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Contingent valuation versus choice experiments: a meta-analysis application exploring the determinants of the time for publication acceptance

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Abstract

In this paper, we test whether the time it takes for a submitted paper to be accepted by the editor(s) is sensitive to the stated preference method used. Two methods are considered: the Contingent Valuation (CV) and the Choice Experiments (CE). A meta-analysis based on a sample of 129 papers published in Resource and Energy Economics, Ecological Economics and Environmental and Resource Economics between 2005 and 2011 is conducted. The dependent variable in the ordinary least squares regression model is the number of days between the submission of the paper and the acceptance of the paper, referred to as Time for Publication Acceptance, or TPA. The main results are that TPA is lower for CE papers than CV papers, especially for those that aim at improving the method which can be interpreted as a higher academic demand in the CE field. However, a convergence is observed over the years.

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1. Introduction

Adamowicz (2004) provided an overview of the future directions that the academic demand in the environmental valuation field may take by examining the number of publications between 1975 and 2003 for several valuation methods. According to the author, "the most significant advance in environmental valuation may be to move away from a focus on value and focus instead on choice behaviour and data that generate information on choices" (page 439). It implies that the Choice Experiments (CE) method may become more popular than the Contingent Valuation (CV). Whitehead (2011) confirmed such shift in the academic demand by examining the number of papers published between 1989 and 2010 for each method using the ISI database.

Another important indicator of the academic demand in the environmental valuation research field may be the Time for Publication Acceptance (TPA), which is the time spent between the submission and the acceptance of the paper. From the editor's point of view, papers that are innovative with a large potential audience may be more quickly accepted, which results in lower TPA. From the author's point of view, long delays constitute a cost (Azar 2005) especially for Ph.D. students who will be looking for an academic position (Conley 2012, Conley *et al.* 2013). A significantly lower TPA for a given valuation method compared to others may hence partially reflect the academic demand. Beyond the valuation method, a wide range of factors may also influence the TPA, including submission policies, referees availability, degree of complexity and innovation as well as clarity of the paper (Ellison 2000). Some of these factors may be unobservable or difficultly measurable.

The objective of this article is to describe trends in the stated preferences research field by examining the effect of the stated preference method used (CV or CE) on the TPA. A meta-analysis of the determinants of the TPA for 129 papers published between 2005 and 2011 in three leading journals in the field of environmental economics (Ecological Economics and Environmental and Resources Economics, Resource and Energy Economics) is conducted. Other variables such as the characteristics of the authors and the year of publication are also included in order to control for other effects that may affect the TPA without being related to the academic demand. The meta-analysis results should provide a better view of the state of the academic demand as well as its evolution over years.

The paper is hence organized as follows: Section 2 describes the data and reports the evolution of CE *versus* CV over time in terms of published papers. Section 3 presents the meta-regression model and section 4 the results, which are discussed in Section 5. Section 6 concludes.

2. Data

The Scopus search engine was used to select the journals in the field of environmental economics which contain a large number of articles where the expression "contingent valuation" and/or "choice experiment" and/or "choice modelling" appears in the title, keywords or the abstract. A high number of journals were discarded because they did not provide information on the TPA. Three journals were finally selected: Resource and Energy Economics (REE, 19 articles), Environmental and Resource Economics (ERE, 34 articles) and Ecological Economics (EE, 138 articles). Each of these journals provide information on the submission process such as when the manuscript is submitted ("received"), when the final manuscript is submitted ("received in revised form") and when the paper is finally accepted ("accepted"). The number of days between "received" and "accepted" is referred to as the TPA in the remaining of this study. For each journal, policy papers were distinguished from

methodological papers. Policy papers are more focus on the outcome of the study, while methodological papers are more focused on the method. We followed the nomenclature of EE, where policy papers are classified as "analysis" and methodological papers as "methods". Papers that do not include a case study were discarded. Results are reported in Appendix. The year 2005 has been chosen as the starting point of our sample as few CE were published before this date. The year 2011 has been chosen as the ending point of our sample as few CV were published after this date. The final sample is composed of 129 papers[1]. Table I describes the selection process and Table II provides general information on the selected papers. Appendix A, B and C provide information on the studies containing CV, CE and both CV and CE respectively.

