Worldwide Diffusion and Shift of ISO standards from 1995 to 2005

Kitae Park

Department of Sociology, Korea University

(kitae80@korea.ac.kr)

Abstract

This paper explores Worldwide Diffusion and Shift of ISO standards are based on world culture perspective and other perspective. Debating on diffusion and shift that is based on neo-institutional perspective, world culture performs as an important factor. As a tentative conclusion, the author presents (1) nations that are exposed more and longer may adopt ISO certifications (ISO 9000, ISO 9001:2000 and ISO 14001) (2) looking into adoption of ISO 14001 through learning effect and resource based view, ISO 9000 series adopters would take more ISO 14001 certification. In conclusion, when researchers explore diffusion, it is good for them to consider world culture and global norm. And as investigator studies shift of standards, they should observe changing procedure from efficiency to legitimacy.

Key Words: ISO certification, Diffusion, Shift, Global pressure, Global norm

INTRODUCTION

Since ISO (International Organization for Standardization) was founded in 1947, various certifications were enacted and introduced by ISO. Among many kinds of standards, ISO 9000 series and ISO 14000 series are the most popular and worldwide adopted certifications.

Though I will present details in later part, 9000 series is called to QMS (Quality Management System) to guarantee standardized manufacturing process of adopted firms. On the other hands, 14000 series assures that firms try to protect natural environment as following guideline. So ISO 14000 series is called as EMS (Environmental Management system). In 2005, a number of 9001:2000 adopters are 776,608 in 161 nations and actors who are certificated by accreditation and certification bodies on 14001 are 111,162 in 138 nations (ISO 2006).

In much previous research, scholars explored that diffusion mechanism of ISO standards which are based on neo-institutional perspective (Guler et al. 2002) and other perspectives (Quasi et al. 2002; Rao et al. 1997; Shannon et al. 1999) within inter-organization or inter-nations. Even though treating multidimensional actors and emphasizing role equivalence in world trade, but scholars did not display descriptive conditions of each nations, and specific distributed factors.

Second, conventional studies inquired diffusion of just one standard series of ISO 9000 (Guler et al. 2002) and showed transferring reasons in each firm from 9000 series to 14000 series (Rhim et al. 2003; Jung 1997).

Therefore, in this paper, I will show descriptive worldwide diffusion trends and conditions shifted from QMS to EMS for overcoming limitations of former research on

empirical method.

DIFFUSION

As noted earlier, ISO 9000 and 14000 series have overspread since 1987 and 1996 when they were enacted. Figure 1 reveals increasing of a number of adopting nations from 1995 to 2005. There is smooth rising of ISO 9000 series, but ISO 14001 has lifted up very sharply. In ISO 9000 case, nations which have an ability to take ISO certifications almost got it caused as a periodical gap between terms of enacted and information gathering. On the other hand, ISO 14001 series has adopted that firms to enhance their legitimacy (Meyer and Rowan 1977) in a global context that regime of environmental protection has increased (Frank 1997; Frank et al. 2000)
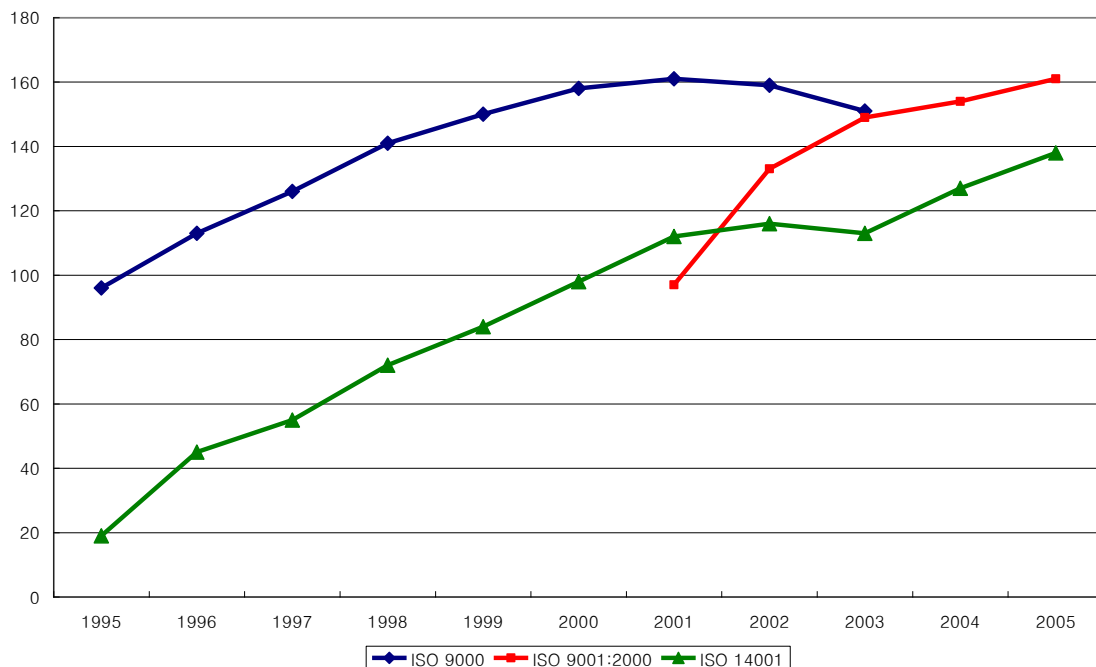
Figure 1. A number of ISO adoption nations

