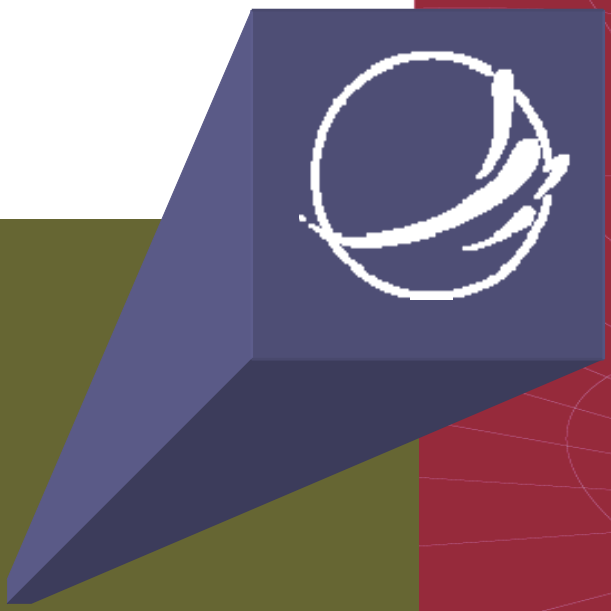


HIGHLIGHTS:

- *UNCTAD*: Foreign direct investment trends
- *Schweik and Kitsing*: Applying Elinor Ostrom's rule classification framework
- *Lisa Bingham*: Elinor Ostrom, institutional analysis and design
- *Invest Canada*: Invest Canada Act
- *Tucker, Agrawal, Fischer*: The International Forestry Resources and Institutions Research Program

VOLUME 2

Number 1
March 2010

ISSN 1918-6444

TRANSNATIONAL CORPORATIONS REVIEW

- **Transnational Corporations**
- **Foreign Direct Investment**
- **Institutional Innovation**
- **International Development**

Published by

Ottawa United Learning Academy & Denfar Transnational Development

Ottawa, Canada

Transnational Corporations Review:

- **Published in English and Chinese**
- **Supported by international experts and partners**
- **Focuses on TNC, FDI, Innovation, and Development**
- **Provides opportunities to recent graduates and young professionals in the fields of policy and economics**

It’s Easy to Ask for a Copy!

Just write to sino@tnc-online.org and we will respond to you immediately

Visit the Website to Learn More!

To learn more about Transnational Corporations Review and relevant information, please visit the website at www.tnc-online.net

Ottawa International Students Entrepreneurship:

- **Supported by the Ottawa United Learning Academy**
- **Managed by a group of senior students and professionals**
- **Assists students with their studies and career development**
- **Reduces the cost of education for international students**

Editorial Statement

Transnational Corporations Review (TNCR), published by the Ottawa United Learning Academy (OULA) and Denfar Transnational Development (Denfar), is a modern media journal dedicated to providing economic, policy, and business analysis of current issues related to transnational corporations (TNCs), foreign direct investment (FDI), institutional innovation, and international development. The journal puts emphasis on China's growing involvement in the global economy. FDI by TNCs is the most dominant and dynamic element of the world economy in terms of production value; and TNCR fills the urgent need for a journal on the topic that is available in both English and Chinese. It is the only journal published in the West that addresses the topic from modern theoretical and practical including knowledge management perspectives. The journal particularly serves the needs of globally dispersed young professionals and senior graduate students majoring in Chinese business and international economics.

Special Advisors

Editorial & Review Board

Development & Management

Hugh Dang, Associate Editor

Anvella Deng, Data Specialist

Alexander Lau, China Representative

Deon Liao, Online Manager

Vincent Liu, Special Assistant

Karl Sauvant, Editor (Honorable)

Val Samonis, Special Editor, Knowledge Management

Kelsey Wagner, Managing Editor

Gloria Yuan, Communications Manager

Printing:

Merriam Print Canada

Published under:

ISSN	1918-6444
Index Information	AMICUS, EconLit, SSCI (pending approval)
Production	Print on acid-free paper (required)

For more information	– **Visit our websites:** www.tnc-online.org, www.tnc-online.net – **Contact us** by mail: 1278 Shillington Ave. Ottawa, ON K1Z 8A4 Canada
To submit an inquiry	– Send us an e-mail at: info@tnc-online.org
To submit an article	– Send us an e-mail at: sino@tnc-online.org
To subscribe to TNCR (yearly)	– Print only: US$100; Electronic only: US$60 – Print and electronic: US$150

Copyright & Disclaimer

Acknowledgement







TABLE OF CONTENT

In This Issue……I

Policy Review

Global and Regional Foreign Direct Investment Trends

UNCTAD……1

Columbia FDI Perspectives

International Investment Law and Media Disputes: A Complement to WTO Law

Luke Eric Peterson……9

Research & Analysis

Applying Elinor Ostrom's Rule Classification Framework to the Analysis of Open Source Software Commons

Charles M. Schweik and Meelis Kitsing……13

Elinor Ostrom, Institutional Analysis and Design, and Dispute Systems Design

Lisa Blomgren Bingham……27

The International Forestry Resources and Institutions Research Program

Catherine M. Tucker, Arun Agrawal, Burnell C. Fischer……37

Theory & Practice

Efficiency of The Nigerian Capital Market

Sunday Eneojo Samuel and Richard Uzoefuna Oka……42

Documentation

Investment Canada Act

Invest Canada……52

Study Notes

A New Perspective for Combating Climate Change

Lei Liu……76

Special Information

2010 TNCs and China Conference……82

Call for Submission……-1-

IN THIS ISSUE

Contributors to this first issue of Transnational Corporations Review (TNCR) for 2010 look at applications of approaches to transnational institutions as developed by the 2009 winner of the Nobel Prize in Economics, Professor Elinor Ostrom. Traditionally, many economists have theorized on markets. However, markets do not function properly without suitable, enforceable contracts. In addition, considerable economic activity takes place outside of markets– within households, firms, associations, agencies, and other organizations. It is necessary to study how institutions support markets in a globalized world.

The "Policy Review" section includes an analysis of global and regional foreign direct investment trends from the United Nations Conference on Trade and Development (UNCTAD). According to this analysis, global inflows of FDI fell by 39%, from US$1.7 trillion in 2008 to just over US$1.0 trillion in 2009, impacting all countries and FDI components.

A new section called "Columbia FDI Perspectives" has been created in collaboration with the Vale Columbia Center on Sustainable International Investment at Columbia University in the United States. This issue features International Investment Law and Media Disputes: A Complement to WTO Law, written by Luke Eric Peterson, a journalist who has covered international arbitration for over a decade. This article reveals that the recent high-stakes dispute between Google and China over censorship and cyber-security has spawned renewed discussion of the international trade law protections that internet and media companies may enjoy.

The "Research and Analysis" section explores the application of Professor Elinor Ostrom's theory of institutional change in contexts of multinational collaboration. This includes Charles Schweik and Meelis Kitsing's application of Elinor Ostrom's rule classification framework to the analysis of open source software commons; Lisa Blomgren Bingham's research on Elinor Ostrom's institutional analysis and dispute systems design; and The International Forestry Resources and Institutions Research Program: an Elinor Ostrom Creation, written by Tucker, Agrawal, and Fischer.

In "Theory and Practice", Sunday Eneojo Samuel and Richard Uzoefuna Oka of Kogi State University in Anyigba, Nigeria appraise the nature and efficiency of the Nigerian capital market and its implications for investment analysis and performance.

This issue also includes an excerpt of some important documentation: the Investment Canada Act from Industry Canada, and Lei Liu's study note on applying Ostrom's approach toward a new perspective on combating global climate change. It also includes special information on the 2010 TNCs and China Conference in Xi'an, China.

POLICY REVIEW

Global and Regional Foreign Direct Investment Trends

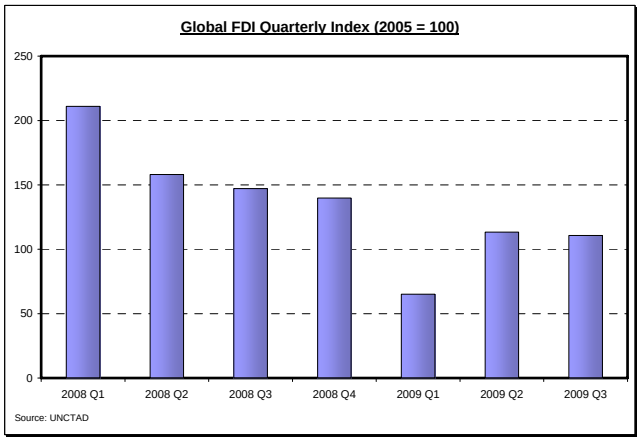
UNCTAD[*]

Abstract: Inflows of FDI fell by 39%, from US$1.7 trillion in 2008 to just over US$1.0 trillion in 2009. This decline was widespread across all major economic groups. After experiencing a severe fall in 2008, FDI flows to developed countries continued their dramatic decline in 2009 (by a further 41%). Those to developing and transition economies, which had risen in 2008, also declined in 2009 (by 35% and 39%, respectively), as the global financial and economic crisis continued to unfold. All components of FDI – equity capital, reinvested earnings, and other capital flows (mainly intra-company loans) – were affected. However, the decrease was especially marked for equity capital flows, which are most directly related to transnational corporations' (TNCs) longer-term investments strategies. Regarding the mode of entry, cross-border mergers and acquisitions (M&As) were the most affected, with a 66% decrease in 2009 compared to 2008. The number of international greenfield projects also declined markedly, though to a much lesser degree (-23%).

Key words: foreign direct investment, transnational corporations, mergers and acquisitions, international investment policy

1. Introduction

FDI flows remained relatively stable during the third quarter of 2009, but at a low level. No pick up was detected in the fourth quarter. After a sharp fall in the first quarter of the 2009, followed by a slight rebound in the second quarter, FDI flows in the third quarter remained relatively stable. UNCTAD's Global FDI Quarterly Index declined only slightly, from 113 to 111 (see the figure). However, when compared to the corresponding quarter of 2008, global FDI flows in 2009 remained much lower. The Global FDI Quarterly Index in the third quarter in 2009 was 36 points lower than the level in the previous year. Initial indicators for the fourth quarter of



[*] This policy note is from UNCTAD's Global Investment Trends Monitor Number 2, 2010. For more information, please contact UNCTAD at Palais des Nations 8-14, Av. de la Paix 1211, Geneva 10, Switzerland. Tel: T: +41 22 917 1234 Fax: +41 22 917 0057 Email: info@unctad.org.

2009 show no signs of a pick up in FDI flows. Global cross-border M&As, which are highly correlated with FDI equity capital flows, plunged in the fourth quarter of 2009 after several quarters of marginal improvement. Nevertheless, it is still likely that a modest rebound in flows will take place in 2010, as investment conditions are improving in many countries.

2. Global FDI flows

The decline of FDI was widespread, affecting all three major groups of economies: developed, developing and transition. Of the major host economies there were only a few exceptions to this general decline (Table 1). Sharp declines were recorded in all constituent components of FDI during the year. Against the background of the drastic FDI decline, most countries have refrained from investment protectionism but implemented policy changes aimed at further liberalizing and facilitating FDI entry and operations. However, increasing policy slippage in the trade area is exerting an impact on FDI and the global operations of TNCs.

2.1. Developed countries: a further slump

UNCTAD estimates show that FDI flows to developed countries continued to fall in 2009, declining roughly 41% compared to the previous year. FDI inflows declined sharply in the United States, the United Kingdom, Spain, France and Sweden. The fall in inflows to the United States reflects the strong decline – in both number and size – of M&A transactions made by foreign firms from major home countries, which themselves were suffering from the consequences of the economic slowdown. The combination of falling profits – which pushed reinvested earnings downwards – and a re-channelling of loans from foreign affiliates back to their headquarters, contributed to a fall in FDI flows to many countries in the European Union. Japan's decline can be attributed, in part, to the sale of a large foreign affiliate (Nikko Cordial Securities) to local companies. A drop in leveraged buyout transactions by private-equity funds from many countries served to further dampen cross-border M&As sales which, in turn, further depressed FDI flows in developed countries.

2.2. Flows to developing countries

As the impact of the global financial crisis on FDI unfolded relentlessly, inflows to developing countries declined by 35% in 2009, after six years of uninterrupted growth. Shrinking corporate profits and plummeting stock prices have greatly diminished the value of, and scope for, cross-border M&As globally – an increasingly important mode of FDI entry into developing countries.

Africa saw inflows fall roughly 36% in 2009 after the peak year of 2008. This decline is a matter of concern as FDI is a major contributor to the continent's capital formation: indeed, the share of FDI flows

in gross fixed capital formation was as high as 29% in 2008. Furthermore, FDI flows to Africa's 33 least developed countries (LDCs) suffered a major decrease in 2009 due to a crisis-induced lull in the global demand for commodities, which is a major driver for FDI in these economies. The cancellation of some cross-border M&A deals combined with the absence of any exceptionally large one-off acquisitions, depressed the value of cross-border M&A operations in Africa during 2009 compared to the previous year.

In South, East and South-East Asia, the upward trend which lasted for six years came to an end, as the region experienced its worst downturn since the Asian crisis of the late 1990s. This downturn reduced FDI flows across the region to US$203 billion in 2009, an estimated decline of 32% over 2008. In particular, falling external demand for Chinese- and Indian-made goods and services has caused foreign companies to cut back on their investment plans in these two large countries. The severity of FDI falls however varied by country, depending on the structure of their economies, the effectiveness of policy responses to the crisis and the strength of the subsequent economic recovery. In addition, as the region leads the rebound in global consumer and business confidence, FDI stopped declining in a number of countries, such as China, in the latter half of 2009.

In West Asia, the worsening regional and global economic outlook, together with frozen global credit markets, has negatively impacted the financing of mega development projects in the oil-rich countries of the region. This, coupled with plummeting cross-border M&A activities and decreased intra-regional FDI flows, resulted in a 43% decline in FDI flows to the region during 2009, to US$51 billion, as compared to the previous year.

In Latin America and the Caribbean, preliminary estimates point to a nearly 41% decrease (to US$86 billion) of inflows in 2009. Both subregions – South America, and Central America and the Caribbean – experienced a sharp decline in FDI flows during the year. A large number of divestments of foreign affiliates to local owners impacted on the overall level of cross-border M&As. FDI to Brazil, which is a significant FDI recipient, declined by 49%; but the country remained the region's top FDI destination with inflows reaching US$23 billion. Flows to Mexico, the region's second- largest recipient, registered a 41% plunge to US$13 billion.

2.3. Transition economies

FDI flows to the transition economies of South-East Europe and the Commonwealth of Independent States (CIS) slumped by 39% during 2009. In South-East Europe, the economic and financial crisis, coupled with the near-exhaustion of major privatization opportunities and the structural weakness of their economies, were major contributing factors. For the CIS, the combination of a significant slowdown in economic growth and a deterioration in demand for, and the price of, major export commodities significantly affected FDI flows into natural-resource-abundant countries.

In summary, the FDI downturn of 2009 manifested itself in all three components of FDI flows. Reinvested earnings, normally a relatively stable component, were squeezed by falling TNC profits at the end of 2008 and the beginning of 2009 – though they showed some signs of recovery in the latter half of the year. Intra-company loans also went through a decline. These falls paled, however, compared to those witnessed in equity investment, largely reflecting the lower propensity of TNCs' ability to invest, especially abroad, against the backdrop of the economic and financial crisis. All types of equity investment were affected by this decline. The most dramatic fall was observed in cross-border M&As, the value of which declined by 66% over the year, reflecting both the shrinking value of assets on the stock market and the lower financial capability of potential buyers to carry out such operations. The number of international greenfield projects also declined markedly (by 23%) due to the cancellation of many operations and the downsizing of international expansion programmes.

3. Quarterly profile

The sharp decline in global FDI flows estimated for 2009 is also apparent in quarterly flows data. After a sharp fall in the first quarter of the year and a slight rebound in the second quarter, flows in the third quarter dipped only slightly – though they were still significantly below the previous year's levels. Initial indicators for the fourth quarter, especially the value of cross-border M&As, do not suggest a solid rebound in the second-half of the year.

3.1. Stagnation in FDI inflows during the third quarter

Global FDI flows in the third quarter remained practically unchanged from the previous quarter. UNCTAD's Global FDI Quarterly Index slightly declined, dropping roughly 2.5 points (from 113.4 to 110.8) between quarters. The index therefore remains at a quite low level, as compared to the values observed prior to the crisis: 36 points lower than in the same period of 2008, and 182 points lower than the all-time record reached in the 4th quarter of 2007.

This sluggishness in flows was aggravated by the fact that among the three major components of FDI flows, equity investment – the one most directly related to TNCs' long-term investments strategies – failed to shift from its already low second quarter level (UNCTAD, 2009). This suggests that companies remained very cautious about their international expansion programmes during the 3rd quarter. In contrast, reinvested earnings showed initial signs of rebounding from their extremely low second quarter levels, reflecting overall economic improvements in the third quarter in major host countries. Other capital flows – mainly highly volatile intra-company loans – decreased slightly.

On a geographical basis, there were marked increases in third quarter flows to Canada, the Netherlands, Norway, the United Kingdom and the United States; whereas flows to Belgium, Hong-Kong (China) and Spain decreased significantly.

3.2. Fourth quarter of 2009

Initial indicators for the fourth quarter underscore that a steady recovery of FDI growth may not yet be underway. In particular, global cross-border M&As during the fourth quarter reverted from the previous upward trajectory, falling markedly from the low, but improved, level of activity observed during the third quarter. The number of large deals remained practically unchanged at a modest level: 10 cross-border M&As with a value of more than $3 billion were undertaken during the fourth quarter of 2009, as compared to 9 during the previous quarter.

International greenfield investments – another indicator of FDI activity – remained much lower than during the same period of 2008, although they showed a slight pick up during the fourth quarter. Based on these initial indications, and also on monthly data on FDI inflows available for some countries, FDI flows during the fourth quarter of 2009 are expected to show little increase as compared to the level in the third quarter and, as a consequence, remain far lower than those for the same period in 2008.

4. Concluding remarks

A number of macroeconomic indicators signal that the overall environment for international investment is slowly improving. For instance, the International Monetary Fund's latest *World Economic Outlook*, released last October, forecasts a 3.1% growth in world gross domestic product for 2010, as against -1.1% in 2009. At the company level, profits of TNCs world-wide have been rising since the second quarter of 2009, thus reversing the sharp drop observed at the end of 2008. According to Standard and Poors, profits made by the firms that make up the S&P 500 bounced back as early as the second quarter of 2009, to levels equivalent to those of the same period of the previous year. Improving conditions will ultimately encourage companies to revise upward their international investment plans for 2010 onward, which in turn should give rise to growing FDI flows in 2010. However, as the recovery in economic growth and profits remains fragile, especially because it has been boosted by the potentially transitory impact of special economic packages implemented by major economies, the recovery in FDI is expected to be modest. Nevertheless, as reported in UNCTAD's *World Investment Report 2009*, overall medium-term prospects remain positive.

Annex Table. FDI inflows and cross-border M&As, by region and major economy, 2008−2009						
(Billions of dollars)						
Region/economy	**FDI inflows**			**Cross-border M&As**		
	2008	**2009 [a]**	**Growth rate (%)**	**2008**	**2009**	**Growth rate (%)**
World	1 697.4	1 040.3	- 38.7	706.5	239.9	- 66.0
Developed economies	962.3	565.6	- 41.2	581.4	195.4	- 66.4
Europe	518.3	373.5	- 27.9	273.3	127.1	- 53.5
European Union	503.5	356.7	- 29.2	251.2	109.6	- 56.4
Austria	13.6	9.8	- 27.8	1.3	1.8	35.4
Belgium	59.7	35.1	- 41.2	2.5	12.1	385.3
Czech Republic	10.7	4.0	- 63.0	5.2	2.7	- 48.4
Denmark	10.9	11.3	3.2	6.1	1.6	- 74.3
Finland	- 4.2	3.0	..	1.2	0.5	- 55.9
France	100.7	65.0	- 35.5	4.6	1.3	- 72.4
Germany	24.9	35.1	40.7	31.9	2.4	- 92.6
Hungary	6.5	- 4.2	- 165.2	1.6	1.9	18.7
Ireland	- 20.0	14.0	..	2.9	1.4	- 50.5
Italy	17.0	29.9	75.5	-2.4	1.1	..
Netherlands	- 3.5	37.8	..	-8.2	22.6	..
Poland	16.5	13.4	- 19.2	1.0	0.5	- 51.6
Romania	13.3	6.1	- 54.4	1.0	0.0	- 97.7
Spain	65.5	25.8	- 60.6	33.7	31.5	- 6.6
Sweden	43.7	15.5	- 64.4	18.8	1.0	- 94.5
United Kingdom	96.9	7.0	- 92.7	147.7	24.9	- 83.2
United States	316.1	135.9	- 57.0	227.4	39.9	- 82.5
Japan	24.4	11.4	- 53.4	9.3	-5.9	- 163.5
Developing economies	620.7	405.5	- 34.7	104.8	37.7	- 64.0
Africa	87.6	55.9	- 36.2	21.2	5.7	- 73.1

Egypt	9.5	8.2	- 13.9	15.9	1.6	- 90.2
Morocco	2.4	1.0	- 56.6	-0.1	0.3	..
South Africa	9.0	6.8	- 24.6	6.7	4.2	- 36.9
Latin America and the Caribbean	144.4	85.5	- 40.7	15.5	-4.4	- 128.5
Argentina	8.9	5.1	- 42.7	-3.3	0.1	..
Brazil	45.1	22.8	- 49.5	7.6	-1.4	- 118.2
Chile	16.8	12.9	- 23.0	3.2	0.8	- 74.5
Colombia	10.6	8.6	- 18.6	-0.1	-1.6	..
Mexico	21.9	13.0	- 40.8	2.3	0.1	- 95.6
Peru	4.8	6.2	28.1	0.3	0.0	- 86.9
Asia and Oceania	388.7	264.1	- 32.1	68.2	36.5	- 46.5
West Asia	90.3	51.3	- 43.1	16.3	2.3	- 85.9
Turkey	18.2	7.9	- 56.3	13.2	1.6	- 87.7
South, East and South-East Asia	297.6	202.8	- 31.8	52.6	34.1	- 35.1
China	92.4 b	90.0 b	- 2.6	5.4	11.2	108.5
Hong Kong, China	63.0	36.0	- 42.8	8.7	2.1	- 75.3
India	41.6	33.6	- 19.0	10.4	6.2	- 40.5
Indonesia	7.9	5.1	- 36.0	2.1	1.3	- 34.9
Malaysia	8.1	2.7	- 66.6	2.8	0.2	- 93.0
Singapore	22.7	18.3	- 19.5	14.2	9.7	- 32.1
Thailand	10.1	4.6	- 54.3	0.1	0.3	142.4
South-East Europe and the CIS	114.4	69.3	- 39.4	20.3	6.8	- 66.6
Russian Federation	70.3	41.4	- 41.1	13.5	5.0	- 62.6
Ukraine	10.7	4.8	- 55.2	5.9	0.2	- 97.0

Source: UNCTAD.

a Preliminary estimates.

b Not including finance.

