

Economic Diversification

Six Case Studies

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Background

- Economic diversification as catalyst to mitigation measures to stem climate change as stipulated by the Paris Climate Accord 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 imposing quotas – are intimately related to those measures that can be most effective as instruments of economic diversification

Outline

- Paper: Six case studies of economic diversification
- Presentation: Bypasses case studies to focus on
 1. Key indices of economic diversification
 - Limitations
 - Potential usefulness in macroeconomic cross-country context
 2. From economic diversification to growth: The data
 3. From double diversification, economic and political, to growth: More data

Six case studies

- Small but diverse group of countries in Africa, Asia, Europe, Middle East, and Western Hemisphere, all eager to diversify their economies to avert risk
 - Grenada
 - Iceland
 - Kuwait
 - Malaysia
 - Mauritius
 - Uganda

Economic diversification 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

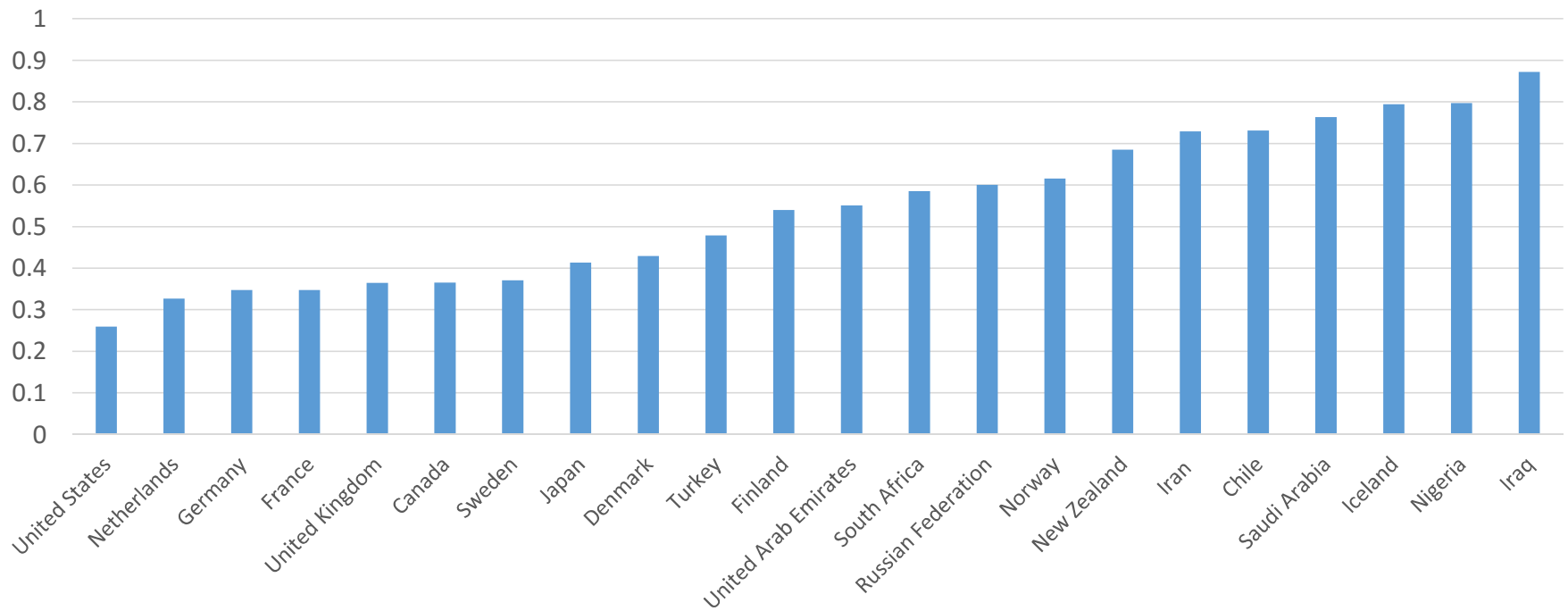
Economic diversification II

- 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 III

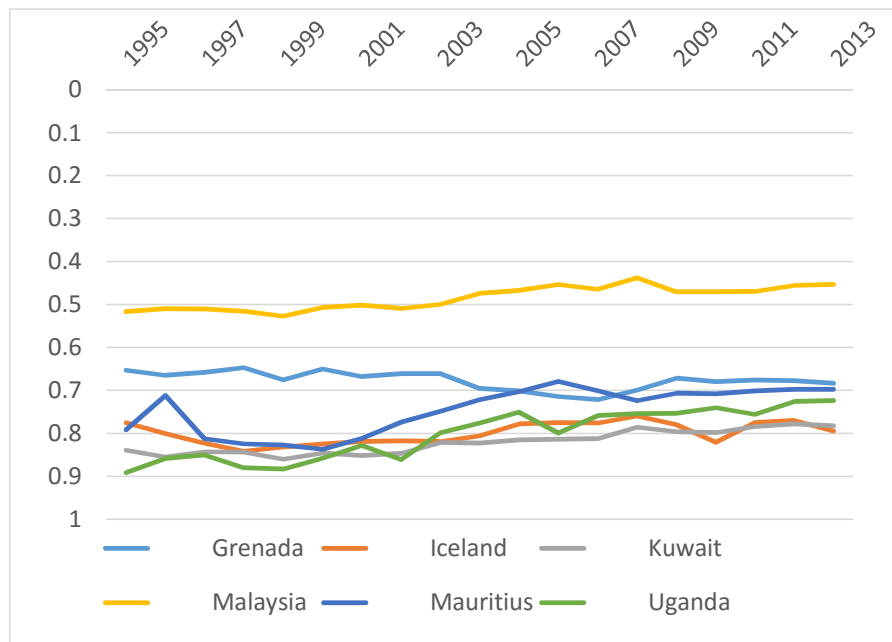
- Key variables – more still
 - World Bank measure of share of manufactures in exports
 - World Bank measure of share of manufactures and services in total output – to include services
 - [Economic Complexity Index](#) by Hidalgo and Hausmann (2009)
 - Ranks countries by the diversity and complexity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

Herfindahl index of merchandise-export diversification 2013

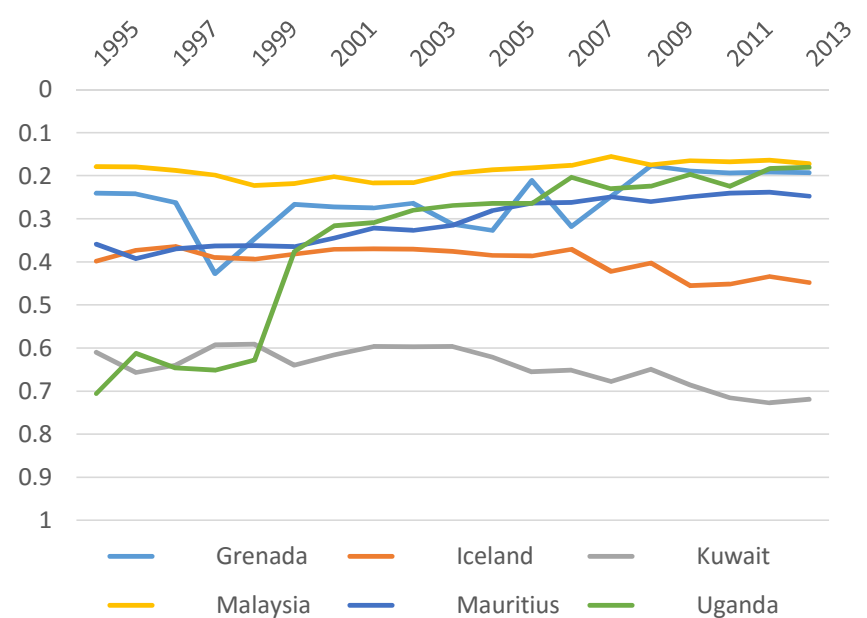


UNCTAD measures of diversification and concentration 1995-2013

Export diversification index (FKI)

