Towards Green Companies: A Panel Data Study of The Environmental and Financial Performance Nexus

Pierrick KINIF

Supervised by Sophie BÉREAU and Jean-Yves GNABO

University of Namur

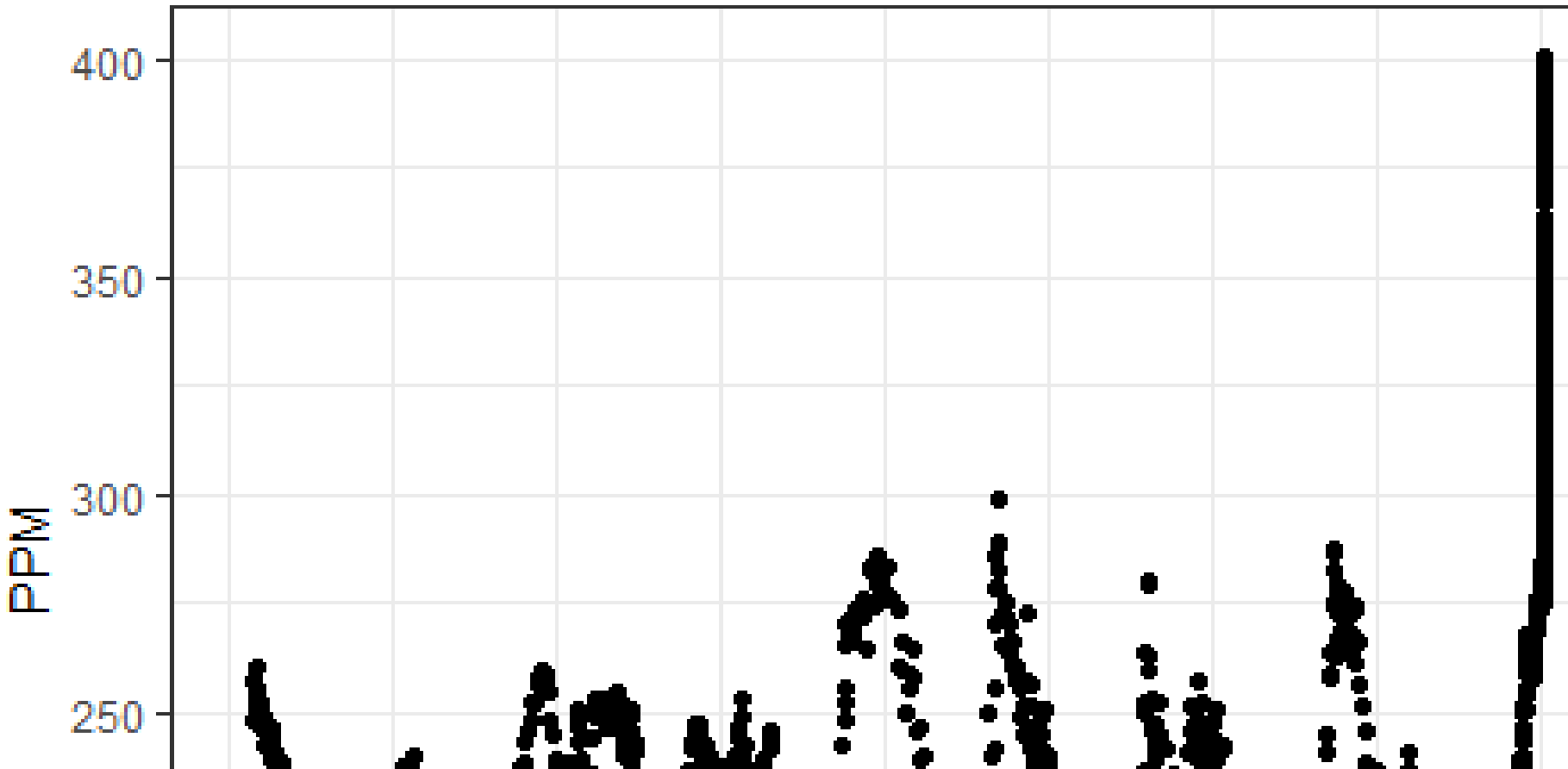
Faculty of Economics, Social Sciences and Business Administration