Note: World FDI inflows are projected on the basis of 153 economies for which data are available for part of 2009 as of 7 January 2010. Data are estimated by annualizing their available data, in most cases the first two and three quarters of 2009. The proportion of inflows to these economies in total inflows to their respective region or sub-region in 2008 is used to extrapolate the 2009 data.

References

UNCTAD. 2009. *Global Investment Trends Monitor* 1, (1), www.unctad.org/en/docs/webdiaeia200910_en.pdf.

———. 2010. UNCTAD Cross-Border Mergers and Acquisitions Database, and information from the Financial Times Ltd., FDI markets for greenfield projects. www.fdimarkets.com.

About UNCTAD:

Established in 1964, the *United Nations Conference on Trade and Development (UNCTAD)* promotes the development-friendly integration of developing countries into the world economy. UNCTAD has progressively evolved into an authoritative knowledge-based institution that aims to help shape current policy debates and thinking on development, with a particular focus on ensuring that domestic policies and international action are mutually supportive in bringing about sustainable development.

Contact Information:

UNCTAD, Palais des Nations 8-14, Av. de la Paix 1211, Geneva 10, Switzerland. Tel: T: +41 22 917 1234 Fax: +41 22 917 0057 Email: info@unctad.org.

COLUMBIA FDI PERSPECTIVES

International Investment Law and Media Disputes: A Complement to WTO Law

Luke Eric Peterson[*]

Abstract: The recent high-stakes dispute between Google and China over censorship and cyber-security has spawned renewed discussion of the international trade law protections that internet and media companies may enjoy. Less recognized, however, is a perhaps more powerful legal tool in the arsenal of internet and media companies engaging in cross-border investments, namely international investment law.

Key words: international investment, media, China, law

1. Introduction

A vast architecture of international treaties has been established to protect flows of foreign direct investment (FDI) from discriminatory or arbitrary treatment, (uncompensated) expropriation, and other forms of mistreatment by host country governments. Legal disputes under these investment protection treaties are on the rise, with foreign investors often taking advantage of dispute settlement mechanisms that permit them to sue a host government for cash damages in case of alleged breach of treaty obligations.

Moreover, a small but growing number of international arbitrations taking place between foreign investors and governments arise out of disputes over the treatment of media enterprises. These cases offer tantalizing hints as to the broad potential impact of investment protection treaties to advance freedom of expression and freedom of the media – as well as some hints as to the limitations of these international investment pacts.

2. Uses of BITs by media organizations

Where media actors are wholly or partially foreign-owned, there may be scope to challenge a wide range of government actions as breaches of investment protection treaties. Such treaties provide specific legal protections for failure by the host state to compensate for direct or indirect expropriations or for breach of international investment law standards such as "fair & equitable treatment," "full protection & security"

[*] The author is a journalist and publisher of a popular legal news service, InvestmentArbitrationReporter.com; he can be contacted at editor@iareporter.com. The author wishes to thank Mark Kantor, José Alvarez, Jurgen Kurtz, and Andrew Newcombe for their helpful comments on this Perspective. He also thanks Toby Mendel, Senior Legal Counsel with Article 19, for earlier feedback on the ideas discussed herein. The views expressed by the individual author of this Perspective do not necessarily reflect the opinions of Columbia University or its partners and supporters. The Columbia FDI Perspectives do not offer legal advice of any kind. Columbia FDI Perspectives is a peer-reviewed series.

or "national treatment." Similar legal protections are also found in a growing number of Free Trade Agreements, including the North American FTA (NAFTA), Central American FTA (CAFTA) and numerous bilateral FTAs (US-Peru, US-Singapore, etc.).

While not directly aimed at the protection of expressive rights, those standards may protect foreigners and foreign-controlled organizations from government actions designed to limit freedom of expression. For example, if a host state shuts down a foreign-controlled media company in reaction to the company's broadcasting of a speech by an opposition leader, a foreign owner might argue that these actions constitute expropriation or breach of other international investment law protections such as "fair & equitable treatment." Similarly, if a state refuses to provide a foreign-owned media operation with protection from a mob reacting violently to news reporting by that company, the foreign owners might argue that the state has breached its obligation to provide "full protection & security" to the investment..

Foreign-owners of newspapers, radio stations, television outlets, and publishing houses have already begun to sue host countries on the international playing field for alleged mistreatment.[1] Although most of these disputes are commercially-oriented and relate to tax, licensing or regulatory matters,[2] others have touched on politically-motivated expropriations of media outlets during military coups or alleged discrimination against publishers who publish political opposition literature.[3]

3. Challenges and opportunities

The growing potential for media enterprises to rely on the protections of international investment treaties is likely to prompt debate as to the limits of such protections, and the discretion afforded to governments to regulate expression so as to uphold public morals, national security or other state interests. In a related vein, we may see further debate as to the relationship and overlap of investor protection law and human rights law.

Already, international arbitrators have consulted human rights law for inspiration and guidance when dealing with certain investment disputes that touch upon questions of due process or denial of justice. It

[1] Newspapers: Victor Pey Casado and President Allende Foundation v. Republic of Chile, ICSID Case No. ARB/98/2; Radio: Joseph C. Lemire v. Ukraine, ICSID Case No. ARB/06/18; Television: CME v. Czech Republic (UNCITRAL rules arbitration), Ronald Lauder v. Czech Republic (UNCITRAL rules arbitration), and European Media Ventures v. Czech Republic (UNCITRAL rules arbitration); Publishing: Tokios Tokeles v. Ukraine, ICSID Case No. ARB/02/18.

[2] Media licensing disputes under investment treaties can bear close resemblance to claims lodged under human rights adjudicative mechanisms. Compare, the investment treaty arbitration, Joseph Charles Lemire v. Ukraine, where Ukraine was held liable for certain breaches in relation to its handling of radio licensing applications, and an ECHR case where similar broadcast licensing actions were framed as breaches of human rights law: Meltex Ltd and Mesrop Movsesyan v. Armenia, Application No. 32283/04, Judgment of June 17, 2008.

[3] See Pey Casado v. Chile and Tokios Tokeles v. Ukraine, Op.Cit.

seems likely that, as arbitrators are asked to grapple with disputes arising out of alleged censorship or crack-downs on the media, they may look at how such matters are handled by human rights courts, and perhaps national courts such as the Supreme Court of the United States, even if the rulings of such bodies are not decisive for international arbitrators. In particular, arbitrators may look for guidance to the approach of human rights adjudicators with respect to permissible limits on freedom of expression, for reasons of national security, public safety or other considerations. While not strictly binding in the context of investment treaty disputes, human rights law may provide useful analogies or insights.

Although there are clear signs that media organizations may enjoy some protection under international investment treaties, these agreements are not a panacea for the range of challenges posed to freedom of expression. Not only are the protections of such treaties limited to foreign investors, the structure of such agreements – including the provision of costly international arbitration – mean that they are of most use in disputes where large sums of money are at stake.[4]

Indeed, in an unfortunate twist, arbitration of disputes between media companies and governments can sometimes play out in confidence – away from the prying eyes of journalists and the public - thanks to the confidentiality that is the default position under certain arbitration rules. Thus, whatever its potential value to media enterprises, it should be noted that the international law protecting foreign investment could have broader impacts upon freedom of expression that need to be closely monitored. Foreign investments outside of the media sector, particularly in extractives or energy sectors, can be controversial and lead to serious conflict, particularly in developing countries. Multinational enterprises sometimes bring pressure to bear upon host countries to crack down on local activists or campaigners. At times, foreign investors may argue that governments are legally obliged to provide “full protection and security” against local critics or campaigners. In such cases, arbitrators will need to ensure that the security-interests of foreign-owned investments are not permitted to undermine basic norms of free dissent and expression.

4. Conclusion

There are growing signs that investment treaty protections – while rarely discussed in media or human rights law circles - may be surprisingly useful in some cases of repression or censorship of foreign-owned media. While there is growing debate as to the uses of World Trade Organization agreements to combat certain forms of state repression of media actors, less attention has been paid to the potential of

[4] While effective as a bulwark against expropriation or arbitrary license cancellations, these international investment agreements may offer less value in situations where media repression is targeted at particular journalists or their reporting methods. See for example the recent battle at the ECHR between the Financial Times and the United Kingdom over the protection of confidential journalist sources which appears to be a battle over a principle, rather than over large sums of damages incurred by the media organization.

international investment law to combat certain forms of state censorship and repression. With the US Department of State now signaling that internet freedom should be advanced through US foreign policy, it remains to be seen whether the US negotiating position on international investment treaties will shift so as to embrace this foreign policy objective. Ongoing investment treaty talks between the US and China could provide the obvious forum for this issue to be raised and debated.

References

Landler, Mark. 2010. Clinton urges global response to internet attacks. *New York Times,* January 20.

Bollinger, L.C. 2010. *Uninhibited, Robust, and Wide-Open: A Free Press for a New Century.* Oxford: Oxford University Press.

Acknowledgement

This article is from the Vale Columbia Center on Sustainable International Investment (VCC), led by Dr. Karl P. Sauvant, which is a joint center of Columbia Law School and The Earth Institute at Columbia University. VCC seeks to be a leader on issues related to foreign direct investment (FDI) in the global economy. It focuses on the analysis and teaching of the implications of FDI for public policy and international investment law.

About the Author: *Luke Eric Peterson* is a journalist who has been covering international arbitration for more than a decade. In addition to his own popular news service, Investment Arbitration Reporter, he has reported on investor-state arbitration for The Financial Times, The Economist, and The American Lawyer. He lives in New York City and is affiliated with NYU Law School's Investment Law Project

Contact Information:

For further information, please contact: Vale Columbia Center on Sustainable International Investment, Lisa Sachs, Assistant Director. Tel: +1 212 854 0691 Email: Lsachs1@law.columbia.edu.

RESEARCH & ANALYSIS

Applying Elinor Ostrom's Rule Classification Framework to the Analysis of Open Source Software Commons

Charles M. Schweik and Meelis Kitsing [*]

Abstract: This research investigates the utility of Ostrom and Crawford's rule classification framework (elaborated in *Understanding Institutional Diversity*) in the systematic study of rule systems in a set of relatively complex open source projects and their overarching non-profit foundation. Using this framework, Rule configurations are described for the overall Open Source Geospatial Foundation and for each of seven associated geospatial projects.

Key words: Ostrom, Crawford, classification, rules, software

1. Introduction

It is an honor for me (lead author Schweik) to be invited to contribute an article to this special issue of Transnational Corporations Review on "Ostroms Studies," celebrating Lin Ostrom's recent Nobel prize in Economics. Like many of the other people who have contributed to this volume, I am a former student of Lin and Vincent's, and one who has studied closely with Lin both in the International Forestry Resources and Institutions research program (IFRI, 2009) initiated at the Workshop in Political Theory and Policy Analysis at Indiana University back in the early 1990s, and in research related to forest change at the Center for the Study of Institutions, Population and Environmental Change (CIPEC, 2009) in the mid-to-late 1990s. Through these efforts, I had the great pleasure of working and being mentored by Lin in the study of environmental commons situations, and in particular, the institutional analysis of natural resource commons.

Prior to this time at Indiana University, I was a computer programmer. In fact, the reason I first began working with Lin was because she hired me as a database developer for the IFRI research program. After I left Indiana University with my PhD in hand, I began to hear the term "open source software." It took me several years to fully make this connection, but around the turn of the century, thanks to my schooling with Lin and Vincent, I realized that open source software was a form of commons; one that is digital and is managed over the Internet. I also concluded then that much of the theory on commons governance from natural resource settings might be informative in understanding how these "new commons" operate. Since

[*] Meelis Kitsing works at the Center for Public Policy and Administration at the University of Massachusetts at Amherst, USA. Charles M. Schweik works at the Department of the Natural Resources Conservation, Center for Public Policy and Administration and National Center for Digital Government at the University of Massachusetts, Amherst. He can be reached at cschweik@pubpol.umass.edu.

then, through support from the United States National Science Foundation, I established a research program to study on open source programming projects – what I call "open source commons." I have been involved in that effort ever since.

2. An open source primer

For readers who may be unfamiliar with the concept, "open source" refers to computer software code – the logic of the computer programs that make the computer do what it does – that is made available, open access and readable. The innovation of open source can be traced back to the mid-1980s to Richard Stallman, a programmer at the Massachusetts Institute of Technology. Stallman, emphasized that the digital nature of software and the low cost for sharing (particularly across the Internet), meant that code should be treated more as a public good than a private one. Moreover, users of software should also be, by default, given the freedoms to use, read and modify this software and to distribute the software as they deem necessary (Stallman, 1999, 2002). This came to be known as "Free\Libre" (FL) software (Ghosh et al., 2002).

However, what really was Stallman's brilliant innovation was his use of copyright law to ensure that the software he was working on, called the GNU operating system, granted its users the freedom to:

- run the software;
- read the software source code and modify it;
- redistribute the original version of the software; and
- redistribute modified versions of the program (Stallman, 1999).

Access to the source code is required in order for all but the first right to be realized. These freedoms, when applied through a software copyright license, often mandate that future versions of the software carry the same attributes. Based on these ideas, Stallman created a software license that included these principles referred to as the General Public License or GPL. There are a number of other licenses that have slightly different terms than the GPL, but are considered "GPL-compatible" (Free Software Foundation, 2009b). There are others that are less compatible to the freedoms described above, and the differences often have to do with added restrictions provided in OS license variants that may limit the freedom of users in what they can do with the software (Perens, 1999). The term open source is used for code that falls under this category. But for our purposes, we will use open source to describe all types of software – free/libre or non-GPL compatible open source software.

The freedoms to copy, modify, and distribute readable software source code found in open source provides two potential advantages over the traditional proprietary, full-copyright approach to software

development. First, all open source software packages are provided at no monetized cost to the end-user. This creates a powerful incentive for them to be used, particularly in settings where software budgets are small (Hahn, 2002). Second, by providing readable source and permitting new derivations to be created based on this source code, the projects could, in theory, generate a large community of users and developers (Raymond, 2001).

But perhaps most importantly for readers of the Journal of Transnational Corporations Review, the innovation of open source licensing, in conjunction with the growth of Internet-based collaborative tools or platforms (such as Sourceforge.net, an open source software hosting website that currently hosts over 250,000 open source projects) creates new opportunities for transnational collaboration. From this perspective, open source projects are a form of Internet-based commons (Benkler, 2006), but one that differs from the environmental commons that readers here may be familiar with (e.g., Hardin, 1968; Ostrom, 1990). In open source commons, groups of people act collectively to produce a public good, i.e., the software, rather than over-appropriate the resource (e.g., Hardin, 1968).

The key question we have been asking in our research on open source is how do these Internet-based and often transnational collaborations in software operate? What kinds of governance structures and systems of rules are in place and how do they evolve?

The work presented here is a subset of a larger research program that is cumulating in the production of a book, entitled *The Success and Abandonment of Open Source Commons* that we expect to publish sometime in 2011. In this paper, we provide results from one case study of a nonprofit foundation and seven open source projects all in the area of geospatial technologies. Here we investigate the utility of Elinor Ostrom and Susan Crawford's rule classification framework (see Chapter 7 in Ostrom, 2005) to describe the rule systems that are found in this particular network of Internet-based commons.

3. Ostrom's (and Crawford's) rule classification framework

We are making the assumption that many readers of this special issue will already be familiar with the Institutional Analysis and Development framework that has provided a theoretically-based scaffolding that has helped structure many projects undertaken by Lin and her colleagues (Ostrom, 2005:6; Ostrom, Gardner and Walker, 1994). Because of space limitations, we will just summarize briefly IAD here and describe how they apply in open source circumstances (see Schweik, 2005 for more information on IAD applied in an open source context).

In IAD, the "Operational level" is a general name for rules that influence the everyday decisions and actions of project participants. In an open source setting, in part from what we've learned through our

ongoing study, these tend to be norms or more formal rules that specify how the further development and support of the software may proceed.

The second institutional level in IAD is referred to as "Collective Choice." This level can be thought of as two general types of rules that "oversee" operational-level rules and structures (Ostrom, Gardner and Walker, 1994). The first type specifies who is eligible to undertake certain operational-level activities. For example, in open source commons, most projects will likely have a norm or rule specifying who has the authority to promote new or revised software code changes to the "next release" library (Fogel and Bar, 2003). In some projects, there may only be one or two people on the team and as a consequence, one or both have this authority. In larger team settings, this authority could be centralized or distributed, depending on the project. The second type of Collective-Choice rules specify who can change operational-level rules and the procedure to make such changes. For example, if a project grows in terms of developer team size, there may be a need to change the Operational-level rule describing how code gets checked in or "committed." Collective-Choice rules would determine how an existing operational procedure would be changed.

The "highest" level in these nested institutions is referred to as "Constitutional-level" rules. One constitutional provision in open source projects is the particular copyright license used (described earlier). But Constitutional-level rules also specify who is allowed to change Collective-Choice rules and the procedures for making such changes. This situation might arise in an open source setting when the recognized leader of a project decides to move on to a new opportunity. Constitutional-level rules could specify who takes over this person's position.

One of the advances Ostrom and her colleague Sue Crawford made in *Understanding Institutional Diversity* (Ostrom, 2005, Chapter 7) was adding further detail or structure to help analysts classify or organize rules found in commons settings at any or all of these levels. In this work, Ostrom and Crawford present seven rule categories: Position, Boundary, Choice, Aggregation, Information, Payoff and Scope. Table 1, Columns 1 and 2 summarize the definitions of each, respectively. In the two sections that follow, we briefly summarize our empirical work investigating how these types of rules fit in the context of an open source "federation" of projects.

Table 1. Ostrom's (2005) seven general rule categories in the OSGeo Foundation's institutional design

Ostrom's Rule Category	**Ostrom's Defintion**	**Examples in OSGeo's Institutional Design**
	Define the positions that participants hold	Board of Directors (BOD); President and CEO; Vice President; Committee

Position **Rules**		Chair; Corporate Officer; Member; Participant
Boundary Rules	Define: (1) who is eligible to take a position (succession rules); (2) the process that determines which participants may enter (entry rules), such as by invitation, through some sort of competition, or compulsory; (3) how an individual can leave a position (exit rules). There may be also rules regarding the relationship between multiple positions, such as a mandate that no one person can hold multiple positions at the same time.	BOD election BOD member leaving Committee Chair Charter v. Other Members
Choice Rules	Specify what participants in positions must, must not or may do in their position and in particular circumstances. Choice rules focus on *actions*.	Bylaws for BOD; Bylaws for Officers Committee rules/policies Incubation process
Aggregation Rules	Determine whether a decision by a single or multiple participants is needed prior to an action at a decision point in a process. Aggregation rules are needed whenever choice rules provide multiple positions partial control over the same sort of actions. Aggregation rules can be symmetric (e.g., unanimity) or nonsymmetric (where a leader can make a decision for a group) and each also must include a non-agreement rule.	Symmetric: Consensus in Committees Nonsymmetric: BOD creates committees
InformationRul	Specify the channels used to communicate information among participants, as well as what kinds of information can be transmitted by what positions. There may also be rules specifying required frequency of interaction, or specifying an official language.	Required Meeting Minutes Required Meeting Notification Annual Meetings Required Financial Statements Required
Payoff Rules	Assign external rewards or sanctions for particular actions or outcomes. For example,	Executive Director and others can be

	some payment for completion of a task.	paid; BOD cannot be paid
Scope Rules	Specify which outcomes may, must, or must not be affected within a situation. Scope rules focus on *outcomes* (compared to choice rules which focus on *actions*).	Organizational Mission Committee Mission

4. The open source geospatial foundation, its associated projects and research methods

There are many types of open source technologies. In some instances, developers from these projects have created nonprofit foundations to, in part, "enable collaboration between a community of individuals and corporate actors" (O'Mahony, 2005:393). Here, we focus our attention on one such nonprofit called the Open Source Geospatial Foundation, which supports open source projects specifically working on geospatial technologies, such as desktop or web-based Geographic Information Systems software. According to the Foundation's website (OSGeo, 2009a), the Open Source Geospatial Foundation is a non-profit organization who supports and promotes the collaborative development of open source geospatial software technologies. The foundation provides financial, legal and organizational support to projects that are formally associated with the organization. It also provides outreach and advocacy services for these software projects.

