

THE DIFFUSION OF VOLUNTARY ENVIRONMENTAL PROGRAMS: THE CASE OF ISO 14001 IN KOREA, 1996-2011

Presentation at Laboratory for Studies in Economic Sociology

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Who am I?

- **Degrees:**

- BA & MA in Sociology from Korea University (S. Korea)
- Ph.D. in Sociology from University of Minnesota-Twin Cities (USA)

- **Dissertation:**

- The Adoption and Outcomes of ISO 14001 across Korean business firms (Advisor: Prof. Erin L. Kelly)

- **Areas of interest:**

- Law & Social Policy: Environmental Policy & Family Policy
- Organization Theory
- Corporate Social Responsibility
- Asian Business
- Quantitative Methods: Event-History Modeling & Panel Analyses

Who am I?

- **Courses taught:**

- Organization Theory (BA & MA)
- Social Statistics (BA & MA)

- **Presentations at:**

- American Sociological Association
- Alliance for Research on Corporate Sustainability

Research Theme

- How do institutional forces affect the diffusion of corporate social responsible programs in East Asian context?
- What are the outcomes of the adoption of corporate social responsible programs?
- What are differences between institutional contexts in countries in East Asia and the West?

My Previous Works

- **Baek, Kyungmin**, Erin L. Kelly and Yong Suk Jang. 2012
“Work Family Policies in Korean Organizations: Human Resources Management and Institutional Explanations.
Asian Business & Management 11(5): 515-539.
- This work investigates why Korean workplaces have work-family policies
- The Korean government plays an important role in diffusing work-family policies, especially parental leave

My Previous Works

- **Baek, Kyungmin** and Erin L. Kelly. 2014 “Noncompliance with Parental Leave Law in Korean Organizations: Extending Institutional Research to a New Legal Context” *Law & Social Inquiry* 39(1): 176-202.
- This work investigates why Korean workplaces violate legal mandates such as parental leave
- Inattention to legal environment and sustained old institution (e.g. male-centered culture) have affected legal violation of parental leave in the Korean workplaces

My Current Works

- Have 3 on-going projects
 - **Baek, Kyungmin.** “The Diffusion of Voluntary Environmental Standards: The Case of ISO 14001 in Korea, 1996-2011.” Currently under review at ***Journal of Business Ethics***
 - **Baek, Kyungmin.** “Organizational Outcomes of Diversity Management Policies in Korean Workplaces” Will be submitted to ***International Journal of Human Resources Management***
 - **Baek, Kyungmin.** “The Effects of Corporate Governance on Environmental Performance in Korean Business Firms” Will be submitted to ***Business Strategy & the Environment***

Development of Voluntary International Standards



- The business sector increasingly recognizes the importance of CSR
- Many voluntary international environmental standards have emerged and diffused worldwide:
 - ISO 14001
 - UN Global Compact
 - Global Reporting Initiative....
- These standards are very recent
- Limited understanding of how they diffuse over time