Table I
Information on selection process

		EE	REE	ERE
Step 1	Number of paper in which CV and/or CE and/or choice modeling appear(s) in the title, abstract and/or keywords between 2005 and 2011	138	19	34
Step 2	Number of paper classified into "method" and "analysis"	121	-	-
Step 3	Number of paper classified into "method" and "analysis" and containing application	98	14	17

Table II
Descriptive information on the 129 selected studies

Year of publication	Number of papers including CV application			Number of papers including CE application			Number of papers including both CV and CE application		
	Analysis	Method	Total	Analysis	Method	Total	Analysis	Method	Total
2005	4	1	5	1	0	1	0	0	0
2006	9	0	9	1	1	2	0	3	3
2007	11	6	17	5	1	6	1	0	1
2008	9	6	15	8	0	8	0	1	1
2009	6	2	8	8	3	11	1	0	1
2010	7	1	8	10	1	11	0	0	0
2011	3	4	7	11	2	13	0	2	2
Total	49	20	69	44	8	52	2	6	8

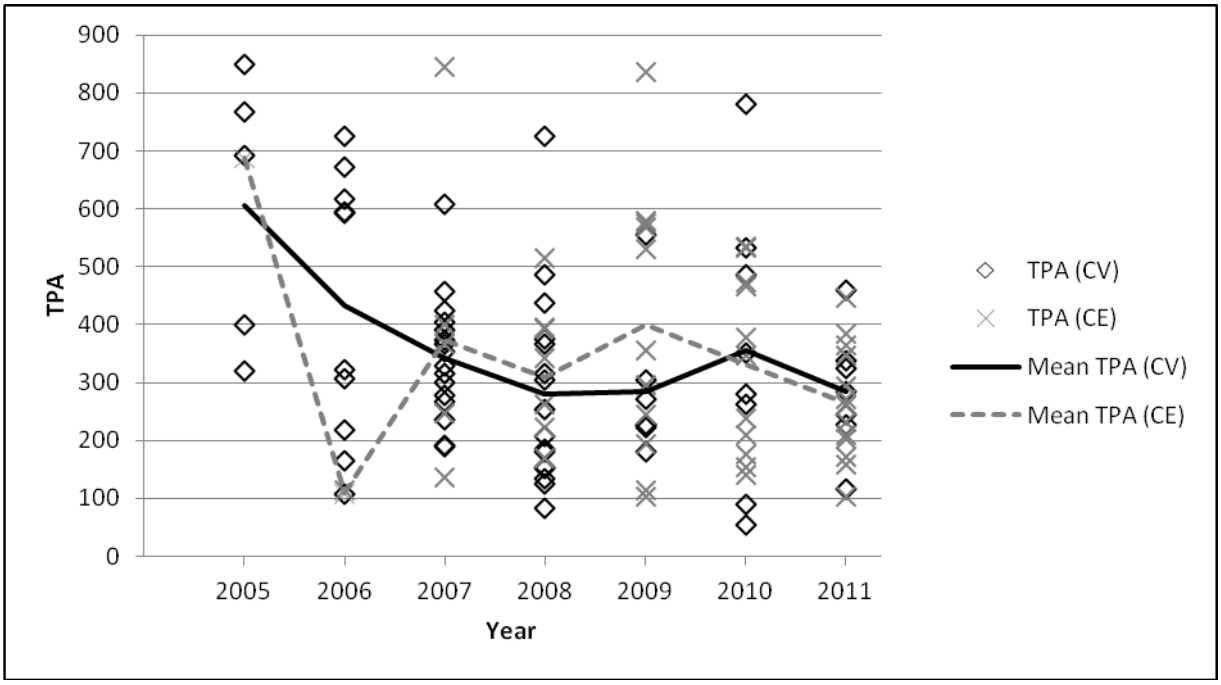
3. Meta-regression analysis

Figure 1 reports the TPA for CV and CE studies over time. Studies that report both CV and CE applications are not considered in this Figure because the number of observations is too low. Figure 1 indicates that the TPA is lower for CV studies in 2005, 2007, 2008 and 2009. However, little is known about the effect of the method on TPA since CV and CE studies may differ in several aspects and Figure 1 does not provide information on the variation in TPA that is explained by other factors (Brander *et al.* 2007). As a result, we propose to use a meta-

[1] Some studies may be missing, either because their titles/abstracts/keywords were misreported in the search engine databases or because they do not include "contingent valuation" and/or "choice experiment" and/or "choice modeling" in their titles/abstracts/keywords sections. We chose this precise selection process in order to limit selection bias.

analytical approach in order to study the effect of a broader range of variables in explaining the variation in TPA.