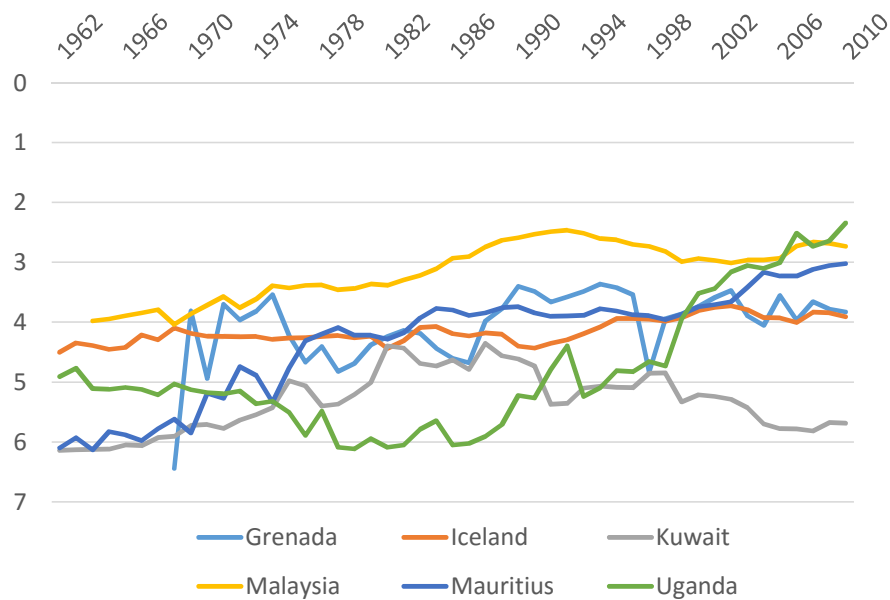


Market concentration index (HHI)

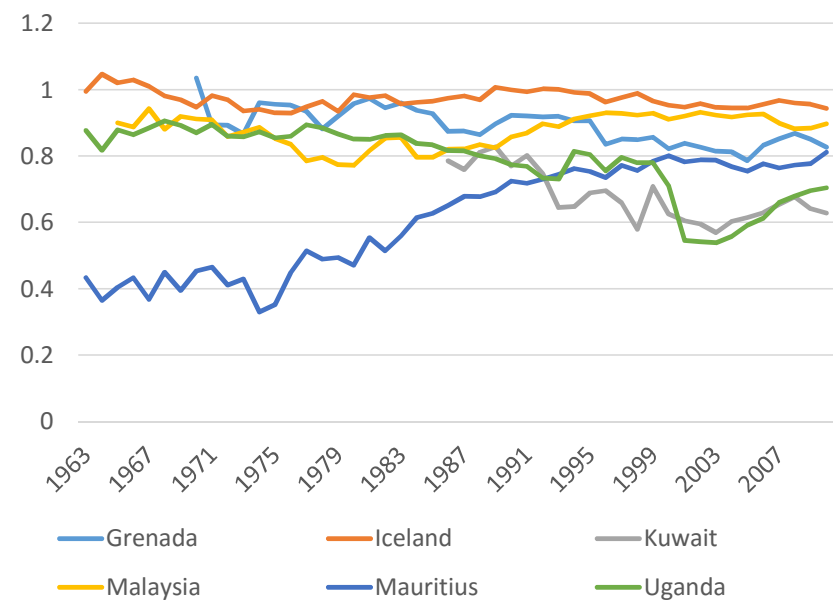


IMF measures of diversification and quality 1962-2010

Export diversification index (EDI, Theil)