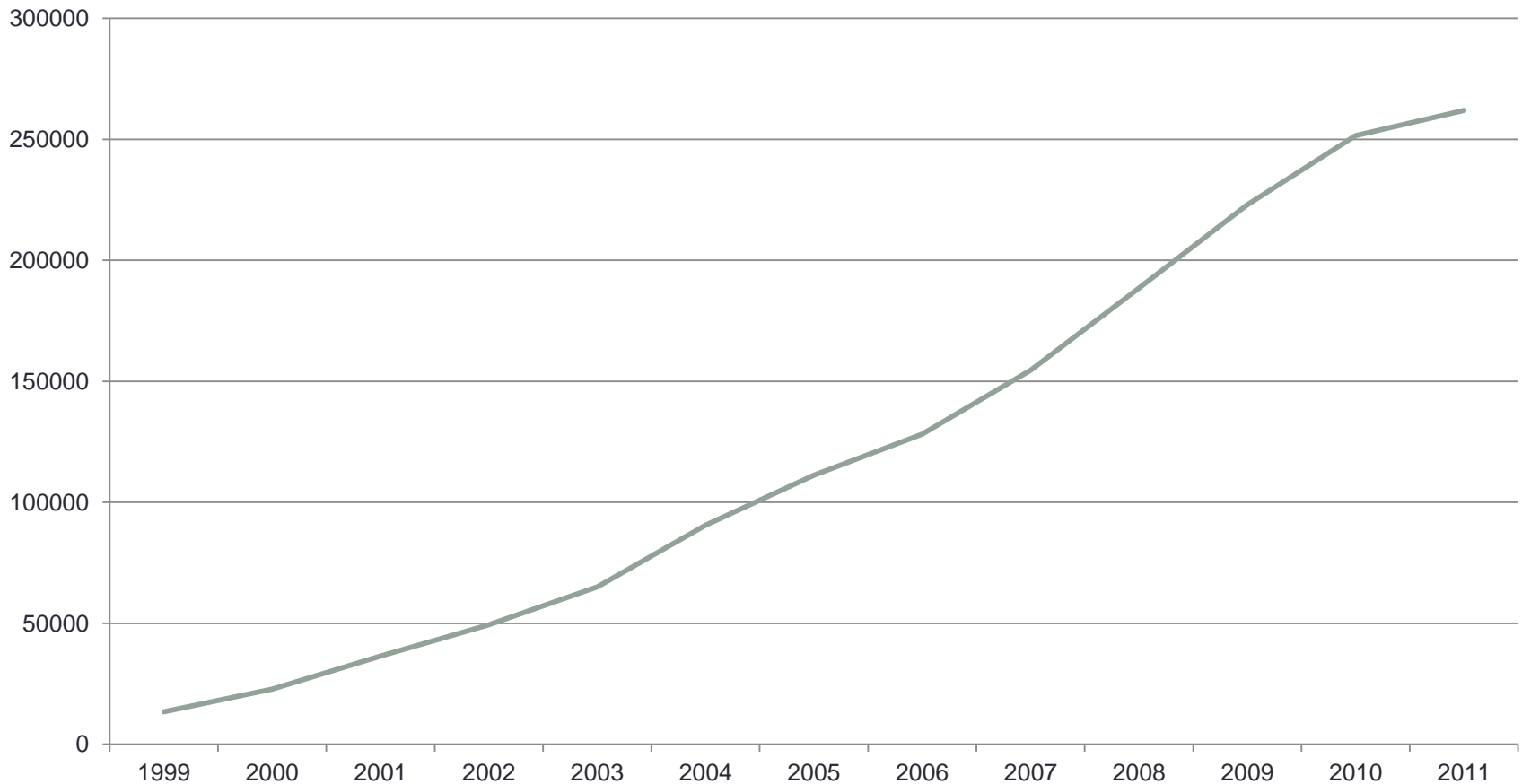
The Emergence of ISO 14001



- **UNCED** in Rio in 1992
- **GATT** in 1994
- **International Organizations for Standardization (ISO)** issued the first edition of ISO 14001 in 1996
 - One of international environmental management standards
 - Management process focused
 - Well-regarded voluntary environmental management standard

Global Diffusion of ISO 14001

The cumulative number of ISO 14001 certified facilities in the world
Source (ISO, 2011)



Research Questions & Theoretical Lenses

- What are the factors that facilitate firms' adoption of ISO 14001 in Korea?
- How do these factors differ in the early stage of diffusion as compared to the later stage of diffusion?
 - Examine 1996 – 2011 data
- Two major theories are used to explain firms' adoption of ISO 14001 in Korea
 - Resource-Based View
 - Institutional Theory

Resource-Based View Overview

- Firm resources with distinctive attributes lead to firms' sustained competitive advantage (Barney, 1991; Wernerfelt, 1984)
- The rent-earning potential of a firm's resources are determined by their scarcity, uniqueness, inimitability and non-substitutability, which determine the firm's competitive advantage (Dierickx and Cool, 1989)

Hypotheses

- The adoption of ISO 14001 draws environmentally conscious consumers' and investors' attention and leads to reduction of operational costs
 - **Hypothesis 1**: A firm in the chemical industry is more likely to adopt ISO 14001
 - **Hypothesis 2**: A firm with more capital intensity is more likely to adopt ISO 14001
 - **Hypothesis 3**: A firm with better financial performance is more likely to adopt ISO 14001

Institutional Theory Overview

- Organizations' policies, practices, structure are affected by the **institutional environment**
 - Drive for legitimacy
 - Much is taken-for-granted
- Contrasted with rational choice perspective
- Meyer & Rowan (1977); DiMaggio & Powell (1983)
 - Organizational practices as myth and ceremony
 - Post hoc claims of economic rationality
 - Explaining isomorphism: same form, policies across diverse settings
 - Coercive pressures – law and public policy
 - Normative pressures – professions (management, HR, finance)
 - Mimetic pressures – peer organizations

Hypotheses

- The legislation of ‘**The Promotion Act for Conversion to Environmental-Friendly Industry Structure (PACEFIS)**’ in 1995 creates normative expectation of corporate environmental responsibility
 - **Hypothesis 4**: A younger firm is more likely to adopt ISO 14001
 - **Hypothesis 5**: A firm with higher financial leverage is more likely to adopt ISO 14001
 - **Hypothesis 6**: The variable indicating ‘Small & Medium Firms’ overrides the effect of firm size
 - **Hypothesis 7**: A firm more dependent on foreign markets is more likely to adopt ISO 14001

How Effects Differ Over Time?