Figure 1. Evolution of the TPA over time



Meta-analysis is a broadly-used technique to perform systematic reviews. In the context of valuation, it is often used to study the statistical relationship between WTP estimates for an environmental good and the characteristics of the study those estimates come from (Bergstrom and Taylor 2006). Our paper focuses on the factors influencing the TPA rather than the factors influencing the WTP. The dependent variable in our meta-regression is a vector of logarithm of TPA values, labelled as log(*tpa*). The log-linear form is chosen to enhance the fit of our model, as it is usually the case in meta-analysis (for an instance, see Barrio and Loureiro 2010). As in Brander *et al.* (2007) as well as in Barrio and Loureiro (2010), independent variables are grouped into three different categories: methodological characteristics, labelled as X_m, authors characteristics, labelled as X_a, and papers characteristics, labelled as X_p. The meta-analytical model is hence the following:

$$\log(tpa) = \alpha + X_{mi}\beta_m + X_{ai}\beta_a + X_{pi}\beta_p + \varepsilon_i, \quad (1)$$

where α stands for the usual constant term, β_m, β_a and β_p are the vectors of coefficients associated with the methodological, authors and paper characteristics respectively and ε is a vector of independently and identically distributed residuals. The subscript *i* denotes the *i*th study. The vector of methodological characteristics (X_m) includes variables that differentiate papers which contain a single CE application (*ce*) from papers which contain both CV and CE applications (*cecv*) and papers which contain a single CV application (*cv*) (baseline). In addition, the variable *attributes* indicates the number of varying attributes for CE based studies and the variable *cvoe* indicates the elicitation format (open-ended or not) for CV based studies. The vector of authors' characteristics (X_a) is composed of two variables: the number of authors (*number_authors*) and their nationality (*nationality_authors)*, indicating if the study has been carried out by two or more authors working in the same country. Finally, the vector of papers characteristics (X_p) includes the variable *methods* which indicates if the study is classified as "methods" or "analysis", the year of publication (*year*), a set of variables

which denote whether the paper has been published in Ecological Economics (*EE*), Resource and Energy Economics (*REE*) or Environmental and Resource Economics (baseline variable). Moreover, interaction variables between *year* and *ce* (*year_ce)*, *year* and *methods* (*year_methods*), *methods* and *ce* (*methods_ce*) and *methods* and *cecv* (*methods_cecv*) were also introduced. Finally, a distinction was made between the papers that have been submitted in summer (June, July or August) and the papers which have not (*summer)*. Each paper corresponds to one observation. Variable description and summary statistics are provided in Table III. Regression results are presented in the next section.

Table III
Variable description and summary statistics

		Mean	Std. Dev.
TPA	Time for publication acceptance as previously defined	340.364	187.694
ce	= 1 If the study contains CE application	0.403	0.492
	= 0 Otherwise		
cecv	= 1 If the study contains both CV and CE applications	0.062	0.242
	= 0 Otherwise		
cvoe	= 1 If the study contains open-ended CV application	0.170	0.377
	= 0 Otherwise		
attributes	Number of varying attributes for CE applications	2.418	2.808
	= 0 Otherwise		
number_authors	Number of authors	2.937	1.339
nationality_authors	= 1 If the study has been carried by several authors working in the same country	0.550	0.499
	= 0 Otherwise		
methods	= 1 If the paper is classified as "methods"	0.263	0.442
	= 0 Otherwise		
year	Year of publication ranging from 1 (2005) to 7 (2011)	4.418	1.779
REE	= 1 If the paper has been published in *Resource and Energy Economics*	0.108	0.312
	= 0 Otherwise		
EE	= 1 If the paper has been published in *Ecological Economics*	0.759	0.428
	= 0 Otherwise		
summer	= 1 If the original manuscript has been submitted in June, July or August	0.232	0.424
	= 0 Otherwise		

4. Results

Table IV exhibits the meta-regression results.