In detail, a number of ISO 9000 adopt nation gradually has increased to 161.

Furthermore, a number of ISO 14001 adopt nation has extended from 1995 to 2005; from 19 countries to 138 countries. It means that ISO certifications are overspread all over the world. In 1987 when ISO 9000 was enacted first as a BS 5750(Corbett and Kirsch 2001), its influence was limited UK and Western Europe. But few years later, other continental countries, even Africa, adopt it competitively. As ISO 9000 series was substituted to ISO 9001:2000, showing decline of nations temporarily. But there is rising phase after substitution is over.
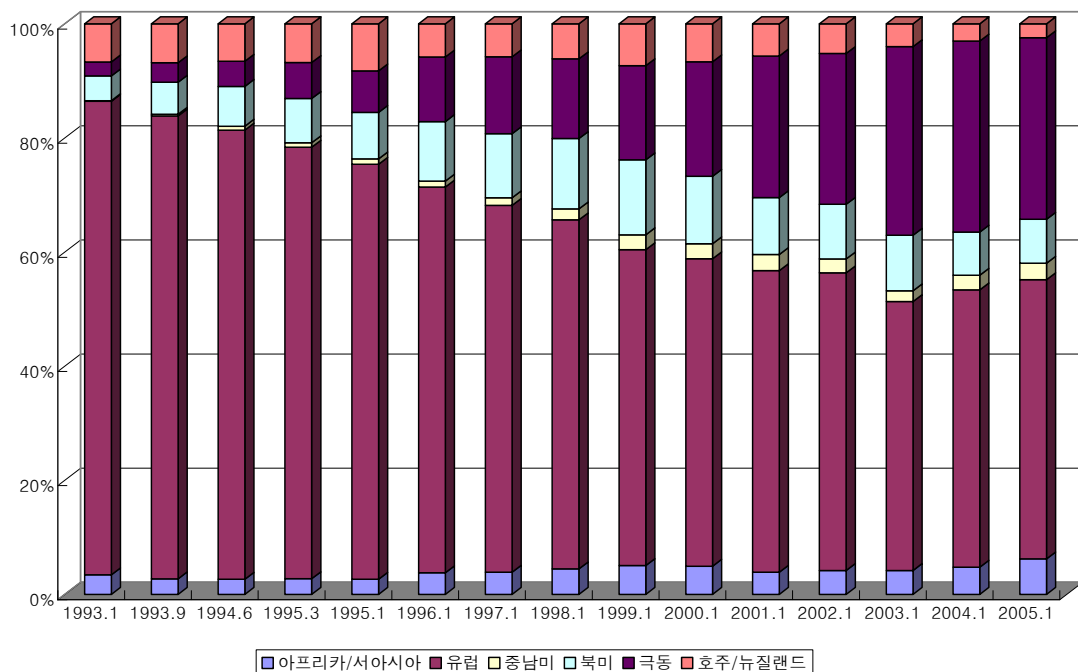
Figure 2. Worldwide distribution of ISO 9000 and 9001:2000