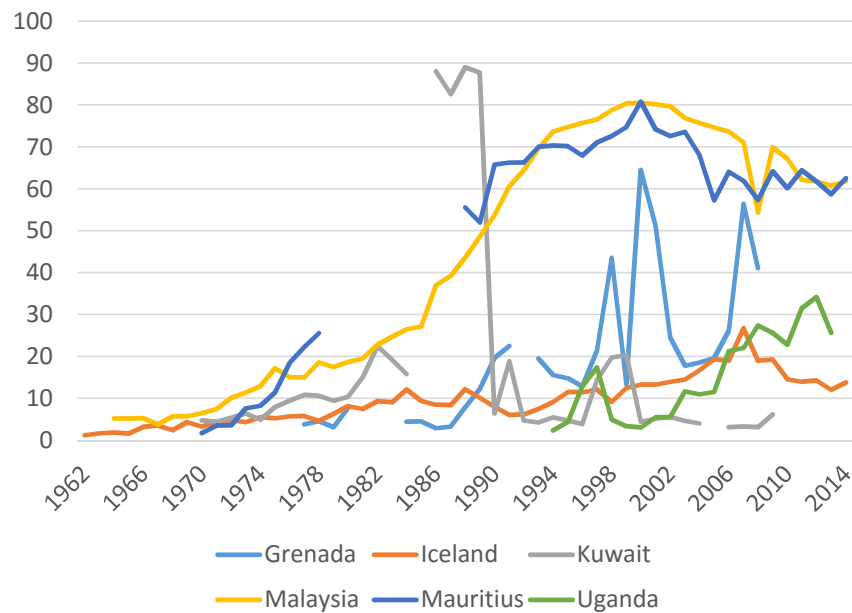


Product quality index (PQI)

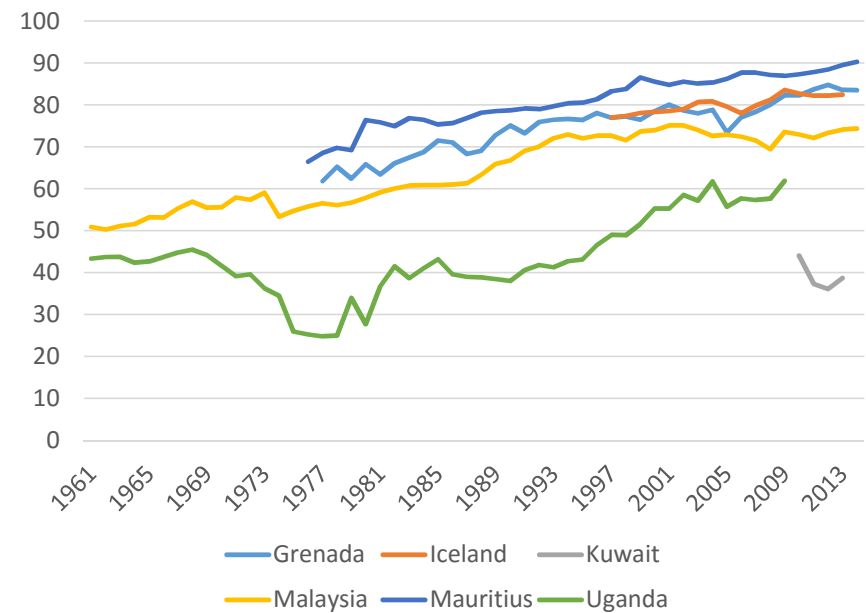


World Bank measures of diversification and complexity 1961-2014

Manufactures (% of total exports)