June 20, 2018

Introduction

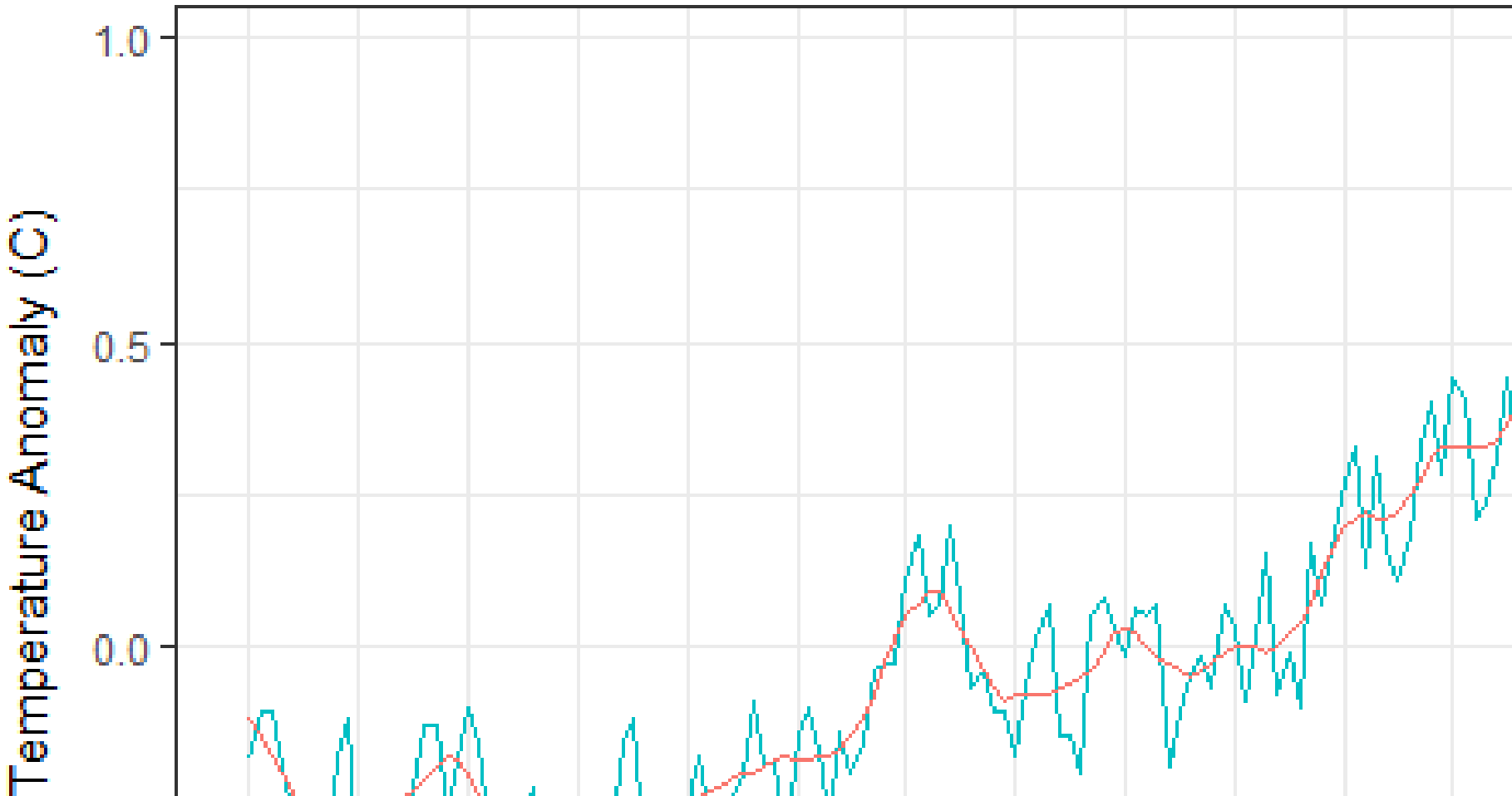
Global warming is not a myth and is growing fast

