

From Double Diversification to Efficiency and Growth

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Background

- Economic diversification as catalyst to mitigation measures to stem climate change as stipulated by the Paris Climate Agreement of 2015
 - As a rule, natural resource wealth and climate are common-property resources, and need to be viewed and managed as such
 - Policy measures needed to mitigate climate change – e.g., regulation of emissions by price rather than by quantity, i.e., by levying fees on emissions rather than by imposing quotas – are intimately related to those measures that can be most effective as instruments of economic diversification

Outline

- Let us bypass links to climate change to focus on
 1. Key indices of economic diversification
 - Limitations
 - Potential usefulness in macroeconomic cross-country context
 2. Links between diversification and growth
 - New data and empirical evidence
 3. Potential importance of double diversification, economic as well as political, to efficiency and growth
 - More empirical evidence
 - Links to inequality, transparency, and corruption

Economic diversification data I

1

- Key indicators
 - [Finger-Kreinin index](#) of export diversification
 - Index from 1 (no diversification) to 0 (full diversification)
 - Relative to average structure of exports elsewhere
 - [Herfindahl-Hirschman index](#) of market concentration
 - Index from 0 (no concentration) to 1 (extreme concentration)
 - Sum of squares of the shares of each sector in total output
 - Merchandise exports only, not services
 - Short coverage, from 1995 to date

Economic diversification data II

- Key indicators – more
 - [IMF](#) index of export diversification – what you export
 - Theil index: Sum of measures of diversity across sectors (vertical diversity or extensive margin, meaning new export products or new export destinations) and diversity within sectors (horizontal diversity or intensive margin, meaning a larger volume of exports of old products)
 - [IMF](#) index of product quality – to whom you export
 - Measures average quality demanded in exporters' markets
 - Model-based index from 0 (low quality) to 1.2 (high quality)
 - Goods only, not services; will be updated to include services

Economic diversification data III

- Key variables – still more
 - World Bank measure of share of manufactures in exports
 - World Bank measure of share of manufactures and services in total output – to include services
 - [Economic Complexity Index](#) by Hidalgo and Hausmann (2009)
 - Ranks countries by the diversity and complexity of their export structure
 - Limited coverage: Goods only, not services
 - Short coverage, from 1995 to date

Chart 1. Merchandise-export diversification and concentration 1995 and 2014

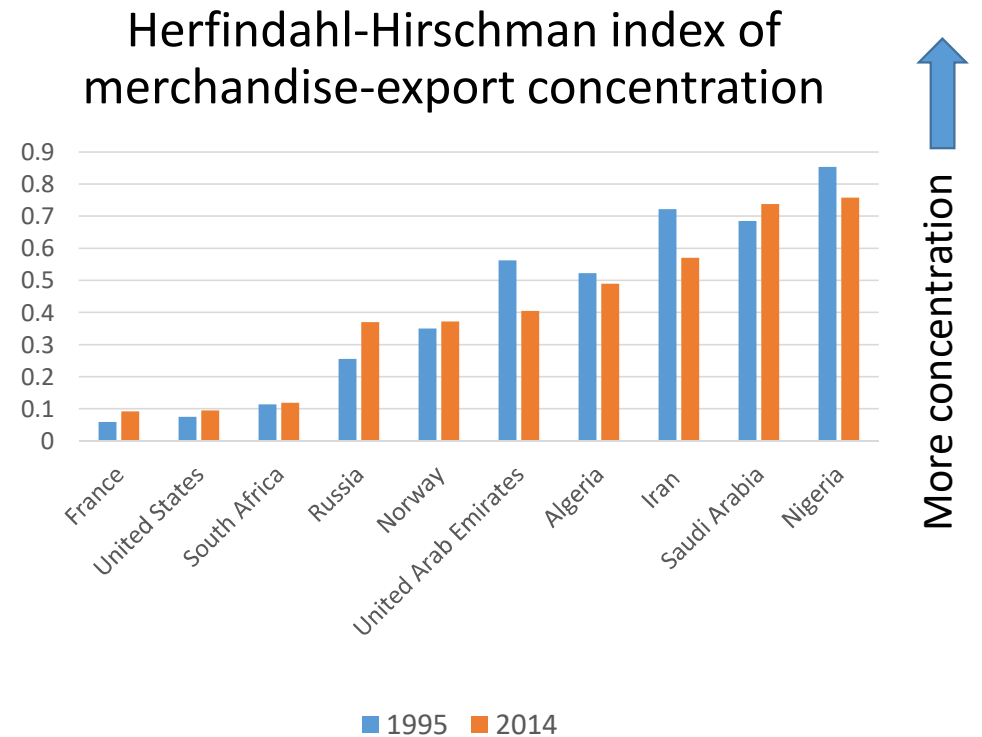
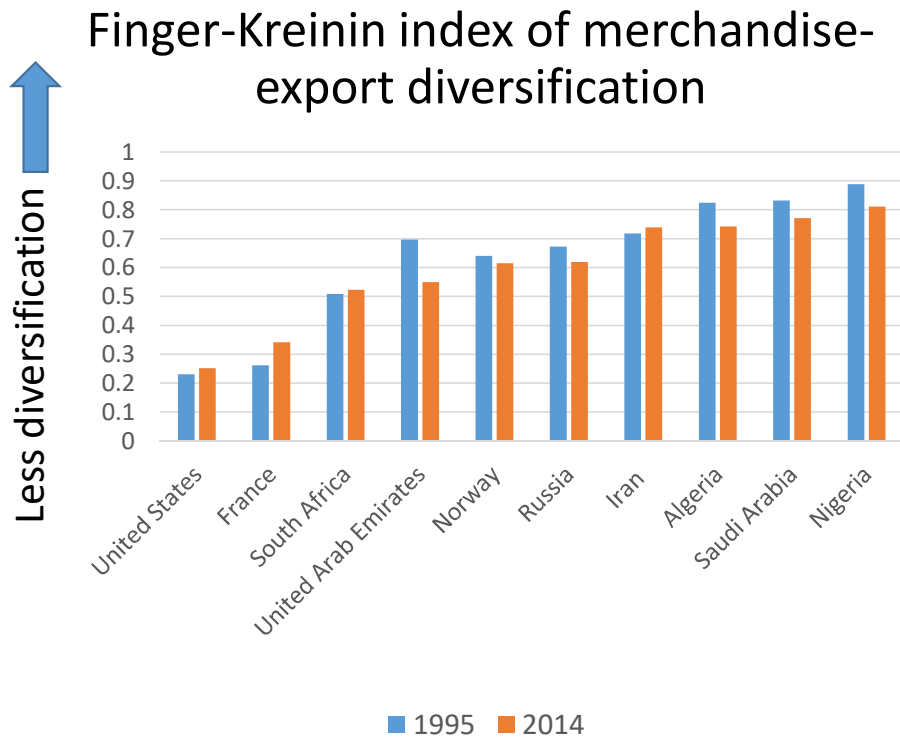


Chart 2. IMF measures of diversification and quality 1962-63 and 2010

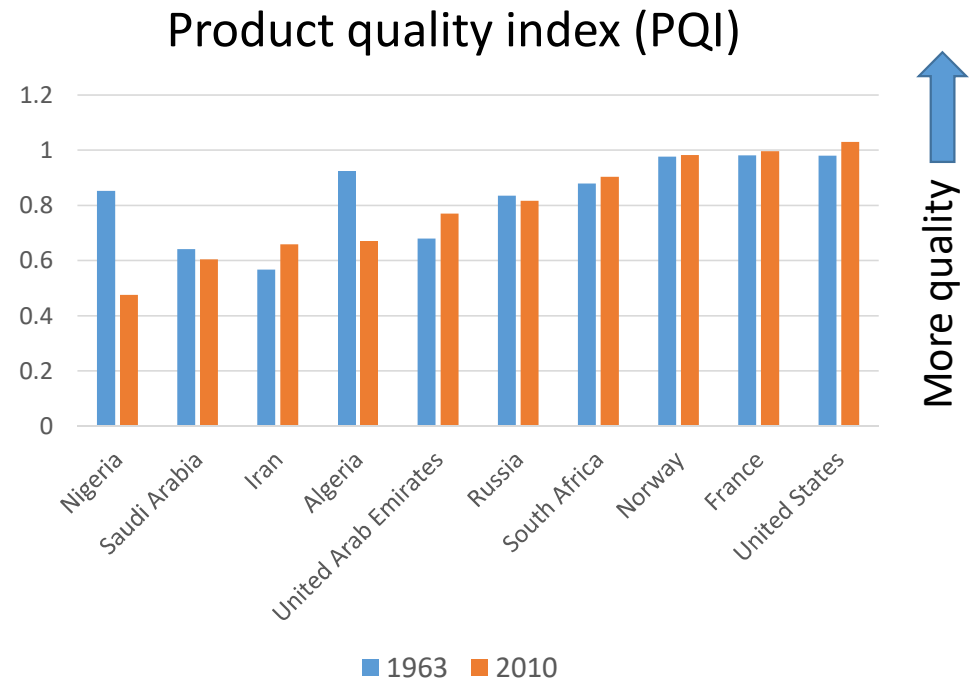
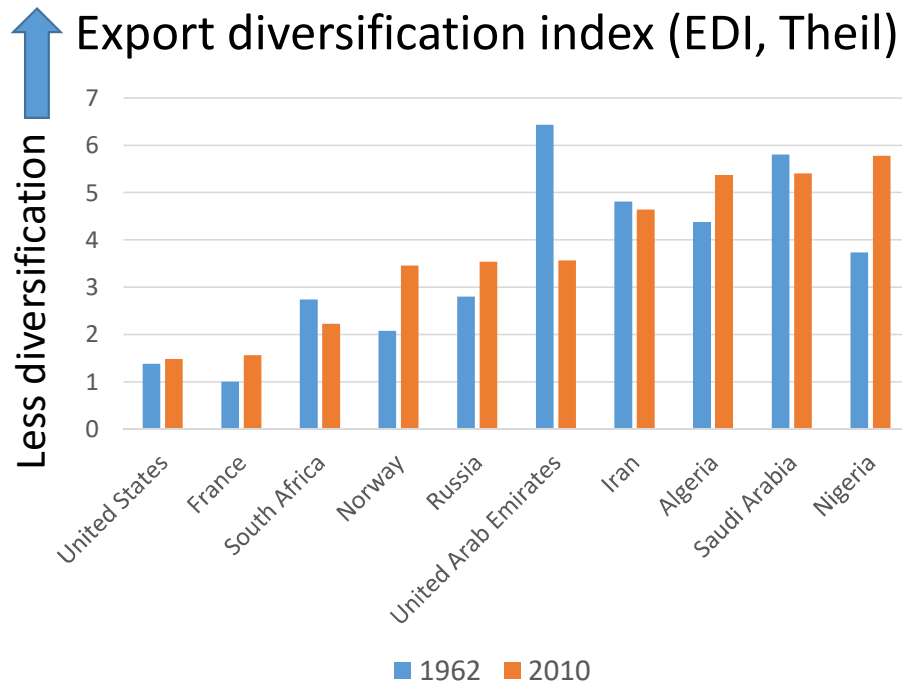
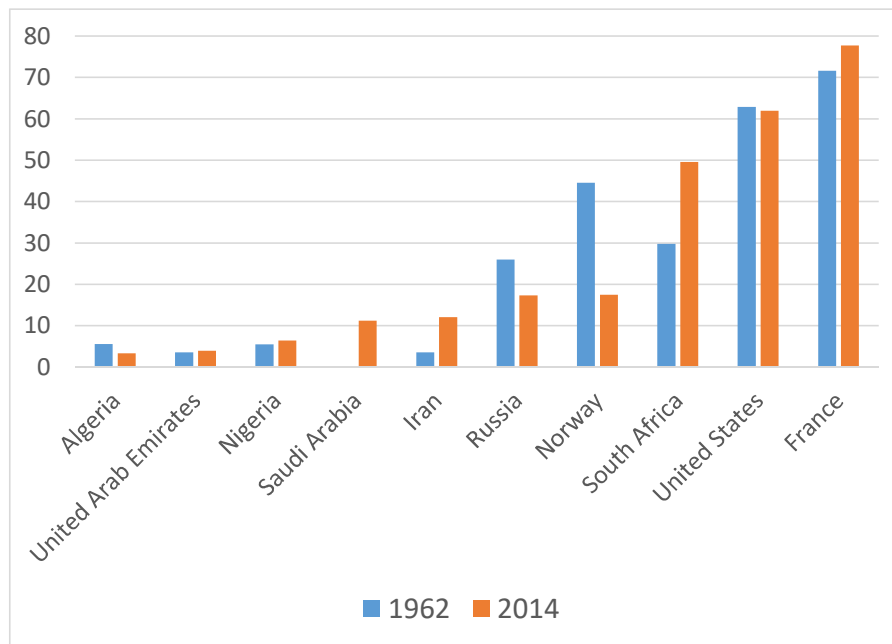


