

Growth, Institutions and Human Capital



Prof. Florencio Lopez de Silanes

EDHEC Business School & U.S. National Bureau of Economic Research

November, 2012

Conference on European Economic Integration (CEEI) 2012

Helsinki, Finland

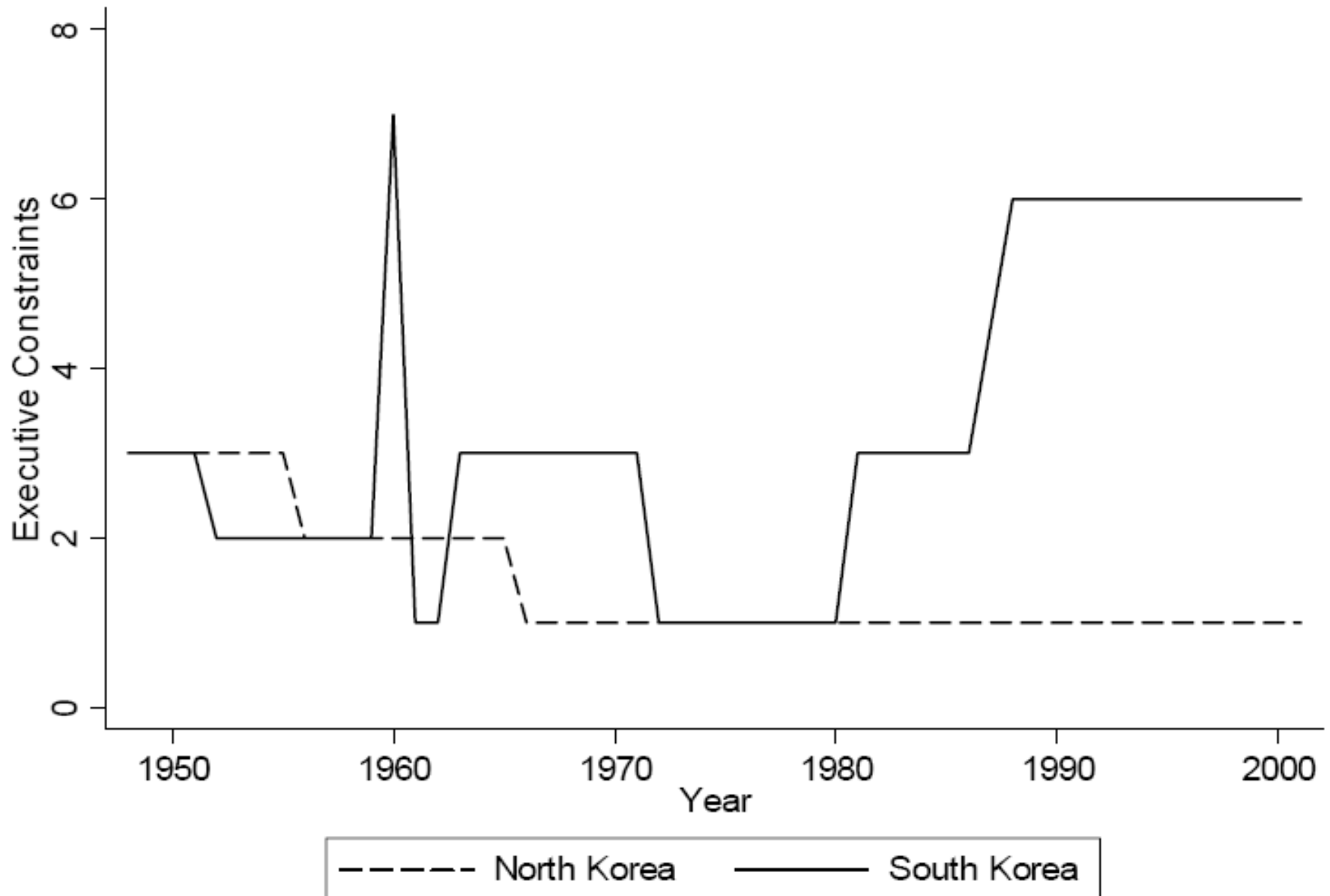
Outline

- I. North and South Korea: same starting institutions but very different results.
- II. Human Capital explains the differences in development across regions/provinces within countries
- III. Human Capital of Entrepreneurs is central for firm growth
- IV. Human Capital also explains Government Efficiency across countries.

Do Institutions cause Growth ?

- ✓ At first we started a cross-country long-term analysis (since 1950) studying the connection between growth, institutions and human capital.
- ✓ There are three main conclusions of this analysis:
 - ✓ We observed that most indicators of institutional quality that are used to support the argument that institutions are leading the growth are inappropriate because: (a) they are subjective; and (b) they follow rather predict growth.
 - ✓ In contrast, it is the institutions of law and the regulation of markets and economic life that do explain some of the differences in development.
 - ✓ Our results also indicate that, beyond institutions, human capital is a key source of growth.
- ✓ Countries get out of poverty, reach a more sustainable growth, and also improve their institutions following policies that improve human capital. Sometimes, these human capital policies are even pursued by dictators.
- ✓ The example of North and South Korea since 1948 illustrates this fact strongly

