Economic Effects of Regulatory Reforms in Korea

KIM, Jungwook
Korea Development Institute

Contents

Prior Research (1)

- Lee et al. (2008, Samsung Economic Research Institute)
  - Decrease in investment and productivity from restricting regulations in the competitive market
  - Comparing national income with and without regulations
    - Estimating how PMR indicators affect GDP per capita in OECD countries

Product Market Regulation Indicators

Korea's PMR A	Regulatory cost (per capita, B)	C = A * B	D = C * per capita GDP	E = D * GDP
1.5	$ 951	$ 1,427	7.7%	$ 59.3 billion (65 trillion won)

Note: (1) B, C, D per capita GDP is based on year of 2000, (2) Nominal GDP on 2006 is about $ 772.5 billion.

- Per capita GDP increased by 2.6% if regulations are relaxed like the seven most lenient countries (Countries with low PMR indicator: US, UK, Australia, New Zealand, Denmark, Ireland, Iceland)
- If Korea's index level (1.5) drops to the average level of the 7 countries (1.0), per capita GDP will increase by $476

Prior Research (2)

- Extimated Regulatory Costs (2015.5, Federation of Korean Industries)
  - Similar estimation method as Lee et al. (2008)
  - Effect of PMR indicator on per capita GDP of 31 OECD countries.

    [per capita GDP] = a + **b** * [PMR indicator] + c * [control variables] + d

    b = -901.3

    → **PMR indicator increasing by unit will decrease per capita GDP by $901.3**
  - Korea's total regulatory cost

    = [GDP to regulatory cost ratio] * [2013 Nominal GDP]

    = 7.246% * $ 1,302 billion

    = $ **94.4 billion**

Prior Research (3)

- Estimated Cost of Corporate Regulations

  (2015.3, Korea's SME Ombudsman Committee)

  – Estimate the changes of regulatory cost using OECD's PMR indicators

  – Recently regulatory costs of 12.1 trillion KRW ($ 11 billion) was alleviated

    - 2008, 48.3 trillion KRW

      per capita regulatory cost to per capita GDP was 4.4%

      – OECD Avg: Cost of 28 trillion Won, 2.8%

    - 2013, 36.2 trillion KRW

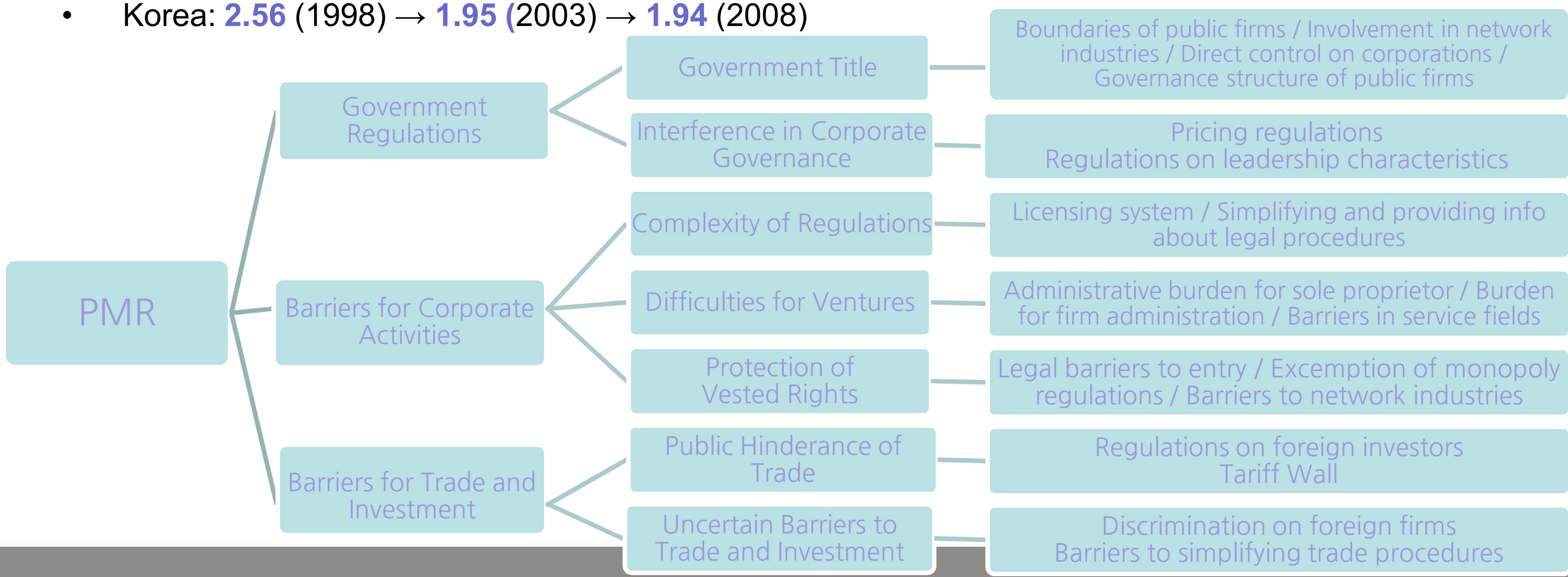
      per regulatory capita cost to per capita GDP was 2.5%

