAs in the US	96
(i) Credit I	Rating Agency Reform Act of 2006	96
(ii) Dodd F	rank Act of 2010	97

	3.	Regulation and	Liability of CRAs in the EU	98
	4.	Summary	·	101
B.	En	npirical Evidence	e for Price Impact of Investment Limits	102
			tation through Rating Defined Investment	
		Limits		103
	2.	Evidence for Sy	nchronizing References to the Investment	
		Grade Boundar	у	105
C.	Ra	ting Over-Reliar	nce and its Regulation	107
	1.	<b>Empirical Evide</b>	ence as Rationale for Regulation beyond	
		Credit Rating A	gencies' Information Function - Price	
		Movements aro	und Rating Changes	108
			Studies on Bond, Credit Default Swaps	
		and Stock		109
			ce Movements around the Investment-/	
			tment Grade Barrier	111
			te of Market Reactions of Solicited and	110
		Unsolicited	Č	112
			actions in Advance of Rating Changes  Iarket Reactions to Downgrades	113
			to Upgrades	114
	2	•	of Regulatory Forced Sell-Offs: The	114
	۷.	-	f Markets and Synchronizing Effects of	
		the Investment	, ,	115
			gmentation through Rating-Based	
		Investment	, ,	115
		(ii) Investment	Grade Barrier as Synchronizer of Rating-	
		Based Rule	es	116
	3.	•	erial Informational Value Inexplicable by	
			ent Market Hypothesis and Need for	
		~	orced Sell-Offs with Focus on Investment	
		Grade Barrier		117
D.			Rating Reliance: Terminology and	
	Fir	nancial Context		118
	1.		ating Over-Reliance	119
		· · · • •	ich to Reduce Rating Reliance: Early	
		Initiatives a	and Dodd Frank	120

	(ii) Role of the Financial Stability Board	121
	(a) Content of Financial Stability Board Guideline	s 123
	(b) Implementation of Financial Stability Board	
	Guidelines into European Law	123
	(1) CRA III	124
	(2) Non CRA III initiatives	125
	2. Summary: Orchestrated and Wide-Ranging Initiatives t	0
	Reduce Rating Reliance within the US and Europe	126
E.	Reducing Rating Over-Reliance in Investment Managemen	t 127
	1. Rationale for Collective Investments & Significance of	
	Asset Management	127
	2. Potential Forced-Sell Offs through Downgrades in	
	Investment Management	128
	(i) Money Market Funds	128
	(ii) Investment Grade Index Funds	131
	(iii) Debt Mutual Funds	133
	(a) Collateral Downgrades	133
	(b) Counterparty Downgrade	134
	(c) Downgrade through Investment Guideline	
	Minimum Risk Boundary	136
F.	The Regulation of Rating Over-Reliance within Mutual Fun	nd
	Investment Guidelines	138
	1. Historic Emergence of Investment Guidelines for Mutua	al
	Funds	138
	2. Investment Fund Governance - Managing the Principal	l
	Agent Relationship	140
	(i) Discretion, Moral Hazard and Economic Incentive	s 141
	(ii) Governance of Collective Investments	143
	3. Emergence and Driver of Credit Rating References in	
	Investment Guidelines	144
G.	. Regulatory and Supervisory Efforts to Reduce the Over-	
	Reliance on Ratings within Investment Guidelines	147
	1. Introduction of KAGB §29 (2a) on the Basis of CRA III	
	Article 5a	148
	2. Amendments to Investment Act of 1940 Following	
	Section 939 of Dodd Frank	150

	3.	Responses by EU and US Supervisory Authorities to FSB	
		Stocktaking	151
		(i) Response by German Financial Market Authority	
		BaFin	152
		(ii) Response by the SEC	153
	4.	IOSCO Good Practices as Additional Guiding Principles	
		to Reduce the Reliance on Ratings in Investment	
		Management	154
		(i) Demand of Individual Credit Risk Assessments &	
		Communication of Downgrade Procedures	155
		(ii) Access to Underlying Credit Rating Information	156
		(iii) Disclosure on Uses of External Ratings	156
		(iv) Quality of Counterparties and Collateral	157
		(v) Managing External Credit Rating Changes	158
		(vi) Investor Reliance on External Credit Ratings	158
		(vii) Summary: Confirmation of Ratings' Market	
		Relevant Role within Investment Guidelines &	
		Proposals for Adjustment	159
	5.	The Joint Committee of EU Supervisory Authorities'	
		Good Practices for Reducing Mechanistic Reliance on	
		Credit Ratings	160
		(i) General Joint Committee Good Practices	161
		(ii) Specific Joint Committee Good Practices	161
	6.	Comparative Summary of IOSCO and Joint Committee	
		Good Practices	162
IV.	Empi	rical Analysis of Mutual Fund Investment Guidelines	165
	A. Ra	ationale for Empirical Analysis	165
		Prior Studies on the Role of Ratings within the	
		Investment Guidelines of Mutual Funds	166
		(i) Pre-Crisis Survey Study by Cantor, Thomas and	
		Gwilym	166
		(ii) Text Recognition Study on US Mutual Fund	
		Investment Guidelines	169
	2.	Need for Comprehensive Empirical Review of Status-Quo	170