As of December, 2009, OSGeo lists 21 affiliated projects, some of which are fully "accepted" projects while others are in "incubation," meaning they are working to become fully OSGeo sanctioned projects. In the summer of 2008 we conducted semi-structured elite interviews with representatives from seven of their associated software projects (except in one project which was discontinued or abandoned where we were able to conduct only one interview), and also interviewed the OSGeo Foundation's executive director. Usually, for each specific software project, we interviewed the formal or informal project leader and one other "core developer." We chose this approach because our interview questions were complex and required a good knowledge of institutional history of each project. We used Skype or the telephone to conduct interviews. Interviewees are located in the United States (Alaska, Arizona and Massachusetts), Canada (British Columbia and Ontario), Europe (Poland, Switzerland, Italy, Germany and France) and Australia. In the analysis that follows, we will keep the project names anonymous and we have identified them as A, B, C, D, E, F and G.

5. Using the Ostrom/Crawford Rule classification to articulate OSGeo's system of rules

In the OSGeo context, there are two "scales" of analysis required: rule systems at the Foundation scale, and rule systems at the individual project scale.

5.1. OSGeo Foundation rules

The OSGeo foundation and its projects have a diverse institutional framework consisting of all the rule categories we highlighted above. As the space is limited, we will offer a brief summary of our key findings.

OSGeo is a nonprofit corporation registered in Delaware. The foundation has detailed Constitutional and Collective-Choice level bylaws. Position rules give ultimate power to the "Charter Members," who elect the Board of Directors (BOD) and vote to admit other Charter Members. In addition to this category, OSGeo acknowledges "Members" and "Participants." "Members" are people who can participate in the activities of Foundation (e.g., write code, participate in the committees et al.). "Participants" can do all of the same things as Members, but they have not formally self-registered on the foundation's website (OSGeo, 2009b). According to the choice rules both Members and Participants can participate in projects and committees, but cannot vote for the BOD or being involved in appointing new Charter Members.

The OSGeo constitution outlines choice rules, which grant exclusive right to form committees and nominate their chairs as well as take actions not specified in the bylaws to the BOD. According to a position rule, committee chair must either hold a seat on the BOD or be an officer of the OSGeO. Currently, the foundation has eight committees such as Website, Marketing, Conference and Education among others. Operational-level choice rules stipulate how aspiring open source software projects can become officially affiliated with the OSGeo. These rules highlight concrete steps to be taken in the "incubation" process. Another specific position rule states that official OSGeo projects have a representative on the Incubation Committee, which oversees incubation of phase of aspiring projects. Each incubation project has assigned a mentor who is a member of the Incubation Committee. Hence, software developers familiar with the process or with a prior incubation experience direct each aspiring project in the incubation phase.

Official affiliation with the OSGeo requires each project in the incubation phase to set up a Project Steering Committee (PSC) or Project Management Committee (PMC) that is a legal committee of OSGeo. According to a constitutional boundary rule, the PSC/PMC chairperson must be either a member of the OSGeo BOD or an OSGeo corporate officer. The criteria of being corporate officer is met as well when the BOD appoints the project chair as a designated Vice President of OSGeo (see OSGeo, 2009c). The process seems to put each project under the control of the OSGeo BOD. But in reality the projects maintain most of their freedom and autonomy. For instance, OSGeo projects are encouraged to use

OSGeo provided hosting services (web sites, version control, mailing lists, etc.), but this is not mandated but rather offered as simply a choice.

In sum, OSGeo has created position rules at different IAD levels such as Constitutional, Collective-Choice and Operational to define the positions participants hold (board members, committee chairs, corporate officers and incubation project mentors). Boundary rules set forth processes for entrance into these positions and succession. Choice rules, which clarify of what is expected of what position holders must, may or must not do are found in organizational bylaws and committee rules and policies. There are aggregation rules directing committees and the BOD in decision-making process. In addition, information flow and payoff rules as well as general mission statements for the organization and committees qualify, to some degree, as one form of scope rule.

5.2. Individual OSGeo project rules

Let us now turn to the rules that exist within the seven individual software OSGeo projects that we interviewed. Given our space limitations, we will not detail all identified rules and at specific Operational, Collective-choice or Constitutional levels in IAD. Our intentions here are only to show that these various rules exist and that are can be mapped on the basis of Ostrom's rule categories. Table 2 provides this summary, with each of the seven projects, compared and contrasted, side by side.

Table 2. Ostrom's (2005) rule categories applied to OSGeo project cases

Ostrom's rule category/ project	Project A	Project B	Project C	Project D	Project E	Project F	Project G
Position rules	Project Leader Project Steering Committee Member, Core Developer (informal - often overlaps with the Committee Member) Developer	Project Leader Project Steering Committee Member, Core Developer (informal - often overlaps with the Committee Member) Developer	No formal Project Leader, informal lead team of 3 people, Project Steering Committee Member, Committers.	Project Leader Project Steering Committee Member Core Developer (informal - often overlaps with the Committee Member) Developer	Project Leader Project Steering Committee Member, Core Developer (informal - often overlaps with the Committee Member) Developer	Project Leader Project Steering Committee Member Core Developer (informal - often overlaps with the Committee Member) Developer	No formal Project Leader, informal lead team of 4 people, Project Management Committee Member Core Developer (informal - often overlaps with the Committee Member)

Table 2. Ostrom's (2005) rule categories applied to OSGeo project cases							
Ostrom's rule category/ project	**Project A**	**Project B**	**Project C**	**Project D**	**Project E**	**Project F**	**Project G**
							Developer
Boundary rules	Formal rules. Community members elect to PSC. No term limits	Formal rules.	Formal rules copied from another project.	Formal rules copied from another project. almost never consulted.	Formal rules.	Formal rules exist but primarily depend on social norms.	Formal rules, but not necessarily followed.
Choice rules	Some formalized. Program Steering Committee makes some major rules, Primarily social norms, open exchange in the list, mutual expectations	Some formalized available in the wiki. Primarily social norms.	Some formalized available in the wiki. Primarily social norms.	Social norms	Social norms	Social norms	Formalized rules written down. Program Management acts if necessary. Social norms important
Aggregation rules	Informal-Symmetric: Consensus in Program Steering Committee and discussion in the including developers who are not in the PSC Formal Voting: Incurs rarely – even though formal rules stipulate Only PSC members can	Steering Committee – almost all developers are on the committee. Voting. If veto vote is used, discussion follows.	Informal-Symmetric: Consensus in Program Steering Committee Formal Voting: Incurs rarely – even though formal rules stipulate Only PSC members can vote.	Steering Committee makes decision by consensus or voting. All developers can vote as well but their vote does not count.	Informal-Symmetric: Consensus in Program Steering Committee Formal Voting: Incurs rarely – even though formal rules stipulate Only PSC members can vote.	Informal-Symmetric: Consensus in Program Steering Committee and discussion but often back channels used before the decision is reached. Voting as a last resort.	Program Management Committee votes

Table 2. Ostrom's (2005) rule categories applied to OSGeo project cases							
Ostrom's rule category/ project	**Project A**	**Project B**	**Project C**	**Project D**	**Project E**	**Project F**	**Project G**
	vote.						
Information rules	Social norm – open exchange of information. Unwritten rule that email list is the main communication tool	Limited formal rules. Most decisions are made in IRC and mailing list is used as well.	Social norms, Talking over email and weekly IRC meeting.	Social norms, project leaders available on IRC almost all the time	Social norms	Social Norms, all communication is based on writing	Social norms Weekly IRC meetings. Otherwise no clear rules.
Payoff rules	No rules	No rules	No rules	No rules	No rules	No rules	No rules
Scope rules	Design rules	Design rules	Design rules	Design rules	Design rules	Design rules	Design rules

Beginning with Position Rules (positions people hold), then there is little variation; all projects have a Project Steering Committee or Project Management Committee (these labels imply the same thing) and an informal group of core developers that often overlaps with the formal management committee. However, there are no formal leaders in two projects (C and G). Project (C) was abandoned in the summer of 2008.

All seven projects have formal Boundary Rules, which stipulate who are eligible and how people enter or leave positions. However, often projects rely on social norms in their governance instead of these formal rules. Similarly, the mapping of Choice Rules, which describe actions people can take in various positions, indicate that project participants follow primarily social norms. Our study of Aggregation Rules concerning how key decisions are made show that all projects have steering or management committees. Formally, these committees use voting as its decision-making method and only committee member votes count. However, most decisions are made through consensus and issues are settled through Internet-based discussion. Most interestingly, in one case, all developers actually vote but only the votes of designated committee members count. Thus, key decisions about project direction are primarily managed via social norms rather than more formal voting structures. According to one project leader, large number of formal rules can de-motivate programmers to take part in the project. In other words, managing the project on the basis of formal rules can make it difficult to keep the current developers and attain new developers, reflecting the idea of "formal rules as friction" (Schweik and English, 2007).

Following the same insight, Information Rules concerning what and how information is communicated and by whom and how often are based on social norms instead of strict formal rules stating which channels will be used. Projects use both email and Internet Relay Chat (IRC). Some projects have weekly IRC meetings. The real difference in project governance is not made by having a norm concerning the communication but rather by the amount of effort contributed to the effective use of communication channels and making vital information available. For example, projects C and D offer principally the same functionality and could be considered competitors. However, project D exploited more effective use of IRC by making one of the core developers available on almost all the time. One key developer is noted for quickly answering questions posed by other developers.

Payoff Rules (external rewards or sanctions) function in an indirect manner and are relatively complex. Most importantly, there is no connection between rewards and project management, i.e. the project leaders cannot decide who gets paid and does not reward completion of particular work. Thus, there are no direct payoff rules. All that project participants can expect to receive stems from social norms and is of non-material nature. For example, successful completion of the task may lead to the reputational gains for a developer. The reward can take a form of a nice email praising one's work (a reputational or signaling related-reward). According to our interviews when a developer's actions have caused problems, an inflow of angry emails serve as a penalty (a negative signal) and should create incentives for them to be more careful in the future. This is well understood in the open source literature and confirms this behavior in the OSGeo context.

All of this does not mean that monetary rewards do not exist and do not matter. Non-material gains such as good reputation may lead to opportunities to get involved in new projects and salaried job or higher salary in the long run. Our interviews show that in five out of seven projects almost all core group members received compensation for their contributions. In these projects, primarily firms but also public sector agencies and/or NGOs reward programmers directly for their work on projects. Only Projects A and E are primarily based on volunteer contributions but in this case some volunteer contributors we interviewed revealed also a very concrete motivation: they used the program in their daily work, and hence, benefited directly from the improvement of software. In the five cases involving direct monetary rewards, developers may have a detailed contract with an employer, which asks them to dedicate a particular percentage of their time to the project. For example, Project D's leader is required to dedicate 20 percent of his time to that project. It was pointed out many times in our interviews that monetary rewards are not the sole motivator and that the compensation is not directly linked to performance; no respondents knew of any penalties or rewards for particular outcomes that developers might receive. The constrained role of monetary compensation is understood further by the fact that many of these cases started as volunteer projects and the success brought the opportunities for the paid work. Our interviews

also demonstrated that volunteers who join the existing projects and demonstrate their abilities well often end up as paid contributors.

Scope Rules found in Table 1 are ones that specify which outcomes may, must, or must not be affected within a situation. Scope rules focus on outcomes in comparison to choice rules which focus on actions. Our interviewees pointed out that outcomes depend on the technical design of the project. There were no formal rules related to technical design outcomes. Scope Rules are articulated primarily through informal norms related to software functionality outcomes and are written in standard communication channels.

In short, Table 2 provides a summary of the formal rules and informal norms across all these seven cases. Although all these cases are part of OSGeo foundation framework, variation does exist within most rule categories. As far as Position Rules are concerned the existence or lack thereof of a designated leader appears to make a difference. The two projects without a designated lead face more challenges (one is now abandoned) compared to the others all with established leadership positions. In some instances existing formal Boundary Rules are not consulted or they are overridden by informal rules. There is variance between formal rules and social norms across projects in the Choice, Aggregation and Information rule categories. There were no projects with established Payoff Rules. Scope rules exist and exhibit little variability.

6. Conclusion

Our goal in this short paper was to demonstrate the utility of Ostrom and Crawford's rule classification system for analyzing the institutional designs of open source projects. This analysis provides convincing evidence that this classification system can be used in these contexts. As the world continues to move toward Internet-based commons to support transnational collective action and collaboration, a standardized classification system to aid in systematically articulating and analyzing institutional designs will become increasingly important. Ostrom and Crawford's system provide a useful, and we think important, step forward. The challenge is how one can successfully interview and investigate more specifics about established rule systems in a thorough yet efficient method. Readers interested in more information about this particular case and other related research we have done related to this project are encouraged to look for our upcoming book entitled *Success and Abandonment in Open Source Commons* that we hope will be published sometime in 2011.

References

Bar, M., and K. Fogel. 2003. *Open Source Development with CVS.* Paraglyph Press.

Benkler, Yochai. 2006. *The wealth of networks: How social production transforms markets and freedom.* Yale University Press.

Center for the Study of Institutions, Population and Environmental Change. [cited December 9 2009]. http://www.cipec.org/.

Garrett, H. 1968. The tragedy of the commons. *Science* 162, (1968): 1243-8.

Ghosh, R. A., R. Glott, B. Krieger, and B. Robles. 2002. Floss Final Report–Part 4: Survey of developers. *University of Maastricht, the Netherlands www.Infonomics.nl/FLOSS/report.*

Hahn, R. W. 2002. *Government policy toward open source software.* Washington, D.C.: Brookings Institution Press.

International Forestry Resources and Institutions Program. [cited December 9 2009]. http://www.sitemaker.umich.edu/ifri/home.

O'Mahony, S. 2005. Non-profit foundations and their role, in community-firm software collaboration. In *Perspectives on free and open source software,* eds. Joseph Feller, Brian Fitzgerald, Scott A. Hissam and Karim R. Lakhani. Cambridge, Mass.: MIT Press.

Open Source Geospatial Foundation. About the Open Source Geospatial Foundation. [cited March 10 2009]. http://www.osgeo.org/content/foundation/about.html.

———. Membership Rules. [cited October 8 2009]. http://www.osgeo.org/Membership.

———. Open Source Geospatial Foundation Officers and Board of Directors. [cited August 7 2009]. http://www.osgeo.org/content/foundation/board_and_officers.html.

Ostrom, E. 2005. *Understanding institutional diversity.* Princeton University Press.

———. 1991. *Governing the commons: The evolution of institutions for collective action.* Cambridge University Press.

Ostrom, E., R. Gardner, and J. Walker. 1994. *Rules, games, and common-pool resources.* University of Michigan Press.

Perens, B. 1999. The Open Source Definition. In *Open Sources: Voices from the Open Source Revolution,* ed. Chris DiBona, Sam Ockman, and Mark Stone, 53-70. Sebastopol, CA: O'Reilly & Associates, Inc.

Raymond, E. S. 2001. *The Cathedral and the Bazaar: Musings on Linux and open source by an accidental revolutionary.* O'Reilly & Associates, Inc. Sebastopol, CA, USA.

Schweik, C., and R. English. 2007. Conceptualizing the institutional designs of free/libre and open source software projects. *First Monday* 12, (2).

Schweik, C. M. An institutional analysis approach to studying libre software 'Commons'. *Upgrade: The European Journal for the Informatics Professional* Vol. VI, no. 3 (June), www.upgrade-cepis.org/issues/2005/3/up6-3Schweik.pdf.

Stallman, R. 1999. The GNU operating system and the free software movement. In *Open Sources: Voices from the Open Source Revolution*, ed. Chris DiBona, Sam Ockman, and Mark Stone, 53-70. Sebastopol, CA: O'Reilly & Associates, Inc.

Stallman, R. M. 2002. *Free software, free society: Selected essays of Richard M. Stallman*. Boston, MA: Free Software Foundation.

About the Author: Charles M. Schweik (Charlie) is an Associate Professor with a joint appointment to

the Department of Natural Resources Conservation (www.umass.edu/nrc) and the Center for Public Policy and Administration (www.masspolicy.org) at the University of Massachusetts, Amherst. He is also the Associate Director of the National Center for Digital Government (www.ncdg.org), and an affiliated researcher with the Science, Technology, and Society Initiative at the University of Massachusetts, Amherst. His research focuses on environmental management and policy, public sector information technology, and the intersection of those domains.

Contact Information

Department of Natural Resources Conservation, University of Massachusetts
Room 217, 160 Holdsworth Way, Amherst, MA 01003-9285 Tel: +1 413 545 1824 Fax: +1 413 545 4358
Email: cschweik@pubpol.umass.edu.

Transnational Corporations Review Vol. 2, No. 1, 2010
www.tnc-online.net 27-36

Elinor Ostrom, Institutional Analysis and Design, and Dispute Systems Design

Lisa Blomgren Bingham[*]

Abstract: Elinor Ostrom's work on Institutional Analysis and Design (IAD) provides a rigorous framework for examining dispute system design (DSD). It has broad potential application in this emerging field of law. This essay briefly examines the IAD framework and illustrates its application to DSD.

Key words: Elinor Ostrom, institutional analysis, dispute system design

1. Introduction

A conflict, issue, dispute, or case submitted to any institution for managing conflict, including one labeled alternative or appropriate dispute resolution (ADR), exists in the context of a system of rules, processes, steps, and forums. In the field of ADR, this is called dispute system design (DSD). In its initial usage, DSD was applied to systems for managing ripe conflicts; such as grievances that ordinarily would be submitted to the quasi-judicial forum of labor arbitration. However, the concept has grown in scope. For example, the civil and criminal justice systems represent DSDs created by a government within a constitutional framework. In the context of a single national government, DSD in ADR exists in the shadow of these traditional justice systems. DSD encompasses the creation of systems for processing many similar claims in court, as in mass torts. It also encompasses the creation of systems within administrative agencies for handling both their own internal conflict and for carrying out their public mission to create, implement, and enforce public policy.

DSD is a lens through which to examine not only domestic justice systems, but also emerging global ones. In the absence of an authoritative global sovereign, all dispute resolution for conflict that crosses national borders depends upon consent; either of nation states through treaties or disputants through contracts. Treaties incorporate conciliation, mediation, or arbitration for disputes, sometimes through new international courts. Moreover, entities such as the European Union (EU) are fostering the creation of

[*] Keller-Runden Professor of Public Service, Indiana University, School of Public and Environmental Affairs, Bloomington, Indiana. This discussion is abridged from a more complete analysis previously published as Bingham, Lisa Blomgren. (2008-9). Designing Justice: Legal Institutions and Other Systems for Managing Conflict. *Ohio State Journal on Dispute Resolution*, 24(I): 1-50.

private dispute resolution infrastructure for perceived competitive advantage. The World Bank and USAID are pressing for private dispute resolution systems as an element of basic legal infrastructure for the rule of law.

2. Institutional design

Elinor Ostrom builds on earlier work[1] to explore and explain the wide diversity of institutions that humans use to govern their behavior.[2] Examples of this diversity include "regularized social interactions in markets, hierarchies, families, sports, legislatures, elections"[3] and others. DSDs create institutions for resolving conflict. These resulting conflict resolution institutions too are amenable to institutional analysis.

Institutions arise, operate, evolve, and change. Ostrom attempts to identify an underlying set of universal building blocks and to lay out a method for researching institutions and how they function. She argues that these universal building blocks are arranged in layers that one can analyze using the Institutional Analysis and Development framework.[4] Most often, this framework will help researchers focus on the simplest unit of analysis— the action situation.[5] Researchers analyze the situation, decide what assumptions to make about participants, predict outcomes, and test the predictions empirically.[6]

However, if the data does not support the predictions, it may be necessary to examine the deeper layers within which the action situation is embedded. For example, structures are nested; families, firms, communities, industries, states, nations, transnational alliances, and others are all structures that can be

[1] See generally, Elinor Ostrom, Governing the Commons: The Evolution of Institutions for Collective Action (Cambridge University Press 1990).

[2] See generally, Elinor Ostrom, Understanding Institutional Diversity (Princeton University Press 2005) . The study of institutional design is the subject of literature in political science, economics, sociology, public affairs, and policy analysis.

[3] Id. at 5.