Chart 3. World Bank measures of diversification and complexity 1962-65 and 2014

Manufactures (% of total exports)



Manufactures and services (% GDP)

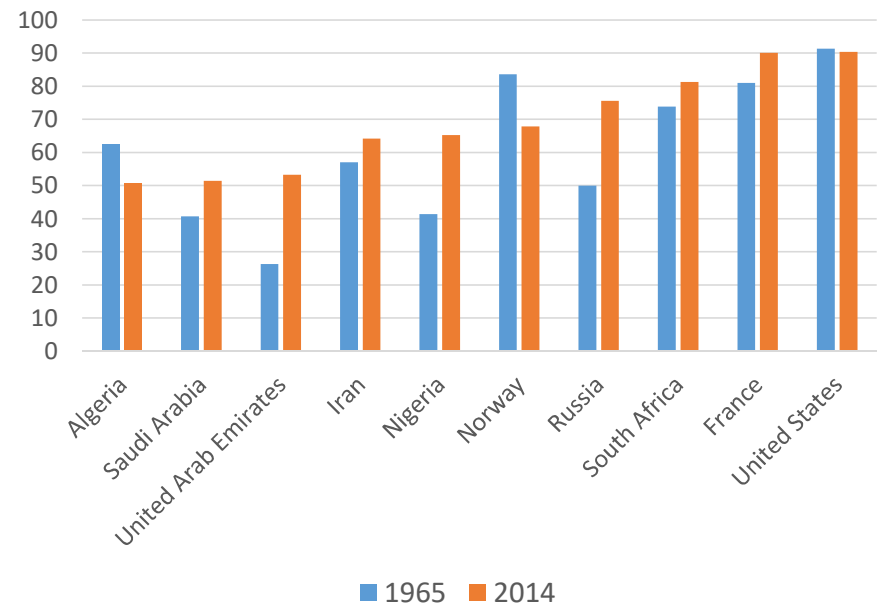
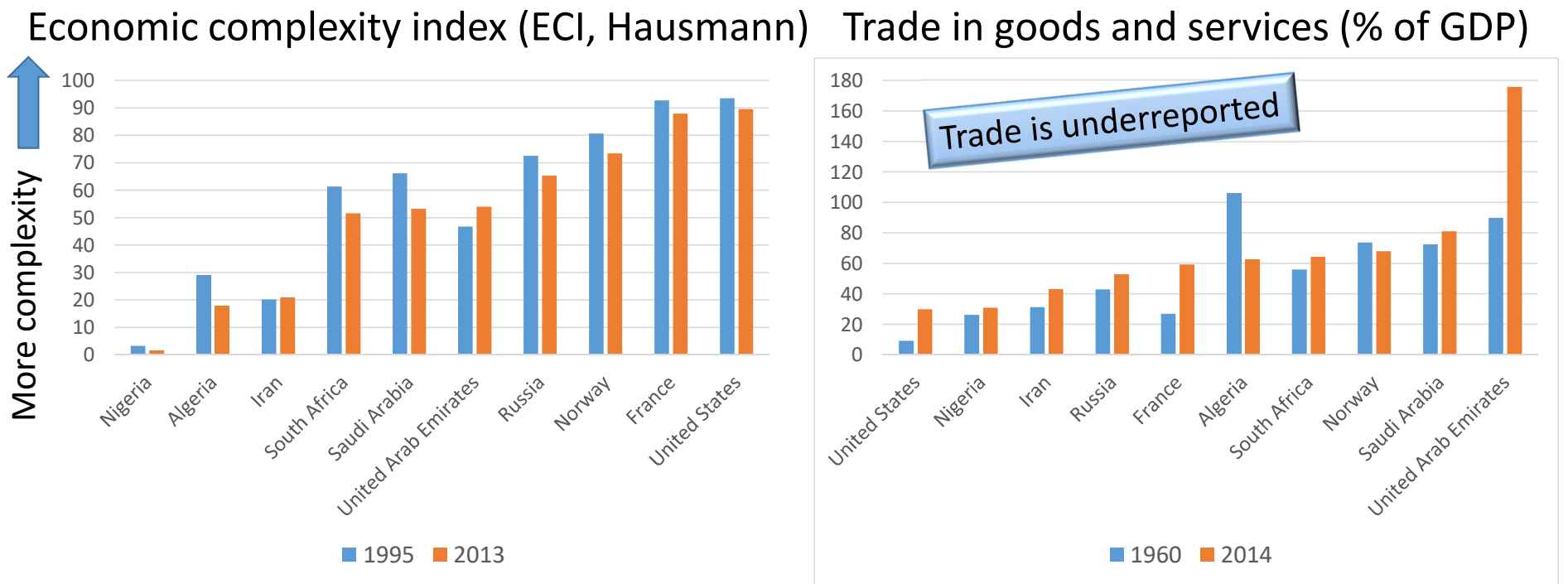


Chart 4. Other measures of complexity 1995 and 2014



Assessing economic diversification

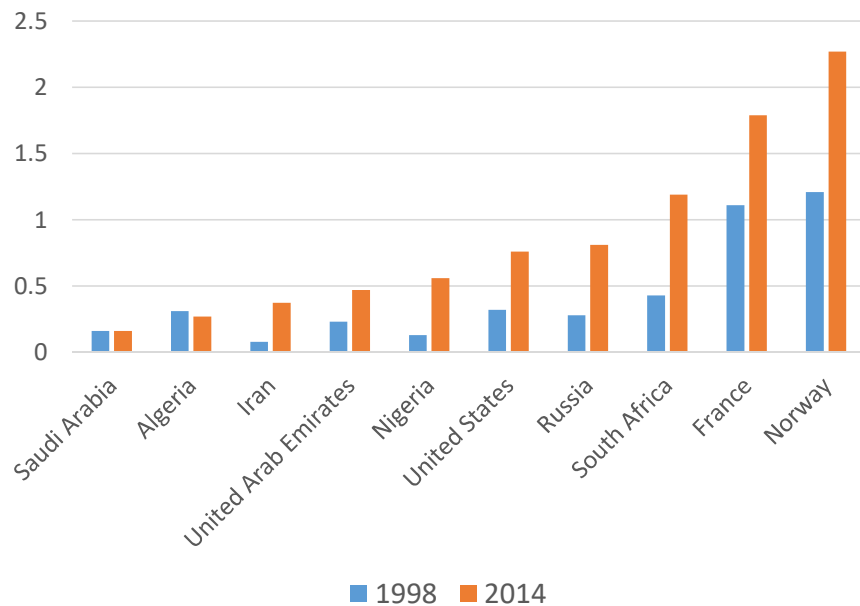
- Need to weigh together various measures
 - Diversification and concentration can leave opposing impressions because diversification (FKI) is a relative measure while concentration (HHI) is an absolute measure
- Successful diversification is evidenced by a move forward by most or all of these measures while reluctant diversification is reflected by progress along fewer dimensions
 - UAE has moved forward by all 8 of the 8 measures: Full house
 - Russia has moved forward by 3 of the 8 measures
 - Algeria, Norway, and US by 2/8, France by 4/8, Nigeria by 6/8, Iran by 7/8