Table IV
Meta-regression results (OLS with Hubert-White adjusted standard errors)

	log(TPA)		
	Coefficients	P > |t|	Marginal effects
	(Std. err.)		
constant	6.473	0.000 ***	
	(0.322)		
Methodological characteristics			
ce	-1.151	0.005 ***	-68.36%
	(0.402)		
cecv	-0.344	0.577	-29.11%
	(0.614)		
cvoe	-0.087	0.560	-8.33%
	(0.150)		
attributes	0.107	0.003 ***	+11.29%
	(0.036)		

Table IV (continued)

Authors characteristics			
number_authors	0.046	0.219	+4.71%
	(0.037)		
nationality_authors	-0.264	0.010 **	-23.2%
	(0.100)		
Papers characteristics			
methods	-0.412	0.217	-33.76%
	(0.332)		
year	-0.161	0.000 ***	+14.87%
	(0.044)		
EE	-0.215	0.309	-19.34%
	(0.211)		
REE	-0.040	0.868	-3.92%
	(0.242)		
year_ce	0.145	0.030 **	+15.6%
	(0.063)		
year_methods	0.141	0.029 **	+15.14%
	(0.063)		
methods_ce	-0.380	0.082 *	-31.61%
	(0.216)		
methods_cecv	-0.623	0.378	-46.36%
	(0.703)		
summer	0.109	0.315	+11.51 %
	(0.108)		
	N=129		
	F=2.66	*P*-value=0.002	
	R-squared =0.197		
	*** significant at the 99% level		
	** significant at the 95% level		
	* significant at the 90% level		

First, *ce* is found to be negative and statistically significant at the 1% level. The coefficient estimate suggests that, all else being equal, the TPA of papers based on a CE application is 68.36% lower than the TPA of papers based on a CV application, which contradicts the results from Figure 1. However, the positive sign of the variable *attributes* (significant at the 1% level) implies that each additional attribute increases the TPA by 11.29%. This suggests that CE studies based on a more complex survey design require longer time to be reviewed and/or revised all else being equal. The variables *cvoe* and *cecv* do not appear to be significant. Second, the coefficients of *methods* and *methods_cecv* are not found to be significant. However, the coefficient of *methods_ce* is negative and significant at the 10% level, which indicates a specific effect for studies which aim at innovating in the CE methodology. Indeed, it might be relatively easier to identify and acknowledge a methodological innovation in CE since the use of CE is relatively new as compared to CV. As a result, the TPA of such papers is 31.61% lower all else being equal. Third, the coefficient of $year^2$ (significant at the 1% level) is negative, while the coefficients of *year_methods* and *year_ce* (significant at the 5% level) are positive. Hence, it shows that CV and combination of CE and CV policy papers have been reviewed and/or revised faster over the years, while it is

[2] *year* has been coded as a categorical variable rather than a set of binary variables for two reasons. First, the number of observations for each year was found to be too low to achieve significant results for each year. Second, such coding implies very low degrees of freedom. Fixed effects for authors were considered but were not found to be suitable for the purpose of this study for similar reasons.

the contrary for methodological and CE papers. These effects suggest that it becomes more difficult to identify, acknowledge and justify methodological innovations over years (*year_methods*). Moreover, CE studies may take longer to be reviewed and/or revised over years because of their increasing complexity. Fourth, the variables *EE* and *REE* do not appear to be significant at usual levels. The reviewing time is hence found to be similar among the three selected journals. Other results suggest that an increase in the number of co-authors does not affect the TPA (number_*authors*). It is also found that the TPA is 23.2% lower all else being equal when research teams work in the same country, as shown by the variable *nationality_authors*. Reviewing a paper may require more coordination when researchers are not working in the same country. Finally, it makes no difference to submit the papers during summer since the variable *summer* does not appear to be significant.

5. Discussion

The use of CE in the field of environmental economics is more recent than the use of CV. Hence, it might be more difficult to innovate in CV than in CE since it has been much more employed. For instance, Carson (2012) delineates over 7,500 CV papers and studies from over 130 countries. In CE, many goods has still to be valued and many challenges are still to be faced, as pointed out by Hoyos (2010). Some issues that have been dealt with in CV have not yet been considered in CE. For example, the effect of giving the respondent additional time to think before responding to the valuation question on WTP has been tested in CV (Whittington *et al.* 1992, Svedsater 2007, Cook *et al.* 2012) but not in CE. This may explain why the variables *ce* and *methods_ce* are both negative: it might reflect a higher academic demand for new CE applications, especially for those that aim at resolving methodological issues. As suggested by an anonymous reviewer, results may also reflect the ongoing effect of the "CV debate" that was fueled by litigation after the Exxon Valdez oil spill, which may encourage referees to make sure that CV articles clear the highest hurdles.