Executive Constraints 1948-2010 North vs South Korea



Outline

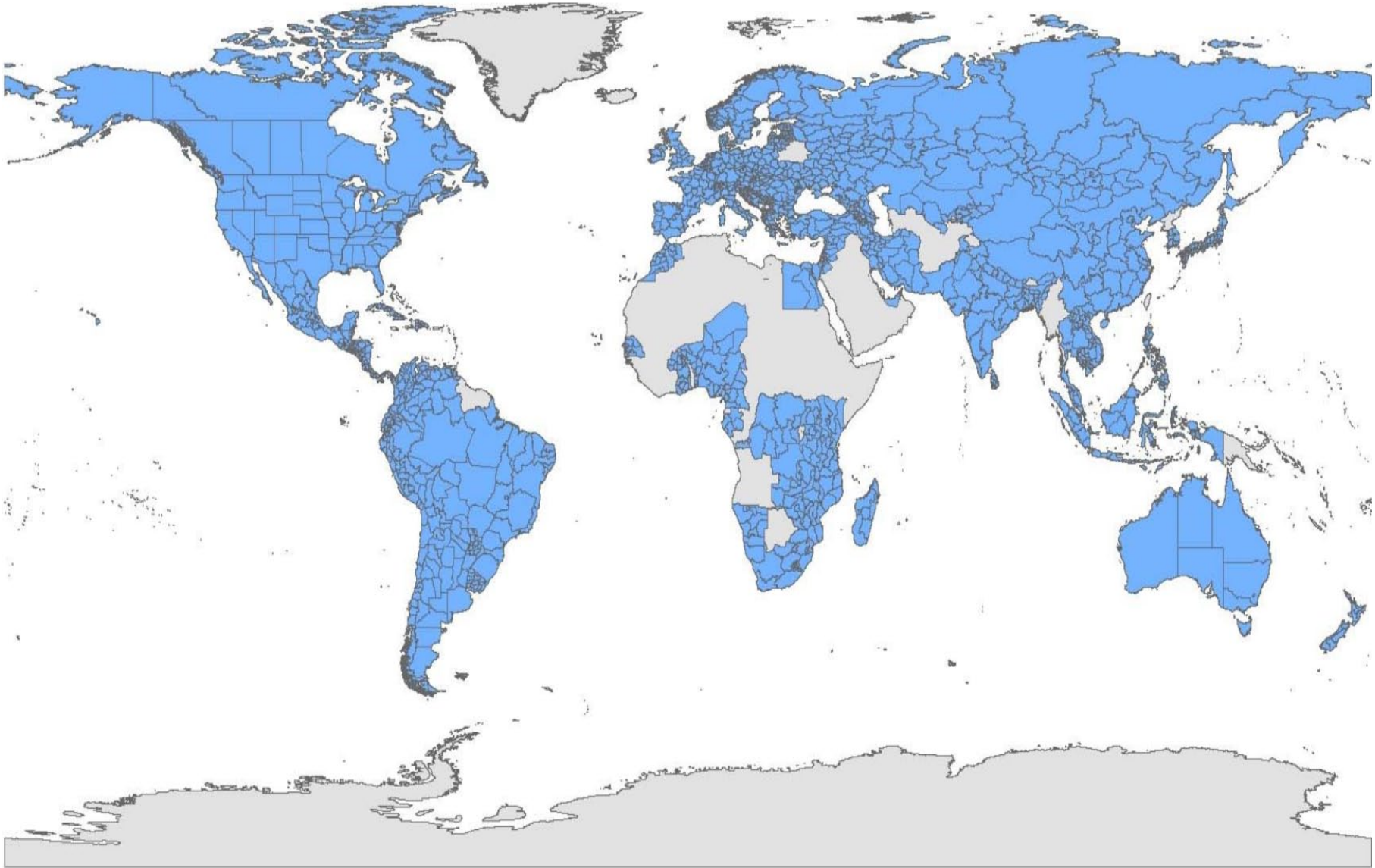
- I. North and South Korea: same starting institutions but very different results.
- II. Human Capital explains the differences in development across regions/provinces within countries
- III. Human Capital of Entrepreneurs is central for firm growth
- IV. Human Capital also explains Government Efficiency across countries.

Human Capital and Regional Development

- In order to go further in the search for the ultimate determinants of economic growth:
 - New model of regional development:
 - Human capital of workers and entrepreneurs are distinct inputs (Lucas 1978);
 - Regional human capital may have externalities (Lucas 1988, 2008);
 - Empirical evidence beyond national level data combining data at the regional and enterprise levels.
- Competing views on the ultimate determinants of economic development:
 1. **Geography** – Bloom and Sachs (1998);
 2. **Ethnic heterogeneity** -- Easterly & Levine (1997), Alesina et al. (2003); and
 3. **Culture** – Knack & Keefer (1997).
 4. **Institutions** – King & Levine (1993), De Long & Shleifer (1993), Acemoglu (2001);
 5. **Human Capital** – Lucas (1988), Barro (1991), Mankiw, Romer & Weil (1992);
- These variables are correlated with each other and, in particular, with human capital.
 - ☞ Difficult to disentangle the ultimate determinants of economic development.
 - ☞ Instrumental variable techniques are not helpful.

Coverage

- ✓ Our sample accounts for 74% of the world's surface and 96% of the world's GDP in 2005.