En	npirical Research Questions	171
1.		
	<u> </u>	172
2.		
_	<u>*</u>	172
		172
4.	1	150
	that do not mechanistically rely on external credit ratings?	173
En	npirical Scoring Model	173
1.	Model Requirements	173
2.	1 0	173
	(i) Score Computation Structure	174
		175
	•	177
		177
		178
3.		178
	- · · · · · · · · · · · · · · · · · · ·	179
	• •	179
		181
	- :	181
		182
4.		183
		184
	•	185
	(iii) Group 3: Divestment Alleviating Factors	188
En	npirical Model	193
1.	Determining the Appropriate Econometric Methodology	193
2.	Statistical Analysis of Results - Mann Whitney U-Test	195
3.	Hypothesis Based Test Procedure	195
Ну	pothesis Testing of Score Results	196
1.	Hypothesis 1: There is no significant reliance on credit	
	ratings.	196
	1. 2. 3. 4. Ent 1. 2. 3. Hy	<ul> <li>(iii) Screening Process and Data</li> <li>(iii) Model Data – Requirements and Sources <ul> <li>(a) US Fund Database</li> <li>(b) E.U. Fund Database</li> </ul> </li> <li>3. Model Variables <ul> <li>(i) Variable 1: Jurisdiction of Offering</li> <li>(ii) Variable 2: Size of Asset Management Firm</li> <li>(iii) Variable 3: Investment Objective</li> <li>(a) European Investment Objectives</li> <li>(b) US Investment Objectives</li> </ul> </li> <li>4. Model Structure <ul> <li>(i) Group 1: Determinants of Rating Reliance</li> <li>(ii) Group 2: Divestment Controls</li> <li>(iii) Group 3: Divestment Alleviating Factors</li> </ul> </li> <li>Empirical Model <ol> <li>Determining the Appropriate Econometric Methodology</li> <li>Statistical Analysis of Results – Mann Whitney U-Test</li> <li>Hypothesis Based Test Procedure</li> </ol> </li> <li>Hypothesis Testing of Score Results</li> <li>Hypothesis 1: There is no significant reliance on credit</li> </ul>

	2.	Hypothesis 2: Mutual funds will not be forced to sell-off portfolio positions following a rating downgrade below the investment grade boundary by either S&P, Moody's	107
	3.	or Fitch.  Hypothesis 3: There is equal rating reliance between	197
		mutual fund prospectuses issued in the EU and the US.  Hypothesis 4: Large asset management firms are less	198
		reliant on external ratings compared to smaller firms Hypothesis 5: Mutual funds categorized as "Investment	199
		Grade" funds are on average more reliant on external	
		ratings.	201
	6.	Hypothesis 6: Mutual funds categorised as High	
		Yield and Specialised Funds rely, on average, less	
		mechanistically on external ratings compared to other all	•••
	-	funds.	202
	/.	Hypothesis Testing of Criteria Datapoints  (i) Structure of the Two Sample 7. Test	203
		<ul><li>(i) Structure of the Two-Sample Z-Test</li><li>(ii) Rating Reliance Criteria and Jurisdiction</li></ul>	204 204
		(iii) Rating Reliance Criteria and Jurisdiction  (iii) Rating Reliance Criteria and Fund Size	204
_			207
F.		swers to Research Question, Additional Findings and	200
		scussion of Results	209
	1.	Answers to the Empirical Research Questions	210
		(i) Do mutual fund investment guidelines pose a source	
		of mechanistic rating reliance that can trigger forced	•
		sell-offs in a downgrade scenario?	210
		(ii) Is there a consistent approach between US and EU	
		issued documentation to address mechanistic rating reliance?	212
		(iii) What constitutes non-mechanistic investment	213
		guidelines?	216
	2	Additional Findings and Considerations	217
	۷.	(i) Lack of Rating References and Contract Elements as	217
		Source of Low Rating Reliance	217
		(ii) Varied Results by Hypotheses Tests on Firm Size and	~1/
		Fund Type	218
		(iii) Non-Expressive Results from Differentiation	
		between Fund Size and Reliance Categories	219

(iv) Characteristics of Non-Mechanistically Rating	
Relying on Investment Guidelines	219
3. Implications Deriving from Investment Guidelines that	
Do Not Mechanistically Rely on External Credit Ratings	219
(i) Theoretical Drawbacks to Elements of Divestment	
Controls	220
(ii) Implications Deriving from Theoretical Drawbacks	
of Divestment Controls	221
4. Discussion on Conflict between Investor Protection and	
Enablement of Market Functioning	222
5. Robustness Test and Comparison with Empirical Results	
in Light of Findings from Previous Studies	222
(i) Decline in Role of Internal Risk Assessments	223
(ii) Unclarity over Share of Rating-Based Investment	
Guidelines	224
(iii) No Utilisation of Rating Outlooks or Watchlist	
Conditions	225
(iv) Fewer Retention Clauses than Stated in 2007	225
(v) Equal Share of Proportionate Rating Definitions	226
(vi) Confirmation of Results on US funds	227
(vii) Concluding the Comparative Review of Empirical	220
Findings	228
(v) Relative Positioning to Previous Studies	229
V. Summary and Conclusion	231
VI. Appendix	237
A. Empirical Database	237
<ol> <li>List of EU Funds Analysed (Table 9)</li> </ol>	237
2. List of US Funds Analysed (Table 10)	242
B. Empirical Model Structure (Table 11)	248
C. Result Visualization	250
1. Reliance Score Distribution (Figure 2)	250
2. Immediacy Score Distribution (Figure 3)	250
Bibliography	251