      – OECD Avg: Cost of 17 trillion Won,1.9%

PMR Indicator

- 34 OECD country data available on 1998, 2003, 2008, 2013

  22 non-OECD country data available on 2013 only
- This index indicates overall regulation intensity and competitiveness of the market
- Considering Intensity of Corporate Regulations, Legal and Administrative Barriers to Corporate Activities, Barriers to Trade and Investment, etc.
- Korea: **2.56** (1998) → **1.95** (2003) → **1.94** (2008)



Limitations of Previous Works Using PMR Indicator

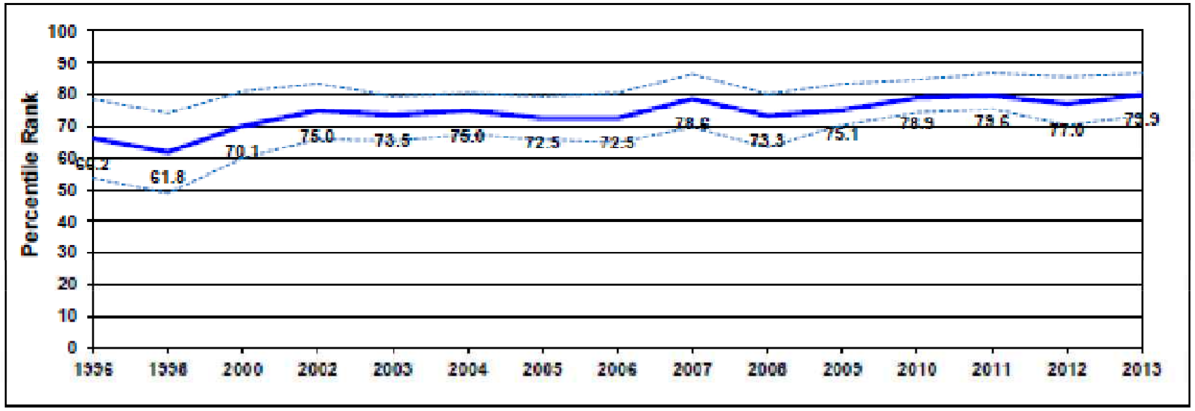
- Availability issues PMR indicator being provided every 5 years
- Compute the index based on survey, low credibility
- Some disregards of benefits from regulations