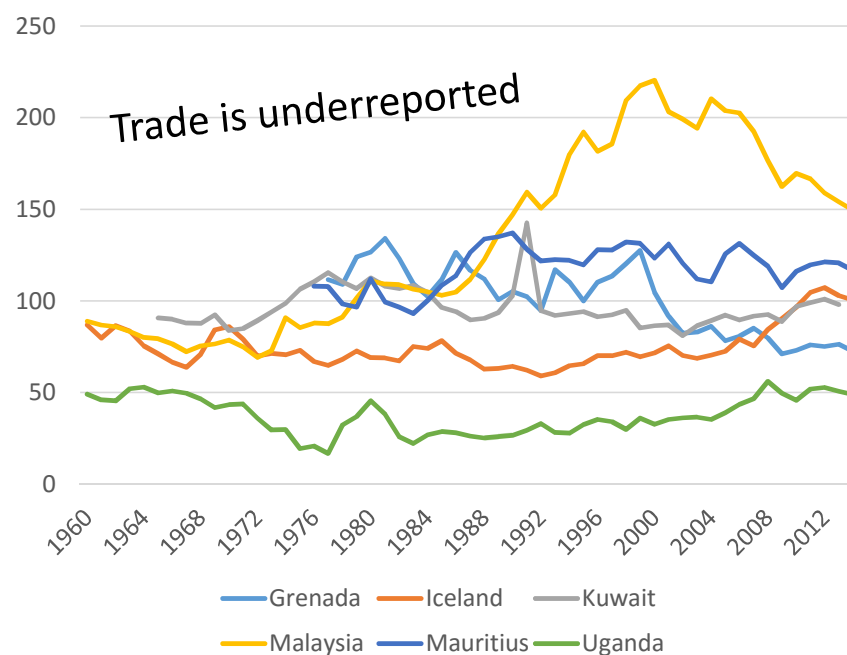
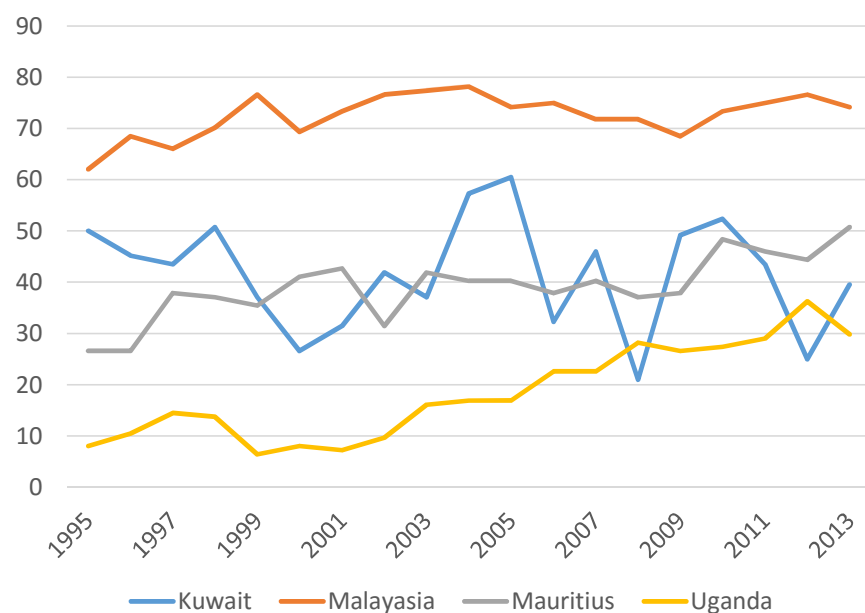


Manufactures & services (% of value added)



Other measures of complexity 1960-2014

Economic complexity index (ECI, Hausmann) Trade in goods and services (% of GDP)



Overview of indices of economic diversification

	Chart 1: UNCTAD		Chart 2: IMF		Chart 3: World Bank		Chart 4: Others	
	(1) Diversi- fication (FKI, goods only)	(2) Dispersion (HHI, goods only)	(3) Diversi- fication (Theil, goods only)	(4) Quality (goods only)	(5) Manu- factures (% of exports)	(6) Manufactures and services (% of value added)	(7) Complexity (Hausmann, goods only)	(8) Trade (% of GDP, goods and services)
Grenada	0	+	+	-	+	+	...	-
Iceland	0	-	+	-	+	+	...	+
Kuwait	+	-	+	-	0	...	-	+
Malaysia	+	0	+	0	+	+	+	+
Mauritius	+	+	+	+	+	+	+	+
Uganda	+	+	+	-	+	+	+	0