(1993-2003 ISO 9000 ; 2004-2005 ISO 9001:2000)

Figure 2 shows regional distribution of ISO 9000. Proportion of Europe is gradually decreasing, but Asian proportion increases continuously. On other words, decline of proportion of Europe means relative expansion of other regions and worldwide diffusion toward other regions. Perhaps, these conditions involved in economic development of other regions and diffusion of norm that firm should concern

efficiency of performance, quality of its product and taken-for-granted legitimacy that corporation certified through authorized bodies.
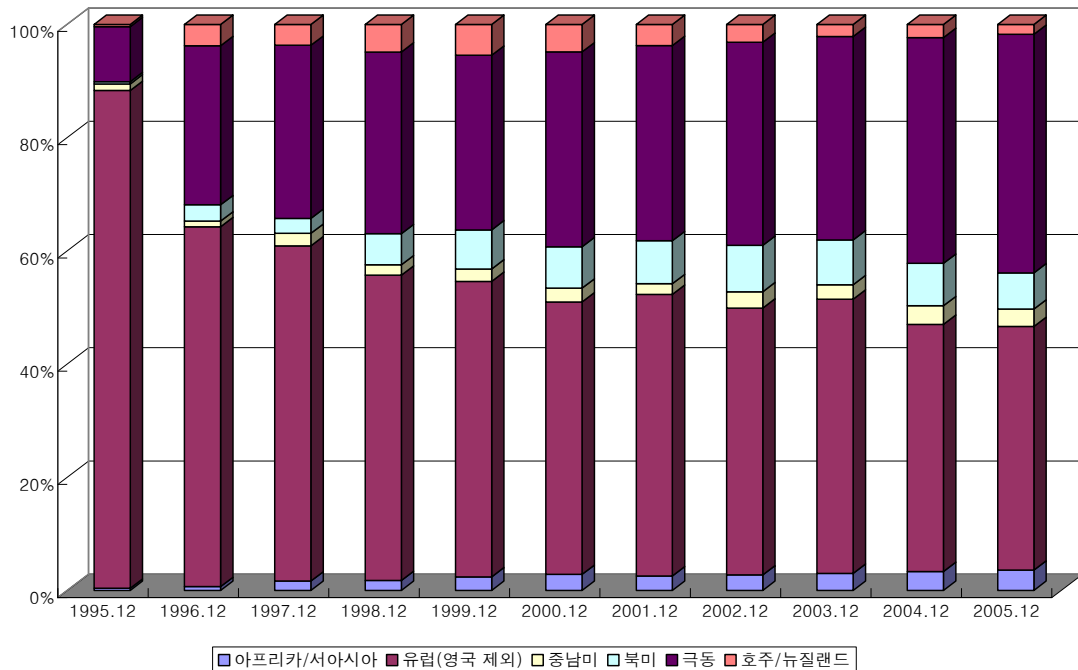
Figure 3. Worldwide distribution of ISO 14001

(except U.K.)

Figure 3 also shows worldwide distribution of ISO 14001. Possession of Europe and Asia in proportion is very similar since 1997, means that not decline of European firms, but extent of Asian companies. As noted earlier, expansion of ISO 14001 series means firm has concerned global pressure that environment should be protected and firm intent to sustainable development (Frank et al. 2000).

Guler et al. (2002) suggest hypotheses that emphasize presence of coercive organizations, effects of trade and role equivalence. Nevertheless, authors did not mention influence of indirect tie that is measured participation of international organization (IGO; International Governmental Organization, INGO; International Non-Governmental Organization) that means norm provider and level of national openness.