[4] Ostrom, supra note 18. at 6. Ostrom defines a framework as the level of analysis necessary to identify the elements and relationships among those elements necessary to engage in institutional analysis, and which provides the most general set of variables that therefore should apply to all settings and institutions. Id. at 28. Within the framework is nested the concept of theory in social science. She lists a wide variety of theories that have framed research and policy analysis on institutions: microeconomic, game, transaction cost, social choice, public choice, constitutional and covenant theories, as well as theories of public goods and common pool resources. Id. Various of these theories have emerged in legal scholarship about disputing and dispute systems.

[5] Ostrom focuses on two holons in the action arena, which is defined as at unit of analysis in which participants (first holon) and the action situation (second holon) interact in ways affected by other outside variables and produce outcomes. Ostrom, supra note 18 at 13.

[6] Id. at 7.

viewed in isolation or as part of a larger whole.[7] Thus, Ostom borrows from complex adaptive systems literature the concept of the holons — "nested subassemblies of part-whole units."[8] To apply this concept to DSD, one might consider a court-connected mediation program as a holon nested within the structure of the court, which is nested in the judicial branch, which in turn is nested within the structure of the state or federal government.

To analyze an action situation, Ostrom uses seven categories of information:

(1) the set of participants [single individuals or corporate actors], (2) the positions to be filled by participants, (3) the potential outcomes, (4) the set of allowable actions and the function that maps actions into realized outcomes [action-outcome linkages], (5) the control that an individual has in regards to this function, (6) the information available to participants about actions and outcomes and their linkages, and (7) costs and benefits – which serve as incentives and deterrents – assigned to actions and outcomes.[9]

These are the common structural components that represent the building blocks for all institutions at their most general level. One can readily see how we might use these categories of information to understand DSD. For example, a mediation design affords more control over the outcome of the function of dispute resolution than an arbitration design. On the other hand, limited discovery in a DSD might afford participants significantly less information about actions and outcomes and their linkages.

Once a researcher understands the initial action arena, she will often "zoom out"[10] to understand the outside variables that are affecting it; this is a two-stage process. First, the action arena now becomes a dependent variable subject to factors in three categories of variables: "(1) the rules used by participants to order their relationships, (2) the attributes of the biophysical world that are acted upon in these arenas, and (3) the structure of the more general community within which any particular arena is placed."[11] In the

[7] Id. at 11.

[8] Id.

[9] Id. at 32, and see generally Chapter 2, at 32-68. Ostrom explains how to operationalize these concepts using game theory to structure experiments in a laboratory in Chapter 3, at 69-98.

[10] Id. at 15.

[11] Ostrom, supra note 18, at 15. (emphasis in original). Ostrom explains how different disciplines within social science might cause a researcher to focus on one or another cluster of these variables:

> Anthropologists and sociologists tend to be more interested in how shared or divisive value systems in a community affect the ways humans organize their relationships with one another. Environmentalists tend to focus on various ways that physical and biological systems interact and create opportunities or constraints on the situations human beings face. Political scientists tend to focus on how specific combinations of rules affect incentives. Rules, the biophysical and material world, and the nature of the community all jointly affect the types of actions that individuals can take, the benefits and costs of these actions and potential outcomes, and the likely outcomes achieved.
>
> Id. at 16. Lawyers also focus on the rules, but for the strategic purpose of advancing the interests of their clients and as agents of participants in the action arena of the arbitration, administrative agency, court, or other forum.

second stage of the analysis, the researcher will examine linkages between one action arena and others; either in sequence or at the same time.12 For example, in DSD, parties in mediation negotiate in the shadow of the civil justice system. The trial is an action arena that follows in sequence upon a failed civil or commercial mediation.

As lawyers, we tend to focus more on the rules than on the other two categories of variables.[13] Ostrom's discussion of rules is central to understanding DSD. She defines rules for the purpose of Institutional Analysis and Development as "shared understandings by participants about enforced prescriptions concerning what actions (or outcomes) are required, prohibited, or permitted."[14] She describes how rules can emerge through processes of democratic governance, or through groups of people who organize privately, such as corporations or membership associations, or within a family or work team.[15] Rules can evolve as working rules that are a function of what individuals decide to do in practice. In other words, her concept of rules would encompass rules in DSD structures that governments create, those that parties mutually negotiate, and those that one corporate player imposes on a weaker party in an economic transaction.

Moreover, institutional analysis is aimed at all institutions — both those within an open, democratic society governed by the rule of law and also those in other systems where rules and attempts to enforce them exist, but people generally try to get away with noncompliance.[16] Rules are also formulated in language, an imperfect and sometimes ambiguous tool, and hence they depend upon a generally shared understanding of meaning by humans who interpret and apply them in action situations. Thus, rules may or may not be predictable and may or may not produce stability in human action. Compliance with rules is a function of monitoring and enforcement.[17]

Ostrom observes that it is also a function of a shared sense that the rules are "appropriate."[18] One might argue that this word is an indirect way to say that people view the rules as just on some measure or definition of justice.

---

[12] Id. at 15.

[13] Ostrom also reports that her book focuses primarily on rules, which are of central interest to political science and policy analysts, of which she counts herself one. Id. at 29.

[14] Id. at 18 (citations omitted). This is a "rule" in the sense of a regulation adopted by an authority. She describes three other possible definitions of rules from the literature of social science; specifically rules as instructions for successful strategies, or rules as precepts such as the Golden Rule, or rules as principles that can be true or false, such as the laws of physics.

[15] Ostrom supra at 18, at 19.

[16] Id. at 20. She describes this as rules-in-form being consistent, or inconsistent, with rules-in-practice.

[17] Id. at 21.

[18] Id.

The second cluster of exogenous variables concerns the biophysical and material world.[19] These encompass not only what is actually physically possible, but also notions of goods and services, costs and benefits. Goods and services, particularly in the economics literature, are categorized by whether they are excludable (how hard it is to keep others from having or using them) or subtractable (whether if you use them there are fewer or less for everyone else).[20] Low excludability creates the free rider problem. High subtractability requires effective rules.

These categories can be viewed as contexts within which people experience conflict or as things over which people have disputes. They are thus useful for analyzing the nature of cases that go through a DSD and the outcomes that are possible. For example, environmental conflict resolution often addresses disputes over common pool natural resources.[21] Commercial contracts usually entail disputes over private goods. DSDs, in an effort to foster transitional justice, have as their goal the creation of public goods such as safety, security, and stability. The nature of the cases or conflict subject to the design helps inform our assessment of its structure's effectiveness and also helps define the universe of outcomes from the design. It may also foreshadow expectations about what kind of justice the DSD should produce.

The third cluster of variables involves community.[22] Of particular relevance are generally accepted values of behavior (sometimes called culture), the level of shared or common understanding about the structure of the action arena, the homogeneity of their preferences, the size of the community, and the level of income or asset inequality.[23] These variables help us understand and identify some of the differences between indigenous peoples' institutions for addressing conflict and those of traditional western institutions. They can inform analysis of how a DSD entailing mediation in Korea or Japan might differ from that in a community mediation center in the U.S.

Institutional analysis provides a structure that we need to apply systematically and rigorously to DSD. As Ostrom observes, "[w]ithout the capacity to undertake systematic, comparative institutional assessments, recommendations of reform may be based on naive ideas about which kinds of institutions are 'good' or 'bad' and not on an analysis of performance."[24] Institutional analysis can bring to the field of dispute

[19] Id. at 15.

[20] Id. at 23. These two dimensions yield four categories of goods: toll or club, private, and public goods, and common pool resources. Toll or club goods are low in both excludability and subtractability (the Mass Turnpike); private goods are high in subtractability but easy to exclude people from or low in excludability (buying things at Wal-Mart); public goods are not subtractable and hard to exclude people from (peace); and common pool resources are high in substractibility and hard to exclude people from (fish in the sea). Id. at 24.

[21] Ostrom supra note 18, at 255-280.

[22] Ostrom, supra note 18, at 15.

[23] Id. at 26-27.

[24] Ostrom, supra note 18, at 29.

resolution a higher level of conversation, beyond a debate over evaluative, facilitative, or transformative mediation, beyond a debate over whether mandatory arbitration is right or wrong, but toward an understanding of process in context.

3. Dispute system design

As a field, DSD is correctly understood as a form of institutional design. Perhaps it is best understood as applied institutional design, or institutional design in practice. This section will sketch the evolution of DSD as a field and present an evolving catalogue of structural variables that researchers have used to compare designs in the field of ADR. Each section gives examples of how we might use institutional analysis to deepen our understanding of DSD.

3.1. DSD in organizations

Although DSD applies to a wide variety of systems, as a field it emerged in the context of organizational conflict and workplace disputes. Historically, organizations reacted to conflict — they did not systematically plan how to manage it. They used existing administrative or judicial forums to address it. Organizations became dissatisfied with traditional time-consuming and costly processes that often did not produce satisfactory outcomes.[25] Workplace conflict often resulted in inefficiency; a quality conflict management system was essential. Lipsky, Seeber and Fincher suggest that the rise of ADR in the workplace reflects a changing social contract between employers and employees.[26] In the first part of the twentieth century, employers dictated workplace rules. Through collective bargaining protected by law, unions began to change the top-down workplace structure; these negotiations yielded the private justice system of grievance arbitration. Today, with unionism in decline, a new system of conflict resolution is emerging.[27]

These changes have led to the concept of DSD, a term coined by Professors William Ury, Jeanne Brett, and Stephen Goldberg to describe the purposeful creation of an ADR program in an organization to manage conflict through a series of steps or options for process.[28] They argued that dispute resolution processes should focus on interests rather than rights or power.

---

[25] Id.

[26] Id. *at 36.*

[27] Id. *at 29-74 for a much more detailed account of the changing social contract in the United States.*

[28] WILLIAM L. URY, ET AL., GETTING DISPUTES RESOLVED: DESIGNING SYSTEMS TO CUT THE COST OF CONFLICT 41–64 (1988). Interest-based systems focus on the disputants' underlying needs (interests), such as those for security, economic well-being, belonging to a social group, recognition from others, and autonomy or control. Rights-based processes focus on legal entitlements under the language of a contract, statute, regulation, or court decision. Power-based systems are least effective as a basis for resolving conflict; workplace examples include strikes, lockouts, and corporate campaigns. Their work on dispute system design grew from experience with industrial disputes in the coal industry. After a series of wildcat strikes, it became

Organizational DSDs can take a myriad of forms, including a multi-step procedure culminating in mediation and/or arbitration, ombudspersons[29] programs giving disputants many different process choices,[30] or simply a single step binding arbitration design. The field of dispute resolution broadly adapted the concept of DSD beyond organizations with employment conflict and courts to other legal and administrative contexts. There are growing numbers of conflict management or dispute resolution programs in the substantive areas of education, the environment, criminal justice, community or neighborhood justice, domestic relations and family law and in settings ranging from federal, state, and local governments to a variety of private and nonprofit organizations.[31]

3.2. Elements of DSD: choices become rules that create structures

We can use Ostrom's framework to better understand and identify the elements of DSD. If one surveys program evaluations on both court-annexed and stand-alone ADR programs, one can identify a number of distinct structural variables and/or choices that make up a DSD. These include, but are not limited to:

The sector or setting for the program (public, private, or nonprofit);

The overall dispute system design (integrated conflict management system, silo or stovepipe program, ombuds program, outside contractor);

---

clear that the traditional multi-step grievance procedure culminating in binding arbitration was not meeting the needs of coal miners, unions, and management. Ury, Brett, and Goldberg suggested an experiment: grievance mediation. This involved providing mediation, a process for resolving conflict based on interests, as soon as disputes arose. The addition of the grievance mediation step changed the traditional rights-based grievance arbitration dispute system design to one including an interest-based 'loop-back', i.e., a step that returned the disputants to negotiation, albeit with assistance.

[29] An ombudsperson program is an organizational dispute system design in which one person, generally with direct access to upper management, serves as a contact point for all streams of conflict in the organization, and assists employees and consumers with identifying an appropriate process for addressing disputes. See International Ombuds Association, http://www.ombudsassociation.org; see Mary P. Rowe, The Ombudsperson's Role in a Dispute Resolution System, 7 NEGOTIATION J. 353 (1991).

[30] Some argue that best practice in institutional DSD is represented by the integrated conflict management system, a system in which there are multiple points of entry and parallel processes suited to the variety of conflicts in the organization, whether with employees, suppliers, service providers, contractors, consumers, customers, clients, community, or the broader public. See generally, CATHY A. COSTANTINO & CHRISTINA SICKLES MERCHANT, DESIGNING CONFLICT MANAGEMENT SYSTEMS: A GUIDE TO CREATING PRODUCTIVE AND HEALTHY ORGANIZATIONS (Jossey-Bass 1996); Association for Conflict Resolution, http://www.acr.org.

[31] For review articles on field studies and evaluation of the uses of mediation and DSD in the contexts of employment, education, criminal justice, the environmental, family disputes, civil litigation in courts, and community disputes, see Tricia S. Jones, ed., Conflict Resolution in the Field: Special Symposium, 22 CONFLICT RESOL. Q. 1, 1–320 (2004). DSD occurs within and outside the context of a single organization. Courts and administrative agencies engage in DSD when they adopt alternative dispute resolution programs or supervise mass tort claim systems. For extensive background on DSD efforts in the federal government, see Interagency Alternative Dispute Resolution Working Group, http://www.adr.gov/. For evaluation reports reflecting the results of DSD in the federal courts, see Federal Judicial Center, http://www.fjc.gov/. For similar reports reflecting DSD in state courts, see National Center for State Courts, http://www.ncsc.org. DSD has addressed the design of legal institutions and constitutions. Stephanie Smith and Janet Martinez, An Analytic Framework for Dispute Systems Design, 14 HARV. NEGOTIATION L.REV. 123-169 (2009).

The subject matter of the conflicts, disputes, or cases over which the system has jurisdiction;

The participants eligible or required to use the system;

The timing of the intervention (before the complaint is filed, immediately thereafter, after discovery or information gathering is complete, and on the eve of an administrative hearing or trial);

Whether the intervention is voluntary, opt out, or mandatory;

The nature of the intervention (training, facilitation, consensus-building, negotiated rulemaking, mediation, early neutral assessment or evaluation, summary jury trial, non-binding arbitration, binding arbitration) and its possible outcomes;

The sequence of interventions, if more than one;

Within intervention, the model of practice (if mediation, evaluative, facilitative or transformative; if arbitration, rights or interests, last-best offer, issue-by-issue or package, high-low, etc.);

The nature, training, qualifications, and demographics of the neutrals;

Who pays for the neutrals and the nature of their financial or professional incentive structure;

Who pays for the costs of administration, filing fees, hearing fees, hearing space;

The nature of any due process protections (right to counsel, discovery, location of process, availability of class actions, availability of written opinion or decision);

Structural support and institutionalization with respect to conflict management programs or efforts to implement; and

Level of self-determination or control that disputants have as to process, outcome, and dispute system design. Is it both parties together, one party unilaterally, or a third party for them?

Each of these categories entails a structural element of the DSD. Moreover, each of the choices must be embodied in a contract, policy, guideline, regulation, statute, or other form of rule.

Ostrom argues that there are three related concepts: strategies, norms and rules: "[I]ndividuals adopt strategies in light of the norms they hold and within the rules of the situation within which they are interacting."[32] Even when we limit our use of rules to regulation or prescription subject to enforcement,

[32] Ostrom supra note 18, at 175.

there are nevertheless many types of rules.[33] Arguing that we need to use simplified, broad, and general types or classes of rules to accumulate comparable research and advance the field of institutional design, Ostrom proposes seven kinds of rules: rules regarding positions, boundaries, choice, aggregation, information, payoff, and scope.[34]

Using Ostrom's categories, designers identify who is eligible to use the program; this is a position rule. For example, some federal sector employers have adopted mediation programs that only people who file an Equal Employment Opportunity complaint may invoke. Designers identify what cases the design will cover; this is a boundary rule. For example, some federal agencies only permit mediation of discrimination complaints, while others broaden their program to encompass a wider variety of workplace conflict, such as mentoring disputes outside of EEO law. An ADR program may be voluntary, mandatory, or opt out; this is a choice rule because it defines what action or action set a person/position has in the program. For example, some courts have mandated nonbinding arbitration as a pre-requisite to a civil trial.

Aggregation rules are critically important in negotiated rulemaking and environmental or public policy consensus-building designs. Are the parties going to decide outcomes by unanimous concurrence or consensus or are they going to use a majority vote rule? One can imagine that consensus rules would make it harder for a collaborative network to take action compared to majority vote because one party could exercise a veto.

DSDs that restrict discovery, as in some of the early abuses in mandatory, adhesive employment arbitration programs, are clearly rules about what information participants can use in the DSD to persuade the neutral or the other participants. DSDs can also limit the award or outcome of the process or intervention, which represents a payoff rule.

When the DSD entails mediation, that choice of process is a form of scope rule; it determines that the neutral does not have the authority to take the action of imposing an outcome on the disputants. Cooling off periods that allow the parties to reject a tentative agreement reached in mediation within a certain period are also scope rules in that they define the range of possible outcomes of the DSD.

---

[33] Id. at 18. See generally, id. at 186–215 for a description of different kinds of rules.

[34] Id. at 190. Ostrom provides very general definitions:

> Position rules create positions (e.g. member of a legislature or a committee, voter, etc.). Boundary rules affect how individuals are assigned to or leave positions and how one situation is linked to other situations. Choice rules affect the assignment of particular action sets to positions. Aggregation rules affect the level of control that individual participants exercise at a linkage within or across situations. Information rules affect the level of information available in a situation about actions and the link between actions and outcome linkages. Payoff rules affect the benefits and costs assigned to outcomes given the actions chosen. Scope rules affect which outcomes must, must not, or may be affected within a domain.

4. Conclusion

Lawyers and ADR practitioners are caught in what Ostrom calls a "babbling equilibrium."[35] We talk about research results and outcomes in DSD, but we are not using the same language to describe the rules and norms we study, and thus we cannot share meaning. Before we can talk about the relative justice a DSD produces, we need to be able to compare designs meaningfully and systematically. Elinor Ostrom's work can help lawyers more systematically analyze and compare the implicit rule choices in varying DSDs. Once we can compare the rules, we can better understand the differences in outcomes that systems produce.

References

Ostrom, Elinor (1990), Governing The Commons: The Evolution Of Institutions For Collective Action (Cambridge University Press 1990).

_____ (2005), Understanding Institutional Diversity (Princeton University Press 2005).

William L. Ury, et al., Getting Disputes Resolved: Designing Systems To Cut The Cost Of Conflict 41–64 (1988).

Cathy A. Costantino & Christina Sickles Merchant, Designing Conflict Management Systems: A Guide To Creating Productive and Healthy Organizations (Jossey-Bass 1996); Association For Conflict Resolution, http://www.acr.org.

Mary P. Rowe, The Ombudsperson's Role in a Dispute Resolution System, 7 Negotiation J. 353 (1991).

Tricia S. Jones, Ed., Conflict Resolution in The Field: Special Symposium, 22 Conflict Resol. Q. 1, 1–320 (2004).

Stephanie Smith And Janet Martinez, An Analytic Framework For Dispute Systems Design, 14 Harv. Negotiation L.Rev. 123-169 (2009).

About the Author: *Lisa Blomgren Bingham,* Professor and Keller-Runden Chair in Public Service, J.D., (with High Honors), University of Connecticut, 1979, B.A., (Magna Cum Laude), Smith College, Northampton, Massachusetts, 1976. Her recent awards, honors and certifications include Fellow, National Academy of Public Administration (NAPA), 2007, Jeffrey Z. Rubin Theory-to-Practice Award, Harvard Project on Negotiation and International Association for Conflict Management, 2006, Best Book Award, (co-edited with Rosemary O'Leary), American Society for Public Administration, 2005. Her professional interests include collaborative governance, comparative governance, dispute resolution, dispute system design, mediation, administrative law, and labor and employment law.

Contact Information: School of Public and Environmental Affairs at Indiana University, 1315 East Tenth Street, Bloomington, Indiana 47405-1701, USA. Tel: +1 812 855 4556 Email: lbingham@indiana.edu.

[35] Ostrom supra note 18, at 176.

The International Forestry Resources and Institutions Research Program: An Elinor Ostrom Creation

Catherine M. Tucker, Arun Agrawal, Burnell C. Fischer[*]

Abstract: The International Forestry Resources and Institutes' (IFRI) Collaborating Research Centers conduct case studies of specific forests. Through training programs at the University of Michigan, Indiana University, and the Asian Institute of Technology, IFRI scholars and trainees learn consistent data collection methods to assure comparability. The data they collect is organized into a unique database that contains information on more than 250 sites in fifteen countries.

Key words: International Forestry Resources, collaborating research, Indiana, Michigan

1. Overview

The International Forestry Resources and Institutions (IFRI) Research Program examines how governance arrangements affect forests and the people who depend on them. Founded in 1992 by Elinor Ostrom at the Workshop in Political Theory and Policy Analysis, the core of the program is a network of 13 active Collaborating Research Centers (CRCs) located in the Americas (Bolivia, Colombia, Guatemala, Mexico, United States), Africa (Uganda, Kenya, Tanzania, and Ethiopia), and Asia (India, Nepal, and Thailand). IFRI researchers use the same data collection methods and protocols across diverse forest types, socio-ecological conditions, and institutional arrangements to ensure that sites can be compared across space and time (Tucker and Ostrom, 2005; Gibson et al., 2000; Ostrom and Wertime 2000). The result is a powerful program of knowledge generation and accumulation that builds on a transnational collaboration to demonstrate the influence of institutional incentives on resource outcomes such as biodiversity, livelihoods, and carbon storage.