- ✓ The final dataset has 1,569 regions in 110 countries

Coverage (2)

- We found regional (i.e. sub-national) data on either income or education for **110 countries**.
- For those 110 countries, in addition to income and education, we collected data on:
 1. **Geography and endowments.**
 - Temperature,
 - Inverse distance to coast, and
 - Oil.
 2. **Institutions**
 - Informal payments,
 - Days to pay taxes,
 - Days without electricity,
 - Security costs,
 - Access to land,
 - Access to finance,
 - Government predictability, and
 - Doing Business rank
 3. **Infrastructure**
 - Power line density, and
 - Time to travel to the closest city of 50,000 inhabitants.
 4. **Culture**
 - Trust,
 - Civic values,
 - Number of ethnic groups, and
 - Probability of same language.
 5. **Population**

Univariate Fixed Effect Regressions

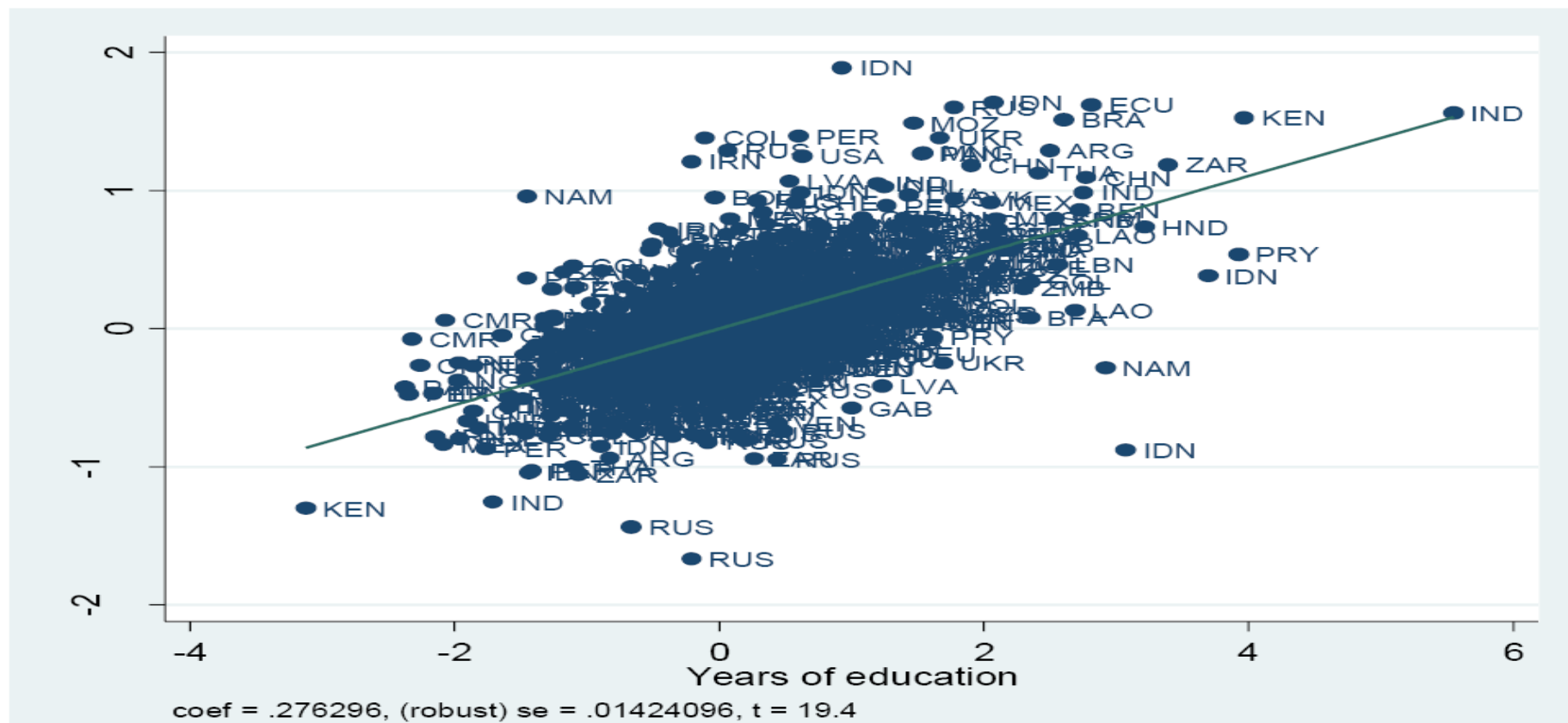
Observations Countries R^2 Within R^2 Between

Independent Variables:

Years of Education	1,470	104	38%	58%
Informal Payments	350	74	0%	21%
Trust in others	739	68	0%	18%

Partial correlation graph of GDP per capita and Human Capital

(controlling for temperature, distance to coast, oil, population and country dummies)