Therefore, I will propose hypotheses beyond their limitations. First, much neo-institutional research emphasize role of IGO and INGO (Boli and Thomas 1997; Schofer and Meyer 2005; Paxton et al. 2006; Hafner-Burton and Tsutsui 2005; Frank and Mceneaney 1999). A number of memberships of international organization symbolize sensitive on global norm (Schofer and Meyer 2005; Paxton et al. 2006; Hafner-Burton and Tsutsui 2005; Frank and Mceneaney 1999). It means that the more memberships of international organizations, norm receptor in individual country may increase and nation may much concern on global pressure. As following above description, I put forward first hypothesis.

Hypothesis 1: Country has more memberships of IGO and INGO, it is more likely to have ISO certifications.

When discussing world culture theory, joining period is an important factor (Boli and Thomas 1997). Since 1947, ISO founded, almost countries join it (ISO 2006). As ISO chases world's standardization, if country maintain its membership longer, country more sensitive guideline of ISO, and effects of membership operate both ISO 9000 and ISO 14001 series as a pressure. Therefore, I would like to propose second hypothesis.

Hypothesis 2: Country may maintain longer ISO membership than other country, it is more likely to have ISO certifications.

When looking over a set of adopting nations, list includes some unexpectedly

nations include some exclusive countries, poorest countries and marginal nations. For instance, North Korea (under N.K.) is included in absolutely closed countries and is known that the most closed country against the world. According to ITU (International Telecommunication Union), North Korea did not report its a number of internet users in 2000 and 2005. In spite of those facts, in 2005, N.K. has 939 certified firms through ISO 9001:2000 and 97 corporations that adopt ISO 14001 (ISO 2006). Second, African poorest countries that almost population suffers a famine were reported. Including Ethiopia, lots of African countries failed to treat their poverty but have adopted ISO standards. Last, unknown countries adopt ISO certifications are discovered. Guyana, locates in north Latin America, is very marginal nation in world. But it has 8 ISO adopt firms in 2005. As noted earlier, there are many cases that nations take certification despite of their internal political and economic context. In other words, marginal actor also must response to global pressure like almost countries have a governmental homepage.

And as these marginal countries almost take ISO standard later 90s, reasons and mechanisms of adoption are different from early adopter, developed countries (Raminez et al. 1997; Strang 1990). Especially, peripheral nations has adopted continuous since 1998 (ISO 2002). It means that early adopters take it to improve their efficiency, but later adopters accept it inevitable because of global pressure. Early stage of adoption, ISO certifications affect export through quality improvement. Yet, later stage of adoption, it is required as a qualifications in a world trade. Therefore, marginal nations try to be certified by accreditation and certification bodies and I would propose hypothesis 3.

Hypothesis 3: The higher proportion that adoption rate of trade counterparts, the more

adopt ISO certifications in marginal nations after 1997.

SHIFT

In this chapter, I explore shift of ISO certification from 9000 to 14001. Shift

started in 1996 when 14001 enacted, and this shift may involve in changing norms from

efficiency to legitimacy. It means that ISO 9000 is called QMS pursue enhance of

manufacturing system and quality of product. On the other hands, even though ISO

14001 chases environmental protection that even obstructs efficiency and development,

nations try to be certified. Perhaps, this shift is explained by legitimacy is empowered