The number of CE applications is rapidly increasing, as expected by Adamowicz (2004) and confirmed by Whitehead (2011). The number of papers reporting a CE application published in the three selected journals reflects it: six CE papers were published in 2007 and 13 CE papers were published in 2011. The reverse tendency was observed in the same period for CV based papers: 17 CV papers were published in 2007 and seven CV papers were published in 2011 (see Table II). The organization of conferences and courses and the development of software may have contributed to the increasing number of CE applications. The International Choice Modelling Conference (ICMC) has been organized in 2009, 2011 and 2013 in Sydney, Australia. In the 18th European Association of the European Association of Environmental and Resource Economists (EAERE) annual conference (June/July 2011, Rome) two sessions labelled "choice experiment" were conducted. In the 19th EAERE annual conference (June 2012, Prague), a special methodological session called "Issues in stated choice experiments: Framing and design, choice behaviour, implementation/administration, estimations issues" was organized. It aimed at dealing with issue that have not yet been fully addressed in CE. Statistical software for experimental design such as NGENE have been recently developed to help in the experimental design stage. Also, courses have been provided to help researchers to conduct their own CE. For example in Europe, summer courses recently took place in different countries, such as Crete (University of Crete), Italy (University of Bologna, University of Padua), UK (University of Essex) and Portugal (University of Tras-os-Montes and Alto Douro). Finally, the creation of journals focused on CE method, such as of the Journal of Choice Modelling (JCM) also encouraged people to conduct CE based papers. A possible drawback of this high dynamism is that the room left for innovation in CE may rapidly decrease. This might explain why the variable *year_ce* is negative.

6. Conclusion

This paper provided an examination of recent trends in the academic demand for stated preference based studies. A meta-analysis of 129 papers published in Resource and Energy Economics, Ecological Economics or Environmental and Resource Economics between 2005 and 2011 that includes a CV or a CE application (or both) has been conducted. An OLS regression model was used to explore the determinants of the TPA, a measure of the time spent in days between the submission of the paper and its acceptance.

In summary, regression results showed that the TPA is found to be lower for methodological papers reporting a CE application which is interpreted as a higher academic demand for innovation in the CE field. Our results also show that the TPA gap between the two methods decreases with time. Indeed, the high dynamism in the CE field may result in a slowdown of the academic demand.

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Appendix

Appendix A CV based studies with application published between 2005 and 2011

References	*tpa*	*cvoe*	*number_authors*	*nationality_authors*	*methods*	*EE*	*REE*	*ERE*	*summer*
(Adams *et al.* 2008)	726	1	6	0	0	1	0	0	0
(Akter *et al.* 2009)	222	1	4	0	0	1	0	0	0
(Aldrich *et al.* 2007)	306	0	4	1	1	0	0	1	0
(Amirnejad *et al*. 2006)	219	0	4	1	0	1	0	0	0
(Andersson and Svensson 2008)	304	1	2	1	1	0	0	1	1
(Aprahamian *et al.* 2008)	253	0	3	1	1	0	1	0	1
(Beaumais and Appéré 2010)	486	0	2	1	1	1	0	0	0
(Bett *et al*. 2009)	272	1	4	0	0	1	0	0	1
(Blomquist *et al.* 2009)	207	0	3	0	1	0	0	1	0
(Blomquist *et al.* 2011)	245	0	3	1	0	0	1	0	1
(Bond *et al.* 2009)	305	0	3	1	1	1	0	0	1
(Broberg and Brännlund 2008)	315	0	2	1	1	0	1	0	0
(Brouwer *et al*. 2008)	438	0	3	1	0	1	0	0	0
(Casey *et al*. 2006)	323	1	3	0	0	1	0	0	1
(Champ *et al.* 2005)	768	0	3	1	0	1	0	0	0
(Czajkowski and Ščasný 2010)	352	0	2	0	0	1	0	0	1
(Dziegielewska and Mendelsohn 2007)	236	1	2	1	1	0	0	1	0
(Ellingson and Seidl 2007)	423	0	2	0	1	1	0	0	1
(Farmer and Lipscomb 2008)	375	1	2	1	1	0	0	1	0
(Fischer and Hanley 2007)	608	0	2	1	0	1	0	0	1
(Flachaire and Hollard 2007)	189	0	2	1	1	0	1	0	0
(Frör 2008)	126	0	1	0	0	1	0	0	0
(Genius and Strazzera 2011)	460	0	2	0	1	0	1	0	0
(Håkansson 2008)	487	1	1	0	1	0	0	1	0
(Hidano *et al.* 2005)	399	0	3	1	0	1	0	0	0
(Howley *et al*. 2010)	90	0	3	1	0	1	0	0	0
(Huhtala 2010)	263	0	1	0	0	1	0	0	1
(Jin *et al.* 2008)	84	0	3	1	0	1	0	0	0
(Jin *et al.* 2010)	781	0	6	0	0	1	0	0	0
(Johnson 2006)	592	0	1	0	0	1	0	0	0
(Jorgensen *et al.* 2006)	594	0	3	1	0	1	0	0	0
(Kim and Haab 2009)	554	0	2	0	0	0	1	0	0
(Kniivilä 2006)	726	0	1	0	0	1	0	0	0
(Lee and W Mjelde 2007)	278	0	2	0	0	1	0	0	0
(Li *et al.* 2009)	226	0	5	1	0	1	0	0	0
(Lindhjem and Navrud 2009)	366	1	2	1	1	0	0	1	0
(Lindhjem and Navrud 2011)	117	0	2	1	0	1	0	0	0
(Loureiro and Ojea 2008)	153	0	2	1	0	1	0	0	0
(Marta-Pedroso *et al.* 2007)	373	1	3	1	1	1	0	0	0
(McIntosh *et al.* 2010)	54	1	3	1	0	1	0	0	1
(MacMillan *et al.* 2006)	164	0	3	1	0	1	0	0	1
(Meyerhoff and Liebe 2006)	107	0	2	1	0	1	0	0	0

