

No-regret Potentials in Energy Conservation

An Analysis of Their Relevance, Size and Determinants

Bearbeitet von
Katrín Ostertag

1. Auflage 2002. Taschenbuch. xvi, 408 S. Paperback

ISBN 978 3 7908 1539 9

Format (B x L): 15,5 x 23,5 cm

Gewicht: 1320 g

[Weitere Fachgebiete > Medien, Kommunikation, Politik > Regierungspolitik > Umwelt- und Gesundheitspolitik](#)

schnell und portofrei erhältlich bei

The logo for beck-shop.de features the text 'beck-shop.de' in a bold, red, sans-serif font. Above the 'i' in 'shop' are three red dots of increasing size. Below the main text, 'DIE FACHBUCHHANDLUNG' is written in a smaller, red, all-caps, sans-serif font.

beck-shop.de
DIE FACHBUCHHANDLUNG

Die Online-Fachbuchhandlung beck-shop.de ist spezialisiert auf Fachbücher, insbesondere Recht, Steuern und Wirtschaft. Im Sortiment finden Sie alle Medien (Bücher, Zeitschriften, CDs, eBooks, etc.) aller Verlage. Ergänzt wird das Programm durch Services wie Neuerscheinungsdienst oder Zusammenstellungen von Büchern zu Sonderpreisen. Der Shop führt mehr als 8 Millionen Produkte.

Brief contents

Page

Part I Introduction

Subject and research questions	3
1 The debate on no-regret potentials – origin, context, issues.....	5
1.1 The origin: climate change and policy responses	5
1.2 The relevance of no-regret potentials beyond climate policy	10
1.3 Key issues in the debate on no-regret potentials	11
1.4 Focus and structure of the thesis	15
2 The issues of the no-regret controversy.....	21
2.1 Definition of "no-regret" potentials	21
2.2 Characterisation of the conflicting views.....	28

Part II Theory-based framework for the reassessment of no-regret potentials

Preliminary remarks.....	37
3 The standard theory of market failure.....	43
3.1 Outline of theoretical concepts	44
3.2 Existing evidence on market failures related to energy saving measures	60
3.3 Conclusions on the standard theory of market failure	65
Annex to Chapter 3	71
4 Transaction cost economics.....	77
4.1 Transaction costs and market failure	78
4.2 Outline of transaction cost economics	80
4.3 Review of empirical transaction cost research.....	88
4.4 Conclusions about transaction costs	93
Annex to Chapter 4: Key questions based on the TCE approach	96
5 Investment appraisal	101
5.1 Standard theory of investment	101
5.2 Real option values.....	111
5.3 Review of investment appraisal methods in "no-regret" studies.....	124
5.4 Conclusions on investment appraisal.....	135
Annex to Chapter 5	140

6	Complementary perspectives on the no-regret potential	145
6.1	Dynamic aspects of market failure	145
6.2	Implications for policy evaluation	156
6.3	Synopsis of further linkages between principal theoretical elements	168
6.4	Conclusions on complementary aspects	171
	Annex to Chapter 6: Key questions concerning complementary perspectives	173
7	Theoretical conclusions – A typology of no-regret potentials	177
7.1	Synopsis of phenomena and causes of no-regret potentials	179
7.2	Conclusions for the empirical re-assessment of no-regret potentials	185

Part III Empirical analyses

	Preliminary methodological remarks	189
8	Case study of electric motors	195
8.1	Review of an engineering study about electric motors	198
8.2	Re-evaluation at the level of phenomena of no-regret potentials	207
8.3	Re-evaluation at the level of causes	229
8.4	Policy initiatives for the promotion of HEMs	233
8.5	Summary of the re-evaluation results	240
	Annex to Chapter 8	243
9	Case study of "Contracting"	253
9.1	Contracting from the perspective of the no-regret advocates	255
9.2	Re-evaluation of "first level" phenomena and causes	266
9.3	Contracting as an autonomous solution (2 nd level)	283
9.4	Summary and policy implications of the re-evaluation results	308
	Annex to Chapter 9	318
10	Generalisation of case study results	327
10.1	Discussion of the case study findings	327
10.2	Possibilities for aggregation by means of the Panta Rhei model	334
10.3	Conclusion on the aggregation of no-regret potentials	353
	Annex to Chapter 10: Key features of the model "Panta Rhei"	355
	General conclusions	361
Annex		371
	List of abbreviations	373
	List of tables	375
	List of figures	379
	References	381

Table of contents

Page

Part I Introduction

Subject and research questions	3
1 The debate on no-regret potentials – origin, context, issues.....	5
1.1 The origin: climate change and policy responses	5
1.1.1 International and supranational policy responses	7
1.1.2 German climate policy background.....	9
1.2 The relevance of no-regret potentials beyond climate policy	10
1.3 Key issues in the debate on no-regret potentials.....	11
1.4 Focus and structure of the thesis.....	15
2 The issues of the no-regret controversy.....	21
2.1 Definition of "no-regret" potentials	21
2.1.1 The micro-level of costs and benefits.....	22
2.1.2 The level of energy system analysis	23
2.1.3 The level of the national economy.....	26
2.2 Characterisation of the conflicting views.....	28
2.2.1 No-regret potentials within the framework of the transformation curve	28
2.2.2 No-regret potentials within the framework of isoquants	29