2. Emerging collaborations

IFRI researchers and collaborating centers have added between 15 and twenty new sites each year on the average since IFRI was founded in 1992. In selected cases, IFRI researchers have returned to the same sites to develop a better understanding of over time changes in forests and the determinants of such changes in causal processes and outcomes.

[*] Industry Canada, Investment Review Division, 235 Queen Street, Room 301B East Tower C.D. Howe Building, Ottawa, Ontario, CANADA K1A 0H5. Tel: +1 613 954 1887; +1 613 952 6184 Fax: +1 613 996 2515 Email: investcan@ic.gc.ca.

New IFRI CRCs form as researchers who study forest governance decide to pursue IFRI research in their home countries, and obtain sponsorship from universities or other research-oriented programs and organizations. Most recently, a new CRC formed in Ethiopia through collaboration between local researchers and IFRI scholars. It has carried out research in two sites, and held on-site database training in 2009. Currently, the School of Resource and Environmental Management at the College of Finance and Economics in Guizhou Province, the first in China, has begun the process of starting a new CRC.

3.0 Recent findings

One great strength of the IFRI research program and network lies in its unique approach: develop systematic case studies by building them around information on common set of approximately 1,000 variables and use the data on these variables for rigorous quantitative analysis as well. As the number of case studies in the IFRI database has grown, the research program has generated a large number of quantitative, cross-country analyses – a phenomenon that is rare in comparative studies of forest management The marriage of qualitative and quantitative approaches allows for greater confidence in the findings of the IFRI research program when these different approaches lead to similar inferences.

The IFRI program's research has tended to focus in particular on the importance of rules and institutions on resource outcomes, although many of its researchers have shown how local biophysical, social-economic, political, and other contextual conditions influence outcomes. Here we focus on IFRI program findings related to rules and institutions.

Through comparative analyses of IFRI study sites, investigators have been able to find patterns associated with successful, and unsuccessful, forest governance. One of the most significant findings for forest governance is that monitoring and enforcement are strongly associated with maintenance of good forest conditions (Agrawal and Yadama 1997, Dietz et al. 2003; Schweik 2000; Banana and Gombya-Ssembajjwe 2000). A comparative study of 178 user groups in 220 IFRI forests showed that forests with regular monitoring were more likely to be in good condition than those with sporadic monitoring (Gibson et al. 2005). In a related study, local enforcement was significantly associated with the likelihood of forest regeneration (Chhatre and Agrawal 2008) across 148 IFRI sites in ten countries, controlling for the influence of other factors. IFRI research shows that forests can be managed well under a broad range of institutions and property rights (Ostrom 2005). National political contexts can influence what type of property rights and institutional arrangements work well for forest management (e.g., Nagendra 2002). For example, communal arrangements are unlikely to succeed under antagonistic legal frameworks (Tucker et al. 2007). The form of property rights appears to be less critical, however,

than whether or not local forest users participate in designing the rules. A comparative analysis of 163 IFRI forests, including public, private, and common property, found that where user groups had rights to design rules to manage a forest, vegetation density was greater (Hayes 2006). Comparative analyses also point to the importance of relationships of trust among stakeholders, perceived benefits from managing forests, and confidence that rule-breakers will face consequences (Ostrom 2009; Dietz et al. 2003). It appears critical that rules fit the local contexts (Ghate 2004; Vogt et al. 2006; Dietz and Henry 2008). As a result, IFRI research provides evidence that no single prescription for forest management applies universally (Ostrom 2007).

4. Expanding influence

IFRI research has also influenced efforts that extend beyond its initial purview. Emerging work on urban forests at Indiana University is developing a set of data collection protocols modeled after IFRI to document urban forest structure and institutional dynamics of urban systems – Urban Forestry Resources and Institutions (UFRI). Initial research has considered street trees in cities as a common-pool resource, which represents a novel contribution to theory (Fischer and Steed 2008).

Development of a framework for analyzing complex social-ecological systems, currently underway by Ostrom and her colleagues incorporates insights from IFRI's large-N studies (Ostrom 2009). IFRI researchers have begun to explore how local populations and institutions are adapting to climate change, globalization processes and rapid social transformations, which pose major challenges for forest management. The dynamism of current IFRI work, as well as the productivity of the ongoing comparative data collection and analyses, promises to make ongoing contributions to theoretical understanding and policy implications relevant to designing and forest institutions and resources management.

References

Agrawal, A., and G. Yadama. 1997. How do local institutions mediate market and population pressures on resources? Forest panchayats in Kumaon, India. *Development and Change* 28, (3): 435-65.

Banana, A. Y., and W. Gombya-Ssembajjwe. 2000. Successful Forest Management: The Importance of Security of Tenure and Rule Enforcement in Ugandan Forests. In *People and Forests: Communities, Institutions, and Governance*, ed. Clark C. Gibson, Margaret A. McKean, and Elinor Ostrom, 87-97. Cambridge, Mass.: MIT Press.

Chhatre, A., and A. Agrawal. 2008. Forest commons and local enforcement. *Proceedings of the National Academy of Sciences* 105, (36):13286.

Dietz, T., and A. D. Henry. 2008. Context and the commons. *Proceedings of the National Academy of Sciences* 105, (36):13189.

Dietz, T., E. Ostrom, and P. C. Stern. 2003. The struggle to govern the commons. *Science* 302, (5652): 1907.

Fischer, B.C. and B.C. Steed. 2008. Street Trees: A Misunderstood Common Pool Resource. *Proceedings of the 84th International Society of Arboriculture Annual Conference*, St. Louis, MO.

Ghate, R., and A. Chaturvedi. 2004. *Uncommons in the commons: Community initiated forest resource management.* New Delhi: Concept Publishing Company.

Gibson, C. C., M. A. McKean, and E. Ostrom. 2000. Explaining deforestation: The role of local institutions. In *People and Forests: Communities, Institutions, and Governance*, ed. Clark C. Gibson, Margaret A. McKean, and Elinor Ostrom, 1-26. Cambridge, Mass.: MIT Press.

Gibson, C. C., J. T. Williams, and E. Ostrom. 2005. Local enforcement and better forests. *World Development* 33, (2): 273-84.

Hayes, T. M. 2006. Parks, people, and forest protection: An institutional assessment of the effectiveness of protected areas. *World Development* 34, (12): 2064-75.

Nagendra, H. 2003. Tenure and forest conditions: Community forestry in the Nepal Terai. *Environmental Conservation* 29, (04): 530-9.

Ostrom, E. 2009. Building trust to solve commons dilemmas: Taking small steps to test an evolving theory of collective action. In *Games, Groups, and the Global Good*, ed. Simon A. Levin, 207-228. Dordrecht, the Netherlands: Springer.

———. 2009. A general framework for analyzing sustainability of social-ecological systems. *Science* 325, (5939): 419.

———. 2007. A diagnostic approach for going beyond panaceas. *Proceedings of the National Academy of Sciences* 104, (39): 15181.

———. 2005. *Understanding institutional diversity.* Princeton University Press.

Ostrom, E., and M. B. Wertime. 2000. International forestry resources and institutions research strategy. *People and Forests: Communities, Institutions, and Governance.*: 243–268.

Schweik, C. M. 2000. Optimal foraging, institutions, and forest. In *People and Forests: Communities, Institutions, and Governance*, ed. Clark C. Gibson, Margaret A. McKean, and Elinor Ostrom, 99. Cambridge, Mass.: MIT Press.

Tucker, C. M., and E. Ostrom. 2005. Multidisciplinary Research Relating Institutions and Forest Transformations. In *Seeing the Forest and the Trees: Human-Environment Interactions in Forest Ecosystems*, ed. Emilio F. Moran and Elinor Ostrom, 81–103. Cambridge, Mass.: MIT Press.

Tucker, C. M., J. C. Randolph, and E. J. Castellanos. 2007. Institutions, biophysical factors and history: An integrative analysis of private and common property forests in Guatemala and Honduras. *Human Ecology* 35, (3): 259-74.

Vogt, N. D., A. Y. Banana, W. Gombya-Ssembajjwe, and J. Bahati. 2006. Understanding the stability of forest reserve boundaries in the West Mengo region of Uganda. *Ecology and Society* 11, (1): 38.

About the Author: *Catherine M. Tucker*, Associate Professor of Anthropology, Associate Faculty, Center

for the Study of Institutions, Population and Environmental Change (CIPEC), Affiliated Faculty, Workshop in Political Theory and Policy Analysis, Adjunct Courtesy Professor, School of Public and Environmental Affairs (SPEA), Faculty Associate, Anthropological Center for Training and Research on Global Environmental Change (ACT), Indiana University at Bloomington, USA. Catherine received her Ph.D. in Anthropology from the University of Arizona at Tucson (1996), her M.A. in Anthropology from the University of Massachusetts at Amherst (1987), and her B.A. in an Interdisciplinary Major (Anthropology, Biology, and Philosophy) from Gustavus Adolphus College in St. Peter, Minnesota (1983). Geographical Areas of Specialization include: Honduras, eastern Guatemala, and Oaxaca, Mexico. Topical Interests include ecological anthropology, political ecology, community forestry, collective action, common property, economic development, human dimensions of global environmental change, and Latin America. Current courses: Culture and Society; Coffee Culture, Production and Market.

Contact Information:

Indiana University Anthropology Department, Student Building 130, 701 E. Kirkwood Avenue, Bloomington, Indiana 47405-7100, USA; Tel: +1 812 855 9360 Fax: +1 812 855 4358; +1 812 855 9360 Email: tuckerc@indiana.edu.

THEORY & PRACTICE

Efficiency of the Nigerian Capital Market: Implications for Investment Analysis and Performance

Sunday Eneojo Samuel and Richard Uzoefuna Oka *

Abstract: This paper appraises the nature and efficiency of the Nigerian capital market and its implications for investment analysis and performance. It examines the implications of the efficient-market hypothesis and types and levels of market efficiency. Data was collected using a survey questionnaire. A multi-stage and random sampling technique was used to select a sample including four categories of people and firms relevant to the study. Data were analyzed using a Likert scale and descriptive statistics. The null hypothesis was analyzed using a five-point Likert scale with a 5% error term, and the study found that information has contributed to the efficiency of the Nigerian capital market to a great extent. It is therefore suggested that the Nigerian Stock Exchange and the Nigeria Securities and Exchange Commission should be more purposeful and aggressive in educating and enlightening the investing public on the workings and technicalities of the market while also committing to continuous training and retraining of their staff.

Key words: Nigerian capital market, efficient capital market, market efficiency, securities, investment

1. Introduction

Nigeria is a developing country. Its government has severally shown commitments to its socio-economic advancement through various initiatives and policy documents. The Millennium Development Goals (MDGs), Vision 20, 20-20, Poverty Alleviation Programme, financial sector reforms and the Seven Point Agenda are instances of this. However, the success or failure of any government-led development effort hinges on the soundness of its financial system. In a nutshell, the financial market is the heartbeat of any market economy, and the capital market is the focal point of the financial market.

According to Ologunde et al (2006), the capital market is a collection of financial institutions set up for the granting of medium- and long-term loans. Babalola (2008) is of the opinion that the major significance of the financial system in any economy is its ability to mobilize savings and to efficiently intermediate in financial service delivery so as to create liquidity in the economy, minimize information cost, and create a bridge in assets diversification. Nwankwo (2007) states that a developed local securities

* Sunday Eneojo Samuel and Richard Uzoefuna Oka, Department Of Accounting, Kogi State University, Anyigba, Nigeria. Tel: +234 8059281392; +234 7063049070 E-mail: aglowsun@yahoo.com, drruoka@yahoo.com.

market will stabilize the financial sector, entrench competitive spirit within the sector, and effectively complement the banking sector.

The Nigerian capital market is a veritable instrument for promoting limitless wealth accumulation through investment (Adepetun, 2008). However, in efficient capital markets, information is expected to be accurate because security prices react instantaneously to new information such that there are no opportunities for market participants to achieve abnormal returns consistently (Hadi, 2006).

The broad objective of this study is to appraise the efficiency of the Nigerian capital market, its implications for investment analysis and performance. Specifically, the study intends to:

(i) create a clear understanding of the nature of the Nigerian capital market;
(ii) determine the efficiency level of the Nigerian capital market;
(iii) make recommendations based on the findings.

The following null hypothesis was formulated and tested:

(i) Information has not greatly contributed to the efficiency of the Nigerian capital market.

2. Efficiency of the Nigerian Capital Market

2.1. An overview of the Nigerian Capital Market

According to Okwoli and Kpelai (2008), the capital market is the second type of financial market that provides the facilities for long-term lending and borrowing using securities. This is the market in which large amounts of money or capital are raised by institutions such as governments and companies for long-term use (Drummond, 1998).

Capital market activities took place long before the establishment of actual capital markets. According to Momoh (2008), capital market activities in Nigeria began in 1946 during the introduction of the Ten Year Development Ordinance, through which 3.25% £300,000 loan stock was issued to the public in units of £10, with a maturity date of 10-15 years. Mfomiso (2007) states that prior to 1960, virtually all formal savings were made through the banking sector, with only core capital investments made on behalf of Nigeria by Britain on the London Stock Exchange.

The first ever capital market in Nigeria was the Lagos Stock Exchange, which began operation in 1961. However, the first ever ordinary shares to be traded in Nigeria and offered to the public were those of the Nigeria Cement Company Limited in 1959, followed by the ordinary and preference shares of John Holt (Liverpool) Investment Company Limited and the ordinary shares of Nigeria Tobacco Company Limited in 1960 (Areago, 1990). These activities were supervised by the London Stock Exchange (Okwoli and

Kpelai, 2008). Subsequently, in 1976, the Lagos Stock Exchange was transformed into "The Nigeria Stock Exchange" following the recommendation of Dr. Pius Okigbo's committee (Uduehi, 2005).

The Nigerian capital market is categorized into the primary and secondary markets. The primary is the market for fresh issues. Traded securities are offered through subscription, right issues, offer for sales, by introduction, and by private placement (Drummond, 1998). The secondary market operates after an issue has been completed and securities listed in the stock market (Okwoli and Kpelai, 2008). The secondary market is made up of two exchanges: The Nigeria Stock Exchange and the Abuja Commodities Exchange (Sanni, 2008).

2.2. Efficient-Market Hypothesis

According to Koijen and Nieuwerburgh (2007), the efficient-market hypothesis implies that capital markets are efficient with regards to a set of information, thereby rationally reflecting all new information in securities prices in terms of magnitude and direction of such movements. This means that stock prices move with the influx of information (McMinn, 2009). Hirschey and Nofsinger (2008) state that the efficient-market hypothesis is the situation where security prices fully reflect all available information. That is to say, "if stock and bond markets are perfectly efficient and current prices fully reflect all available information, then neither buyers nor sellers have an information advantage".

2.3. Efficient capital market

Efficient capital market is the ability of securities to reflect and incorporate relevant information, almost instantaneously, in their prices (Pandey, 2005). According to Hadi (2006), an efficient capital market is a market that is efficient in processing information. Bruce (2008) opined that, efficient capital market is informational efficiency, which essentially means that market prices adjust instantaneously to new information that could inform future prices.

2.4. Types of market efficiency

There are three types of market efficiency; they are Operational efficiency, Allocation efficiency and pricing efficiency.

2.4.1. Operational efficiency: According to Mensah (2003), operational efficiency implies that all transactions in securities are carried out instantly, correctly, and at a low cost. This may be promoted through enhancing competition between exchanges for secondary market transaction.

2.4.2. Allocation efficiency: This refers to mechanism which allocates scarce resources to where they can be most productive.

2.4.3. Pricing efficiency: A market that is price efficient is one in which an investor can only expect to earn a risk-adjusted returns from an investment as prices move instantaneous and in an unbiased

manner to any news. A capital market is described as efficient if security prices are timely and accurately reflects all available information about the current and future likely worth of the assets (Adelegan, 2008).

2.5. Levels of market efficiency

Robert (1991) identifies the followings as the three levels of market efficiency: weak form, semi-strong form and strong form.

2.5.1. Weak form efficiency: Okwoli and Kpelai (2008) defined weak form efficiency as a situation where the security prices reflect all the past information as reported by the press. It is therefore, not possible for an investor to predict future security price by analyzing historical prices, and achieve a performance (return) better than the stock market index. It is so because the capital market has no memory, and the stock market index has already incorporated past information about the security prices in the market price (Pandey, 2005).

2.5.2. Semi-strong efficiency: This level of efficiency assumes that all publicly available information about a given security has been accurately factored into the present price of that security (Russel and Violet, 2002). Okwoli and Kpelai (2008) looked at semi-strong efficiency as a situation where the security prices reflect not only past information but all other published information.

2.5.3. Strong-form efficiency: This is a situation where the security prices reflect not only public information but all information that can be acquired by painstaking analysis of the company and the security (Okwoli and Kpelai, 2008). According to Pandey (2005), in strong-form efficiency, the security prices reflect all published and unpublished, public and private information.

2.6. Implications of the efficient-market hypothesis

The concept of market efficiency has a number of implications for three categories of persons. These are the investing community, the corporate world and the regulatory authorities (Mensah, 2003).

2.6.1. For investors:

- Both technical and fundamental analyses are meaningless.
- Rationality demands that an investor hold a well-diversified portfolio.
- It is necessary for high investor networks to demand for timely release of adequate information in order to steer the market towards semi-strong form efficiency.

2.6.2. For companies:

- Emphasize substance over form
- It is pointless to fine tune the timing of new issues
- Consider prices of own stocks as an indication of market perception of virility or a lack of it.

2.6.3. For regulators

Professional accounting bodies and capital market regulations should be geared towards boosting investors' confidence through the prevention of insider trading; protection of investors from abuse; minimizing systematic risk; enthronement of fairness; and enhancing market efficiency.

2.7. Methodology

A survey research method was used for the study. The instrument for data collection was the questionnaire. Fixed response questions were put forward to the respondents as data collected from such facilitates data analysis and estimation of the validity and reliability indices of the instrument.

A multi-stage sampling technique was used to select four categories of people and firms relevant to the study. They are professional accountants, stock broking firms, the Nigeria Stock Exchange and Academicians. A random sampling technique was later used to select ten staff from stock broking firm, twenty from Nigerian Stock Exchange, fifteen from Professional Accountants and thirty from the academia making a total sample size of seventy-five.

The analytical tools used in analyzing the data collected for the study include the descriptive statistics and Likert Scale. The descriptive statistical tools used were frequency distribution percentages and tables. The null hypothesis was analyzed on a five-point Likert scale measuring the extent information has contributed to the efficiency of the Nigeria capital market.

The formula for Likert Scale is $(\sum FX)/N$

Where $\sum FX$ = weighted sum of frequencies and N = Total response.

The mean point of scale is $(\sum X)/n$

Where $\sum X$ = sum of nominal value and n= Number of response categories

The cut-off point = mean + e, Where e = error term i.e. 0.05.

2.8. Data Analysis and Results

Data collected via the questionnaire are analyzed bellow:

Table 1.1 below shows the frequency distribution of respondents' view on the efficiency of the Nigerian capital market.

Table 1.1. Efficiency of the Nigerian capital market

Responses	Frequency	Percentage
Yes	40	53

No	35	47
Total	**75**	**100**

Source: Field survey, 2009.

From Table 1.1 above, 53% of the respondents said the Nigerian capital market is efficient while 47% said it is not.

Table 1.2. below shows the frequency distribution of respondents' view on the level of efficiency of the Nigerian capital market.

Table 1.2. Level of efficiency of Nigerian Capital Market.

Level	**Frequency**	**Percentage**
Weak form	51	68
Semi strong form	15	20
Strong form	9	12
Total	**75**	**100**

Source: Field survey, 2009

From Table 1.2. above, 68% of the respondents are of the opinion that the level of efficient of the Nigeria capital market is weak form, while 20% and 12% of the respondents said it is semi-strong form and strong form respectively.

2.9. Test of hypothesis

H_0: Information has not contributed to the efficiency of the Nigerian Capital Market to a great extent.

Table 1.3. below shows the calculation of figures to determine the extent information has contributed to the efficiency of the Nigerian Capital Market using Likert-Scale.

Table 1.3. Calculation of figures using Likert Scale

Responses	**Frequency (F)**	**Scale (X)**	**FX**
To a very great extent	29	5	145
To a great extent	35	4	140
Undecided	4	3	12
To no extent	7	2	14
To no extent at all	0	1	0
Total	**75**	**15**	**311**

Source: Field survey, 2009

Mean point = (∑FX)/N = 311/45 = 4.15

Mean point of scale = (∑X)/N = 15/5 = 3.00

Cut off point = Mean + e = 3.00 + 0.05 = 3.05

To determine the extent to which information has contributed to the efficiency of the Nigerian capital market, a five-point Likert scale of rating responses was used. The mean point of the responses is 4.15 and the cut off point is 3.05. The decision rule is that where the calculated mean point is above the cut off point, it is regarded as effective; while below, reverse is the case. The calculated mean point of 4.15 is greater than the cut off point of 3.05. Therefore, the null hypothesis is hereby rejected. That is, information has contributed to the efficiency of the Nigerian capital market to a great extent.