Utilizing Regulatory Quality Index

- Instead of PMR, Regulatory Quality Index(RQI, issued by World Bank) is used

Korea, Rep., 1996-2013

Aggregate Indicator: Regulatory Quality

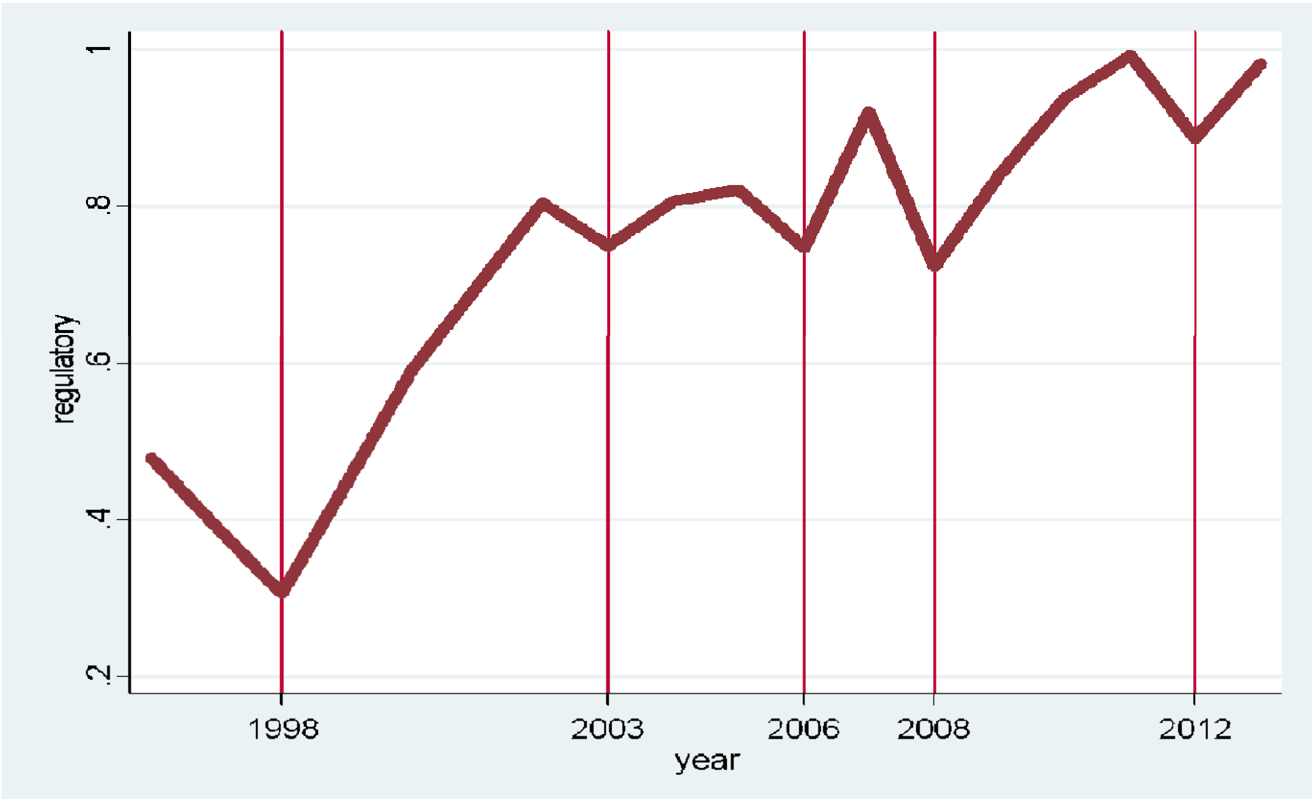


Individual Indicators used to construct Regulatory Quality

Code	Source	Website	1996	1998	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
ADB	African Development Bank Country Policy and Institutional Assessments	http://cpia.afdb.org/	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
ASD	Asian Development Bank Country Policy and Institutional Assessments	http://www.adb.org/	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
BPS	Business Enterprise Environment Survey	http://www.worldbank.org/eca/governance	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
BTI	Bertelsmann Transformation Index	http://www.bertelsmann-transformation-index.de/	..	..	..	0.75	0.85	0.85	0.85	0.85	0.88	0.88	0.88	0.88	0.88	0.85	0.85
EBR	European Bank for Reconstruction & Development Transition Report	http://www.ebrd.org	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
EIU	Economist Intelligence Unit	http://www.eiu.com	0.70	0.75	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.75	0.75	0.75	0.75
GCS	World Economic Forum Global Competitiveness Survey	http://www.weforum.org	0.43	0.48	0.51	0.57	0.56	0.58	0.60	0.53	0.76	0.51	0.52	0.47	0.52	0.54	0.53