Figure 1: Global Atmospheric Concentrations of Carbon Dioxide Over Time



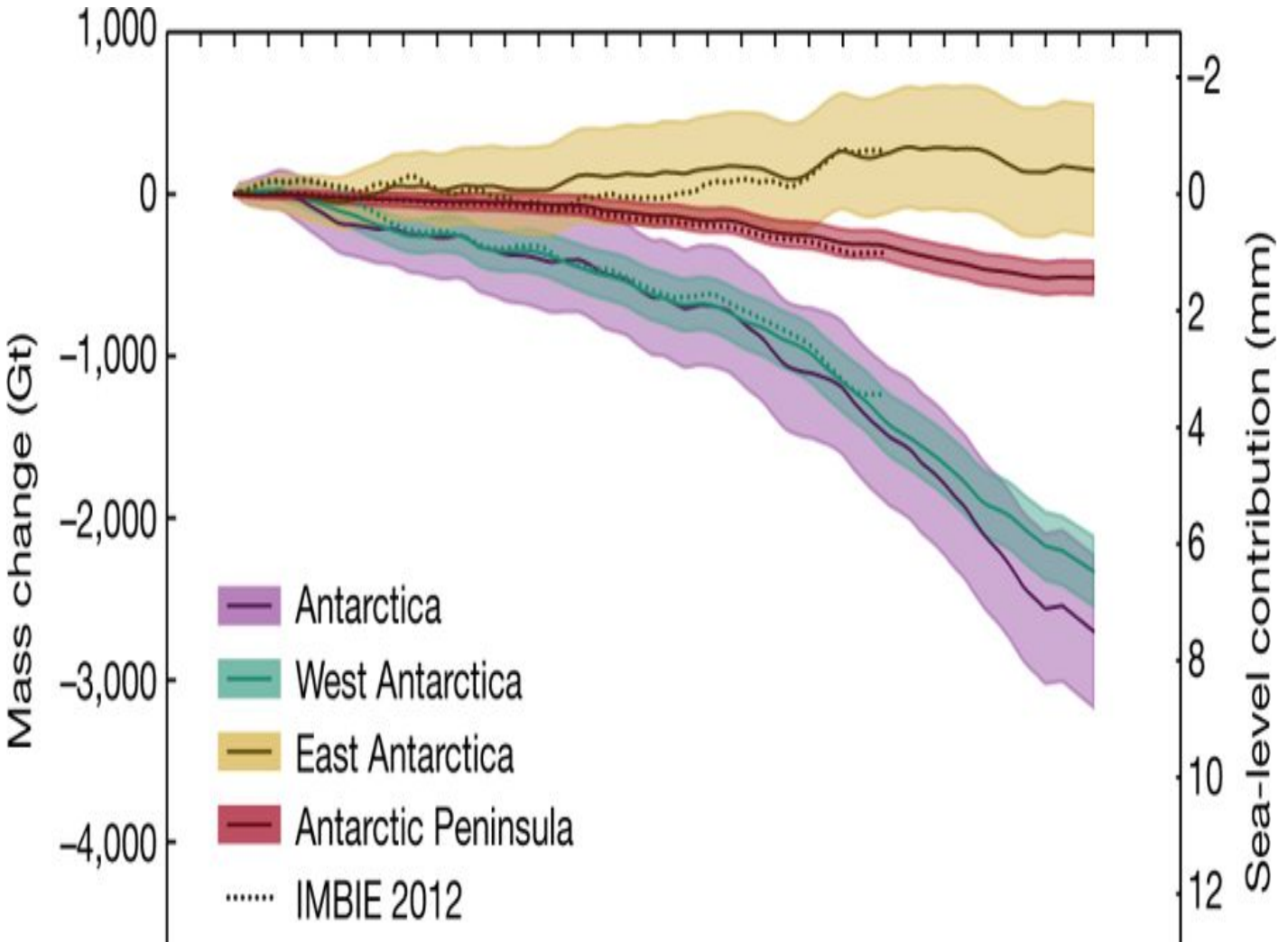
Global warming is not a myth and is growing fast