Part II Theory-based framework for the reassessment of no-regret potentials

Preliminary remarks.....	37
3 The standard theory of market failure.....	43
3.1 Outline of theoretical concepts	44
3.1.1 Externalities	44
3.1.2 Decreasing average costs and market concentration	48
3.1.3 Information deficiencies	52
3.1.3.1 Quality ignorance and information asymmetries	53
3.1.3.2 Market solutions to information asymmetries	55

3.1.3.3	Ignorance of utility and prices	57
3.1.3.4	Uncertainty	59
3.2	Existing evidence on market failures related to energy saving measures	60
3.2.1	Existing evidence on external effects related to energy saving measures	60
3.2.2	Existing evidence on market failure following decreasing average costs.....	62
3.2.3	Existing evidence on information deficiencies related to energy saving measures	63
3.3	Conclusions on the standard theory of market failure	65
Annex to Chapter 3		71
A.1	Key questions related to market failure.....	71
A.1.1	Key questions related to externalities as a reason for market failure.....	71
A.1.2	Key questions related to market failure following decreasing average costs	72
A.1.3	Key questions on information deficiencies related to energy saving measures	72
A.1.3.1	Key questions related to asymmetric quality information	72
A.1.3.2	Key questions related to ignorance of utility and prices	74
A.1.3.3	Key questions related to the uncertainty of energy saving measures	75
A.2	Micro-economic background	76
4	Transaction cost economics.....	77
4.1	Transaction costs and market failure	78
4.2	Outline of transaction cost economics	80
4.2.1	Outline of the quantitative approach	81
4.2.2	Outline of the heuristic approach.....	82
4.2.2.1	Asset specificity.....	84
4.2.2.2	Uncertainty and opportunism	86
4.2.2.3	Frequency.....	87
4.3	Review of empirical transaction cost research.....	88
4.3.1	Exemplary empirical TCE research.....	88
4.3.2	Existing heuristic evidence of transaction costs related to energy saving measures.....	90
4.3.3	Existing quantitative evidence of transaction costs related to energy saving measures	91
4.4	Conclusions about transaction costs	93
Annex to Chapter 4: Key questions based on the TCE approach		96
A.1	Key questions from a market failure perspective	96
A.2	Key questions from a heuristic perspective.....	96
A.3	Key questions from a quantitative perspective.....	98

5 Investment appraisal	101
5.1 Standard theory of investment	101
5.1.1 Data for investment appraisal	102
5.1.2 Net present value and internal rate of return	104
5.1.3 Choosing the appropriate discount rate: the Capital Asset Pricing Model	105
5.1.4 Shortcomings of the standard concepts	109
5.2 Real option values.....	111
5.2.1 Outline of the theoretical concept.....	112
5.2.2 Alternative modes of operationalisation.....	118
5.2.3 Strengths and potential biases in real option valuation	122
5.3 Review of investment appraisal methods in "no-regret" studies.....	124
5.3.1 Underlying data on revenues and expenditures	125
5.3.2 Conventional investment appraisal criteria in no-regret studies.....	127
5.3.3 Evaluation of energy saving measures as real options	131
5.4 Conclusions on investment appraisal.....	135
Annex to Chapter 5	140
A.1 Key questions on investment evaluation.....	140
A.1.1 Verify and re-estimate data on cash flows	140
A.1.2 Re-assessment based on conventional investment criteria.....	141
A.1.3 Assessing the no-regret potential on the basis of real option theory	142
A.2 Treatment of taxes and depreciation in cash flow estimates	143
6 Complementary perspectives on the no-regret potential	145
6.1 Dynamic aspects of market failure	145
6.1.1 Results from preceding chapters.....	146
6.1.2 Complementary insights from the theory of diffusion	148
6.1.3 Existing evidence on dynamic market failures related to energy saving measures.....	153
6.2 Implications for policy evaluation	156
6.2.1 Evaluation of policy benefits and costs	157
6.2.2 Effectiveness of policy instruments.....	160
6.2.3 Review of policy evaluations related to the no-regret potential	163
6.3 Synopsis of further linkages between principal theoretical elements	168
6.4 Conclusions on complementary aspects	171
Annex to Chapter 6: Key questions concerning complementary perspectives	173
A.1 Key questions related to dynamic market failure.....	173
A.2 Key questions related to policy evaluation	175
7 Theoretical conclusions – A typology of no-regret potentials	177
7.1 Synopsis of phenomena and causes of no-regret potentials.....	179
7.2 Conclusions for the empirical re-assessment of no-regret potentials.....	185