Overview of indices of economic diversification

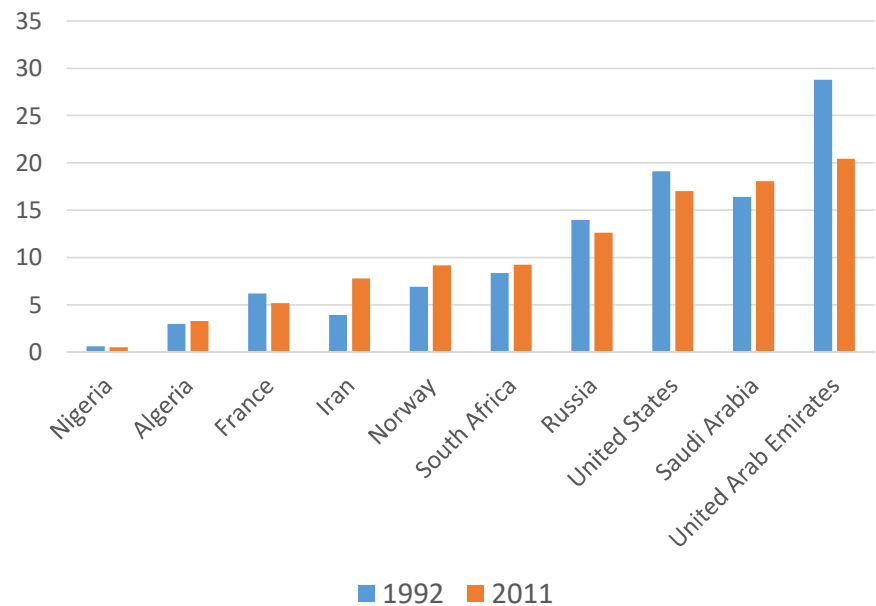
Overall: 43/80		Chart 1: UNCTAD		Chart 2: IMF		Chart 3: World Bank		Chart 4: Others	
	Success rate	(1) Diversification (FKI, goods only)	(2) Dispersion (HHI, goods only)	(3) Diversification (Theil, goods only)	(4) Quality (goods only)	(5) Manufactures (% of exports)	(6) Manufactures and services (% of value added)	(7) Complexity (Hausmann, goods only)	(8) Trade (% of GDP, goods and services)
Algeria	2/8	+	+	-	-	-	-	-	-
France	4/8	-	-	-	+	+	+	-	+
Iran	7/8	-	+	+	+	+	+	+	+
Nigeria	5/8	+	+	-	-	+	+	-	+
Norway	2/8	+	-	-	+	-	-	-	-
Russia	3/8	+	-	-	-	-	+	-	+
Saudi Arabia	5/8	+	-	+	-	+	+	-	+
South Africa	5/8	-	-	+	+	+	+	-	+
UAE	8/8	+	+	+	+	+	+	+	+
United States	2/8	-	-	-	+	-	-	-	+

Chart 5. Gasoline prices and CO2 emissions

Pump price for gasoline (US\$ per liter)



CO2 emissions (metric tons per capita)



From diversification to growth

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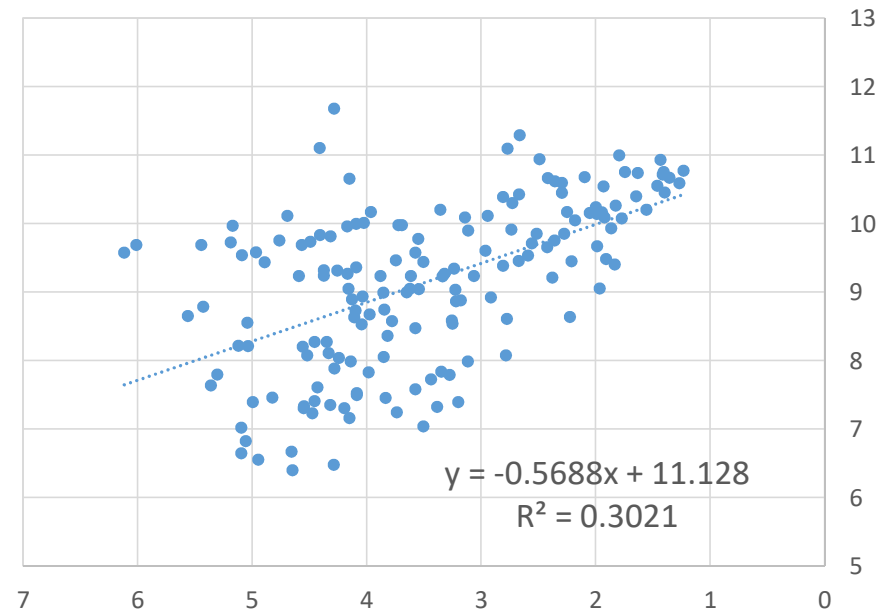
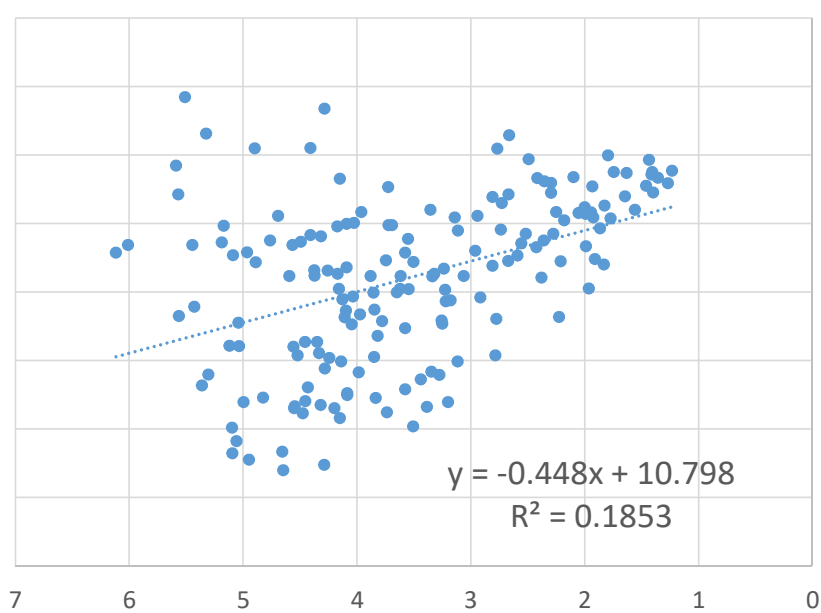
- Most countries, especially those that depend on a few industries or resources for much of their incomes, seek to diversify their economies
 - They view diversification as an essential aspect of national risk management
 - Some may suspect that, by reducing risk, diversification may also encourage economic efficiency and growth
 - What do the data say?
 - Let's take a look at some simple correlations in preparation for more comprehensive econometric work yet to be undertaken

Chart 6. Economic diversification (Theil index) and growth

“20/50 rule”

170 countries for which data are available

164 countries, all except six GCC countries

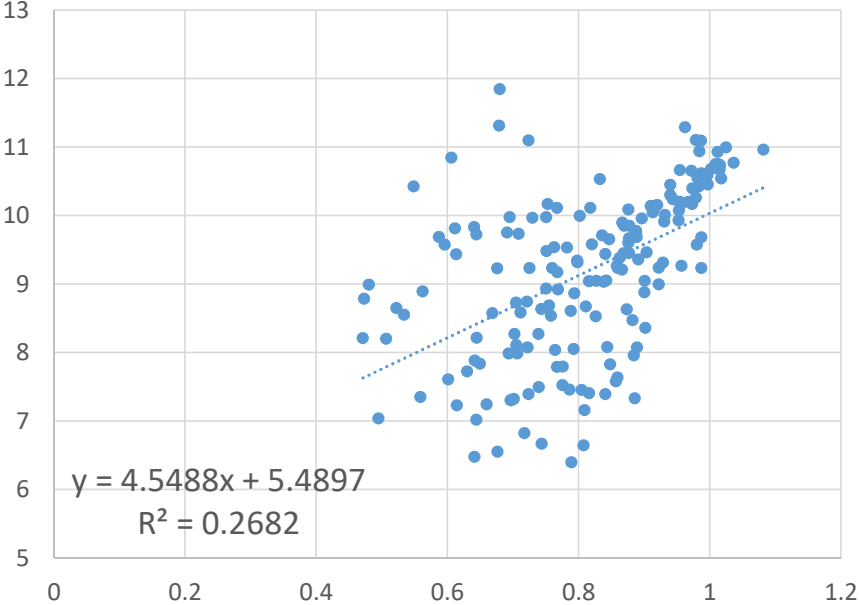


Source: Author's computations

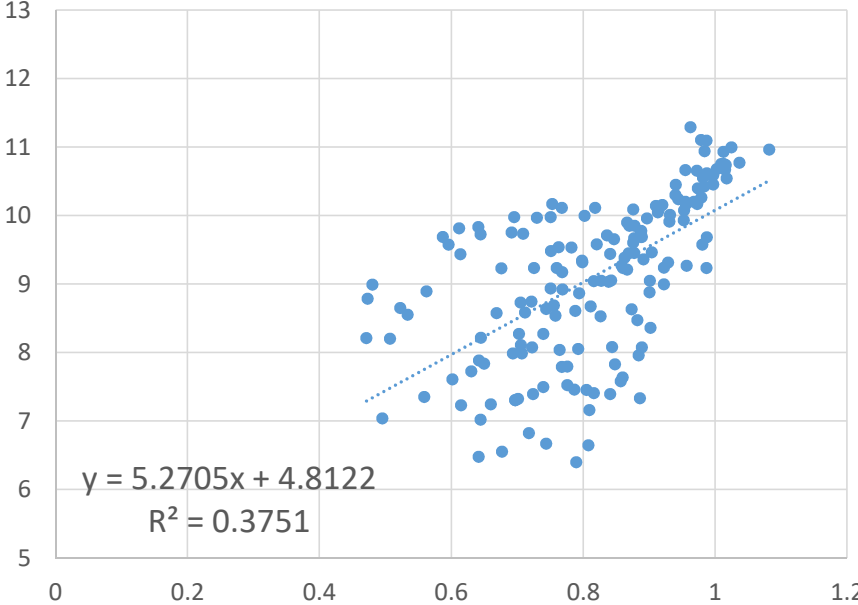
Note: Log of per capita GNI on vertical axes; Theil index of diversification on horizontal axes.