- Scholars suggest that while early adopters of management practices tend to seek technical gains from adoption, later adopters are primarily interested in social legitimacy (Tolbert & Zucker, 1983; Westphal et al., 1997; Delmas & Montes-Sancho, 2010)
- For ISO 14001 diffusion, as ISO 14001 spreads across Korean manufacturing firms, this standard becomes more common and less beneficial to a 'green reputation.' Therefore, variables in RBV can be significant to explain the motivation for early adopters, but institutional theory can be significant for later adopters

Hypotheses

- **Hypothesis 8**: While the variables in RBV will be significant to explain the early periods of the diffusion process, the variables in institutional theory will be significant to explain the later periods of the diffusion process

Data and Method

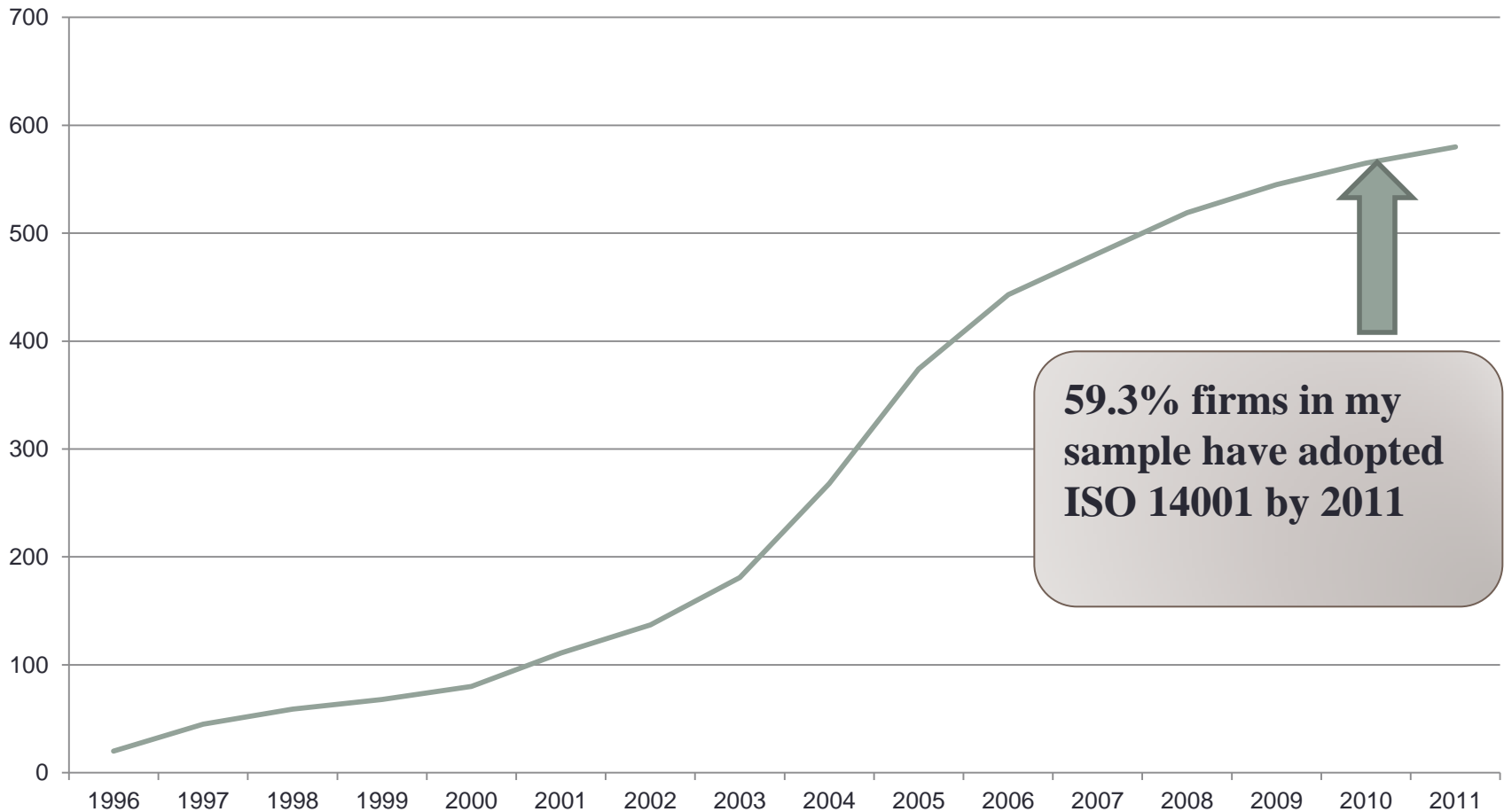
- Population: Korean manufacturing firms
- Sample: 977 Korean manufacturing firms listed in Korean stock market as of 2011
- Data Sources: Korea Information Service Value, equivalent to COMPUSTAT data set in the U.S. (Unique longitudinal data)
- Event-History Analysis is used
 - Exponential model
- This analysis relies on the 9,947 at-risk firm-years with complete data for the variables of interest.