HER	Heritage Foundation Index of Economic Freedom	http://www.heritage.org	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.65	0.65	0.70	0.70	0.70	0.70	0.75
IFD	IFAD Rural Sector Performance Assessments	http://www.ifad.org	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
IPD	Institutional Profiles Database	http://www.cepii.fr/	..	..	..	..	..	..	..	0.71	0.71	0.71	0.80	0.80	0.80	0.53	0.53
PIA	World Bank Country Policy and Institutional Assessments	http://www.worldbank.org	..	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
PRS	Political Risk Services International Country Risk Guide	http://www.prsgroup.com	0.45	0.45	0.64	0.73	0.77	0.86	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
WCY	Institute for management & development World Competitiveness Yearbook	http://www.imd.ch	0.44	0.40	0.51	0.54	0.48	0.51	0.53	0.48	0.48	0.39	0.43	0.48	0.52	0.52	0.56
WJP	World Justice Project	http://www.worldjusticeproject.org.	..	..	..	..	..	..	..	..	..	..	..	..	0.69	0.67	0.74
WMO	Global Insight Business Conditions and Risk Indicators	http://www.globalinsight.com	0.69	0.69	0.75	0.88	0.81	0.76	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81

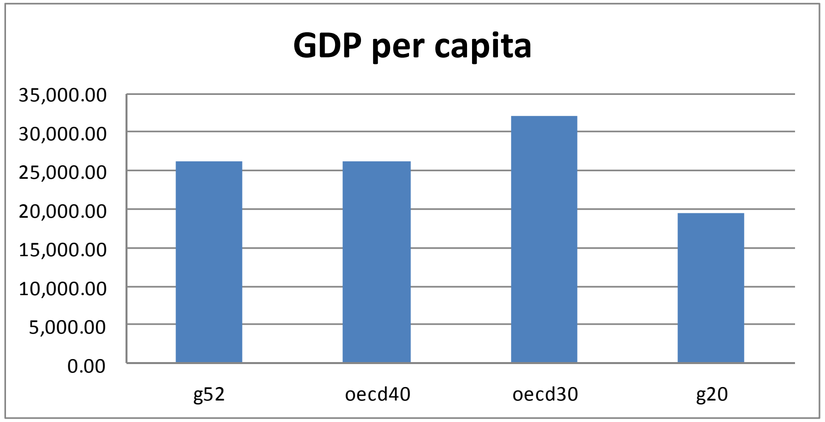
Trend of Korea's Regulation Intensity

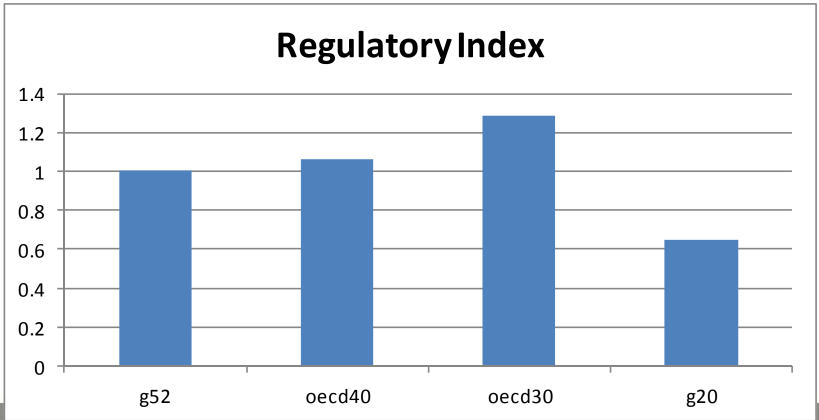
- World Bank, Worldwide Governance Indicators (WGI)