Regional GDP Per Capita, Geography, and Schooling

	(1)	(2)	(3)	(4)	(5)	(6)
Temperature	-0.0156 ^c (0.0082)	-0.0128 (0.0083)	-0.0069 (0.0053)	0.0003 (0.0063)	-0.0142 (0.0089)	0.0020 (0.0081)
Inverse distance to coast	1.0283 ^a (0.2080)	0.5236 ^a (0.1380)	0.5066 (0.3257)	0.5806 ^b (0.2377)	0.4568 ^a (0.1292)	0.5713 ^c (0.3397)
Ln(Oil production per capita)	0.1650 ^a (0.0477)	0.1848 ^a (0.0470)	0.1604 (0.0970)	0.1459 ^b (0.0593)	0.1983 ^a (0.0491)	0.1041 (0.2006)
Years of education		0.2763 ^a (0.0170)	0.3476 ^a (0.0215)	0.3032 ^a (0.0278)	0.2653 ^a (0.0178)	0.3678 ^a (0.0443)
Ln(Population)		0.0122 (0.0164)	0.0008 (0.0215)	0.0091 (0.0177)	0.0165 (0.0169)	0.0050 (0.0393)
Institutional quality			0.3667 (0.2297)			0.4667 (0.2850)
Trust in others				-0.0413 (0.0879)		0.0439 (0.1632)
Ln(Nbr ethnic groups)					-0.0499 ^b (0.0243)	0.0005 (0.0490)
Years of education 65+						
Constant	8.1061 ^a (0.2277)	6.3594 ^a (0.1857)	5.9375 ^a (0.4235)	5.9902 ^a (0.2809)	6.5044 ^a (0.1637)	5.4934 ^a (0.6989)
Observations	1,536	1,499	483	728	1,498	281
Number of countries	107	105	78	66	105	45
R ² Within	8%	42%	62%	48%	42%	62%
R ² Between	47%	60%	61%	51%	60%	51%
R ² Overall	34%	61%	53%	49%	61%	45%
Within R ² excluding institutions and culture	8%	42%	61%	48%	42%	61%
Within R ² excluding education	8%	10%	6%	12%	15%	16%
Between R ² excluding institutions and culture	47%	60%	60%	51%	60%	50%
Between R ² excluding education	48%	42%	46%	6%	47%	63%
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

- Education is the only variable that explains a substantial amount of regional variation in income and labor productivity..

Regional GDP Per Capita, Geography, and Schooling

	(1)	(2)	(3)	(4)	(5)	(6)
Temperature	-0.0156 ^c (0.0082)	-0.0128 (0.0083)	-0.0069 (0.0053)	0.0003 (0.0063)	-0.0142 (0.0089)	0.0020 (0.0081)
Inverse distance to coast	1.0283 ^a (0.2080)	0.5236 ^a (0.1380)	0.5066 (0.3257)	0.5806 ^b (0.2377)	0.4568 ^a (0.1292)	0.5713 ^c (0.3397)
Ln(Oil production per capita)	0.1650 ^a (0.0477)	0.1848 ^a (0.0470)	0.1604 (0.0970)	0.1459 ^b (0.0593)	0.1983 ^a (0.0491)	0.1041 (0.2006)
Years of education		0.2763 ^a (0.0170)	0.3476 ^a (0.0215)	0.3032 ^a (0.0278)	0.2653 ^a (0.0178)	0.3678 ^a (0.0443)
Ln(Population)		0.0122 (0.0164)	0.0008 (0.0215)	0.0091 (0.0177)	0.0165 (0.0169)	0.0050 (0.0393)
Institutional quality			0.3667 (0.2297)			0.4667 (0.2850)
Trust in others				-0.0413 (0.0879)		0.0439 (0.1632)
Ln(Nbr ethnic groups)					-0.0499 ^b (0.0243)	0.0005 (0.0490)
Years of education 65+						
Constant	8.1061 ^a (0.2277)	6.3594 ^a (0.1857)	5.9375 ^a (0.4235)	5.9902 ^a (0.2809)	6.5044 ^a (0.1637)	5.4934 ^a (0.6989)
Observations	1,536	1,499	483	728	1,498	281
Number of countries	107	105	78	66	105	45
R ² Within	8%	42%	62%	48%	42%	62%
R ² Between	47%	60%	61%	51%	60%	51%
R ² Overall	34%	61%	53%	49%	61%	45%
Within R ² excluding institutions and culture	8%	42%	61%	48%	42%	61%
Within R ² excluding education	8%	10%	6%	12%	15%	16%
Between R ² excluding institutions and culture	47%	60%	60%	51%	60%	50%
Between R ² excluding education	48%	42%	46%	6%	47%	63%
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

- Education is the only variable that explains a substantial amount of regional variation in income and labor productivity..

Regional GDP Per Capita, Geography, and Schooling

	(1)	(2)	(3)	(4)	(5)	(6)
Temperature	-0.0156 ^c (0.0082)	-0.0128 (0.0083)	-0.0069 (0.0053)	0.0003 (0.0063)	-0.0142 (0.0089)	0.0020 (0.0081)
Inverse distance to coast	1.0283 ^a (0.2080)	0.5236 ^a (0.1380)	0.5066 (0.3257)	0.5806 ^b (0.2377)	0.4568 ^a (0.1292)	0.5713 ^c (0.3397)
Ln(Oil production per capita)	0.1650 ^a (0.0477)	0.1848 ^a (0.0470)	0.1604 (0.0970)	0.1459 ^b (0.0593)	0.1983 ^a (0.0491)	0.1041 (0.2006)
Years of education		0.2763 ^a (0.0170)	0.3476 ^a (0.0215)	0.3032 ^a (0.0278)	0.2653 ^a (0.0178)	0.3678 ^a (0.0443)
Ln(Population)		0.0122 (0.0164)	0.0008 (0.0215)	0.0091 (0.0177)	0.0165 (0.0169)	0.0050 (0.0393)
Institutional quality			0.3667 (0.2297)			0.4667 (0.2850)
Trust in others				-0.0413 (0.0879)		0.0439 (0.1632)
Ln(Nbr ethnic groups)					-0.0499 ^b (0.0243)	0.0005 (0.0490)
Years of education 65+						
Constant	8.1061 ^a (0.2277)	6.3594 ^a (0.1857)	5.9375 ^a (0.4235)	5.9902 ^a (0.2809)	6.5044 ^a (0.1637)	5.4934 ^a (0.6989)
Observations	1,536	1,499	483	728	1,498	281
Number of countries	107	105	78	66	105	45
R ² Within	8%	42%	62%	48%	42%	62%
R ² Between	47%	60%	61%	51%	60%	51%
R ² Overall	34%	61%	53%	49%	61%	45%
Within R ² excluding institutions and culture	8%	42%	61%	48%	42%	61%
Within R ² excluding education	8%	10%	6%	12%	15%	16%
Between R ² excluding institutions and culture	47%	60%	60%	51%	60%	50%
Between R ² excluding education	48%	42%	46%	6%	47%	63%
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

- Education is the only variable that explains a substantial amount of regional variation in income and labor productivity..