3. Conclusion

The following conclusions were reached from the findings of the study:

(i) The results of the study are consistent with the reports of Adelegan (2008) which disclosed that the Nigerian capital market is in the weak form level of efficiency. This is premised on the following:

- Operations of the market are not transparent. There are instances of insider trading, deception, complacency by NSE officials in enforcing rules, delay in issuance of certificates and in dividend declaration, exploitative fees by brokers, and other market makers (Anonymous, 2008).
- There are instances of stock overvaluation and 'cooked' accounting books as in the case of Cadbury Nigeria Plc (Oluba, 2008; Ryan, 2006)

(ii) Information has a positive effect on the efficiency of the Nigerian capital market. A market is said to be efficient when security prices fully reflect all available information. This means that the price of stocks moves with the influx of information.

(iii) An efficient market holds profound implications for investors, companies and regulators.

The following recommendations are capable of enhancing the efficiency of the Nigerian capital market:

(i) The Nigerian stock exchange and Securities and Exchange Commission should be more purposeful and aggressive in educating and enlightening the investing public on the workings and technicalities of the market.

(ii) Institutional investors and stock broking firms should be more committed to continuous training and re-training of their staff.

(iii) SEC should ensure that its rules are adequate, relevant and up-to-date.

(iv) Institutional investors and stock broking firms should invest more in information technology apparatus.

References

Adelegan, O. J. 2003. Capital market efficiency and the effects of dividend announcements on share prices in Nigeria. *African Development Review, 15* 2, (3): 218-36.

Adepetun, A. 2008. Investment opportunities in capital market. *The Guardian*, July 23.

Anonymous. 2008. Capital market: Shortcoming investors. *Nigerian Tribune*, May 20.

Areago, R. B. 1990. Nigerian Stock Exchange: Genesis, Organisation, and Operations. Portsmouth, New Hampshire, USA: Heinemann.

Babalola, R. A speech delivered at members' evening roundtable talks held at IOD National Secretariat, Ikoyi, Lagos, Nigeria.

Chardwick, Bruce. Types of market efficiency - Bruce Chardwick's blog. 2008. http://www.bruce.chardwick.org/blog/2008/01/types-of-market-efficiency.html.

Drummond, G. 1998. Introduction to international capital market. *Security Institute Publication*: 7.

Hadi, M. M. 2006. Review of capital market efficiency: Some evidence from Jordanian market. *International Research Journal of Finance and Economics* 3.

Hirschey, M., and J. R. Nofsinger. 2008. *Investments: Analysis and Behavior.* New York: McGraw-Hill Irwin.

Koijen, R. S. J., and S. Van Nieuwerburgh. 2007. Market efficiency and return predictability. http://www.faculty.chicagobooth.edu.

McMinn, D. 2009. Inefficient vs. efficient market hypothesis. Moon Sun Finance. http://www.davidcminn.com/pages.inefficient.htm.

Mensah, S. 2003. The essentials of an efficient market and implications for investors, firms, and regulators. UNECA Workshop on African Capital Markets Development. Johannesburg, South Africa.

Mfomiso, G. A. 2007. History of Nigeria Stock Exchange. Stock Market Investment (blog archive). http://stockmarket-onnet.blogspot.com/2007/06/history-of-nigeriastock-exchange.html.

Momoh. 2008. The Nigerian capital market. *The Tide Online*, 8 February, 2008.

Nwankwo, A. 2008. Towards creating a vibrant bond market in Nigeria. Paper presented at Business World Annual Investment Lecture, Lagos, Nigeria.

Okwoli, A. A., and S. T. Kpelai. 2008. *Introduction to Managerial Finance*. 2nd ed. Jos, Nigeria: Go-Go International Limited.

Ologunde, A. O., D. O. Elumilade, and T. O. Asaolu. 2006. Stock market capitalization and interest rate in Nigeria: A time series analysis. *International Research Journal of Finance and Economics* 4.

Oluba, Martin. 2008. The visible hand of the Nigerian Stock Exchange. *The Business Day.* 20 April.

Pandey, I. M. 2005. Financial Management, Ninth Edition. New Delhi:Vikas.

Robert, H. V. *Statistical versus clinical prediction of stock market, quoted in Brealey, R.A. and Myers, S.C. Principles of Corporate Finance. McGraw-Hill: 295*.

Russel, P. S., and V. M. Torbey. 2003. The efficient market hypothesis on trial: A survey. Business Quest. http://www.westga.edu

Ryan, S. 2006. *Nigeria: Cadbury Nigeria's cooked books.* http://investinginafrica.blogspot.com/2006/12/nigeria-cadbury-nigerias-cooked-books.html

Sanni, Y. 2008. The Nigerian capital market: Lessons and opportunities. http://www.euromoneyconferences.com/daownloads/Nigeria08/Nigeria-Stanbic-Presentation.pdf.

Acknowledgement

A number of individuals have contributed immensely in bringing this article to its present state. We are thankful to all of them for their criticisms, help and encouragement. Even though time and space constraints would not permit us to list all of their names, we must specifically express our gratitude to Professor Akpa Abimaje of Benue State University, Makurdi, Nigeria, and Dr. Ajachukwu, Mr. Rufai, Mr. Inyanda, and Mr. Audu, all of Kogi State University, Anyigba, Nigeria.

About the Authors: *Sunday Eneojo Samuel* is a lecturer in the Department of Accounting at Kogi State University in Anyigba, Nigeria, where he obtained his B.Sc. in the discipline. He received his M.Sc in Accounting and Finance from Benue State University in Makurdi, Nigeria and is a member of the Institute of Certified Public Accountants of Nigeria (ICPAN). Mr. Samuel worked for Arewa Textile plc as finishing inspector from 1999-2002 and also served as a Director of Special Duties for the World Changers Youth Foundation in Kaduna, Nigeria (a Non Governmental Organization) from 2007 to 2008.

Richard Uzoefuna Oka, Ph.D., is a Senior Lecturer in the Department of Accounting at Kogi State University in Anyigba, Nigeria. He was formerly the Head of the Department of Accounting and Dean of the Faculty of Management Sciences at the same university. Dr. Oka's educational history is as follows: Associate Diploma in Education, University of Lagos, 1974; B.Sc. (Hons) in Accountancy, University of Nigeria, Enugu Campus, 1980; Post-Graduate Diploma, Business and Public Administration, Anambra State University of Technology, Enugu, 1989; MBA in Banking and Finance, Anambra State University of Technology, 1991; Professional Diploma in Computer Software Applications, Enugu State University of

Science and Technology, Enugu, 1992; Ph.D. in Agricultural Economics (Agricultural Financing), Enugu State University Of Science and Technology, Enugu, 2003. He became a Certified National Accountant (CNA) of the Association of National Accountants of Nigeria (ANAN) in 1994, a Fellow of The Institute of Corporate Administration of Nigeria (FCAI) in 2008, and a Fellow of the Strategy Institute of Natural Resources and Human Development (FRHD) in 2008.

Contact Information:

Sunday Eneojo Samuel and Richard Uzoefuna Oka, Department Of Accounting, Kogi State University, Anyigba, Nigeria. Tel: +234 8059281392; +234 7063049070 E-mail: aglowsun@yahoo.com, drruoka@yahoo.com.

DOCUMENTATION

Investment Canada Act: An Act Respecting Investment in Canada

Invest Canada[*]

Abstract: The *Investment Canada Act* (the Act) is to provide for the review of significant investments in Canada by non-Canadians in order to ensure benefit to Canada. The legislation describing the 'review function' and associated rules is complex, and as such, this document is intended to serve as an introduction to the Act, describing its key features. It is intended to help investors and others to understand how non-Canadian investors are to respond to the Act's requirements. However, it is only a general guide. It does not include all of the details found in the Act, and is not intended to express a legal opinion of the Government of Canada as to the interpretation of the Act, nor is it bound by its content. For the application of the Act to a particular situation, the reader is advised to consult the specific provisions of the Act and to obtain appropriate legal counsel.

Key words: investment, Canada, Act, legislation, regulation

20th June, 1985

Short Title

1. This Act may be cited as the *Investment Canada Act*.

Purpose

Purpose of Act

2. Recognizing that increased capital and technology would benefit Canada, the purpose of this Act is to encourage investment in Canada by Canadians and non-Canadians that contributes to economic growth and employment opportunities and to provide for the review of significant investments in Canada by non-Canadians in order to ensure such benefit to Canada.

Definitions

3. In this Act,

"Agency" [Repealed, 1995, c. 1, s. 45]

[*] Industry Canada, Investment Review Division, 235 Queen Street, Room 301B East Tower C.D. Howe Building, Ottawa, Ontario, CANADA K1A 0H5. Tel: +1 613 954 1887; +1 613 952 6184 Fax: +1 613 996 2515 Email: investcan@ic.gc.ca.

"assets" «actifs»

"assets" includes tangible and intangible property of any value;

"business" «entreprise»

"business" includes any undertaking or enterprise capable of generating revenue and carried on in anticipation of profit;

"Canada" «Canada»

"Canada" includes the exclusive economic zone of Canada and the continnental shelf of Canada

"Canadian" «Canadien»

"Canadian" means

(a) a Canadian citizen,

(b) a permanent resident within the meaning of subsection 2(1) of the the *Immigration and Refugee Protection Act* who has been ordinarily resident in Canada for not more than one year after the time at which he first became eligible to apply for Canadian citizenship,

(c) a Canadian government, whether federal, provincial or local, or an agency thereof, or

(d) an entity that is Canadian-controlled, as determined pursuant to subsection 26(1) or (2) and in respect of which no determination or declaration has been made under subsection 26(2.1) or (2.2);

"Canadian business" «entreprise canadienne»

"Canadian business" means a business carried on in Canada that has

(a) a place of business in Canada,

(b) an individual or individuals in Canada who are employed or self-employed in connection with the business, and

(c) assets in Canada used in carrying on the business;

"corporation" «personne morale»

"corporation" means a body corporate with or without share capital;

"Director" «directeur»

"Director" means the Director of Investments appointed under section 6;

"entity" «unité»

"entity" means a corporation, partnership, trust or joint venture;

"joint venture" «coentreprise»

"joint venture" means an association of two or more persons or entities, where the relationship among those associated persons or entities does not, under the laws in force in Canada, constitute a corporation, a partnership or a trust and where, in the case of an investment to which this Act applies, all the undivided ownership interests in the assets of the Canadian business or in the voting interests of the entity that is the subject of the investment are or will be owned by all the persons or entities that are so associated;

"Minister" «ministre»

"Minister" means such member of the Queen's Privy Council for Canada as is designated by the Governor in Council as the Minister for the purposes of this Act;

"new Canadian business" «nouvelle entreprise canadienne»

"new Canadian business", in relation to a non-Canadian, means a business that is not already being carried on in Canada by the non-Canadian and that, at the time of its establishment,

(a) is unrelated to any other business being carried on in Canada by that non-Canadian, or

(b) is related to another business being carried on in Canada by that non-Canadian but falls within a prescribed specific type of business activity that, in the opinion of the Governor in Council, is related to Canada's cultural heritage or national identity;

"non-Canadian" «non-Canadien»

"non-Canadian" means an individual, a government or an agency thereof or an entity that is not a Canadian;

"own" «propriétaire»

"own" means beneficially own;

"person" «personne»

"person" means an individual, a government or an agency thereof or a corporation;

"prescribed"

Version anglaise seulement

"prescribed" means prescribed by the regulations made pursuant to this Act;

"voting group" «groupement de votants»

"voting group" means two or more persons who are associated with respect to the exercise of rights attached to voting interests in an entity by contract, business arrangement, personal relationship, common control in fact through the ownership of voting interests, or otherwise, in such a manner that they would ordinarily be expected to act together on a continuing basis with respect to the exercise of those rights;

"voting interest" «intérêt avec droit de vote»

"voting interest", with respect to

(a) a corporation with share capital, means a voting share,

(b) a corporation without share capital, means an ownership interest in the assets thereof that entitles the owner to rights similar to those enjoyed by the owner of a voting share, and

(c) a partnership, trust or joint venture, means an ownership interest in the assets thereof that entitles the owner to receive a share of the profits and to share in the assets on dissolution;

"voting share" «action avec droit de vote»

"voting share" means a share in the capital of a corporation to which is attached a voting right ordinarily exercisable at meetings of shareholders of the corporation and to which is ordinarily attached a right to receive a share of the profits, or to share in the assets of the corporation on dissolution, or both.

R.S., 1985, c. 28 (1st Supp.), s. 3; 1993, c. 35, s. 1; 1995, c. 1, s. 45.

Part I Organization and Mandate

Minister

Role of Minister

4. The Minister is responsible for the administration of this Act.

R.S., 1985, c. 28 (1st Supp.), s. 4; 1995, c. 1, s. 46.

Duties and powers of Minister

5. (1) The Minister shall

(a) to (e) [Repealed, 1995, c. 1, s. 47]

(f) ensure that the notification and review of investments are carried out in accordance with this Act; and

(g) perform all other duties required by this Act to be performed by the Minister.

Other powers

(2) In exercising the Minister's powers and performing his duties under this Act, the Minister

(a) shall, where appropriate, make use of the services and facilities of other departments, branches or agencies of the Government of Canada;

(b) may, with the approval of the Governor in Council, enter into agreements, for the purposes of this Act, with the government of any province or any agency thereof, or with any other entity or person, and may make disbursements up to an amount equal to the aggregate of the amounts to be contributed by all parties to the agreement, even before those amounts have been contributed; and

(c) may consult with, and organize conferences of, representatives of industry and labour, provincial and local authorities and other interested persons.

R.S., 1985, c. 28 (1st Supp.), s. 5; 1993, c. 35, s. 2; 1995, c. 1, s. 47.

Director of Investments

Director of Investments

6. The Minister may appoint an officer, to be known as the Director of Investments, to advise and assist the Minister in exercising the Minister's powers and performing the Minister's duties under this Act.

R.S., 1985, c. 28 (1st Supp.), s. 6; 1995, c. 1, s. 48.

7. to **9.** [Repealed, 1995, c. 1, s. 48]

Part II Exemptions

Exempt transactions

10. (1) This Act does not apply to

(a) the acquisition of voting shares or other voting interests by any person in the ordinary course of that person's business as a trader or dealer in securities;

(b) the acquisition of voting interests by any person in the ordinary course of a business carried on by that person that consists of providing, in Canada, venture capital on terms and conditions not inconsistent with such terms and conditions as may be fixed by the Minister;

(c) the acquisition of control of a Canadian business in connection with the realization of security granted for a loan or other financial assistance and not for any purpose related to the provisions of this Act;

(d) the acquisition of control of a Canadian business for the purpose of facilitating its financing and not for any purpose related to the provisions of this Act on the condition that the acquirer divest himself of control within two years after it is acquired or within such longer period as is approved by the Minister;

(e) the acquisition of control of a Canadian business by reason of an amalgamation, a merger, a consolidation or a corporate reorganization following which the ultimate direct or indirect control in fact of the Canadian business, through the ownership of voting interests, remains unchanged;

(f) the acquisition of control of a Canadian business carried on by an agent of Her Majesty in right of Canada or a province or by a Crown corporation within the meaning of the *Financial Administration Act*;

(g) the acquisition of control of a Canadian business carried on by a corporation the taxable income of which is exempt from tax under Part I of the *Income Tax Act* by virtue of paragraph 149(1)(d) of that Act;

(h) any transaction to which section 522 of the *Bank Act* applies;

(i) the involuntary acquisition of control of a Canadian business on the devolution of an estate or by operation of law;

(j) the acquisition of control of a Canadian business by

(i) an insurance company incorporated in Canada that is a company or a provincial company to which the *Insurance Companies Act* applies, on the condition that the gross investment revenue of the company from the Canadian business is included in computing the income of the company under subsection 138(9) of the *Income Tax Act*,

(ii) a non-resident insurance company the insurance of risks in Canada by which has been approved by order of the Superintendent of Financial Institutions under Part XIII of the *Insurance Companies Act*, on the condition that the gross investment revenue of the company from the Canadian business is included in computing the income of the company under subsection 138(9) of the *Income Tax Act* and the voting interests of the entity carrying on the Canadian business, or the assets used in carrying on the Canadian business, are vested in trust under that Part, or

(iii) a corporation incorporated in Canada, all the issued voting shares of which, other than the qualifying voting shares of directors, are owned by an insurance company described in subparagraph (i) or (ii) or by a corporation controlled directly or indirectly through the ownership of voting shares by such an insurance company, on the condition that, in the case of an insurance company described in subparagraph (ii), the voting interests of the entity carrying on the Canadian business, or the assets used in carrying on the Canadian business, are vested in trust under Part XIII of the *Insurance Companies Act*; and

(k) the acquisition of control of a Canadian business the revenue of which is generated from farming carried out on the real property acquired in the same transaction.

Where condition not complied with

(2) Where any condition referred to in paragraph (1)(d) or (j) is not complied with, the exemption under that paragraph does not apply and the transaction referred to in that paragraph is subject to this Act as if it had never been exempt.

R.S., 1985, c. 28 (1st Supp.), s. 10; 1991, c. 46, s. 600, c. 47, s. 735.

Part III Notification

Investments subject to notification

11. The following investments by non-Canadians are subject to notification under this Part:

(a) an investment to establish a new Canadian business; and

(b) an investment to acquire control of a Canadian business in any manner described in subsection 28(1), unless the investment is reviewable pursuant to section 14.

Notice of investment

12. Where an investment is subject to notification under this Part, the non-Canadian making the investment shall, at any time prior to the implementation of the investment or within thirty days thereafter, in the manner prescribed, give notice of the investment to the Director providing such information as is prescribed.

R.S., 1985, c. 28 (1st Supp.), s. 12; 1995, c. 1, s. 50.

Receipt

13. (1) Where a notice given under section 12 provides all the required information or reasons for the inability to provide any part of the required information, or where the notice is completed pursuant to subsection (2), the Director shall forthwith send a receipt to the non-Canadian that gave the notice

(a) certifying the date on which

(i) the complete notice given under section 12 was received by the Director, or

(ii) the information required to complete the notice was received by the Director pursuant to subsection (2); and

(b) advising the non-Canadian that

(i) the investment is not reviewable, or

(ii) unless the Director sends the non-Canadian a notice for review pursuant to section 15 within twenty-one days after the certified date referred to in paragraph (a), the investment is not reviewable.

Incomplete notice

(2) Where a notice given under section 12 is incomplete, the Director shall forthwith send a notice to the non-Canadian that gave the notice under that section, specifying the information required to complete the notice under section 12 and requesting that the information be provided to the Director in order to complete that notice.

Where investment not reviewable

(3) An investment in respect of which a receipt is sent under subsection (1) is not reviewable if

(a) the information provided by the non-Canadian and relied on by the Director in sending the receipt is accurate; and

(b) in a case where the receipt contains the advice referred to in subparagraph (1)(b)(ii), no notice for review is sent to the non-Canadian pursuant to section 15 within twenty-one days after the certified date referred to in paragraph (1)(a).

R.S., 1985, c. 28 (1st Supp.), s. 13; 1995, c. 1, s. 50.

Part IV Review

Reviewable investments

14. (1) The following investments by non-Canadians are reviewable under this Part:

(a) an investment to acquire control of a Canadian business in any manner described in paragraph 28(1)(a), (b) or (c), where the limits set out in subsection (3) apply;

(b) an investment to acquire control of a Canadian business in the manner described in subparagraph 28(1)(d)(i), where the limits set out in subsection (3) apply;

(c) an investment to acquire control of a Canadian business in the manner described in subparagraph 28(1)(d)(ii), where the circumstances described in subsection (2) and the limits set out in subsection (3) apply; and

(d) an investment to acquire control of a Canadian business in the manner described in subparagraph 28(1)(d)(ii), where the circumstances described in subsection (2) do not apply and the limits set out in subsection (4) apply.

Circumstances

(2) The circumstances referred to in paragraphs (1)(c) and (d) are that the value, calculated in the manner prescribed, of the assets of the entity carrying on the Canadian business, and of all other entities in Canada, the control of which is acquired, directly or indirectly, amounts to more than fifty per cent of the value, calculated in the manner prescribed, of the assets of all entities the control of which is acquired, directly or indirectly, in the transaction of which the acquisition of control of the Canadian business forms a part.

Limits

(3) An investment described in paragraph (1)(a), (b) or (c) is reviewable under this Part where the value, calculated in the manner prescribed, of

(a) the assets acquired, in the case where control of a Canadian business is acquired in the manner described in paragraph 28(1)(c), or

(b) the assets of the entity carrying on the Canadian business, and of all other entities in Canada, the control of which is acquired, directly or indirectly, in the case where control of a Canadian business is acquired in the manner described in paragraph 28(1)(a), (b) or (d),

is five million dollars or more.

Limits

(4) An investment described in paragraph (1)(d) is reviewable under this Part where the value, calculated in the manner prescribed, of the assets of the entity carrying on the Canadian business, and of all other entities in Canada, the control of which is acquired, directly or indirectly, is fifty million dollars or more.