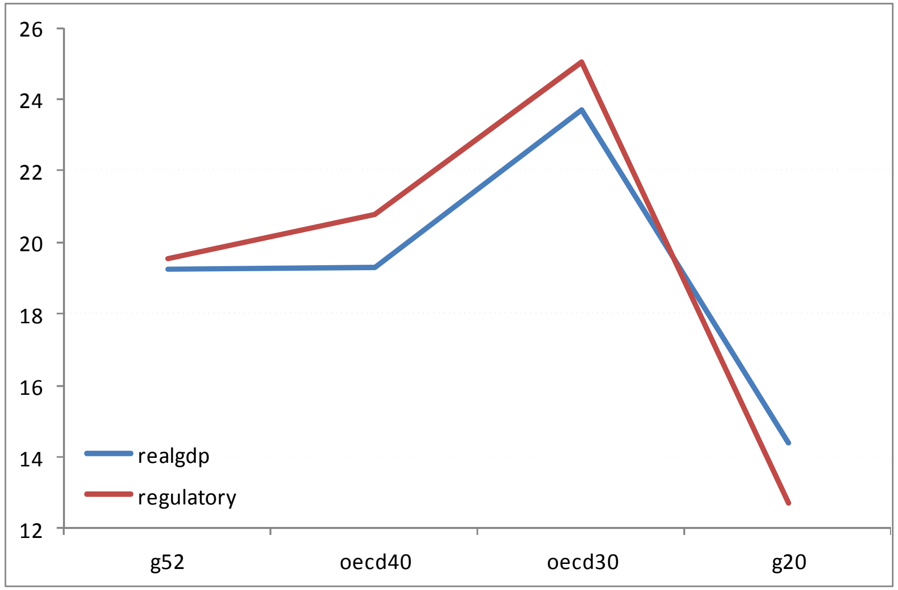


Methods - GDP and RQI

- Average per capita GDP and Regulation Index by Grouped Countries





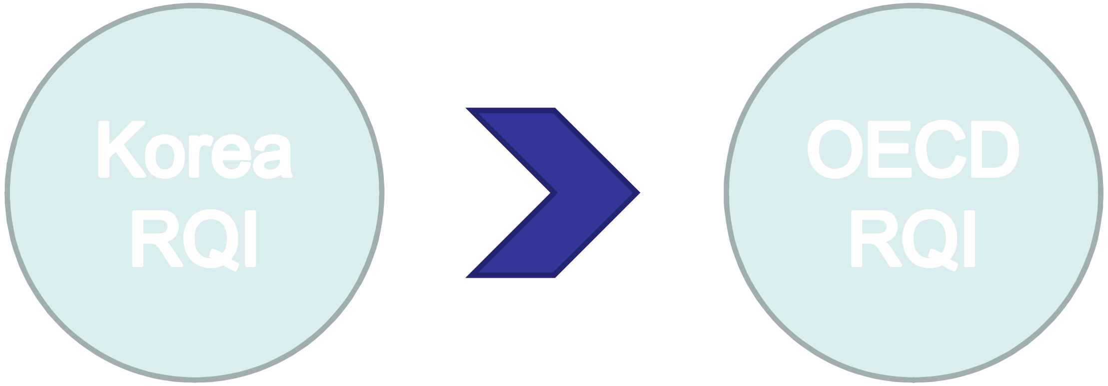


Model

$$\ln(GDP\_per\_capita)_{i,t} = \beta \times (regulation\_level)_{i,t} + \phi \times \ln(X)_{i,t} + \alpha_i + \gamma_t + \varepsilon_{i,t}$$