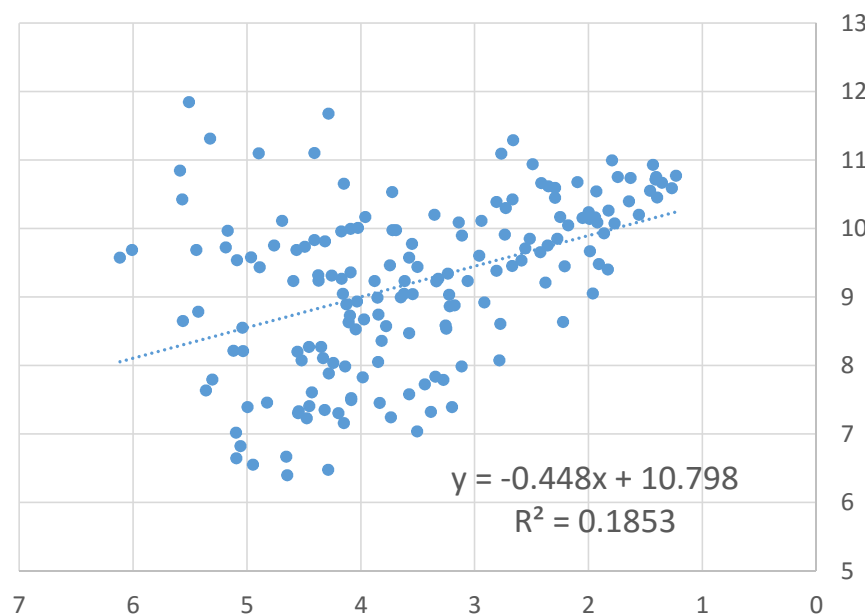
Economic diversification strategies

- Successful, deliberate diversification
 - Malaysia 6/8: Manufactures, incl. cars and electronics
 - Mauritius 8/8: Tourism displaced sugar plantation owners
- Imperfect, accidental diversification
 - Grenada 4/8: Tourism, incl. medical tourism, but hurricanes
 - Iceland 4/8: Crash ended overvaluation, encouraging tourism
 - Uganda 6/8: Services, oil, but still mainly agricultural
- Insignificant diversification
 - Kuwait: 3/8: Little but oil, still

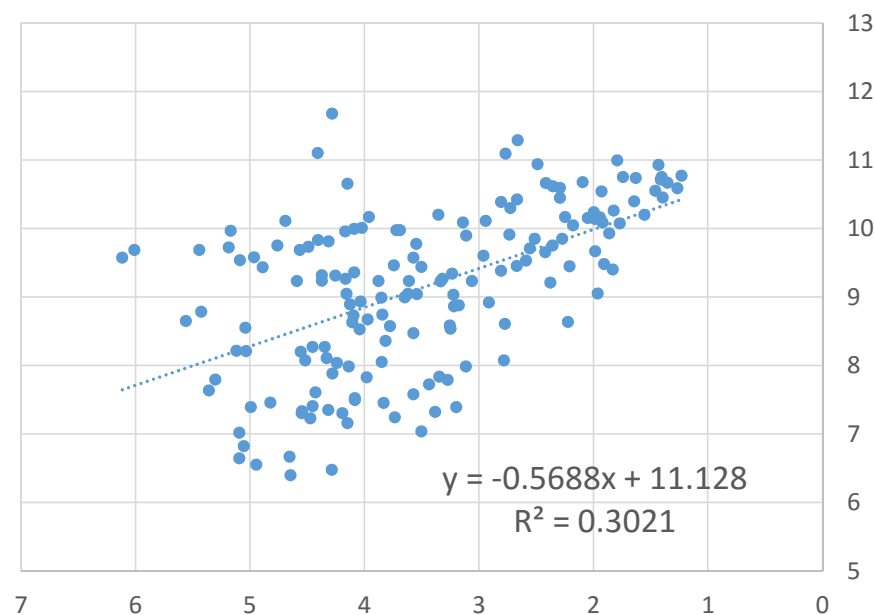
Economic diversification (Theil index) and growth

2

170 countries for which data are available



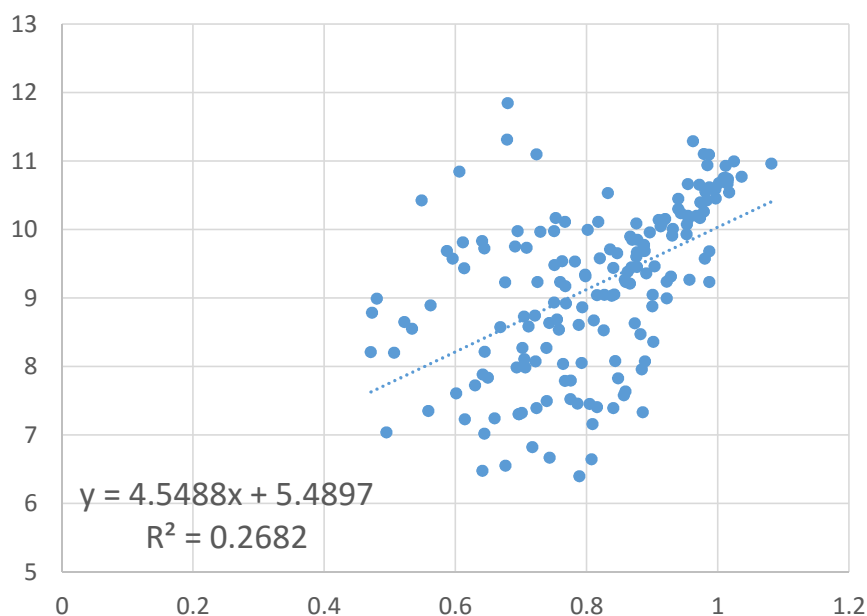
164 countries, all except six GCC countries