Chart 7. Product quality (IMF index) and economic growth

174 countries for which data are available



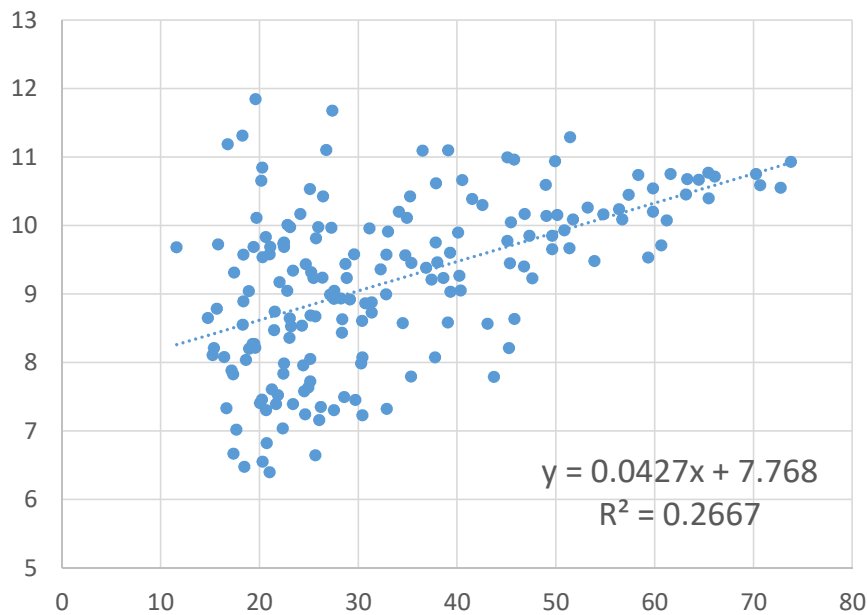
168 countries, all except six GCC countries



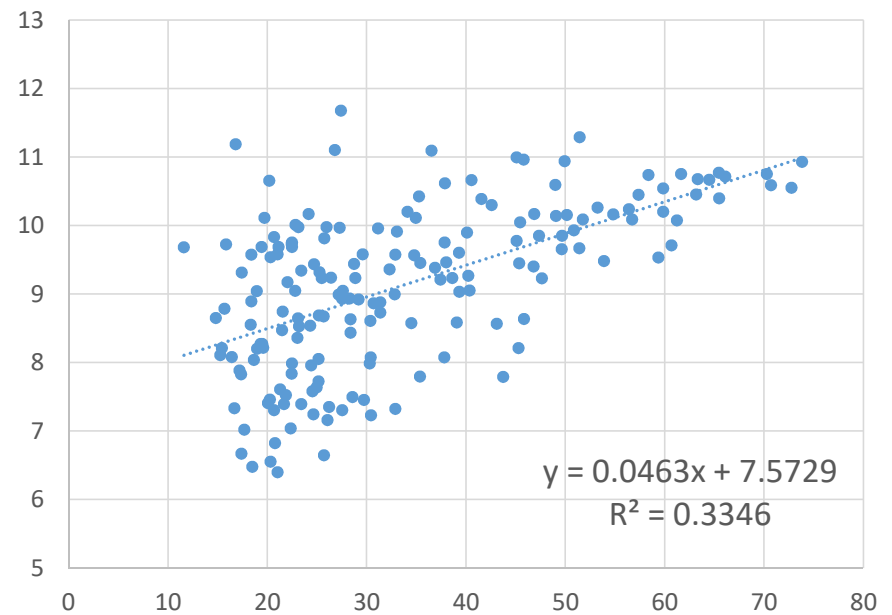
Note: Log of per capita GNI on vertical axes; Product Quality Index on horizontal axes.

Chart 8. Export diversification (Finger-Kreinin index) and economic growth

181 countries for which data are available



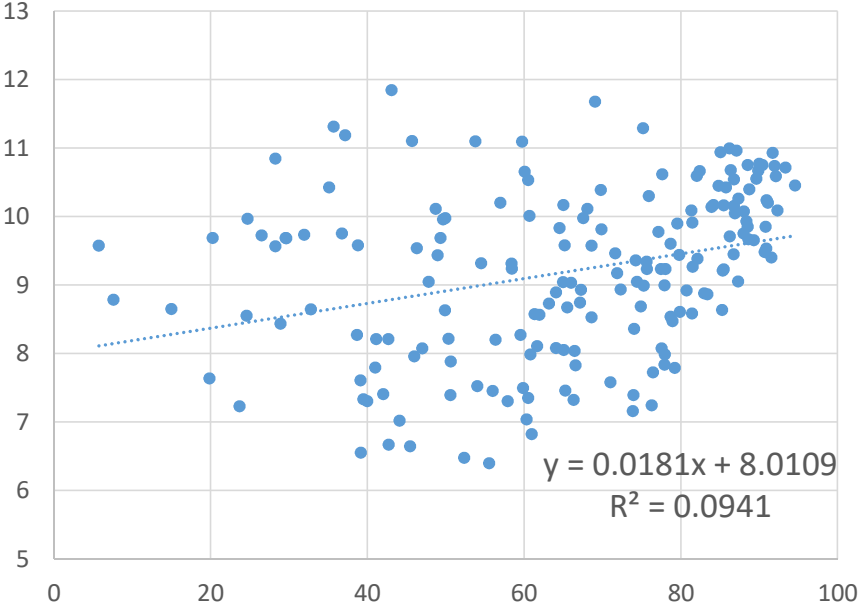
175 countries, all except six GCC countries



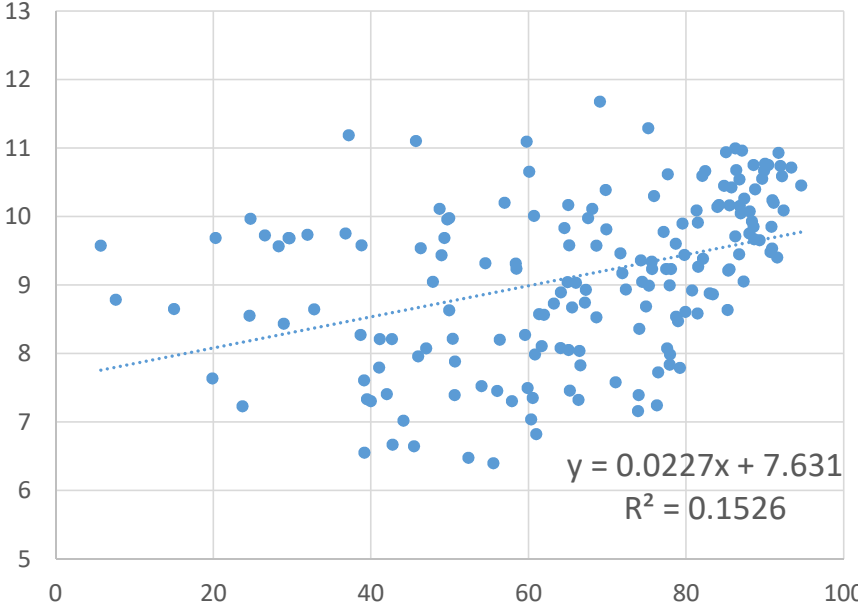
Note: Log of per capita GNI on vertical axes; export diversification index on horizontal axes.

Chart 9. Export dispersion (Herfindahl-Hirschman index) and economic growth

180 countries for which data are available



174 countries, all except six GCC countries

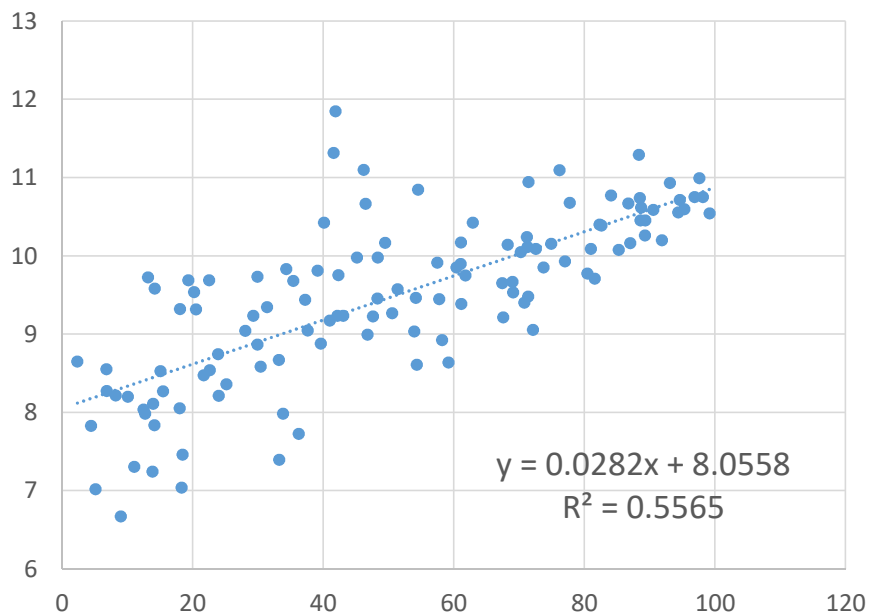


Note: Log of per capita GNI on vertical axes; export dispersion index on horizontal axes.

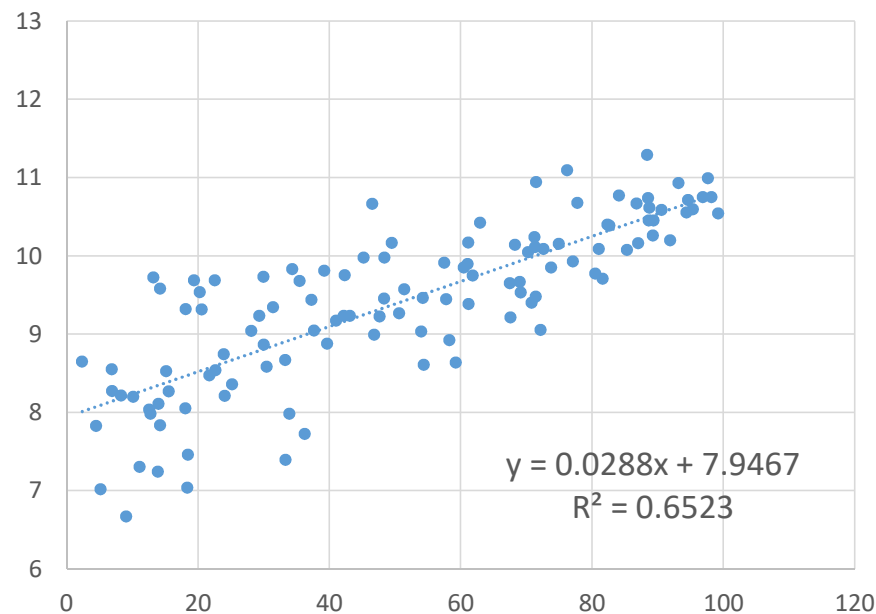
Source: Author's computations

Chart 10. Economic complexity (Hausmann index) and economic growth

121 countries for which data are available



116 countries, all except five GCC countries



Note: Log of per capita GNI on vertical axes; economic complexity on horizontal axes, computed as $100 \cdot (1 - \text{rank}/124)$ where 124 is the number of countries included.