Figure 2: Global Mean Estimates Based On Land and Ocean Data



Global warming is not a myth and is growing fast

Figure 3: Cumulative Antarctic Ice Sheet Mass Change



Global Warming represents a threat for companies

- Resource depletion, effect on geography, increase of incertainty, increase of natural disasters,...
- The Business and Sustainable Development Commission (2017) (p12) report states:

  "... businesses need to pursue social and environmental sustainability as avidly as they pursue market share and shareholder value... If they don't, the costs and uncertainty of unsustainable development could swell until there is no viable world in which to do business."

Turn the threat into an opportunity

- Companies are important stakeholders of Global Warming. They are part of the **problem** but also part of the **solution.**
- The solution can be profitable

Contribution of this thesis

This thesis **provides incentives** for companies to invest in environmental strategies and shows that **it does pay to be green**. Companies with better corporate environmental performance have better financal performance and the relation increases with a long-term perspective.

Theoretical Framework

Corporate Environmental And Financial Performance Nexus

Figure 4: Research Framework

Corporate Financial Performance (i.e. CFP)

Assesses the outcomes of business strategy (Bansal and DesJardine, 2014) and is a fundamental indicator of organizational performance and long-term survival of an organization (Hamann et al., 2013).

Three-group classification (Orlitzky et al., 2003):

1. **Market-based measures** (e.g. price-earning ratio or Tobin's Q) consider that returns should be measured from the perspective of shareholders (Cochran and Wood, 1984). They are considered as proxies for **long-term CFP** (Endrikat et al., 2014).
2. **Accounting-based measures** require profitability and asset utilization indicators such as Return on Asset (i.e. ROA) or Return on Equity (i.e. ROE) (Cochran and Wood, 1984; Wu, 2006). They are considered as proxies for **short-term CFP** (Endrikat et al., 2014).

Corporate Environmental Performance (i.e. CEP)

"Measurable results of an organization's management of its environmental aspects" (ISO, 2013).

Two-group classification (Endrikat et al., 2014):

1. **Process-based CEP** which refers to "a strategic level and focuses on managerial principles and processes such as environmental objectives, environmental policies, or environmental management structures".
2. **Outcome-based CEP** which reflects "the observable and quantifiable results of these efforts (Delmas et al., 2011) and refers to measures such as the number of released pollutants or the ratio of recycled waste to total waste".

Hypotheses

Methodology

Data Description

$$Y_{it} = \alpha + \beta_1 SPL_{it} + \beta_2 STC_{it} + \beta_3 AS_{it} + Controls_{it} + d_t + u_{it} \quad (1)$$

where Y_{it} is a proxy of outcome-based CEP measured as carbon productivity, water productivity and waste productivity, SPL_{it} is a proxy for a firm's sustainability pay link, STC_{it} is a proxy for a firm's sustainability themed commitment, AS_{it} is a proxy for a firm's audit score, $Controls_{it}$ is a vector of control variables that includes firm size, industry sector, financial leverage and growth, d_t represents the time effect and u_{it} is the error term.