Regulation Level	Regulatory Quality Index
X	Control Variable (trade: foreign trade as share of GDP) (broadband: internet subscriber rate) (priedu: primary school registration rate) (pop: population) (life: life expentency)
α	Fixed Country Effect
γ	Fixed Time Effect

Model



REGULATORY COST REDUCTION

OR ECONOMIC GROWTH

Summary Statistics

All 52 Countries				
realgdp	Per capita GDP	26,156.950	410.818	113,738.700
regulatory	Reg. Index (-2.5~2.5)	1.000	-0.781	2.247
trade	Share of trade to GDP	93.557	14.933	439.657
broadband	Distribution rate of internet	11.868	0.000	43.009
priedu	Registration rate of primary school	102.775	82.518	147.514
pop	Population (million)	81.700	0.269	1,360.000
life	Life Expectancy	76.314	51.557	83.096

OECD 40 Countries (Members and Partners)				
realgdp	Per capita GDP	26,209.280	410.818	113,738.700
regulatory	Reg. Index (-2.5~2.5)	1.064	-0.781	2.077
trade	Share of trade to GDP	81.120	14.933	371.440
broadband	Distribution rate of internet	13.118	0.000	43.009
priedu	Registration rate of primary school	102.998	92.168	147.514
pop	Population (million)	105.000	0.269	1,360.000
life	Life Expectancy	76.334	51.557	83.096

G20 Countries				
realgdp	Per capita GDP	19,535.620	410.818	67,524.760
regulatory	Reg. Index (-2.5~2.5)	0.650	-0.781	2.023
trade	Share of trade to GDP	51.845	14.933	110.000
broadband	Distribution rate of internet	10.290	0.000	38.792
priedu	Registration rate of primary school	104.236	91.017	147.514
pop	Population (million)	222.000	18.300	1,360.000
life	Life Expectancy	74.132	51.557	83.096

Results Determinants of per capita income Panel Regression (Fixed effect)

	ln(real_gdp)				
	Ⅰ G52	Ⅱ OECD	Ⅲ OECD Ⅰ	Ⅳ OECD Ⅱ	Ⅴ G20
regulatory	0.217***	0.199***	0.216***	0.170***	0.163**
	(5.56)	(4.55)	(5.32)	(4.07)	(2.08)
ln(trade)	-0.724***	-0.808***	-0.646***	-0.642***	-0.916***
	(-11.91)	(-11.88)	(-8.60)	(-7.84)	(-9.82)
ln(priedu)	0.399**	0.720***	-0.219	-0.453	1.215***
	(2.20)	(3.17)	(-0.74)	(-1.53)	(3.82)
ln(broadband)	0.0702***	0.0721***	0.0490***	0.0559***	0.0855***
	(9.31)	(8.93)	(6.29)	(6.72)	(6.56)
ln(pop)	-0.372***	-1.211***	-0.868***	-1.448***	-0.167
	(-3.78)	(-4.45)	(-3.07)	(-4.98)	(-0.34)
ln(life)	5.253***	5.268***	4.518***	5.746***	6.233***
	(5.78)	(5.67)	(3.61)	(4.54)	(4.89)
time F.E	YES				

Note - Grouping Countries

1) All 52 countries (G52) include 34 OECD members, 6 OECD partner countries, and Arab Emirate, Bahrain, Bahamas, Cyprus, Oman, Kuwait, Malta, Puerto Rico, Qatar, Macao(China), Saudi Arabia, Singapore that have more than 20,000 dollars of GDP per capita.

2) OECD **I** includes 30 countries out of 40 OECD members without 6 OECD partners and 4 countries such as Estonia, Israel, Chile, and Slovenia that had joined OECD after 2010.