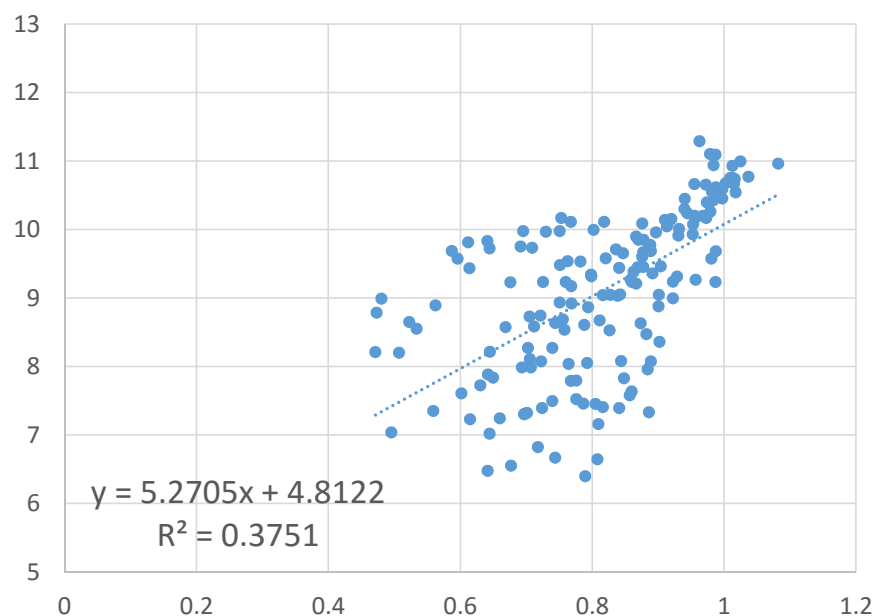
Note: Log of per capita GNI on vertical axes; Theil index of diversification on horizontal axes.

Product quality (IMF index) and economic growth

174 countries for which data are available



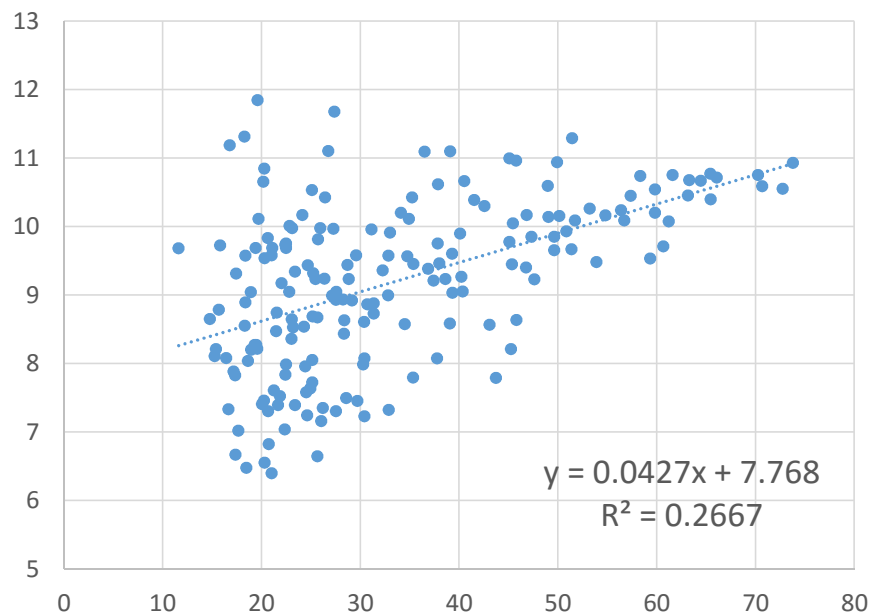
168 countries, all except six GCC countries