Clear impression from data

- Various measures of economic diversification are positively correlated with growth across countries, without exception
- Perhaps an index of economic diversification ought to be tried in cross-country growth regressions as a more broadly based replacement for indicators of natural resource intensity currently in use
 - Work in progress

Double diversification

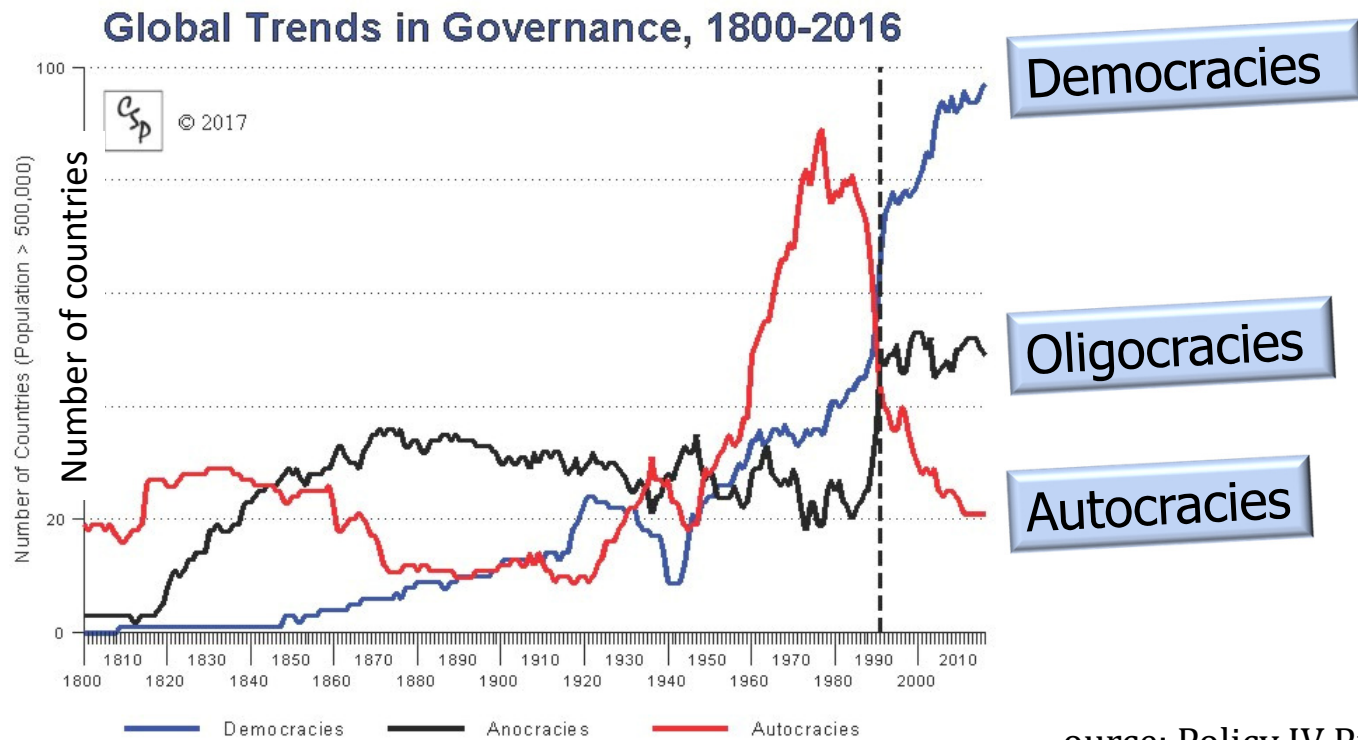
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- Economic diversification and political diversification can be viewed as two sides of the same coin
 - Economic diversification means diversification of exports and output away from excessive dependence on a single dominant sector or a few typically natural-resource-based commodities as well as change toward increased complexity and quality of human-capital-intensive output
 - Political diversification means increased democracy, i.e., diversification away from excessive dependence on a narrow political base toward political pluralism
 - Both aim to avert national risk, from different perspectives

Political diversification

- Key variables
 - Polity2 index of democracy from University of Maryland
 - Extends from -10 (least democratic) to +10 (most democratic)
 - Freedom House index of political rights
 - Freedom House index of civil liberties
 - Based on numerical ratings from 1 (most free) to 7 (least free)
 - 1 – 2.5 Free
 - 3 – 5 Partly free
 - 5.5 – 7 Not free

Chart 11. Global trends in governance 1800-2016

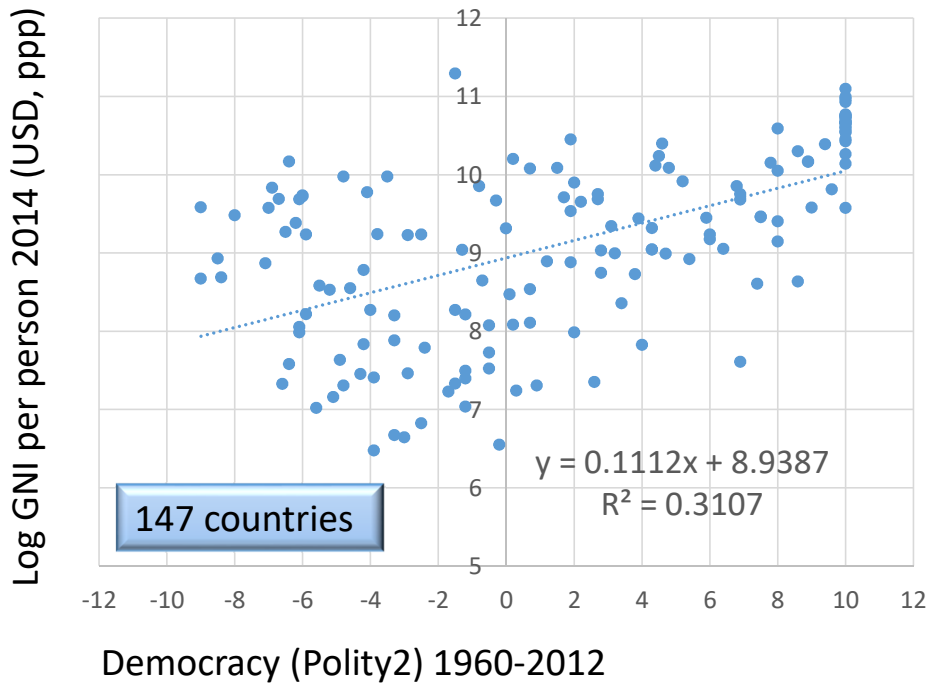


source: Policy IV Project.

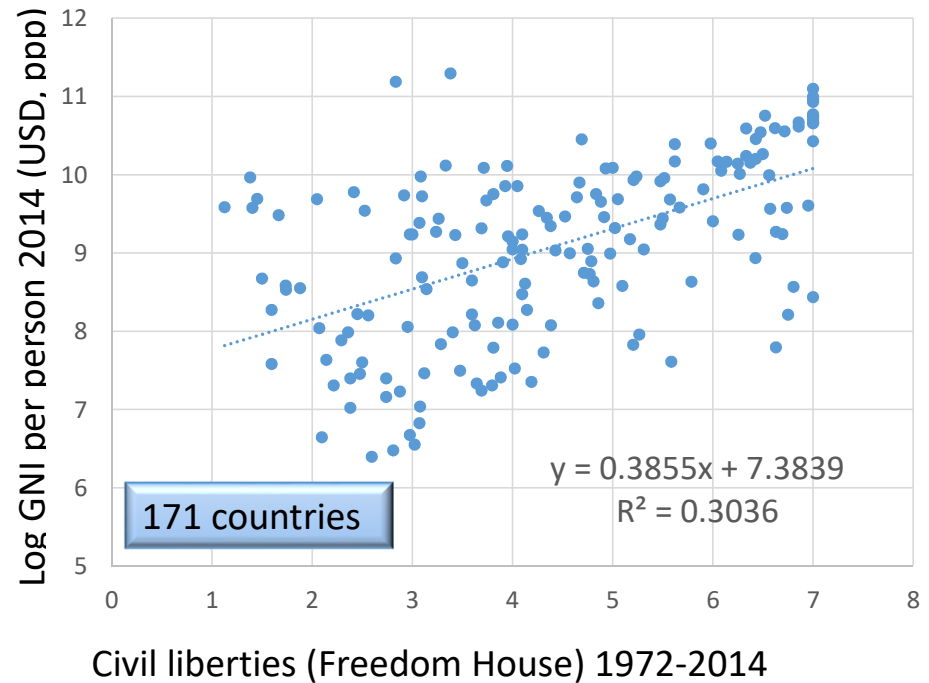
Chart 12. From democracy to growth

Political rights on horizontal axis give similar results

Polity2 index of democracy and per capita GNI



Freedom House index of civil liberties and per capita GNI



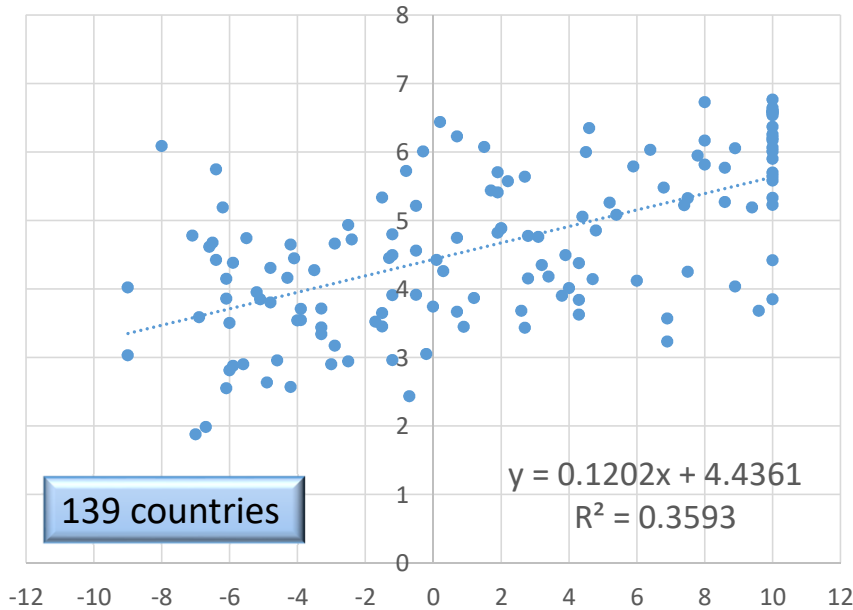
Source: Author's computations

Chart 13. From democracy to diversification

Civil liberties on horizontal axis give similar results

Polity2 index of democracy and economic diversification (Theil index)