Appendix A (continued)

References	*tpa*	*cvoe*	*number_authors*	*nationality_authors*	*methods*	*EE*	*REE*	*ERE*	*summer*
(Mill *et al.* 2007)	315	0	4	0	0	1	0	0	0
(Mwebaze *et al*. 2010)	281	0	5	0	0	1	0	0	0
(Nguyen *et al*. 2007)	367	0	5	1	0	1	0	0	0
(Nielsen 2011)	227	1	2	0	1	0	1	0	1
(Ninan and Sathyapalan 2005)	319	0	2	1	0	1	0	0	0
(Ojea and Loureiro 2007)	301	0	2	1	0	1	0	0	0
(Ojeda *et al*. 2008)	180	1	3	1	0	1	0	0	0
(Pemberton *et al.* 2010)	533	0	3	0	0	1	0	0	0
(Petrolia and Kim 2011)	325	0	2	0	1	0	1	0	0
(Ressurreição *et al.* 2011)	285	1	6	0	0	1	0	0	0
(Saengsupavanich *et al.* 2008)	184	0	4	1	0	1	0	0	0
(Samnaliev *et al*. 2006)	616	0	3	1	0	1	0	0	1
(Sattout *et al*. 2007)	390	1	3	0	0	1	0	0	0
(Schläpfer and Bräuer 2007)	266	1	2	0	0	1	0	0	0
(Schläpfer and Schmitt 2007)	354	1	2	1	1	0	1	0	0
(Shaikh *et al*. 2007)	192	0	3	0	0	1	0	0	0
(Solomon and Johnson 2009)	226	0	2	1	0	1	0	0	1
(Szabó 2011)	338	1	1	0	1	1	0	0	0
(Tisdell *et al*. 2007)	404	0	3	1	0	1	0	0	0
(Tseng and Chen 2008)	152	0	2	1	0	1	0	0	0
(Urama and Hodge 2006)	672	0	2	1	0	1	0	0	0
(Verbič and Slabe-Erker 2009)	180	0	2	1	0	1	0	0	0
(Wang and Whittington 2005)	693	0	2	1	1	1	0	0	0
(Whitehead and Cherry 2007)	458	0	2	1	0	0	1	0	1
(Whitehead 2005)	849	1	1	0	0	0	1	0	0
(Wiser 2007)	328	0	1	0	0	1	0	0	1
(Yang *et al.* 2008)	133	1	5	0	0	1	0	0	0