3) OECD **II** indicates 26 countries with balanced panel without missing values in control variables that are covered in Crain (2010) excluding Australia, Canada, Greece, and Denmark. Statistics appear to be similar as shown in Crain (2010).

Results Summary Estimating Regulatory Costs of Korea

		All 52	OECD 40	OECD 30	OECD 26	G 8
Regulatory Improvement Level		0.018	0.083	0.300	0.275	0.139
I		5,229	23,397	84,879	77,890	39,352
I	- ① (2002~2008)	4,156	18,595	67,460	61,906	31,276
I	- ② (2002~2012)	5,846	26,160	94,905	87,091	44,000
II		4,801	21,483	77,935	71,519	36,133
III		5,212	23,319	84,598	77,632	39,222
IV		4,090	18,300	66,390	60,924	30,780
IV	- ① (2002~2008)	2,215	9,912	35,959	32,998	16,672
IV	- ② (2002~2012)	5,542	24,797	89,959	82,553	41,707
V		3,925	17,563	63,714	58,469	29,540
V	- ① (2002~2008)	4,182	18,712	67,883	62,294	31,472
V	- ② (2002~2012)	7,100	31,771	115,260	105,770	53,438
VI		6,812	30,481	110,579	101,475	51,267
VII		7,187	32,157	116,660	107,055	54,086

Estimation Result

- If regulatory level improves to OECD's average,

  $ 9.9~32.2 billion worth of regulatory cost is estimated to be reduced

  – This amount is 0.76~2.47% of 2013 GDP

  – OECD "Going for Growth"

    Product Market Regulations 20% Reduction

    ➡ 2.4% level gain for advanced economies

    ➡ 3.4% level gain for emerging economies

Issues

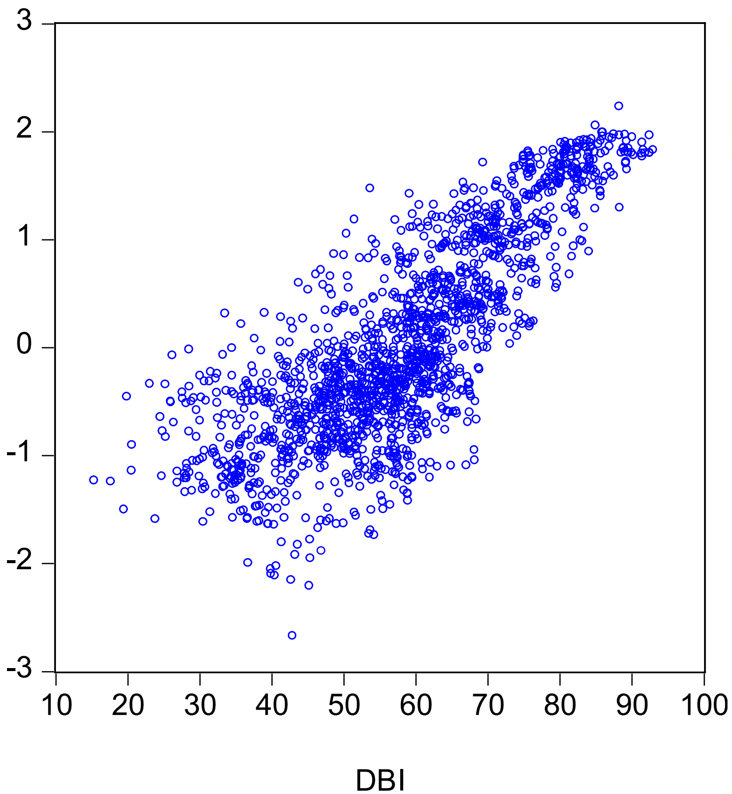
- Reduced Form
  - OECD: PMR **>** TFP(Total Factor Productivity) **>** Growth
- Bliss Point of Regulations
- Selection of Control Variables
- Considering Time Lag