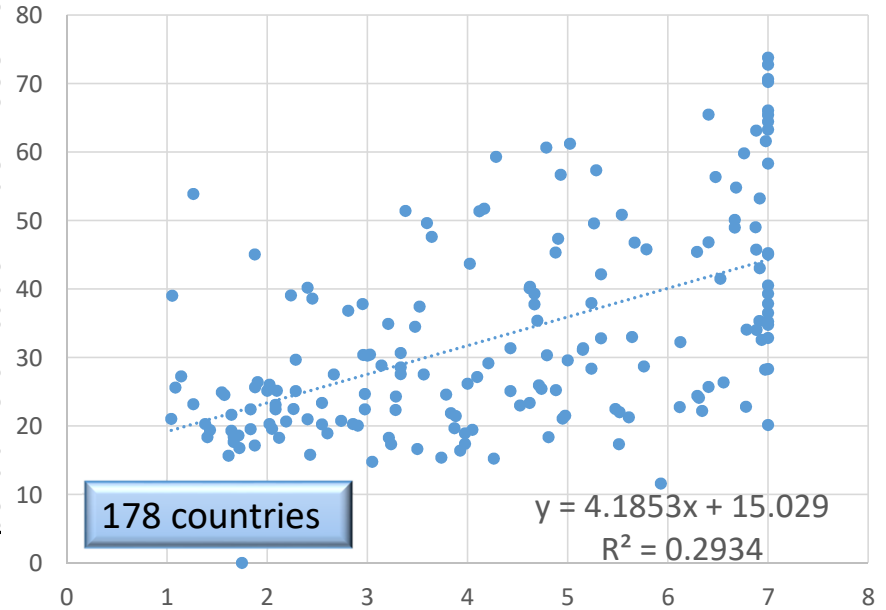
Economic diversification index 1962-2010



Democracy (Polity2) 1960-2012

Freedom House index of political rights and export diversification (Finger-Kreinin index)

Export diversification index 1995-2014



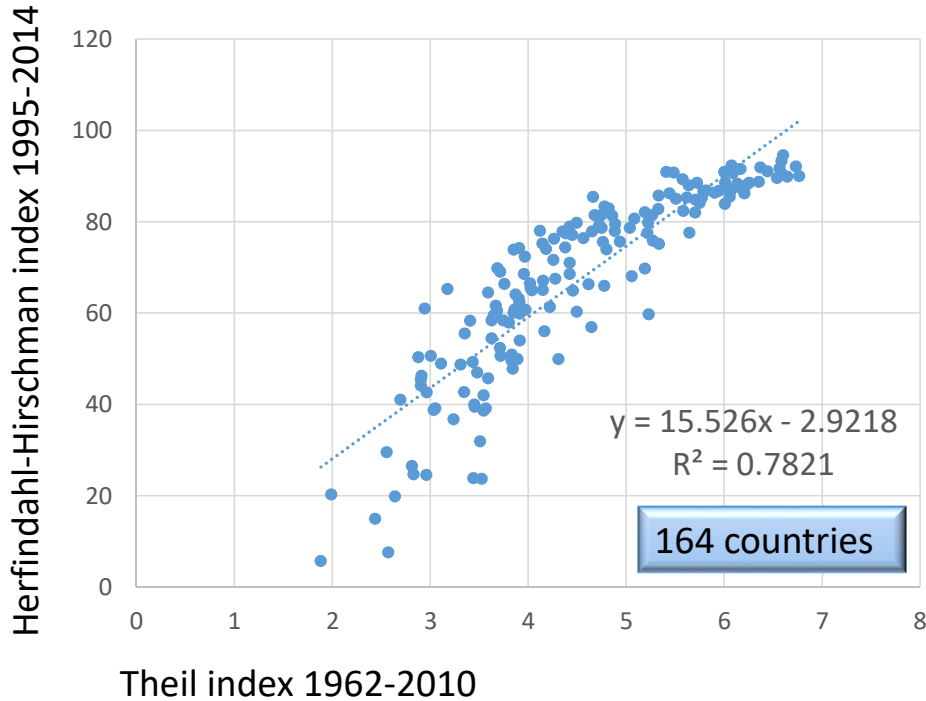
Political rights (Freedom House) 1972-2014

Source: Author's computations

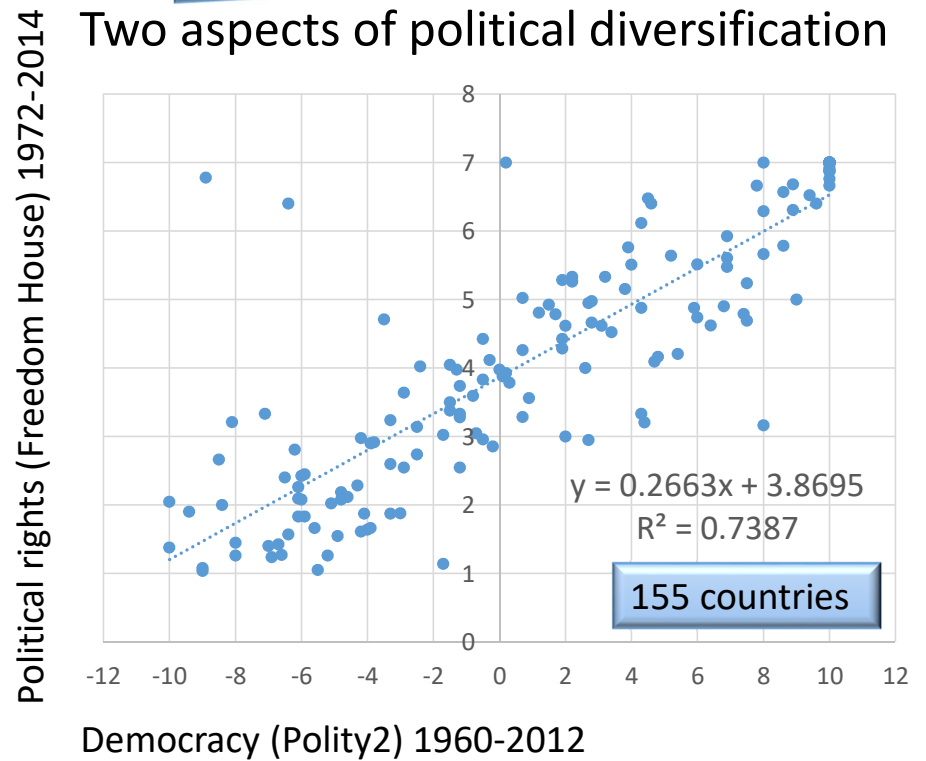
Chart 14. Side by side: Economic and political diversification go together

Civil liberties on vertical axis give similar results

Two aspects of economic diversification



Two aspects of political diversification



Source: Author's computations

Related concerns I: Inequality

- Inequality can undermine democracy and growth
 - “We can have democracy in this country, or we can have great wealth concentrated in the hands of a few, but we can't have both.”

Louis Brandeis, US Supreme Court Justice 1916-1939
- The top 1% of households saw its share in total pre-tax income rise from 8% in 1980 to 12% in Europe and 20% in US in 2015, also in Russia
- The top 1% of households saw its share of total net wealth rise from 20% in 1980-1990 to 40% in 2015, also in Russia
 - JPMorgan CEO makes in a day what his typical worker makes in a year!

Related concerns II: Transparency and corruption

- Lack of transparency can undermine democracy and growth
 - “Publicity is justly commended as a remedy for social and industrial diseases. Sunlight is said to be the best of disinfectants; electric light the most efficient policeman.”

Louis Brandeis, US Supreme Court Justice 1916-1939

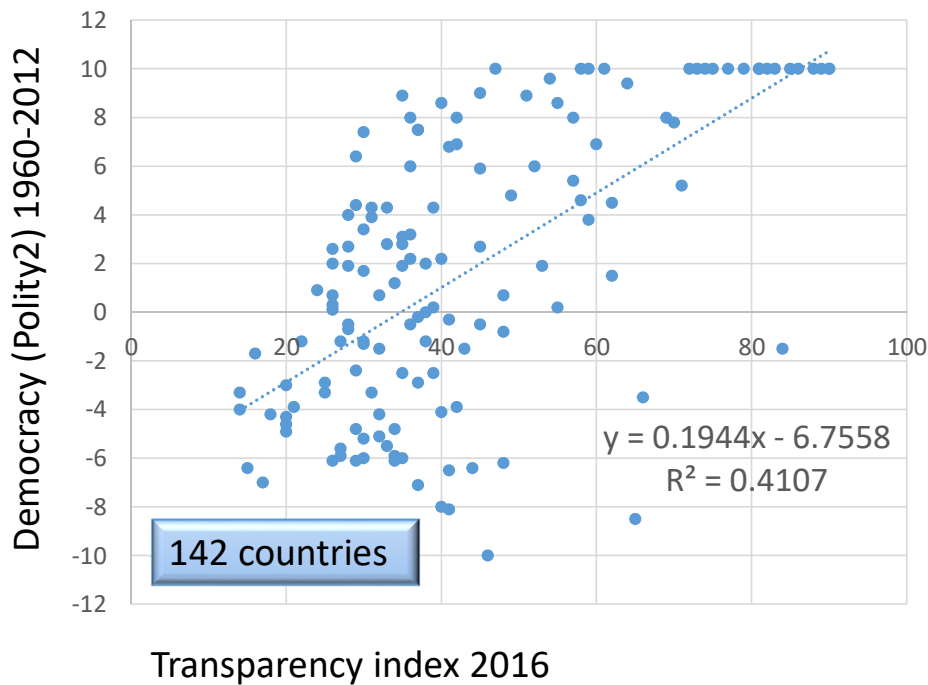
- No independent statistical measure of transparency exists yet
- So, given that CPI varies inversely with corruption by construction, let us define transparency simply as