Firm Level Productivity

	<i>Ln(Sales/Employee)</i>				
	(1)	(2)	(3)	(4)	(5)
Years of Education in the Region	0.0655 ^a (0.0202)	0.0639 ^a (0.0185)	0.0954 ^a (0.0280)	0.0950 ^a (0.0279)	0.0478 ^b (0.0185)
Ln(Population in the Region)	0.0920 ^a (0.0321)	0.0803 ^a (0.0297)	0.1437 ^a (0.0501)	0.1409 ^a (0.0504)	0.0917 ^a (0.0328)
Years of Education of manager	0.0534 ^a (0.0047)	0.0352 ^a (0.0048)	0.0257 ^a (0.0062)	0.0243 ^a (0.0057)	0.0169 ^b (0.0077)
Ln(Employees)	.	0.1497 ^a (0.0154)	.	0.0113 (0.0176)	0.1468 ^a (0.0193)
Years of Education of workers	0.0349 ^a (0.0053)	0.0279 ^a (0.0054)	0.0384 ^a (0.0056)	0.0378 ^a (0.0058)	0.0066 (0.0068)
Ln(Expenditure on energy / employee)	0.3577 ^a (0.0185)	0.3554 ^a (0.0177)	.	.	0.2902 ^a (0.0220)
Ln(Property, Plant, Equip. / employees)	.	.	0.3258 ^a (0.0132)	0.3250 ^a (0.0136)	0.1946 ^a (0.0162)
Constant	5.1202 ^a (0.3706)	5.0055 ^a (0.3373)	4.8529 ^a (1.1885)	4.8850 ^a (1.1887)	4.6033 ^a (0.4521)
Observations	13,248	13,248	19,305	19,305	7,733
Number of Countries	29	29	22	22	21
Within R ²	30%	32%	31%	31%	37%
Between R ²	90%	90%	59%	59%	92%
Overall R ²	74%	74%	54%	54%	80%
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes

- Education influences regional development through the education of workers and entrepreneurs.
- Returns to entrepreneurial education 4-5 times higher than worker education returns
- Human Capital externalities may magnify the impact of entrepreneurial inputs.

Firm Level Productivity

	<i>Ln(Sales/Employee)</i>				
	(1)	(2)	(3)	(4)	(5)
Years of Education in the Region	0.0655 ^a (0.0202)	0.0639 ^a (0.0185)	0.0954 ^a (0.0280)	0.0950 ^a (0.0279)	0.0478 ^b (0.0185)
Ln(Population in the Region)	0.0920 ^a (0.0321)	0.0803 ^a (0.0297)	0.1437 ^a (0.0501)	0.1409 ^a (0.0504)	0.0917 ^a (0.0328)
Years of Education of manager	0.0534 ^a (0.0047)	0.0352 ^a (0.0048)	0.0257 ^a (0.0062)	0.0243 ^a (0.0057)	0.0169 ^b (0.0077)
Ln(Employees)	.	0.1497 ^a (0.0154)	.	0.0113 (0.0176)	0.1468 ^a (0.0193)
Years of Education of workers	0.0349 ^a (0.0053)	0.0279 ^a (0.0054)	0.0384 ^a (0.0056)	0.0378 ^a (0.0058)	0.0066 (0.0068)
Ln(Expenditure on energy / employee)	0.3577 ^a (0.0185)	0.3554 ^a (0.0177)	.	.	0.2902 ^a (0.0220)
Ln(Property, Plant, Equip. / employees)	.	.	0.3258 ^a (0.0132)	0.3250 ^a (0.0136)	0.1946 ^a (0.0162)
Constant	5.1202 ^a (0.3706)	5.0055 ^a (0.3373)	4.8529 ^a (1.1885)	4.8850 ^a (1.1887)	4.6033 ^a (0.4521)
Observations	13,248	13,248	19,305	19,305	7,733
Number of Countries	29	29	22	22	21
Within R ²	30%	32%	31%	31%	37%
Between R ²	90%	90%	59%	59%	92%
Overall R ²	74%	74%	54%	54%	80%
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes

- Education influences regional development through the education of workers and entrepreneurs.
- Returns to entrepreneurial education 4-5 times higher than worker education returns
- Human Capital externalities may magnify the impact of entrepreneurial inputs.