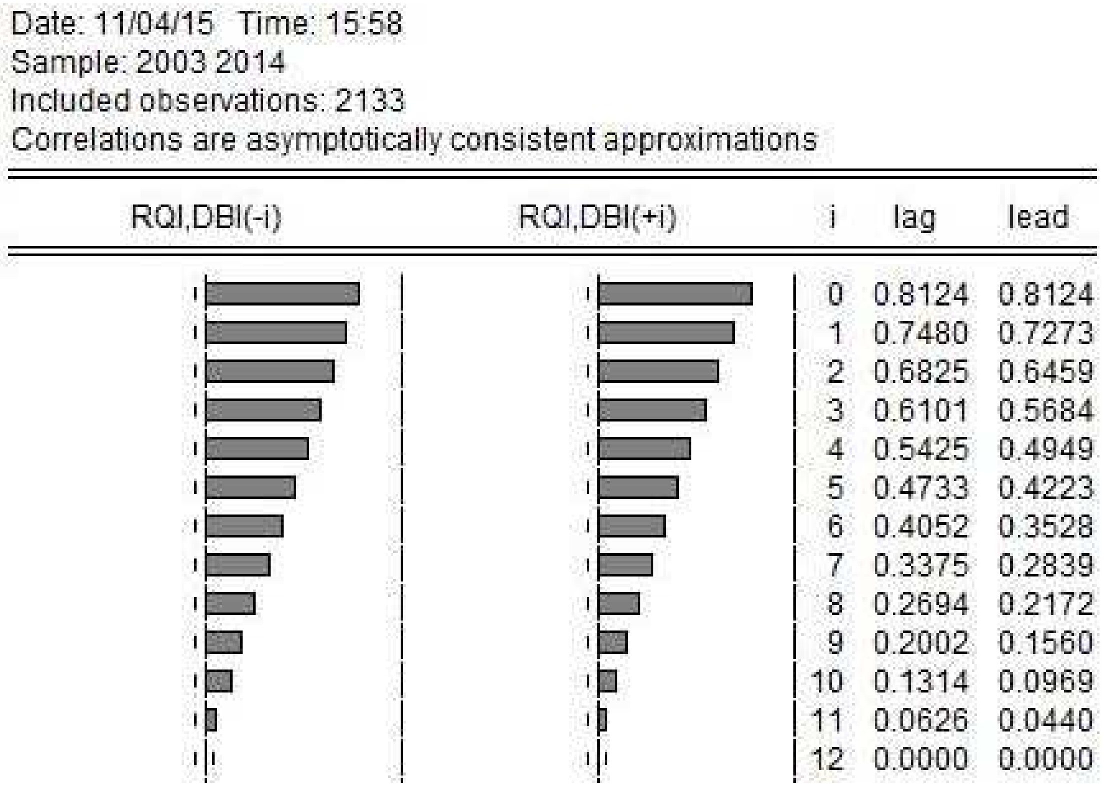
Future Works

- Doing Business Index

  RQI is highly correlated with DBI

correlation	RQI	DBI
RQI	1	0.812
DBI	0.807	1





Date: 11/04/15 Time: 15:58
Sample: 2003 2014
Included observations: 2133
Correlations are asymptotically consistent approximations

RQI,DBI(-i)	RQI,DBI(+i)	i	lag	lead
		0	0.8124	0.8124
		1	0.7480	0.7273
		2	0.6825	0.6459
		3	0.6101	0.5684
		4	0.5425	0.4949
		5	0.4733	0.4223
		6	0.4052	0.3528
		7	0.3375	0.2839
		8	0.2694	0.2172
		9	0.2002	0.1560
		10	0.1314	0.0969
		11	0.0626	0.0440
		12	0.0000	0.0000

Korea's Leading Think Tank

KDI KDI KDI KDI
KDI KDI KDI KDI
KDI KDI KDI KDI

KDI