than efficiency.
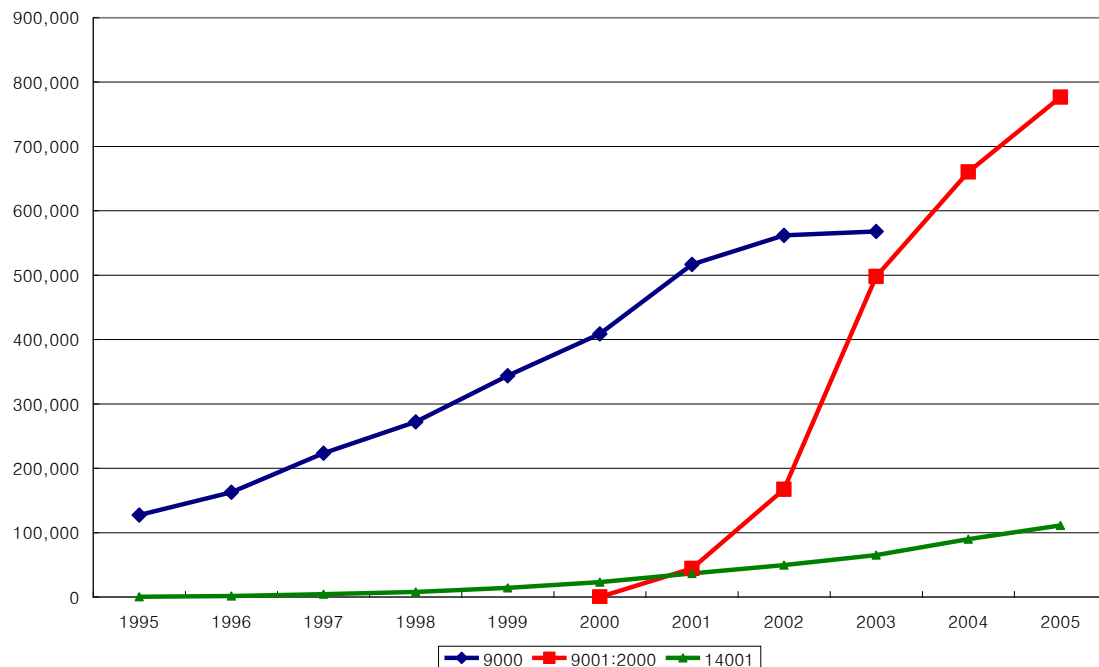
Figure 4. A number of ISO adoption firms

Figure 4 shows annual sum of each certifications of world. In detail, ISO 9000

of annual increasing rate declines gradually. Second, 9001:2000 raise very sharp that it is introduced in 2000 first, and firms take it as a substitutional standard. Third, a number of ISO 14001 adopt firms have expanded continuously.
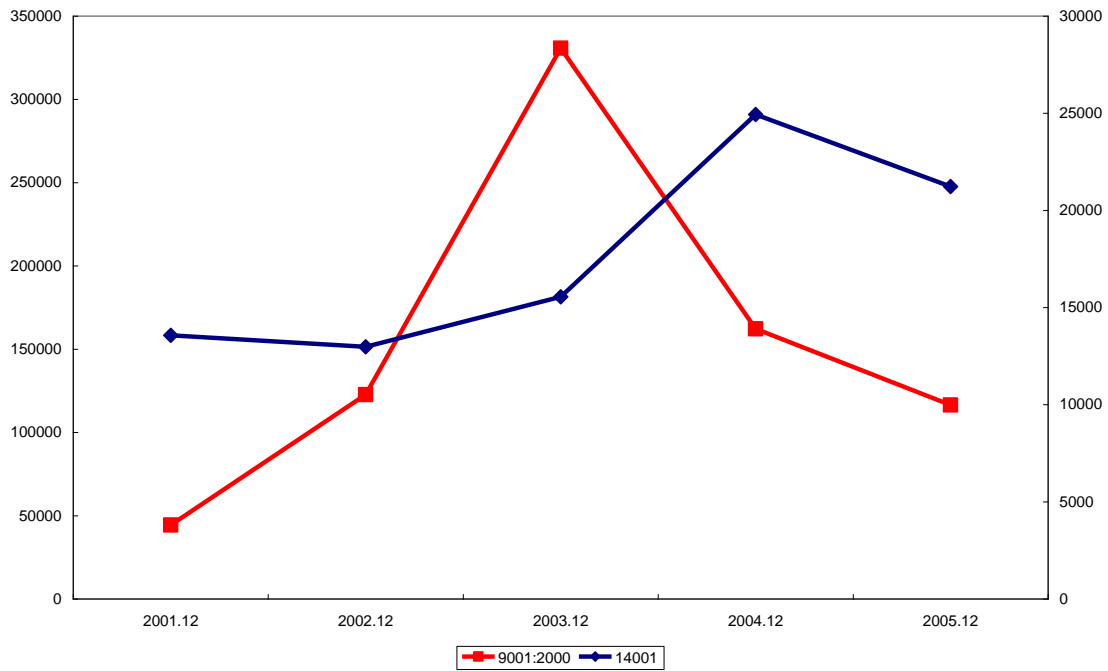
Figure 5. up and down conditions of ISO 9001:2000 and 14001