Appendix B CE based studies with application published between 2005 and 2011

References	*tpa*	*attributes*	*number_authors*	*nationality_authors*	*methods*	*EE*	*REE*	*ERE*	*summer*
(Achtnicht 2011)	202	7	1	0	0	1	0	0	0
(Agimass and Mekonnen 2011)	271	3	2	1	0	1	0	0	0
(Alvarez-Farizo *et al.* 2007)	845	6	4	0	0	1	0	0	0
(Álvarez-Farizo *et al.* 2009)	575	4	3	0	0	1	0	0	0
(Araña and León 2009)	103	6	2	1	0	1	0	0	0
(Asrat *et al.* 2010)	533	8	4	0	0	1	0	0	0
(Baskaran *et al.* 2010)	377	5	3	0	1	1	0	0	0
(Beharry-Borg and Scarpa 2010)	467	10	2	0	0	1	0	0	0
(Beharry-Borg *et al.* 2009)	531	9	3	0	0	0	0	1	0
(Bergmann *et al.* 2008)	222	5	3	0	0	1	0	0	0
(Birol *et al*. 2006)	113	4	3	0	1	1	0	0	0
(Birol *et al*. 2010)	239	5	3	0	0	1	0	0	0
(Blazy *et al.* 2011)	446	8	3	1	0	1	0	0	1
(Boyle and Özdemir 2009)	356	5	2	1	1	0	0	1	0
(Burton and Rigby 2009)	193	4	2	0	1	0	0	1	0
(Caplan *et al.* 2007)	246	4	3	1	0	1	0	0	1
(Carlsson *et al*. 2007)	367	8	3	1	1	0	0	1	0
(Carlsson *et al*. 2011)	365	2	5	0	0	1	0	0	0
(Casey *et al*. 2008)	396	6	3	0	0	1	0	0	0
(Christensen *et al.* 2011)	172	3	6	1	0	1	0	0	0
(Christie and Gibbons 2011)	347	5	2	1	1	1	0	0	1
(Colombo *et al.* 2009)	567	5	7	0	0	1	0	0	0
(Czajkowski *et al.* 2009)	296	4	3	0	1	1	0	0	0
(Domínguez-Torreiro and Soliño 2011)	209	6	2	1	0	1	0	0	0
(Faustin *et al.* 2010)	346	5	6	0	0	1	0	0	0
(Fleischer and Sternberg 2006)	107	4	2	1	0	1	0	0	1
(Hanley *et al.* 2005)	687	4	3	0	0	0	1	0	0
(Hanley *et al.* 2010)	141	3	4	0	0	1	0	0	0
(Hidrue *et al*. 2011)	103	6	4	1	0	0	1	0	0
(Hoyos *et al.* 2009)	245	5	3	1	0	1	0	0	1
(Jacobsen and Thorsen 2010)	154	5	2	1	0	1	0	0	0
(Jacobsen *et al.* 2008)	248	5	4	1	0	0	0	1	1
(Jacobsen *et al.* 2011)	293	4	5	1	0	1	0	0	0
(Johnston *et al*. 2011)	261	7	5	1	1	1	0	0	0
(Juutinen *et al.* 2011)	231	5	6	0	0	1	0	0	1
(Kosenius 2010)	535	5	1	0	0	1	0	0	0
(Loureiro and Ojea 2008)	169	4	3	0	0	1	0	0	1
(McVittie and Moran 2010)	175	4	2	1	0	1	0	0	0
(Moran *et al.* 2007)	399	5	4	1	0	1	0	0	1
(Nunes and Travisi 2009)	835	5	2	1	0	0	0	1	1
(Rigby *et al*. 2009)	114	4	3	0	0	0	0	1	0
(Roessler *et al.* 2008)	515	6	7	0	0	1	0	0	0
(Rolfe and Bennett 2009)	580	5	2	1	0	1	0	0	0
(Sælen and Kallbekken 2011)	158	2	2	1	0	1	0	0	0

Appendix B (continued)

References	*tpa*	*attributes*	*number_authors*	*nationality_authors*	*methods*	*EE*	*REE*	*ERE*	*summer*
(Schläpfer *et al.* 2008)	169	7	3	1	0	1	0	0	0
(Shapansky *et al.* 2008)	262	6	3	1	0	1	0	0	0
(Travisi and Nijkamp 2008)	343	4	2	0	0	1	0	0	0
(Veettil *et al.* 2011)	384	4	5	1	0	1	0	0	0
(Wang *et al*. 2007)	136	6	5	0	0	1	0	0	0
(Westerberg *et al*. 2010)	473	6	3	0	0	1	0	0	0
(Zander and Drucker 2008)	394	7	2	1	0	1	0	0	0
(Zander and Straton 2010)	210	5	2	1	0	1	0	0	0

Appendix C Combination of CV and CE based studies published between 2005 and 2011