$$\begin{aligned} Y_{it+1} = \quad & \alpha + \beta_1 SPL_{it} + \beta_2 STC_{it} + \beta_3 AS_{it} + \beta_4 CaP_{it} \\ & + \beta_5 WatP_{it} + \beta_6 WastP_{it} + Controls_{it} + d_t + u_{it} \end{aligned} \quad (2)$$

where Y_{it+1} is a proxy of CFP measured as ROA or Tobin's Q, SPL_{it} is a proxy for a firm's sustainability pay link, STC_{it} is a proxy

Panel Data

Results

Process-based CEP positively influences outcome-based CEP

Table 1: The Impact of Process-Based on Outcome-Based CEP

	Dependent variable:		
	CaP Model (1)	WaP Model (2)	WastP Model (3)
SPL	0.010 (0.011)	0.022* (0.012)	0.025** (0.011)
STC	0.058*** (0.010)	0.067*** (0.011)	0.046*** (0.011)
AS	0.057*** (0.010)	0.068*** (0.011)	0.071*** (0.011)
FirmSize	−0.005 (0.008)	−0.008 (0.008)	−0.010 (0.008)
Leverage	0.0003 (0.001)	0.001* (0.001)	0.001** (0.001)
Growth	0.028 (0.028)	0.001 (0.030)	0.003 (0.028)
Industry	0.002 (0.002)	−0.00001 (0.002)	0.004** (0.002)
BPLM test (pvalue)	0***	0***	0***
F test (pvalue)	0***	0***	0***
Observations	1,123	1,123	1,123
Adjusted R^2	0.109	0.138	0.132
F Statistic (df = 7; 1113)	20.888***	26.892***	25.632***
Note:			*p<0.1; **p<0.05; ***p<0.01

Both process and outcome-based CEP have a positive impact on CFP

Table 2: The Impact of Process and Outcome-Based CEP on CFP

	Dependent variable:	
	TobinsQ	ROA
	Model (4)	Model (5)
SPL	0.079* (0.044)	0.008** (0.004)
STC	0.063 (0.044)	0.012*** (0.004)
AS	0.158*** (0.044)	−0.004 (0.004)
CaP	−0.012 (0.135)	0.030** (0.012)
WaP	0.337** (0.155)	0.006 (0.012)
WastP	−0.199 (0.156)	0.010 (0.012)
FirmSize	−0.443*** (0.015)	−0.020*** (0.001)
Leverage	0.003 (0.003)	−0.00000 (0.0003)
Growth	0.465*** (0.152)	0.138*** (0.012)
Industry	−0.026*** (0.007)	−0.002*** (0.001)
Constant	10.701*** (0.345)	
BPLM test (pvalue)	0.508	0.024**
F test (pvalue)	0.323	0.012**
Observations	954	1,093
Adjusted R^2	0.500	0.282
F Statistic	96.388*** (df = 10; 943)	44.007*** (df = 10; 1080)
Note:		*p<0.1; **p<0.05; ***p<0.01

Sensitivity analyses

- Describe + confirms results

Summary

Main findings and contributions

1. Contribution 1
2. Contribution 2
3. Contribution 3
4. Contribution 4

Limitations

1. Limitation 1
2. Limitation 2
3. Limitation 3
4. Limitation 4

References

References

Bansal, P., DesJardine, M.R., 2014. Business sustainability: It is about time. Strategic Organization 12, 70–78. doi:10.1177/1476127013520265

Business and Sustainable Development Commission, 2017. Better business, better world - The report of the Business & Sustainable Development Commission.

Cochran, P.L., Wood, R.A., 1984. Corporate social responsibility and financial performance. Academy of management Journal 27, 42–56. doi:10.2307/255956

Delmas, M., Hoffmann, V.H., Kuss, M., 2011. Under the Tip of the Iceberg: Absorptive Capacity, Environmental Strategy, and Competitive Advantage. Business & Society 50, 116–154. doi:10.1177/0007650310394400

Endrikat, J., Guenther, E., Hoppe, H., 2014. Making sense of conflicting empirical findings: A meta-analytic review of the