Transparency = Corruption Perception Index

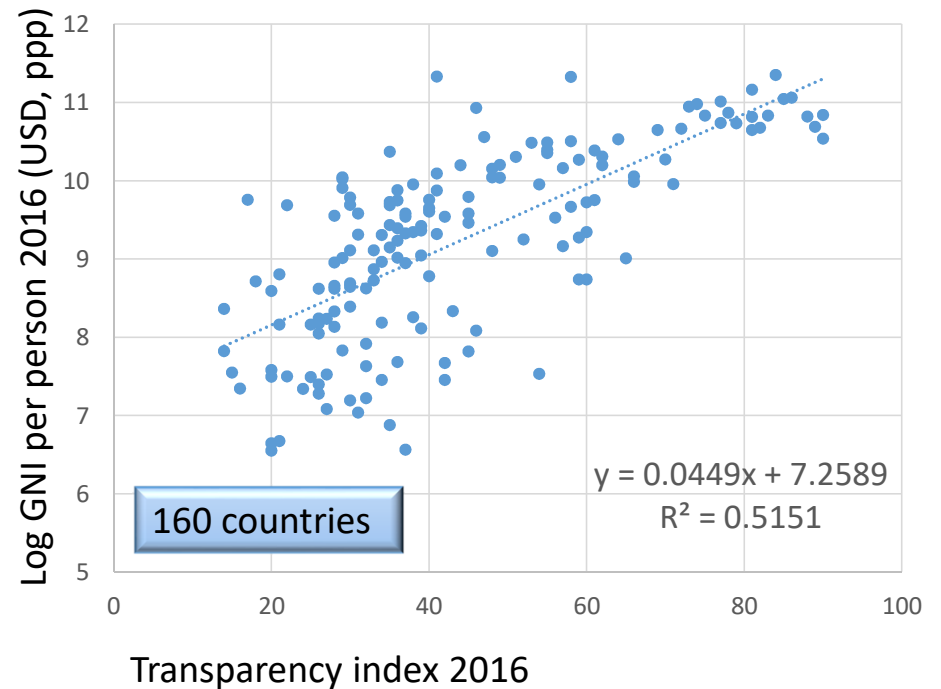
Source: Transparency International

Chart 15. From transparency to democracy and growth

Transparency and democracy 2016



Transparency and per capita income 2016



Source: Author's computations

Related concerns III: Rule of law

- Weak rule of law can undermine democracy and growth
 - “... human rights, the rule of law and democracy are interlinked and mutually reinforcing and ... they belong to the universal and indivisible core values and principles of the United Nations”

Declaration adopted on 24 September 2012 by UN General Assembly
- New statistical measure of the rule of law is now available from the World Justice Project, based on expert opinion as well as public opinion
 - Composite index, reflecting various aspects of the rule of law
 - Closely correlated with several of our variables as we shall now see

Chart 16. From rule of law to democracy and growth

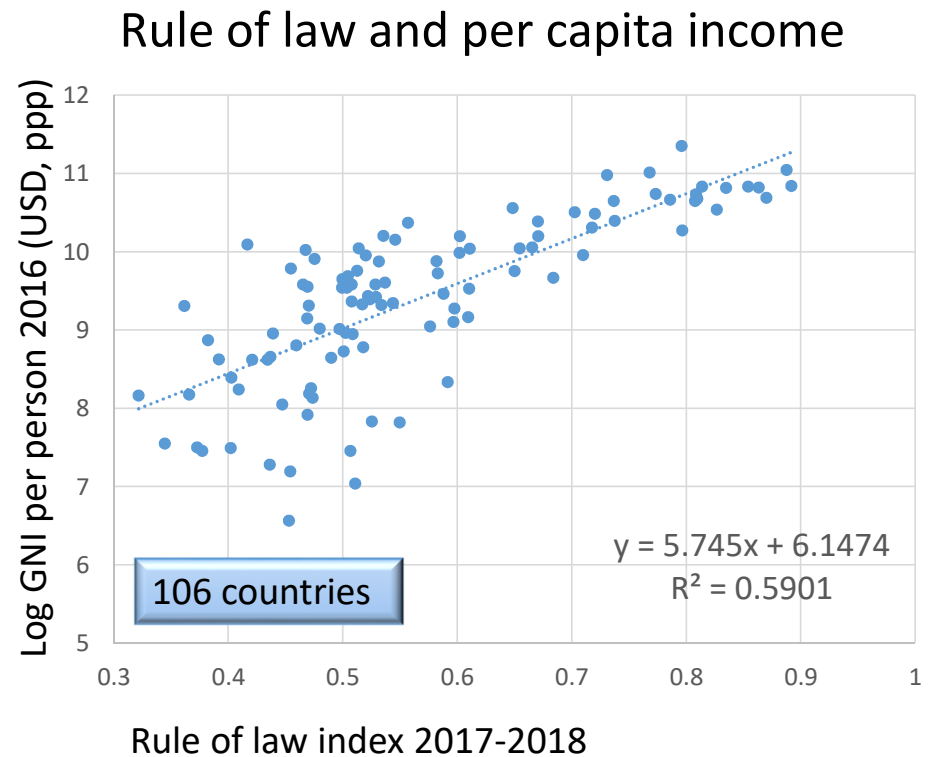
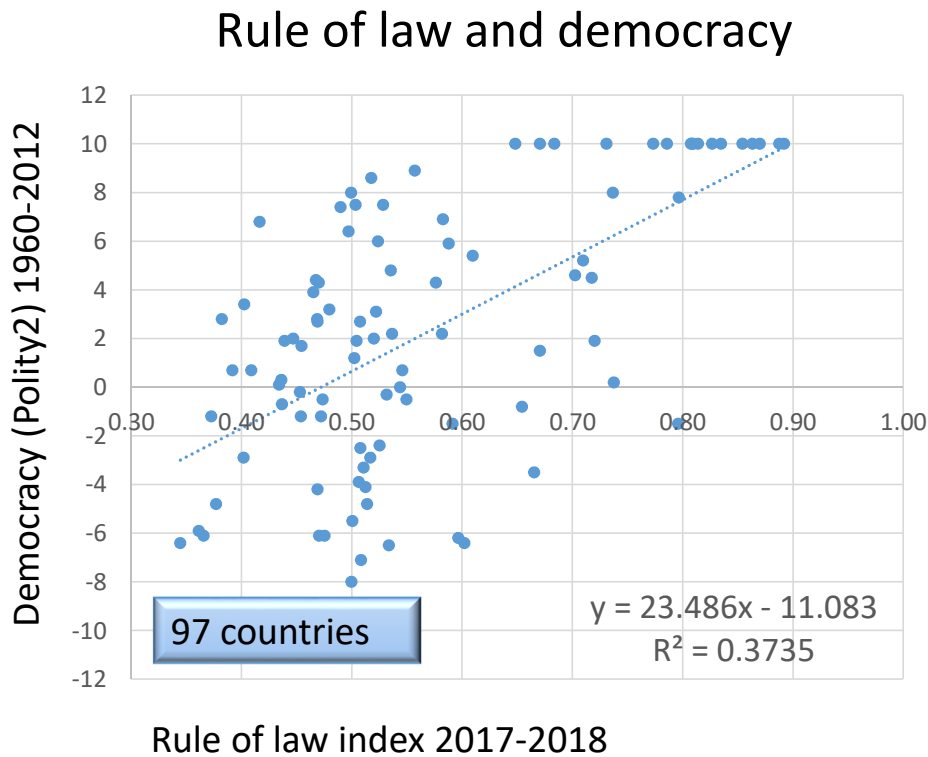
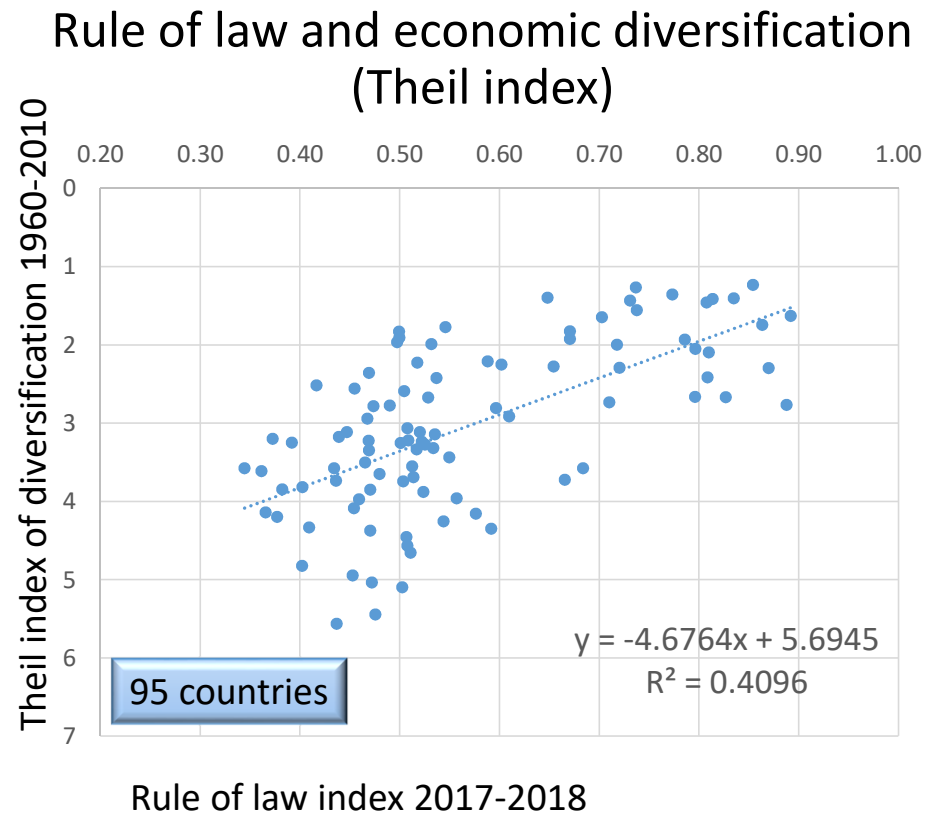
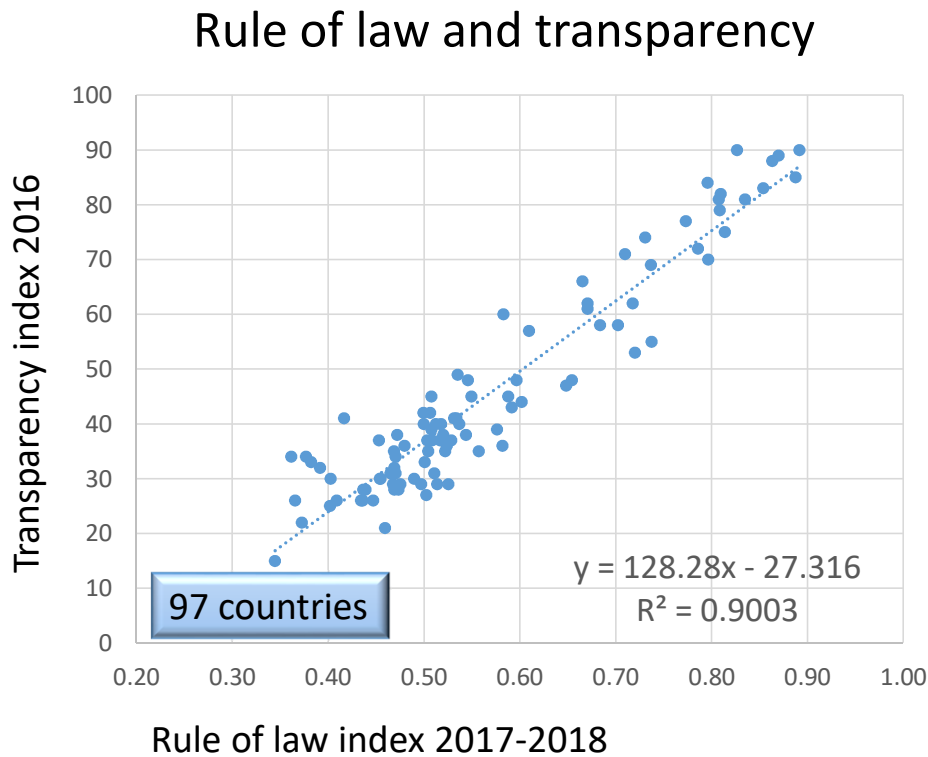