Firm Level Productivity

	<i>Ln(Sales/Employee)</i>				
	(1)	(2)	(3)	(4)	(5)
Years of Education in the Region	0.0655 ^a (0.0202)	0.0639 ^a (0.0185)	0.0954 ^a (0.0280)	0.0950 ^a (0.0279)	0.0478 ^b (0.0185)
Ln(Population in the Region)	0.0920 ^a (0.0321)	0.0803 ^a (0.0297)	0.1437 ^a (0.0501)	0.1409 ^a (0.0504)	0.0917 ^a (0.0328)
Years of Education of manager	0.0534 ^a (0.0047)	0.0352 ^a (0.0048)	0.0257 ^a (0.0062)	0.0243 ^a (0.0057)	0.0169 ^b (0.0077)
Ln(Employees)	.	0.1497 ^a (0.0154)	.	0.0113 (0.0176)	0.1468 ^a (0.0193)
Years of Education of workers	0.0349 ^a (0.0053)	0.0279 ^a (0.0054)	0.0384 ^a (0.0056)	0.0378 ^a (0.0058)	0.0066 (0.0068)
Ln(Expenditure on energy / employee)	0.3577 ^a (0.0185)	0.3554 ^a (0.0177)	.	.	0.2902 ^a (0.0220)
Ln(Property, Plant, Equip. / employees)	.	.	0.3258 ^a (0.0132)	0.3250 ^a (0.0136)	0.1946 ^a (0.0162)
Constant	5.1202 ^a (0.3706)	5.0055 ^a (0.3373)	4.8529 ^a (1.1885)	4.8850 ^a (1.1887)	4.6033 ^a (0.4521)
Observations	13,248	13,248	19,305	19,305	7,733
Number of Countries	29	29	22	22	21
Within R ²	30%	32%	31%	31%	37%
Between R ²	90%	90%	59%	59%	92%
Overall R ²	74%	74%	54%	54%	80%
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes

- Education influences regional development through the education of workers and entrepreneurs.
- Returns to entrepreneurial education 4-5 times higher than worker education returns
- Human Capital externalities may magnify the impact of entrepreneurial inputs.

Outline

- I. North and South Korea: same starting institutions but very different results.
- II. Human Capital explains the differences in development across regions/provinces within countries
- III. Human Capital of Entrepreneurs is central for firm growth
- IV. Human Capital also explains Government Efficiency across countries.

Human Capital and Government Efficiency

- ✓ Many countries exhibit poorly performing governments, as evidenced by surveys of citizens, businessmen, foreign investors, or local experts (La Porta et al. 1999, Treisman 2000, Svensson 2005, Kaufmann et al. 2008).
- ✓ Survey responses cannot disentangle the determinants of the quality of government, since:
 - Capture combined assessment of government policies, corruption, and productivity.
 - Reflect a combination of personal experiences and policy views (Glaeser et al. 2004).
- ✓ Two broad reasons for bad government:
 1. **Political economy:** governments in poor countries are less accountable
 - Citizens have few opportunities to exercise their voice (Hirschman 1970).
 - As countries grow richer and more educated, government responsiveness improves as politics become more democratic and transparent (Verba/Nie 1972, Barro 1999, Glaeser et al. 2007, Papaioannou/Siourounis 2008, Djankov et al. 2010, Botero et al. 2012).
 2. **Productivity:** low productivity of government services, similar to the private sector.
 - Inferior inputs (human and physical capital, technology).
 - Poor management (lack of supervision and monitoring (Bloom et al. 2007, 2010a,b, 2012a,b; Lewis 2004).

Human Capital and Government Efficiency

- ✓ We propose an objective indicator of government efficiency:
 - Performance of the mail system returning an incorrectly addressed international letter.
 - Measure the share of letters we got back, and how long it took to get them back, in each of 159 countries, and analyze correlates of these measures of postal efficiency
- ✓ Our approach to measuring government efficiency has two key advantages:
 1. **Simple** and **universal** government service:
 - All countries have post office equipment reading zip codes and sometimes addresses, so the letter ends up with a postal employee whose job is to return it.
 - Performance requires a rather small effort and very little human capital.
 - Government efficiency from the narrow perspective of whether this task is performed enables us to focus on government productivity and relate it to that of the private sector.
 2. **Free from political economy** influences, corruption / political patronage play no role:
 - Impossible to ask the sender for a bribe, since he is not available to pay it.
 - No political purpose is served by either returning the letter or throwing it out.
- ✓ We also consider the determinants of government efficiency compared to the private sector:
 - Measures of capital, labor, and technology in the postal system
 - Management quality and practices

The Letters

Professor Rafael La Porta
Tuck School of Business at Dartmouth
100 Tuck Hall
Hanover, NH 03755

PLEASE RETURN TO SENDER IF UNDELIVERABLE

1-3-2012



BOSTON MA 021

29 DEC 2010 PM 17 T



Gakere Michuki
Smart Computer Services
Tobin Rd 1048
Eldoret
KENYA

RTS.

RETURN

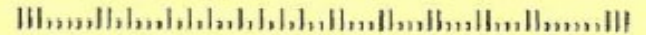
TO SENDER.

00240+0001
03755@9000

NIXIE 100 SE 1 01 12/22/11

RETURN TO SENDER
OTHER REASON
UNABLE TO FORWARD

BC: 03755900000 *1721-20889-29-32



Porta
ness at Dartmouth.