References	*tpa*	*cvoe*	*attributes*	*number_authors*	*nationality_authors*	*methods*	*EE*	*REE*	*ERE*	*summer*
(Bullock and Collier 2011)	233	0	7	2	0	1	1	0	0	0
(Christie *et al*. 2006)	337	0	5	6	0	1	1	0	0	1
(Colombo *et al.* 2006)	173	1	6	3	1	1	1	0	0	0
(Jin *et al.* 2006)	80	0	4	3	0	1	1	0	0	0
(McNair *et al*. 2011)	258	0	5	3	1	1	0	1	0	0
(Meyerhoff and Liebe 2008)	600	1	5	2	1	1	0	0	1	1
(Mogas *et al.* 2009)	812	0	6	3	1	0	0	0	1	1
(Tuan and Navrud 2007)	175	0	4	2	1	0	0	0	1	0

Appendix D Rejected studies

References	Journal	Reason
(Akter *et al.* 2008)	EE	Other classification
(Alberini and Ščasný 2011)	ERE	No TPA
(Ami *et al.* 2011)	ERE	No TPA
(Araña and León 2007)	ERE	No TPA
(Baral *et al.* 2008)	EE	Other classification
(Barkmann *et al.* 2008)	EE	Other method
(Barrio and Loureiro 2010)	EE	Meta-analysis
(Baskaran *et al.* 2010)	EE	Benefit transfer method
(Bateman *et al.* 2006)	REE	No TPA
(Bateman and Munro 2009)	ERE	Outlier TPA = 4
(Bateman and Brouwer 2006)	EE	Benefit transfer method
(Brander *et al.* 2007)	EE	Meta-analysis
(Brey *et al.* 2007)	EE	Other classification
(Brey *et al.* 2011)	REE	Other method
(Brito 2005)	EE	Other classification
(Brouwer *et al.* 2010)	ERE	No TPA
(Brouwer 2006)	EE	Benefit transfer method
(Bujosa Bestard and Font 2009)	EE	Other method
(Bush *et al.* 2009)	ERE	No TPA
(Campos and Caparrós 2006)	EE	Other method
(Carlsson and Martinsson 2008)	ERE	No TPA
(Carlsson *et al.* 2010b)	ERE	No TPA
(Carlsson *et al.* 2010a)	ERE	No TPA
(Chilton *et al.* 2006)	EE	Other method
(Hoyos 2010)	EE	Other classification
(Ingraham and Foster 2008)	EE	Benefit transfer method
(Johnston and Duke 2010)	REE	Benefit transfer
(Kumar and Kumar 2008)	EE	Other method
(Labao *et al.* 2008)	ERE	No TPA
(Leiter and Pruckner 2009)	ERE	No TPA
(Lienhoop and Ansmann 2011)	EE	Other classification
(Loureiro *et al.* 2009)	ERE	No TPA
(Martínez-Espiñeira and Lyssenko 2011)	EE	Other classification
(Meinard and Grill 2011)	EE	No application
(Menzel and Wiek 2009)	EE	Other classification
(Mørkbak *et al.* 2010)	ERE	No TPA
(Morrison and Bergland 2006)	EE	Other classification
(Newbold and Massey 2010)	REE	Other method
(Ojea and Loureiro 2011)	REE	Meta-analysis
(Olsen *et al.* 2011)	ERE	No TPA
(Olsen 2009)	ERE	No TPA
(Panagopoulos 2009)	EE	Other classification
(Powe *et al.* 2005)	EE	Meta-analysis

Appendix D (continued)

References	Journal	Reason
(Rheinberger 2011)	ERE	No TPA
(Richardson and Loomis 2009)	EE	Meta-analysis
(Sælensminde 2006)	EE	Other method
(Sauer and Fischer 2010)	EE	Other classification
(Scarborough and Bennett 2008)	EE	No application
(Schläpfer 2006)	EE	Meta-analysis
(Schläpfer 2008)	EE	No application
(Schlapfer 2009)	EE	Other classification
(Spash *et al.* 2009)	EE	Other classification
(Spash 2007)	EE	Other classification
(Spring and Kennedy 2005)	EE	Other method
(Swinton *et al.* 2007)	EE	Other classification
(Taylor *et al.* 2010)	ERE	No TPA
(van der Heide *et al.* 2008)	EE	Other classification
(Vatn 2009)	EE	No application
(Vesely 2007)	EE	No TPA
(Wattage *et al.* 2005)	EE	No application
(Weidema 2009)	EE	Other classification
(Zendehdel *et al.* 2008)	EE	Other method