14.01 and **14.02** [Repealed, 1994, c. 47, s. 132]

14.03 [Repealed, 1994, c. 47, s. 133]

Limits for WTO investors

14.1 (1) Notwithstanding the limits set out in subsection 14(3), an investment described in paragraph 14(1)(a), (b) or (c) by

(a) a WTO investor, or

(b) a non-Canadian, other than a WTO investor, where the Canadian business that is the subject of the investment is, immediately prior to the implementation of the investment, controlled by a WTO investor,

is reviewable pursuant to section 14 only where the value, calculated in the manner prescribed, of the assets described in paragraph 14(3)(a) or (b), as the case may be, is equal to or greater than the applicable amount determined pursuant to subsection (2).

Amount for subsequent years

(2) For the purposes of subsection (1), the amount for any year shall be determined by the Minister in January of that year by rounding off to the nearest million dollars the amount arrived at by using the formula:

$$\frac{\text{Current Nominal } \textbf{GDP} \text{ at Market Prices}}{\text{Previous Year Nominal } \textbf{GDP} \text{ at Market Prices}}$$

multiplied by amount determined for previous year

where

"Current Nominal GDP at Market Prices" means the average of the Nominal Gross Domestic Products at market prices for the most recent four consecutive quarters; and

"Previous Year Nominal GDP at Market Prices" means the average of the Nominal Gross Domestic Products at market prices for the four consecutive quarters for the comparable period in the year preceding the year used in calculating the Current Nominal GDP at Market Prices.

Publication in *Canada Gazette*

(3) As soon as possible after determining the amount for any particular year, the Minister shall publish the amount in the *Canada Gazette*.

Investments not reviewable

(4) Notwithstanding paragraph 14(1)(d), an investment described in that paragraph by

(a) a WTO investor, or

(b) a non-Canadian, other than a WTO investor, where the Canadian business that is the subject of the investment is, immediately prior to the implementation of the investment, controlled by a WTO investor,

that is implemented after this section comes into force is not reviewable pursuant to section 14.

Exceptions

(5) This section does not apply in respect of an investment to acquire control of a Canadian business that

(a) engages in the production of uranium and owns an interest in a producing uranium property in Canada;

(b) provides any financial service;

(c) provides any transportation service, as that expression may be defined by the regulations; or

(d) is a cultural business.

Definitions

(6) In this section and section 14.2,

"controlled by a WTO investor" «sous le contrôle d'un investisseur OMC»

"controlled by a WTO investor", with respect to a Canadian business, means, notwithstanding subsection 28(2),

(a) the ultimate direct or indirect control in fact of the Canadian business by a WTO investor through the ownership of voting interests, or

(b) the ownership by a WTO investor of all or substantially all of the assets used in carrying on the Canadian business;

"cultural business" «entreprise culturelle»

"cultural business" means a Canadian business that carries on any of the following activities, namely,

(a) the publication, distribution or sale of books, magazines, periodicals or newspapers in print or machine readable form, other than the sole activity of printing or typesetting of books, magazines, periodicals or newspapers,

(b) the production, distribution, sale or exhibition of film or video recordings,

(c) the production, distribution, sale or exhibition of audio or video music recordings,

(d) the publication, distribution or sale of music in print or machine readable form, or

(e) radio communication in which the transmissions are intended for direct reception by the general public, any radio, television and cable television broadcasting undertakings and any satellite programming and broadcast network services;

"financial institution" «institution financière»

"financial institution" means any entity authorized to do business under the laws applicable to a WTO Member or any of its political subdivisions relating to financial institutions, as defined by the laws applicable to that WTO Member or any of its political subdivisions, and includes a holding company thereof;

"financial service" «service financier»

"financial service" means a service of a financial nature offered by a financial institution excluding the underwriting and selling of insurance policies;

"WTO Agreement" «Accord sur l'OMC»

"WTO Agreement" has the meaning given to the word "Agreement" by subsection 2(1) of the *World Trade Organization Agreement Implementation Act*;

"WTO investor" «investisseur OMC»

"WTO investor" means

(a) an individual, other than a Canadian, who is a national of a WTO Member or who has the right of permanent residence in relation to that WTO Member,

(b) a government of a WTO Member, whether federal, state or local, or an agency thereof,

(c) an entity that is not a Canadian-controlled entity, as determined pursuant to subsection 26(1) or (2), and that is a WTO investor-controlled entity, as determined in accordance with subsection (7),

(d) a corporation or limited partnership

(i) that is not a Canadian-controlled entity, as determined pursuant to subsection 26(1),

(ii) that is not a WTO investor within the meaning of paragraph (c),

(iii) of which less than a majority of its voting interests are owned by WTO investors,

(iv) that is not controlled in fact through the ownership of its voting interests, and

(v) of which two thirds of the members of its board of directors, or of which two thirds of its general partners, as the case may be, are any combination of Canadians and WTO investors,

(e) a trust

(i) that is not a Canadian-controlled entity, as determined pursuant to subsection 26(1) or (2),

(ii) that is not a WTO investor within the meaning of paragraph (c),

(iii) that is not controlled in fact through the ownership of its voting interests, and

(iv) of which two thirds of its trustees are any combination of Canadians and WTO investors, or

(f) any other form of business organization specified by the regulations that is controlled by a WTO investor;

"WTO Member" «membre de l'OMC»

"WTO Member" means a Member of the World Trade Organization established by Article I of the WTO Agreement.

Interpretation

(7) For the purposes only of determining whether an entity is a "WTO investor-controlled entity" under paragraph (c) of the definition "WTO investor" in subsection (6),

(a) subsections 26(1) and (2) and section 27 apply and, for that purpose,

(i) every reference in those provisions to "Canadian" or "Canadians" shall be read and construed as a reference to "WTO investor" or "WTO investors", respectively,

(ii) every reference in those provisions to "non-Canadian" or "non-Canadians" shall be read and construed as a reference to "non-Canadian, other than a WTO investor," or "non-Canadians, other than WTO investors," respectively, except for the reference to "non-Canadians" in subparagraph 27(d)(ii), which shall be read and construed as a reference to "not WTO investors",

(iii) every reference in those provisions to "Canadian-controlled" shall be read and construed as a reference to "WTO investor-controlled", and

(iv) the reference in subparagraph 27(d)(i) to "Canada" shall be read and construed as a reference to "a WTO Member"; and

(b) where two persons, one being a Canadian and the other being a WTO investor, own equally all of the voting shares of a corporation, the corporation is deemed to be WTO investor-controlled.

1988, c. 65, s. 135; 1993, c. 35, s. 3; 1994, c. 47, s. 133.

Regulations

14.2 The Governor in Council may make such regulations as the Governor in Council deems necessary for carrying out the purposes and provisions of section 14.1, including regulations defining the expression "transportation service" for the purposes of paragraph 14.1(5)(c).

1988, c. 65, s. 135; 1994, c. 47, s. 133.

Other reviewable investments

15. An investment subject to notification under Part III that would not otherwise be reviewable is reviewable under this Part if

(a) it falls within a prescribed specific type of business activity that, in the opinion of the Governor in Council, is related to Canada's cultural heritage or national identity; and

(b) within twenty-one days after the certified date referred to in paragraph 13(1)(a)

(i) the Governor in Council, where the Governor in Council considers it in the public interest on the recommendation of the Minister, issues an order for the review of the investment, and

(ii) the Director sends the non-Canadian making the investment a notice for review.

R.S., 1985, c. 28 (1st Supp.), s. 15; 1995, c. 1, s. 50.

Prohibition

16. (1) A non-Canadian shall not implement an investment reviewable under this Part unless the investment has been reviewed under this Part and the Minister is satisfied or is deemed to be satisfied that the investment is likely to be of net benefit to Canada.

Exceptions

(2) Subsection (1) does not apply

(a) where the Minister has sent a notice to a non-Canadian making an investment to the effect that the Minister is satisfied that a delay in implementing the investment would result in undue hardship to the

non-Canadian or would jeopardize the operations of the Canadian business that is the subject of the investment;

(b) to an investment made through an acquisition referred to in subparagraph 28(1)(d)(ii); or

(c) to an investment reviewable pursuant to section 15.

Application

17. (1) Where an investment is reviewable under this Part, the non-Canadian making the investment shall, in the manner prescribed, file an application with the Director containing such information as is prescribed.

When application must be filed

(2) The application required by subsection (1) shall be filed

(a) subject to paragraph (b), in the case of an investment reviewable pursuant to section 14, at any time prior to the implementation of the investment;

(b) in the case of an investment made through an acquisition referred to in subparagraph 28(1)(d)(ii) or an investment with respect to which a notice referred to in paragraph 16(2)(a) has been sent, at any time prior to the implementation of the investment or within thirty days thereafter; or

(c) in the case of an investment reviewable pursuant to section 15, forthwith on receipt of a notice for review referred to in subparagraph 15(b)(ii).

R.S., 1985, c. 28 (1st Supp.), s. 17; 1995, c. 1, s. 50.

Receipt

18. (1) Where an application filed under section 17 contains all the required information or reasons for the inability to provide any part of the information, or where the application is completed pursuant to subsection (2) or is deemed to be complete pursuant to subsection (3), the Director shall forthwith send a receipt to the applicant, certifying the date on which

(a) the complete application filed under section 17 was received by the Director;

(b) the information required to complete the application was received by the Director pursuant to subsection (2); or

(c) the application was deemed to be complete pursuant to subsection (3).

Incomplete application

(2) Where an application filed under section 17 is incomplete, the Director shall send a notice to the applicant specifying the information required to complete the application and requesting that that information be provided to the Director in order to complete the application.

Where application deemed complete

(3) Where the Director does not, within fifteen days after an application under section 17 has been received by the Director, send a receipt under subsection (1) or a notice under subsection (2), the application is deemed to be complete as of the date the application was received by the Director.

R.S., 1985, c. 28 (1st Supp.), s. 18; 1995, c. 1, s. 50.

Matters to be referred to Minister

19. The Director shall refer to the Minister, for the purposes of section 21, any of the following material received by the Director in the course of the review of an investment under this Part:

(a) the information contained in the application filed under section 17 and any other information submitted by the applicant;

(b) any information submitted to the Director by the person or entity from whom or which control of the Canadian business is being or has been acquired;

(c) any written undertakings to Her Majesty in right of Canada given by the applicant; and

(d) any representations submitted to the Director by a province that is likely to be significantly affected by the investment.

R.S., 1985, c. 28 (1st Supp.), s. 19; 1995, c. 1, s. 50.

Factors

20. For the purposes of section 21, the factors to be taken into account, where relevant, are

(a) the effect of the investment on the level and nature of economic activity in Canada, including, without limiting the generality of the foregoing, the effect on employment, on resource processing, on the utilization of parts, components and services produced in Canada and on exports from Canada;

(b) the degree and significance of participation by Canadians in the Canadian business or new Canadian business and in any industry or industries in Canada of which the Canadian business or new Canadian business forms or would form a part;

(c) the effect of the investment on productivity, industrial efficiency, technological development, product innovation and product variety in Canada;

(d) the effect of the investment on competition within any industry or industries in Canada;

(e) the compatibility of the investment with national industrial, economic and cultural policies, taking into consideration industrial, economic and cultural policy objectives enunciated by the government or legislature of any province likely to be significantly affected by the investment; and

(f) the contribution of the investment to Canada's ability to compete in world markets.

Net benefit

21. (1) Subject to sections 22 and 23, the Minister shall, within forty-five days after the certified date referred to in subsection 18(1), send a notice to the applicant that the Minister, having taken into account any information, undertakings and representations referred to the Minister by the Director pursuant to section 19 and the relevant factors set out in section 20, is satisfied that the investment is likely to be of net benefit to Canada.

Where Minister deemed to be satisfied

(2) Subject to sections 22 and 23, where the Minister does not send a notice under subsection (1) within the forty-five day period referred to in that subsection, the Minister is deemed to be satisfied that the investment is likely to be of net benefit to Canada and shall send a notice to that effect to the applicant.

R.S., 1985, c. 28 (1st Supp.), s. 21; 1995, c. 1, s. 50.

Extension period

22. (1) Where the Minister is unable to complete the consideration of an investment within the forty-five day period referred to in subsection 21(1), the Minister shall, within that period, send a notice to that effect to the applicant and the Minister shall, within thirty days from the date of the sending of the notice or within such further period as may be agreed on by the applicant and the Minister, complete the consideration of the investment.

Notice

(2) If, within the thirty day period referred to in subsection (1) or such further period as is agreed on pursuant to that subsection, the Minister is satisfied that the investment is likely to be of net benefit to Canada, the Minister shall, within that period, send a notice to that effect to the applicant.

Where Minister deemed to be satisfied

(3) Subject to section 23, where the Minister does not send a notice under subsection (2) within the period referred to in that subsection, the Minister is deemed to be satisfied that the investment is likely to be of net benefit to Canada and shall send a notice to that effect to the applicant.

Notice of right to make representations and submit undertakings

23. (1) Where the Minister is not satisfied, within the forty-five day period referred to in subsection 21(1) or within any extension period referred to in subsection 22(1), that an investment is likely to be of net benefit to Canada, the Minister shall send a notice to that effect to the applicant, advising the applicant of his right to make representations and submit undertakings within thirty days from the date of the notice or within such further period as may be agreed on by the applicant and the Minister.

Representations and undertakings

(2) Where, after receipt of the notice referred to in subsection (1), the applicant advises the Minister that he wishes to make representations or submit undertakings, the Minister shall afford the applicant a reasonable opportunity, within the period referred to in subsection (1) for so doing, to make representations in person or by an agent and to give undertakings to Her Majesty in right of Canada, as the applicant sees fit.

Net benefit

(3) On the expiration of the period referred to in subsection (1) for making representations and submitting undertakings, the Minister shall, in the light of any such representations and undertakings and having

regard to the matters to be taken into account under subsection 21(1), forthwith send a notice to the applicant

(a) that the Minister is satisfied that the investment is likely to be of net benefit to Canada; or

(b) confirming that the Minister is not satisfied that the investment is likely to be of net benefit to Canada.

Divestiture

24. (1) On receipt of a notice under paragraph 23(3)(b), the applicant shall not implement the investment to which the notice relates or, if the investment has been implemented, shall divest himself of control of the Canadian business that is the subject of the investment.

(1.1) to (1.3) [Repealed, 1994, c. 47, s. 134]

Authority to purchase cultural business

(2) Notwithstanding section 90 of the *Financial Administration Act*, where a NAFTA investor is, pursuant to a review under this Part, required to divest control of a cultural business, as defined in subsection 14.1(6), that has been acquired in the manner described in subparagraph 28(1)(d)(ii), where the circumstances described in subsection 14(2) do not apply, Her Majesty in right of Canada may acquire all or part of the cultural business and dispose of all or any part of the cultural business so acquired.

Designation of agent

(3) For the purposes of subsection (2), the Governor in Council may, on the recommendation of the Minister and the Treasury Board, by order, designate any Minister of the Crown in right of Canada, or any Crown corporation within the meaning of the *Financial Administration Act*, to act as agent on behalf of Her Majesty with full authority to do all things necessary, subject to such terms and conditions not inconsistent with the obligations of the parties to the NAFTA Agreement under Article 2106 of the Agreement, as the Governor in Council considers appropriate.

Definitions

(4) In this section,

"controlled by a NAFTA investor" «sous le contrôle d'un investisseur ALÉNA»

"controlled by a NAFTA investor", with respect to a Canadian business, means, notwithstanding subsection 28(2),

(a) the ultimate direct or indirect control in fact of the Canadian business by a NAFTA investor through the ownership of voting interests, or

(b) the ownership by a NAFTA investor of all or substantially all of the assets used in carrying on the Canadian business;

"NAFTA Agreement" «Accord ALÉNA»

"NAFTA Agreement" has the meaning given to the word "Agreement" by the *North American Free Trade Agreement Implementation Act*;

"NAFTA country" «pays ALÉNA»

"NAFTA country" means a country that is a party to the NAFTA Agreement;

"NAFTA investor" «investisseur ALÉNA»

"NAFTA investor" means

(a) an individual, other than a Canadian, who is a national as defined in Article 201 of the NAFTA Agreement,

(b) a government of a NAFTA country, whether federal, state or local, or an agency thereof,

(c) an entity that is not a Canadian-controlled entity, as determined pursuant to subsection 26(1) or (2), and that is a NAFTA investor-controlled entity, as determined in accordance with subsection (5),

(d) a corporation or limited partnership

(i) that is not a Canadian-controlled entity, as determined pursuant to subsection 26(1),

(ii) that is not a NAFTA investor within the meaning of paragraph (c),

(iii) of which less than a majority of its voting interests are owned by NAFTA investors,

(iv) that is not controlled in fact through the ownership of its voting interests, and

(v) of which two thirds of the members of its board of directors, or of which two thirds of its general partners, as the case may be, are any combination of Canadians and NAFTA investors,

(e) a trust

(i) that is not a Canadian-controlled entity, as determined pursuant to subsection 26(1) or (2),

(ii) that is not a NAFTA investor within the meaning of paragraph (c),

(iii) that is not controlled in fact through the ownership of its voting interests, and

(iv) of which two thirds of its trustees are any combination of Canadians and NAFTA investors, or

(f) any other form of business organization specified by the regulations that is controlled by a NAFTA investor.

Interpretation

(5) For the purposes only of determining whether an entity is a NAFTA investor-controlled entity under paragraph (c) of the definition "NAFTA investor" in subsection (4),

(a) subsections 26(1) and (2) and section 27 apply and, for that purpose,

(i) every reference in those provisions to "Canadian" or "Canadians" shall be read and construed as a reference to "NAFTA investor" or "NAFTA investors", respectively,

(ii) every reference in those provisions to "non-Canadian" or "non-Canadians" shall be read and construed as a reference to "non-Canadian, other than a NAFTA investor," or "non-Canadians, other than NAFTA investors," respectively, except for the reference to "non-Canadians" in subparagraph 27(d)(ii), which shall be read and construed as a reference to "not NAFTA investors",

(iii) every reference in those provisions to "Canadian-controlled" shall be read and construed as a reference to "NAFTA investor-controlled", and

(iv) the reference in subparagraph 27(d)(i) to "Canada" shall be read and construed as a reference to "a NAFTA country"; and

(b) where two persons, one being a Canadian and the other being a NAFTA investor, own equally all of the voting shares of a corporation, the corporation is deemed to be NAFTA investor-controlled.

R.S., 1985, c. 28 (1st Supp.), s. 24; 1988, c. 65, s. 136; 1993, c. 44, s. 179; 1994, c. 47, s. 134.

Information for monitoring

25. A non-Canadian that implements an investment in accordance with this Part shall submit such information in his possession relating to the investment as is required from time to time by the Director in order to permit the Director to determine whether the investment is being carried out in accordance with the application filed under section 17 and any representations made or undertakings given in relation to the investment.

R.S., 1985, c. 28 (1st Supp.), s. 25; 1995, c. 1, s. 50.

(to be continued)

About Invest Canada:

The Government of Canada created Invest Canada to promote, attract, and retain foreign direct investment in Canada. As a bureau of the Department of Foreign Affairs and International Trade, Invest Canada assists multinational companies planning to invest in Canadian businesses or to expand their operations in the country. It provides guidance on every step of the investment process, from the exploratory phase to site selection and follow up: Invest Canada provides a wealth of information about doing business in Canada, and introduces specialists who offer one-on-one assistance customized to meet any needs.

Contact Information:

Industry Canada, Investment Review Division, 235 Queen Street, Room 301B East Tower
C.D. Howe Building, Ottawa, Ontario, CANADA K1A 0H5. Tel: +1 613 954 1887; +1 613 952 6184 Fax: +1 613 996 2515 Email: investcan@ic.gc.ca.

STUDY NOTES

Transnational Corporations Review Vol. 2, No. 1, 2010
www.tnc-online.net 76-81

A New Perspective on Combating Global Climate Change

Lei Liu[*]

Abstract: This paper presents problems with current methods of coping with climate change and reviews Elinor Ostrom's polycentric approach to theories of collective action on this issue. Past decades have witnessed the shortcomings of global efforts to combat climate change, such as conflicts between developed and developing nations. Efforts have been analyzed using conventional theories of collective action, wherein rational choice theory predicts that individuals will not collaborate without external authority. However, as a large number of empirical cases do not support this prediction, Elinor Ostrom proposes a polycentric approach that takes into account actions at various levels, with active oversight of local, regional, and national stakeholders. The approach recognizes efforts to reduce individual emissions and to have responsibility taken in small- to medium-scale governance units linked by information networks and monitoring at all levels. Coordination and oversight at these levels takes advantage of a much broader and potentially more resilient network in the fight against climate change.

Key words: climate change; global solution; polycentric

The increasing threat of climate change has been the major and ongoing concern of the world in the last two decades. Due to the global nature of the problem, many current policy analyses recommend solutions at an international level to be implemented by national governments. So far, however, a global solution seems elusive.

1. Climate change dilemma

1.1. International conflict

Since adopting the Kyoto Protocol in 1997, developed countries that ratified the treaty have managed to reduce their carbon emissions, and yet global CO_2 emissions have risen by nearly 35%. The developing countries are always blamed for increasing emissions (Chatterjee, 2008). So, developed countries keep demanding the GHG emission reduction of developing countries. However, it cannot be neglected that a considerable amount of production behavior in developing countries are driven by the consumption demand from developed countries. And from the viewpoint of the developing countries, the most greenhouse gas (GHG) emissions in the atmosphere are accumulated by developed countries in history, with which they have attained a high level of prosperity. So for the equity, now developing countries are responsible for GHG emission reduction and should offer technical and financial aid to help developing

[*] Lei Liu, College of Environmental Sciences and Engineering, Peking University, Beijing 100871, China. Email: liulei811@gmail.com.

countries to adapt climate change and cut down GHG emissions. Till now, the dispute is still continuing on the Copenhagen conference, where developing world and developed world still accuse each other that they should bear more responsibilities.