BOSTON MA 021

14 DEC 2010 PM 17 L



TO SENDER IF UNDELIVERABLE

Fadhil Hajek
Technology Professional Partners (المهنة التكنولوجية - شركاه)
763 Kuznets St
Benghazi
Libyan Jamahiriya

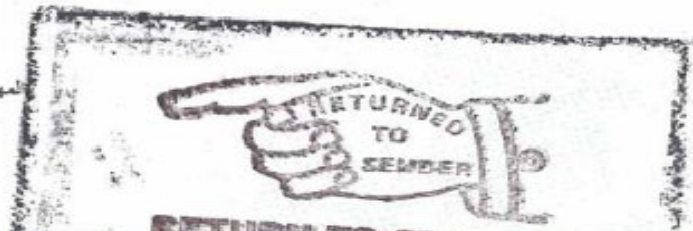
أدريسنا لثقتنا
ADDRESS INSUFFICIENT

مكتوب
REFUSE

لا يتلقى
NONRECLAME

مكتوب
البيانات
بنغازي

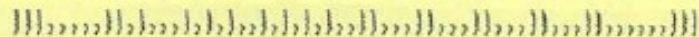
10-26



NIXIE 100 SE 1 01 10/21/11

RETURN TO SENDER
TEMPORARILY AWAY
UNABLE TO FORWARD

BC: 03755900000 *1721-10207-14-27



Mail Efficiency Across Countries

	<i>Panel B: Full sample means</i>		
Full sample (159)	0.5931	0.3535	228.22
	<i>Panel C: Means by GDP per capita</i>		
High income (39)	0.8487 ^a	0.6000 ^a	125.91 ^a
Upper middle income (38)	0.6684	0.4316 ^c	196.27 ^c
Lower middle income (39)	0.5590	0.3026	245.99
Low income (38)	0.3211 ^a	0.0921 ^a	336.02 ^a
	<i>Panel D: Means by average number of years of schooling</i>		
Above median years of schooling (72)	0.7528 ^a	0.5208 ^a	164.48 ^a
Below median years of schooling (84)	0.4607	0.2120	281.65

Notes:

Number of countries in parentheses.

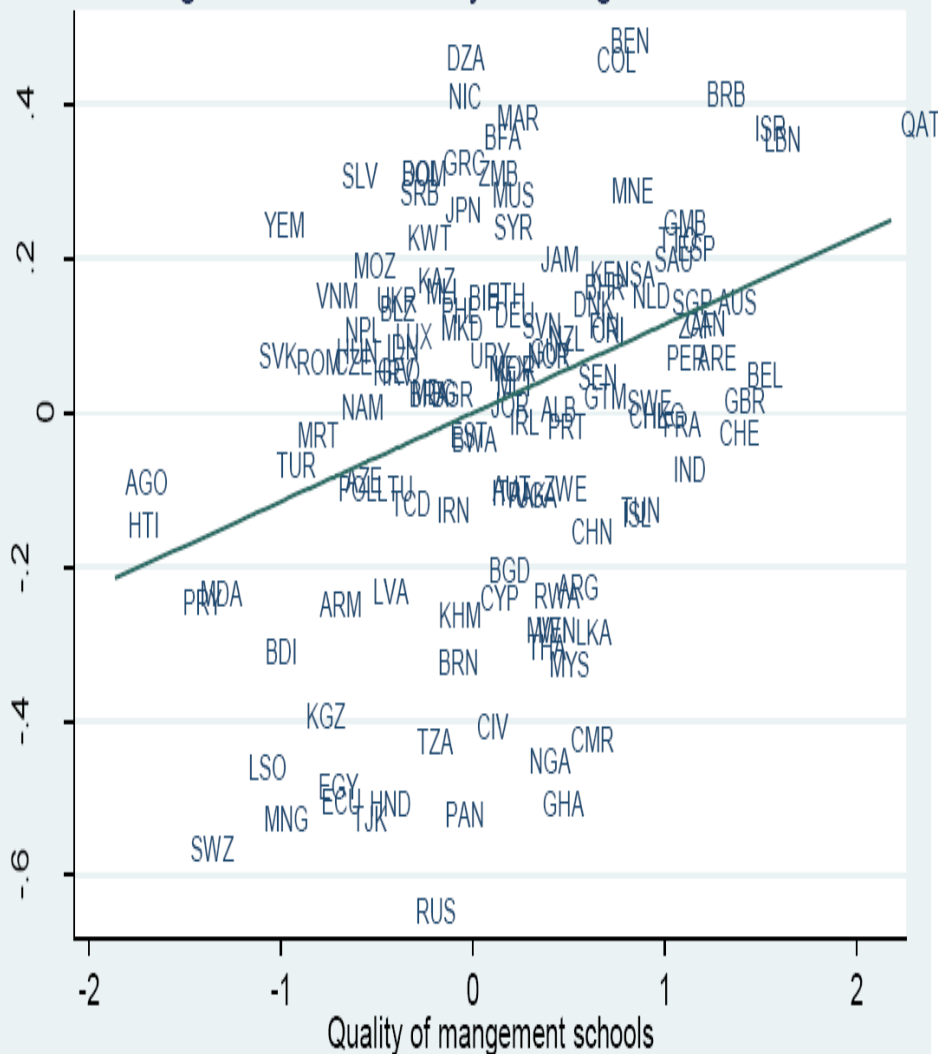
Significance levels: (a) if $p < 0.01$; (b) if $p < 0.05$; (c.) if $p < 0.10$.