Chart 17. From rule of law to transparency and economic diversification



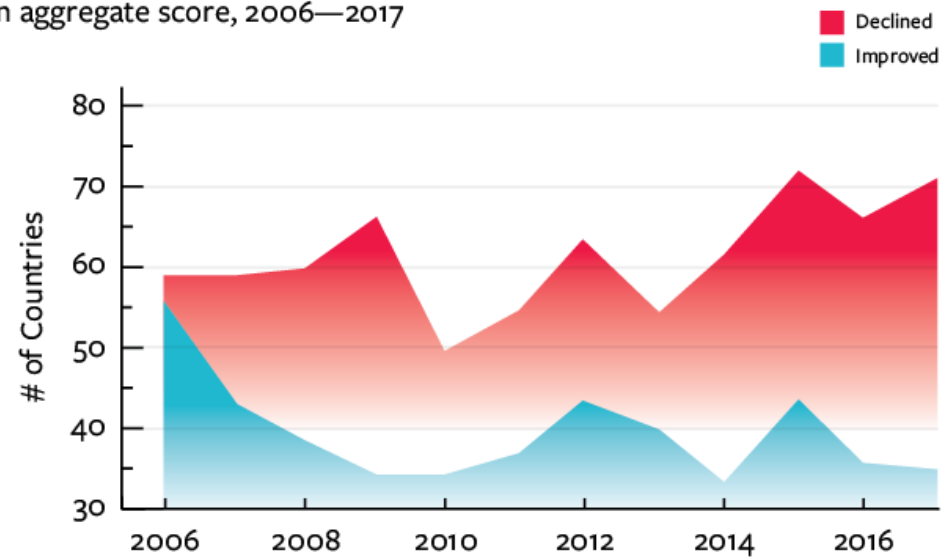
Lessons for the US, Europe, and Russia I

- US and Europe
 - Economic diversity shows no signs of weakening
 - Democracy does show some signs of weakening
 - Freedom House has gradually downgraded US to 86 compared with 99 for Canada
 - 2008 Supreme Court verdict made gun control difficult
 - 2010 Supreme Court verdict abolished limits on political campaign financing
 - Some now describe US as an oligarchy that is insensitive to the will of the people
 - Many Europeans and others also worry about recent political developments in Hungary and Poland (“illiberal democracy”)

Chart 16. Democracy has lost ground around the globe

Twelve Years of Decline

Number of countries that declined and improved in aggregate score, 2006—2017



www.freedomintheworld.org

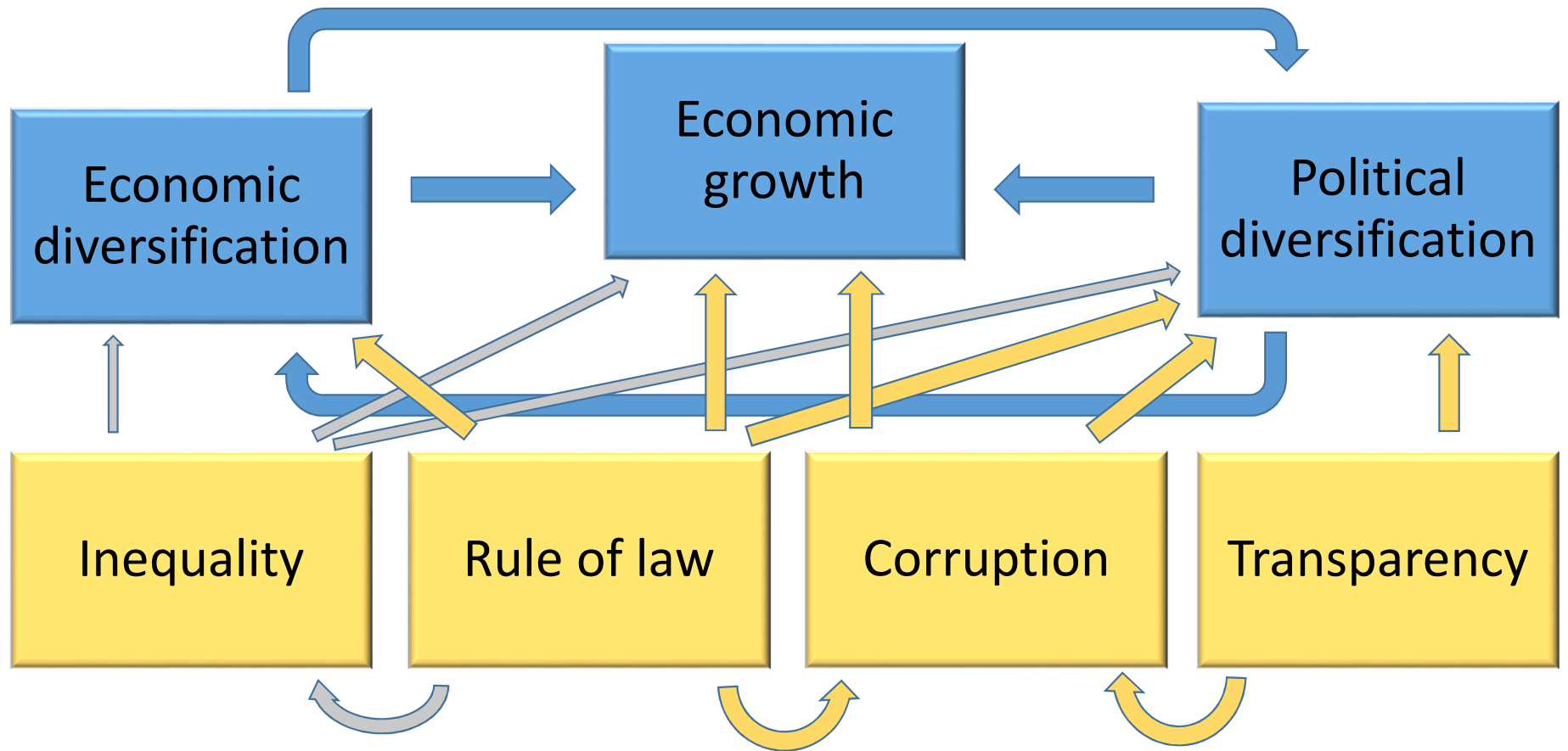
Source: Freedom House

Lessons for the US, Europe, and Russia II

- Russia

- Economic diversity shows few signs of change
- Democracy earns rather low scores from
 - Freedom House: 20/100 (political rights and civil liberties)
 - Compared with 86/100 for US
 - Polity IV: 4 on a scale from -10 to 10 (democracy)
 - Compared with 10 in US, still full house
 - Transparency International: Score 29/100, rank 135/180 (corruption)
 - Compared with score 75/100 and rank 16/180 for US
 - World Justice Project: 0.47 out of 1.00 (rule of law)
 - Compared with 0.73 out of 1.00 for US

Conclusion I: Web of linkages



Conclusion II: Diversification is good for growth

- Diversification goes along with long-run economic growth
 - Data on economic diversification need to be
 - Extended from goods alone to include goods and services
 - Introduced into econometric growth literature
- If economic diversification is desirable in itself as well as being good for growth and if economic and political diversification can be viewed as two sides of the same coin, then political diversification must also be good for growth as well as being desirable in itself
 - China, with its rapid growth without democracy, is an outlier

Conclusion III: Links to climate change

- Main policy measures needed for economic diversification are closely related to measures that can be most effective in mitigating climate change
 - Natural wealth and climate are common-property resources
 - Need efficient and fairly egalitarian conservation by price
 - Application of the 'polluter pays principle' first recommended by OECD in 1972 and, since 1987, enshrined in Treaty of the European Communities
 - Case in point: World Bank and IMF advocate carbon pricing to mitigate climate change

КОНЕЦ