1.2. Carbon leakage and free riding

Carbon leakage means the increase in emissions outside a region as a direct result of the policy to cap emission in this region (Reinaud, 2008). For example, as a result of differentiated level of GHG regulations in different countries, the energy-intensive manufacturing activity in countries that adopt strict environmental regulation may shift to countries that do not yet have comparable regulations.

In addition, whenever actions taken by some individuals or organizations benefit a larger group, a risk always exists that some participants will free ride on the efforts of others and not contribute an appropriate share. There are still many governmental and private entities at multiple scales that are increasing their GHG emissions without adopting any reductions policies (Ostrom, 2009). For example, although there are so-called binding agreements between national governments, such as Kyoto Protocol, a part of governments refuse to ratify it.

The atmospheric environment is shared by all the global communities. Such leakage and free riding can undermine the endeavor of those countries who try to cap GHG emission.

1.3. Lack of local consciousness

As a matter of fact, GHG emission control requires collective action and innovation at the local level. However, it is challenging. So far, many individuals still have not accepted the reality of the threat and their need to act in a different manner. So much people are continuing to drive alone that single occupancy vehicle trips constitute more than 80 percent of all travel in the US (Sovacool, 2009). Actually, if families would change their fundamental behavior relating to energy conservation, it would cumulatively reduce their GHG emissions by around 30 percent (Vandenbergh and Steinemann, 2007). Besides, when the Cities for Climate Protection campaign sponsored by the International Council for Local Environmental Initiatives tried to encourage cities to find ways of controlling GHG emissions, they found it a difficult task. Lack of local consciousness may be due in part to the fact that climate change is so often framed as a global issue that local politicians and citizens sometimes cannot see that there are things that can be done at a local level that are important steps in the right direction (Betsill, 2001). It seems the world has been trapped in a dilemma while trying to find a global solution for climate change.

2. The defect of the conventional theory of collective action

The reason why the world has been trying to seek a global agreement to regulate the behaviors of each country originates from the classic theory of collective action, which predicts the benefits that might be achieved through collective action are impossible to obtain without externally imposed regulations at the

scale of the potential externalities. However, contrary to such argument, a large number of empirical studies at a small to medium scale find many groups in the field have self-organized to develop solutions to common-pool resource problems (National Research Council, 1986; Ostrom, 1992; Ostrom, Gardner et al., 1994; Schlager, 1994; Schlager, Blomquist et al., 1994; Agrawal, 2000; McKean, 2000; Ostrom, 2001; Agrawal, 2002; Dietz, Ostrom et al., 2003). As a foundation for the conventional theory of collective action, rational choice theory is well supported when applied to the analysis of the provision and production of private goods in a highly competitive environment, while it is not convincing when applied to situations involving social dilemmas where participants trust one another to be effective reciprocators (Ostrom, 1998). Thus, it is essential to update the conventional theory so that future policies are not made on the basis of a theory that appears to be so reasonable but has not received strong empirical support (Ostrom, 2009).

3. A polycentric solution

Given the complexity of the problem, the cause and effects at multilevel and the shortage of conventional theory of collective action, continuing to wait for a global solution may defeat the possibilities of significant adaptations and mitigations in time to prevent tragic disasters. Many of the actions generating GHG emissions are taken at multiple scales, so activities could be organized at multiple scales, ranging from households, farms, and cities at a local scale to regions within a state, states, regional units that cross state boundaries and the globe (Kates and Wilbanks, 2003). More importantly, global solutions, if not backed up by a variety of efforts at national, regional, and local levels, however, are not guaranteed to work well (Ostrom, 2009). Base on this, Elinor Ostrom proposes a new perspective for fighting climate change, which is defined as "polycentric approach".

The origin of the term "polycentric" is from an article of Vincent Ostrom, Charles Tiebout, and Robert Warren entitled "The Organization of Government in Metropolitan Areas: A Theoretical Inquiry." in 1961, which intended to make sense that a simple dichotomy between "the" market and "the" government was not a good scientific approach to the study of public economies. This was aiming at scholars thought it chaotic that during the 1950s, massive criticism was leveled at metropolitan areas across the United States and Europe as a result of the large number of small-, medium-, and large-scale governmental units operating at the same time (Ostrom, 2009). Nevertheless, it turned out to be that polycentric metropolitan regions tend to reduce opportunistic behavior even though no institutional arrangement can totally eliminate opportunism with respect to the provision and production of collective goods. Later, Vincent Ostrom (1999) defines a polycentric order as "one where many elements are capable of making mutual adjustments for ordering their relationships with one another within a general system of rules where each element acts with independence of other elements". When applied to the context of global public goods, the initial relevance of polycentric is the parallel between the earlier theoretical presumption that only the largest scale was relevant for the provision and production of public goods for metropolitan areas, and the contemporary presumption that only one scale is relevant for policies related to global public goods.

However, while large-scale units were part of effective governance of metropolitan areas, small and medium-scale units were also essential (Ostrom, 2009). Therefore, an important lesson is that simply trying to seek a single global solution that is implemented by national governmental unit because of global impacts is far from enough. The important role of smaller-scale effects must be recognized.

A polycentric approach means actions at various levels with active oversight of local, regional, and national stakeholders. It encourages experimental efforts at multiple levels, leading to the development of methods for assessing the benefits and costs of particular strategies adopted in one type of ecosystem and compared to results obtained in other ecosystems (Ostrom, 2009).

Instead of the benefits of reducing GHG emissions existing only at the global level, multiple benefits are created by diverse actions at multiple scales, such as better health of household members who bike to work rather than driving and reduced expenditures on heating and electricity, etc. Further, the extensive empirical research on collective action has repeatedly identified trust and reciprocity among participants as the central core of successful collective action. If the only policy related to climate change was adopted at the global scale, it would be particularly difficult to increase the trust from citizens and firms that other citizens and firms located halfway around the globe are taking actions similar to those being taken "at home". When participants fear they are being "suckers" for taking costly actions while others free ride, more substantial effort is devoted to finding deceptive ways of appearing to reduce emissions while not doing so. Then monitoring is critical. Diversified monitoring strategies at various levels have been identified in a number of cases of successful common pool resources management. For example, most long-surviving resource regimes select their own monitors, who are accountable to the appropriators or are appropriators themselves and who keep an eye on resource conditions as well as on harvesting activities. By creating official positions for local monitors, a resource regime does not have to rely only on local community norms to sanction a rule breaker (Ostrom, 2009). In addition, Elinor Ostrom (2009) also suggests more investment in scientific research and practical project to protect ecosystem related to carbon sequestration.

Facing the current situation, nevertheless, Elinor Ostrom thinks there are no optimal solutions that can be used to make substantial reductions of GHG emitted into the atmosphere, given the complexity and changing nature of the problems involved in coping with climate change. A major reduction in emissions is, however, needed. Given that the recognition of the danger of climate change among citizens and public officials is still relatively recent, and given the debates about who is responsible for causing the problem and for finding solutions, one cannot expect that an effective polycentric system will be constructed in the near future. But given the slowness and conflict involved in achieving a global solution, recognizing the potential of building even more effective ways of reducing energy use at multiple levels is an important step forward (Ostrom, 2009).

4. Conclusion

Efforts to reduce global GHG emissions are a classic collective action problem that is best addressed at multiple scales and levels. Besides global solutions, it is important to build a strong commitment to find ways of reducing individual emissions and have others also take responsibility in small- to medium-scale governance units that are linked together through information networks and monitoring at all levels. Undoubtedly, facing the current somewhat inefficient global solutions and limited recognitions of the problem of climate change, the research of Elinor Ostrom offers a new and much broader perspective for global communities. That is, in one word, multilevel action and diverse institution.

References

Agrawal, A. 2002. Common resources and institutional sustainability. In *The drama of the commons*, eds. E. Ostrom, et al. National Research Council, Committee on the Human Dimensions of Global Change, National Academy Press.

———. 2000. Small is beautiful, but is larger better? Forest-management institutions in the Kumaon Himalaya, India. In *People and Forests: Communities, Institutions, and Governance*, ed. Clark C. Gibson, Margaret A. McKean, and Elinor Ostrom, 57-85. Cambridge, Mass.: MIT Press.

Betsill, M. M. 2001. Mitigating climate change in US cities: Opportunities and obstacles. *Local Environment* 6, (4): 393-406.

Chatterjee, R. 2008. Carbon embodied in international trade. *Environmental Science & Technology* 42, (5) (Mar 1): 1391-2.

Dietz, T., E. Ostrom, and P. C. Stern. 2003. The struggle to govern the commons. *Science* 302, (5652): 1907.

McKean, M. A. 2000. Common property: What is it, what is it good for, and what makes it work? In *People and Forests: Communities, Institutions, and Governance*, ed. Clark C. Gibson, Margaret A. McKean, and Elinor Ostrom, 27-55. Cambridge, Mass.: MIT Press.

National Research Council. 1986. Proceedings of the Conference on Common Property Resource Management.

Ostrom, E. 2009. A polycentric approach for coping with climate change. *Policy Research Working Paper Series*.

———. 2001. Reformulating the Commons. In *Protecting the Commons: A Framework for Resource Management in the Americas*, eds. Joanna Burger et al.: 17. Washington, D.C.: Island Press.

———. 1998. A behavioral approach to the rational choice theory of collective action: Presidential Address, American Political Science Association, 1997. *The American Political Science Review* 92, (1): 1-22.

———. 1992. The Rudiments of a Theory of the Origins, Survival, and Performance of Common-Property Institutions. In *Making the Commons Work: Theory, Practice, and Policy*, ed. Daniel W. Bromley, David Feeny, 293. Richmond, California: ICS Press.

Ostrom, E., R. Gardner, and J. Walker. 1994. *Rules, games, and common-pool resources.* University of Michigan Press.

Ostrom, V. 1999. Polycentricity (Part 1). Paper presented at Polycentricity and Local Public Economies: Readings from the Workshop in Political Theory and Policy Analysis, Indiana University, Bloomington, Indiana.

Reinaud, J. 2008. Climate policy and carbon leakage: Impacts of the European emissions trading scheme on aluminium'. *IEA Information Paper*.

Schlager, E. 1994. Fishers' institutional responses to common-pool resource dilemmas. In *Rules, Games, and Common-Pool Resources*. eds. Ostrom, E., R. Gardner, and J. Walker. 247-66. University of Michigan Press.

Schlager, E., W. Blomquist, and S. Y. Tang. 1994. Mobile flows, storage, and self-organized institutions for governing common-pool resources. *Land Economics*: 294-317.

Sovacool, B. K. 2009. Addressing climate change: Global and local? In *Generating Electricity in a Carbon-Constrained World,*. ed. F. Sioshansi. New York: Elsevier.

Vandenbergh, M. P., and A. C. Steinemann. 2007. The carbon-neutral individual. *New York University Law Review* 82: 1673.

About the Author: *Lei Liu* is a fifth-year doctoral student at the College of Environmental Sciences and Engineering, Peking University, China. He is a 2009-2010 visiting scholar at the Workshop in Political Theory and Policy Analysis at Indiana University in the United States. Lei Liu received his B.A. in Environmental Science from Wuhan University, China in 2005. His research interests include environmental policy and economics. In the past several years, he has participated in a number of projects sponsored by local governments in China, including policy design for industrial environmental management, strategic environmental assessment, and regional environmental planning. He is currently on China's climate policy and its impact on the country's economic development, especially in terms of international trade.

Contact Information:

Lei Liu, College of Environmental Sciences and Engineering, Peking University, Beijing 100871, China. Email: liulei811@gmail.com.

SPECIAL INFORMATION

2010 TNCs and China Conference

The primary focus of the Conference is on new and original research in the areas of economics and management with special emphasis on Transnational Corporations (TNC) and Foreign Direct Investment (FDI). China is keen in its interest to listen, learn, and evolve according to proven best practices globally. Soft power is there...based on the Schumpeterian prudential entrepreneurial and long-term innovative market economy helped by the proper roles of governments.

As we all are in the same "Great Recession" boat of global economy, this Global Conference at the end of the Silk Road and the Cradle of the Chinese nation (Xi'an) will focus on collaborative and interactive roles of governments and transnational corporations (TNCs) in modern social and economic development of China & emerging markets in general. In particular, China's rapid integration into the global economy has created tremendous and least understood new investment and trade opportunities for all the global economy stakeholders. Featuring Nobelists and other top experts, the Conference will offer a unique forum for business, government & academia leaders and analysts to discuss and practically assess the existing opportunities and how to optimally advance them in the near future.

Background

For over a generation, China has been implementing daring reforms and advancing firmly towards a modern market economy (mixed economy) based on the aspirations of the growing middle class. While still nominally an “emerging market” of the East, it occupies a special place as a G-2 country since the onset of this Great Recession globally.

Thematic Cluster

The Conference will be devoted to diverse modern approaches and strategies to learning and managing knowledge needed to successfully invest in China in the longer term, e.g. FDI via TNCs. So far global investors into China are rather traditionally short-term oriented and pursue shallow approaches, more so than in other countries. While some business opportunities with China can be tapped using just traditional business textbook methods, deeper and more lucrative opportunities necessitate dedication to learning and managing the changing knowledge for substantial longer-term earning strategies. These strategies are becoming available as the Chinese middle class advances in both quantities and qualities. As such, the issue will be addressing the knowledge needs of a whole spectrum of interested readers: from international business (esp. foreign investment) theorists to hands-on practitioners.

Grounded in Lessons of Economic History

Historically, skeptics rather superficially compare China with the USSR, where heavy investment also produced rapid rates of growth for years before it collapsed. If China were similar, its total factor productivity (TFP, growth in output over and above the growth in inputs' value which is the essence of sustainable economic progress) growth would be negative, as the Soviet Union's was on average by -1% annually some three decades leading to 1988. In contrast, over the past two decades China has enjoyed the fastest growth in TFP of any country in the world. China's productivity has been put on a sustainable growth path by a massive expansion of creative and innovative private enterprise and a shift of labour out of agriculture and into more productive jobs in industry and, increasingly, modern services. For example, China's average return on physical capital is now well above the global average; a decade ago it was less than half the world average, according to Goldman Sachs. Using their "animal spirits" (see Keynes), the Chinese people creatively (re) combine factors of production/inputs (labour, land, human capital/new knowledge, etc.) in the economic processes of satisfaction of their needs, thereby increasing the total factor productivity of the economy.

The most important determinants of long-term productivity growth are the rate of adoption of existing and new technologies, the pace of domestic scientific innovation and knowledge management for modern development. China has become the world's second-largest producer of scientific knowledge. China's gross expenditure on R&D grew at an annual rate of 18 per cent between 1995 and 2006. There is a strong link between the rate of increase in an economy's technological progress and its productivity growth as measured by TFP. This is mainly because China is more open to foreign investment than many other emerging economies, notably Japan and South Korea when they were at similar stages of development. China's TFP growth is almost twice as fast as that of Japan and South Korea during their periods of peak economic growth.

Important Dates

Full paper submission: May 31, 2010
Acceptance notification: June 30, 2010
Camera-ready submission: July 15, 2010
Registration deadline: July 20, 2010
Conference dates: August 26-28, 2010

CALL FOR SUBMISSION

General Information

Transnational Corporations Review (TNCR), published by the Ottawa United Learning Academy (OULA) and Denfar Transnational Development (Denfar), is a modern media journal dedicated to providing economic, policy, and business analysis of current issues related to transnational corporations (TNCs), foreign direct investment (FDI), institutional innovation, and international development. The journal puts emphasis on China's growing involvement in the global economy. FDI by TNCs is the most dominant and dynamic element of the world economy in terms of production value; and TNCR fills the urgent need for a journal on the topic that is available in both English and Chinese. It is the only journal published in the West that addresses the topic from modern theoretical and practical including knowledge management perspectives. The journal particularly serves the needs of globally dispersed young professionals and senior graduate students majoring in Chinese business and international economics.

Journal Title (in English)	*Transnational Corporations Review*
Journal Title (in Chinese)	Kuaguo Gongsi
ISSN	1918-6444
Languages	English/Chinese
Special Advisors	Dr. Manfred Bienefeld, Dr. Anne Miroux, Dr. Elinor Ostrom, Dr. Vincent Ostrom, Dr. Someshwar Rao, Dr. Karl Sauvant, Dr. Yongding Yu, Dr. Yanzhong Zhang
Honorable Editors	Dr. Karl Sauvant & Dr. Val Samonis
Managing Editors	Hugh Dang & Kelsey Wagner
Editors	Anvella Deng, Deon Liao, Vincent Liu
Production Management	Gloria Yuan
China Representative	Alexander Lau
Publication Period	March, June, September, December
Index Information	ALPSP-SWETS, AMICUS, EconLit, SSCI/SCI (pending approval)
Publisher	Ottawa United Learning Academy and Denfar Transnational Development, 1278 Shillington Ave. Ottawa, ON K1Z 8A4 Canada
Websites	www.tnc-online.net, www.tnc-online.org
E-mail (inquiries)	info@tnc-online.org, sino@tnc-online.org

Editorial Policy

TNCR welcomes submission on any aspect(s) of transnational corporations (TNCs), foreign direct investment (FDI), institutional innovation, or international development. Authors from business, government and academic sectors are encouraged to submit papers to this unique journal. The Editorial Board of *TNCR* is comprised of well-known individuals from academic, enterprise, and policy circles. The primary role of board members is to ensure that the journal publishes material of consistently high quality and remains editorially independent. As such, each submission is subject to a double-blind review by members of the Advisory Board and/or relevant organizations, who are asked either to accept or reject the submission. To expedite publication, all aspects of the process from submission to correspondence and editing are done electronically. In order to circulate the work of the authors selected for publication as widely as possible, *TNCR* retains the copyright to all documents appearing in *TNCR* (articles, editorials, comments, etc.). These include, but are not limited to, rights to publication, republication, transmission, distribution, and other forms of use.

Guidelines for Contributors

Submissions focused on TNCs, FDI, institutional innovation, or international development would be warmly welcomed. In keeping with the journal's mandate, submissions dealing with topics related to China are encouraged. Preference will be given to submissions that focus on clear policy implications. *TNCR* publishes special issues on particular topics; individuals with a proposal for a special issue are encouraged to contact the Managing Editor(s) at info@tnc-online.org.

Papers submitted for publication should be in both English and Chinese. Submissions should be sent in Microsoft Word format by e-mail to info@tnc-online.org accompanied by a statement that the text (or parts thereof) has not been published or submitted for publication elsewhere. Papers should not normally exceed ten pages (3,000 words) in length. All papers should have an abstract not exceeding about 100 words, including key words. Research notes should be between five and eight pages. Book reviews and other information should be around 1,000 words, with the exception of review essays, which may be article-length. Footnotes should appear at the bottom of the page to which they refer. An alphabetical list of references should appear at the end of the manuscript. Appendices, tables, figures and acknowledgement should appear at the end of the paper on separate pages.

Submissions (including references) should be typed within standard margins. Pages should be numbered consecutively. The first page of the paper should contain: (i) title; (ii) name(s) and institutional affiliation(s) of the author(s); (iii) mailing address, e-mail address, telephone and facsimile numbers of the author (or primary author, if more than one); (iv) the author's or authors' biographical information with a recent

photograph. Authors should ensure that each submitted paper contains an abstract, an introduction, and a conclusion highlighting the paper's policy implications.

TNCR editors work on a voluntary basis. Submissions should include a contribution of US$30 per printed page to cover the cost of high-level peer reviews, editing and printing. This is payable by authors themselves and/or their affiliated institutions or granting agencies. For submissions in either English or Chinese only, an extra charge of US$20 per printed page may be applied to cover the costs of translating the submission into the second language of the journal. Contributions do not affect editorial decisions. Instructions for making contributions are given once a submission has been accepted for publication.

Subscribe to the Journal

TNCR welcomes subscriptions. This journal takes an innovative, comprehensive look at a wide range of issues facing transnational corporations. It is dedicated to providing economic, policy, and business information as well as analysis of current issues related to transnational corporations, foreign direct investment, institutional innovation, and social development. The mandate of *TNCR* is to publish papers that provide insight into the economic, legal, social and cultural impacts of transnational corporations and foreign direct investment in an increasingly globalized world. For more information about subscription, please contact us at info@tnc-online.org.

FOR ADVERTISEMENT

- **Circulations of over 30,000 through a variety of effective email lists with updates regularly**
- **Hard copies of about 10, 000 to 3 significant areas: North America, Europe and China**
- **Focus of 3 groups: transnational corporations, relevant governments, and young professionals in the field**
- **4 versions: English printed and Chinese printed; English electronic and Chinese electronic**

Unique Journal in English and Chinese

Platform for TNC Policies, Theories, and Practices

TRANSNATIONAL CORPORATIONS REVIEW

www.tnc-online.net, info@tnc-online.org