Mail Efficiency and Management Quality

	Got it back						
Ln permanent offices per capita	0.092 ^a [0.017]	0.077 ^a [0.018]	0.091 ^a [0.016]	0.127 [0.090]	0.104 [0.087]	0.121 [0.086]	0.160 [0.095]
Postcodes databases	0.155 ^b [0.062]	0.140 ^c [0.075]	0.097 [0.060]	0.115 [0.128]	0.135 [0.110]	0.130 [0.122]	0.153 [0.170]
Alphabet used is latin-based	0.136 ^a [0.050]	0.148 ^a [0.051]	0.120 ^b [0.047]	0.020 [0.085]	0.006 [0.073]	0.042 [0.089]	0.027 [0.113]
Will to delegate authority	0.064 ^b [0.026]						
Innovation capacity		0.071 ^a [0.025]					
Quality of management schools			0.115 ^a [0.024]				
Management practices index				0.381 ^b [0.145]			
Monitoring management subindex					0.349 ^a [0.107]		
Targets management subindex						0.264 ^c [0.132]	
Incentives management subindex							0.290 [0.183]
Constant	-0.159 [0.107]	-0.083 [0.095]	-0.355 ^a [0.112]	-1.037 [0.672]	-0.890 [0.563]	-0.680 [0.540]	-0.923 [0.776]
Observations	136	133	136	16	16	16	16
Adj. R-squared	0.37	0.37	0.42	0.53	0.59	0.46	0.44

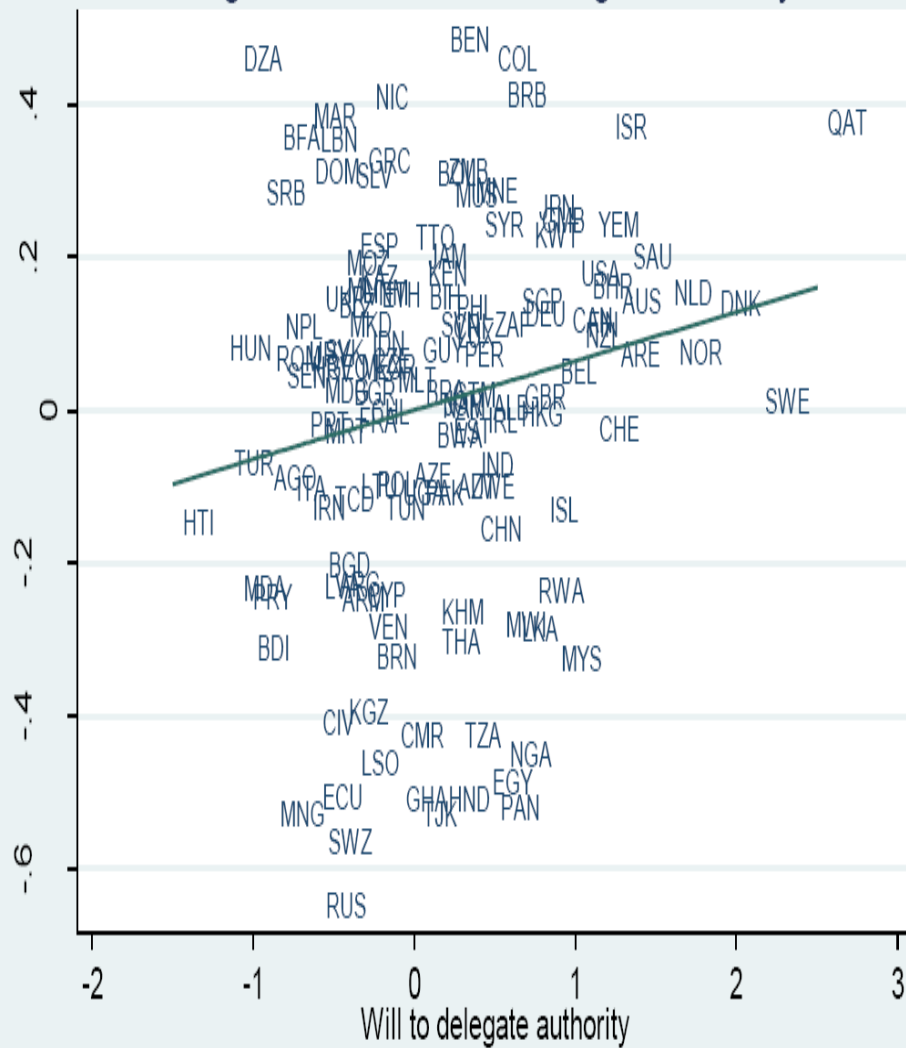
Mail Efficiency and Management Quality

Fig.3c. Got it & Quality of mangement schools



coef = .11503741, (robust) se = .02396721, t = 4.8

Fig.3b. Got it & Will to delegate authority



coef = .06425244, (robust) se = .02565815, t = 2.5

Implications for Policies for the Rebound

- Taken at face value, this work has implications for the policies to be implemented so that economies rebound and to ensure stable long-run growth:
 1. Institutions, such as law, matter but they are not all.
 2. Education is key to ensure long-run growth and a transformation of the economy
 3. The images I showed illustrate :
 1. The contrast between North and South Korea show that investment in Human Capital actually leads to the transformation of institutions and sustainable growth.
 2. If you want to understand the variations of income levels across regions within countries, Human Capital is the central explanatory variable
 3. Post office efficiency shows that the Human Capital of managers, those who organize production, that matters significantly.
 4. European countries have very similar institutions, some of them possibly not the best, but the evidence suggests that part of the better performance of a few of the economies in the region may be related to their high Human Capital.
 5. People with the right Human Capital (i.e., entrepreneurial) may help bust growth.