Part III Empirical analyses

Preliminary methodological remarks	189
8 Case study of electric motors	195
8.1 Review of an engineering study about electric motors	198
8.1.1 Motor electricity consumption patterns and determinants.....	198
8.1.2 Technical energy saving potentials.....	201
8.1.3 Economic energy saving potentials	201
8.1.4 Summary with respect to our typology.....	205
8.2 Re-evaluation at the level of phenomena of no-regret potentials	207
8.2.1 Verification and re-estimation of the data on cash-flows	207
8.2.2 Investment appraisal criteria.....	209
8.2.2.1 Re-assessment of the conventional NPV	210
8.2.2.2 Assessment of the sequential NPV	216
8.2.3 (Re-) Evaluation of transaction costs.....	224
8.2.4 Interim results regarding the level of phenomena	228
8.3 Re-evaluation at the level of causes	229
8.3.1 Market failure related to information deficiencies	230
8.3.2 Diffusion failure	233
8.4 Policy initiatives for the promotion of HEMs.....	233
8.4.1 Policy design and effectiveness.....	234
8.4.2 Policy costs	236
8.5 Summary of the re-evaluation results	240
Annex to Chapter 8	243
A.1 Case study on motor use in firm B	243
A.1.1 Characteristics of motor stock in firm B.....	243
A.1.2 Summary of interview topics	243
A.2 Features of case study data base Ostertag, Landwehr, Thomas et al. 1998	244
A.2.1 List of interviewees for the market study.....	244
A.2.2 Summary of interview topics for the market study	245
A.3 Decision trees for the sequential NPV of optimal motor choice.....	247
9 Case study of "Contracting"	253
9.1 Contracting from the perspective of the no-regret advocates	255
9.1.1 Economic energy saving potential of residential heat contracting	258
9.1.2 Interpretation with respect to our typology	262
9.2 Re-evaluation of "first level" phenomena and causes.....	266
9.2.1 Verification of investment appraisal.....	266

9.2.2	Re-evaluation of transaction costs	272
9.2.3	Re-evaluation of 1 st level causes of market failure	277
9.2.3.1	Evidence for causes of Type I and Type II	277
9.2.3.2	Evidence for causes of Type III	281
9.2.3.3	Evidence for causes of Type V	282
9.2.3.4	Conclusions about the 1 st level causes of market failure	283
9.3	Contracting as an autonomous solution (2 nd level)	283
9.3.1	Effectiveness of contracting	284
9.3.1.1	Contracting as a remedy to X-inefficiencies	284
9.3.1.2	Contracting as a remedy to the ignorance of utility	285
9.3.1.3	Contracting as a remedy to interferences with diffusion mechanisms	286
9.3.1.4	Contracting as a remedy to excessive capital costs	287
9.3.2	Transaction costs and cost-efficiency of contracting	290
9.3.2.1	Comparative heuristic aspects of transaction costs under contracting	290
9.3.2.2	Quantitative aspects of transaction costs under contracting	294
9.3.2.3	Impact of contracting on profitability beyond transaction costs	297
9.3.3	Evidence and remedies for causes of market failure at the 2 nd level	301
9.3.3.1	Market failure related to standard energy service contracts	301
9.3.3.2	Information asymmetries on the quality of the contractor	302
9.3.3.3	Information asymmetries on the ex-post behaviour of contracting clients	304
9.3.3.4	Reinforcements of contracting as an autonomous solution	306
9.4	Summary and policy implications of the re-evaluation results	308
	Annex to Chapter 9	318
A.1	Definition and critique of performance contracting	318
A.2	The energy saving potential of heat contracting in residential buildings (re-estimation)	320
A.3	Economic aspects of rental housing legislation	321
A.4	List of contracting projects for secondary analysis	323
A.5	List of interview candidates	323
A.6	Summary of interview topics	324
A.6.1	Topics of interviews with technical experts	324
A.6.2	Topics of interviews with contracting professionals	324
A.6.3	Topics of interviews in individual contracting projects	326
10	Generalisation of case study results	327
10.1	Discussion of the case study findings	327
10.1.1	Synopsis of results	328
10.1.2	Policy implications	331
10.1.3	From case studies towards more general results	332
10.2	Possibilities for aggregation by means of the Panta Rhei model	334

10.2.1 General characteristics and key equations.....	336
10.2.1.1 Energy demand in households.....	338
10.2.1.2 Energy demand in production.....	339
10.2.1.3 Capital stock turnover.....	340
10.2.2 "Cause"-based aggregated estimation of no-regret potentials	342
10.2.2.1 Price distortions of non-energy inputs to energy saving measures	344
10.2.2.2 X-inefficiencies on the side of the adopter.....	346
10.2.2.3 Mismatch of governance structures.....	346
10.2.3 Explicit technology choice	348
10.3 Conclusion on the aggregation of no-regret potentials	353
Annex to Chapter 10: Key features of the model "Panta Rhei"	355
A.1 Energy demand and related regression equations	355
A.1.1 Energy demand in households.....	356
A.1.2 Energy demand in production	358
A.2 Prices, demand and production	359
 General conclusions	 361
 Annex	 371
List of abbreviations.....	373
List of tables.....	375
List of figures	379
References	381