Dependent Variable: ISO 14001 Adoption

- Operationalization: the first year that one of the firm's associated facilities adopted ISO 14001
 - The first decision to be certified to ISO 14001 can reflect changes of firm-level strategies (Lee, 2011; Darnall, 2005)
- Sources of information: ISO 14001 certification data published by the **Ministry of Knowledge and Economy** in Korea (Government data); **Company homepage**; **Company profiles offered by business newspaper** (Maeil Business News)
- Integrated longitudinal data set for 1996-2011

Diffusion of ISO 14001 in Korea

The cumulative number of ISO 14001 adoption in Korea



Independent Variables

- **Resource-Based View**
- Chemical industry (Dummy variable marking chemical industry)
- Capital intensity (Yearly firms' total asset/ total sales of firms)
- Financial performance (Yearly ROA)

- **Institutional Theory**
- Firm age (Years since firm's founding)
- Financial leverage (Yearly firms' debt/ total asset of firms)
- Small & Medium Enterprise (Dummy variable marking SMEs)
- Export (Yearly export volume/ total sale of firms)

- **Control Variables**
- Firm size (Natural logarithm of number of employees)
- ISO 9001 (Dummy variable marking firms' adoption of ISO 9001)

- **Periods: Mid-point**
- Early periods (1996-2003)
- Later periods (2004-2011)

Statistical Results

	Entire model (w/o SME)	Before 2004 (w/o SME)	After 2004 (w/o SME)
<u>Resource-Based View</u>			
Chemical Industry	.294(.146)	.763(.205)***	-.004(.216)
Capital intensity	.001(.004)	-.108(.119)	.010(.007)
ROA	.526(.353)	1.326(.598)*	.735(.382)
<u>Institutional Theory</u>			
Firm age	-.289(.054)***	-.146(.109)	-.392(.062)***
Financial leverage	-.003(.002)	-.003(.004)	.006(.002)**
Small-medium firms	N/A	N/A	N/A
Export	.007(.001)***	.002(.003)	.008(.002)***
<u>Control Variables</u>			
Firm size	.236(.040)***	.489(.061)***	.142(.053)**
ISO 9001	1.185(.102)***	1.125(.173)***	.837(.127)***
Observations	9947 (580)	5618 (181)	4329 (399)

Statistical Results

	Entire model (w/o Size)	Before 2004 (w/o Size)	After 2004 (w/o Size)
<u>Resource-Based View</u>			
Chemical Industry	.299(.146)*	.767(.203)***	-.005(.216)
Capital intensity	.001(.004)	-.105(.111)	.009(.007)
ROA	.579(.339)	1.255(.561)*	.712(.372)
<u>Institutional Theory</u>			
Firm age	-.171(.050)***	.192(.105)	-.357(.058)***
Financial leverage	-.001(.002)	.001(.003)	.006(.002)**
Small-medium firms	-.223(.087)*	-.503(.171)**	-.237(.103)*
Export	.008(.001)***	.006(.002)*	.009(.002)***
<u>Control Variables</u>			
Firm size	N/A	N/A	N/A
ISO 9001	1.219(.102)***	1.243(.170)***	.853(.127)***
Observations	9947 (580)	5618 (181)	4329 (399)

Findings

- RBV explains the diffusion of ISO 14001 in Korea well, but in only early periods
 - Firms adopt ISO 14001 to acquire a green reputation as well as to reduce operational cost
 - As ISO 14001 spreads across Korean manufacturing firms, ISO 14001 loses its status as a valuable resource
- Institutional theory explains the diffusion of ISO 14001 in Korea well, but in only later periods
 - Over time normative pressures increase and help to reduce uncertainty of ISO 14001
 - Normative pressures encourage stakeholders such as banks and export partners to improve their understanding of ISO 14001

Findings

- Previous studies have expected that government incentives for firms seeking ISO 14001 in Asian countries promote the diffusion of ISO 14001 (Delmas, 2002)
 - Unlike this prediction, the effects of government incentives in Korea might be less strong than expected
- In later periods firms are expected to adopt ISO 14001 in a ceremonial way
 - Dissonance between ISO 14001 and actual environmental outcomes (e.g. pollutant emission; legal compliance) should be expected to happen

Theoretical Implications

- Research in organizations and the natural environment
 - Most research on voluntary environmental standards is dependent on cross-sectional data
 - This study uses longitudinal data ranging from 1996 to 2011
 - Most research in this area of environmental self-regulations & sustainable development has taken either a resource-based or institutional position
 - This study integrates two theoretical directions in a single framework

Thank You!