Figure 5 shows more detailed than figure 4, and absolute number of ISO 9001:2000 is more than 14001 but an upward tendency it is higher and continuously than 9001:2000. Especially, although increasing phase of 9001:2000 decline, 14001 series is gradually increase.

Frank et al. (2000) argue that conventional research emphasize domestic factors to protect environment. And they dissert that to explore environmental norms, researcher concern with top-down international pressure rather than focus on bottom-up domestic activities. As debating on world culture theory, the most important factor is a tie through INGO and IGO as receptor sites to global norms. On other words, when individual country has more memberships, its tie with global norms would more be

intensified. This logic can be applied on environmental section, and the more INGO and IGO on environmental domain, the more global norms that protect environment would penetrate into domestic environmental part. Therefore, norm penetrates domesticity promote adoption of ISO 14001. As based on above description, 4th hypothesis is proposed.

Hypothesis 4: The country have more environmental INGO and IGO, it is more likely to adopt ISO 14001 than less.

RANKING	ISO 9001:2000		ISO 14001	
1	CHINA	143823	JAPAN	23466
2	ITALY	98028	CHINA	12683
3	JAPAN	53771	SPAIN	8620
4	SPAIN	47445	CANADA	7639
5	UK	45612	ITALY	7080
6	USA	44270	UK	6055
7	GERMANY	39816	USA	5061
8	INDIA	24660	KOREA, REP. OF.	4955
9	FRANCE	24441	GERMANY	4440
10	AUSTRAILA	16922	SWEDEN	3682
11	HUNGARY	15464	FRNACE	3289
12	KOREA, REP. OF.	14033	CZECH, REP. OF.	2122
13	CZECH, REP. OF.	12743	BRAZIL	2061
14	CANADA	12503	AUSTRAILA	1778
15	SWITZERLAND	12413	INDIA	1698
16	TURKEY	10929	SWITZERLAND	1561
17	POLAND	9718	CHINESE TAIPEI	1556
18	NETHERLANDS	9160	THAILAND	1120
19	BRAZIL	8533	NETHERLANDS	1107
20	ISRAEL	7657	HUNGARY	993

Figure 6. List of top 20 adopt nations in 2005

In figure 6, almost countries overlap. It means that there is correlation between ISO 9001:2000 and ISO 14001. Rhim et al. (2003) assert that ISO 9000 certification effects on certificating motivation and process of ISO 14001. As expanding above statement, nations that gain ISO 9000 certifications take more and easier ISO 14001. And on organization learning perspective, firms experienced certificating process, they would repeat it again more easily. Therefore, I would propose hypothesis 5.

Hypothesis 5: Nation has more ISO 9000(ISO 9001:2000), it is more likely to be certified ISO 14001.

TENTATIVE CONCLUSION AND IMPLICATIONS

Debating on diffusion and shift that is based on neo-institutional perspective, world culture performs as an important factor. In this article, the author proposes some hypotheses that are involved in global norm. To measure global pressure, the author uses IGO and INGO, ISO membership maintaining period, effect of customer nation, learning effect.

Therefore, I would present tentative conclusion. First, nations that are exposed more and longer may adopt ISO certifications (ISO 9000, ISO 9001:2000 and ISO 14001). Second, as I look into adoption of ISO 14001 through learning effect and resource based view, ISO 9000 series adopters would take more ISO 14001 certification.

In conclusion, when researchers explore diffusion, it is good for them to consider world culture and global norm. And as investigator studies shift of standards, they should observe changing procedure from efficiency to legitimacy, and this shift

could be found on transformation of ISO standard from ISO 9000 via ISO 14001 to ISO 26000. After all, global norm is expected to transfer from efficiency-oriented to legitimacy-oriented continuously.

REFERENCES

Anderson, Shannon W., J. Daniel Daly and Marilyn F. Johnson. 1999. "Why Firms seek ISO 9000 certification: Regulatory Compliance or Competitive Advantage?" *Production and Operations Management*, 8(1): 28-43

Boli, John and George Tomas. 1997. "World Culture in the World Polity: A Century of International Non-governmental Organization." *American Sociological Review* 62 (2): 171-190.

Corbett, Charles J. and David Kirsch. 2001. "International Diffusion of ISO 14000 Certification." *Production and Operations Management*, 10(3): 327-342.

Frank, David John. 1997. "Science, Nature, and the Globalization of the Environment, 1870-1990." *Social Forces,* 76 (December): 409-35.

Frank, David, Ann Hironaka, and Evan Schofer. 2000. "The Nation-State and the Natural Environment over the Twentieth Century." *American Sociological Review*, 65: 96-116

Frank, John David and Elizabeth H. Mceneaney. 1999. "The Individualization of Society and the Liberalization of State Policies on Same-Sex Sexual Relations, 1984-1995." *Social Forces*, 77(3): 911-943

Guler, Isin, Mauro F. Guillen and John Muir Macpherson. 2002. "Global Competition, Institutions, and the Diffusion of Organizational Practices: The International Spread of ISO 9000 Quality Certificates." *Administrative Science Quarterly*, 47(2): 207-232

Hafner-Burton, Emilie M., and Kiyoteru Tsutsui. 2005. "Human Right in a Gobalizing World: The Paradox of Empty Promises." *American Journal of Sociology*, 110(5): 1373-1411

Jung, Sumi. 1997. "A study relationship between the effect factors of ISO 9000 and

  motive factors of ISO 14000." *Journal of Management Science* 6:123-139

Meyer, John and Brian Rowan. 1977. "Institutionalized Organizations: Formal Structure

  as Myth and Ceremony." *American Journal of Sociology*, 83: 340-363

Paxton, Pamela, Melanie M. Hughes and Jennifer L. Green. 2006. "The International

  Women's Movement and Women's political Representation, 1893-2003." *American

  Sociological Review,* **71:** 898-920

Quasi, Hesan A., Chang Wing Hong and Chan Tuck Meng. 2002. "Impact of ISO 9000

  Certification on Quality Management Practices: A Comparative Study." *Total Quality

  Management,* 13(1): 53-67

Raminez, Francisco, Yasemin Soysal and Suzanne Shanahan. 1997. "The Changing

  Logic of Political Citizenship: Cross-National Acquisition of Women's Suffrage Right,

  1890 to 1990." *American Sociological Review*, 62: 735-745

Rao, S. Subba, T. S. Ragu-Nathan and Luis E. Solis. 1997. "Does ISO 9000 have an

  Effect on Quality Management Practice? An International Empirical Study." *Total

  Quality Management*, 8(6): 335-346

Rhim, Ho-sun, Gun-hee Lee and Yu-kyeong Chong. 2003. "An Empirical Study on

  Motivations and Benefits of ISO 9000, 14000 Certification in Korea." *Journal of

  Korea Production and Operations Management Society* (KOPOMS) 14(1):45-62

Schofer, Evan and John W. Meyer. 2005. "The Worldwide Expansion of Higher

  Education in the Twentieth Century." *American Sociological Review*, 70: 898-920

Strang, David. 1990. "From Dependency to Sovereignty: An Event History Analysis of

  Decolonization, 1870-1987." *American Sociological Review* 55: 846-60