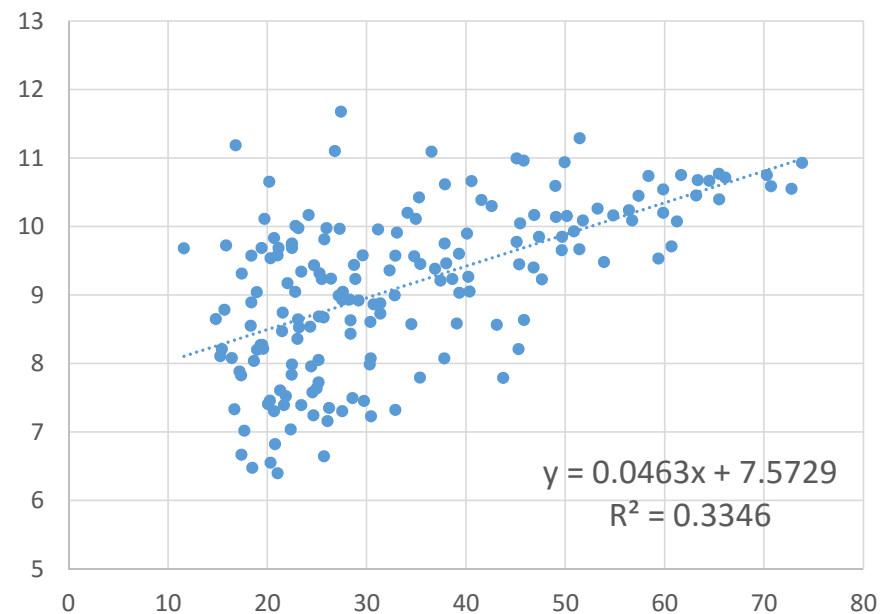
Note: Log of per capita GNI on vertical axes; Product Quality Index on horizontal axes.

Export diversification (Finger-Kreinin index) and economic growth

181 countries for which data are available



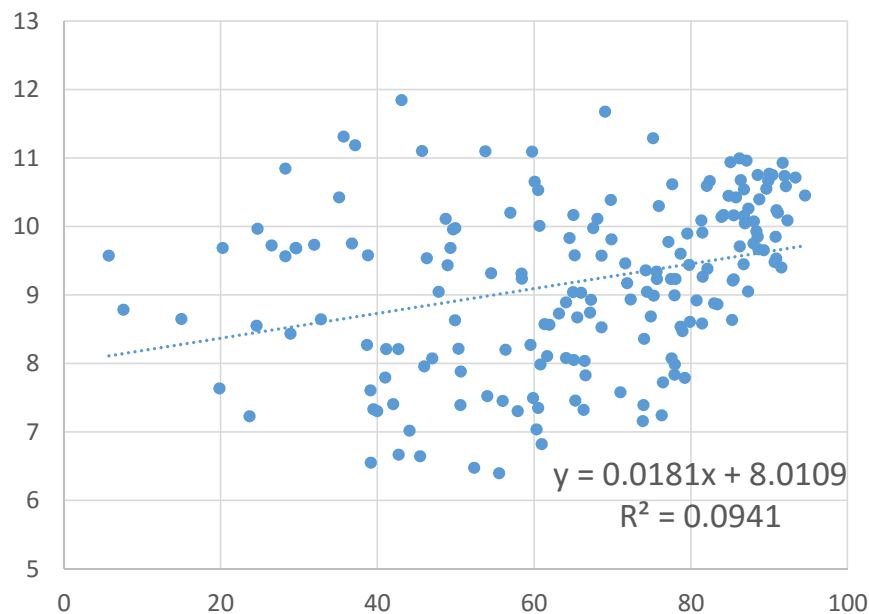
175 countries, all except six GCC countries



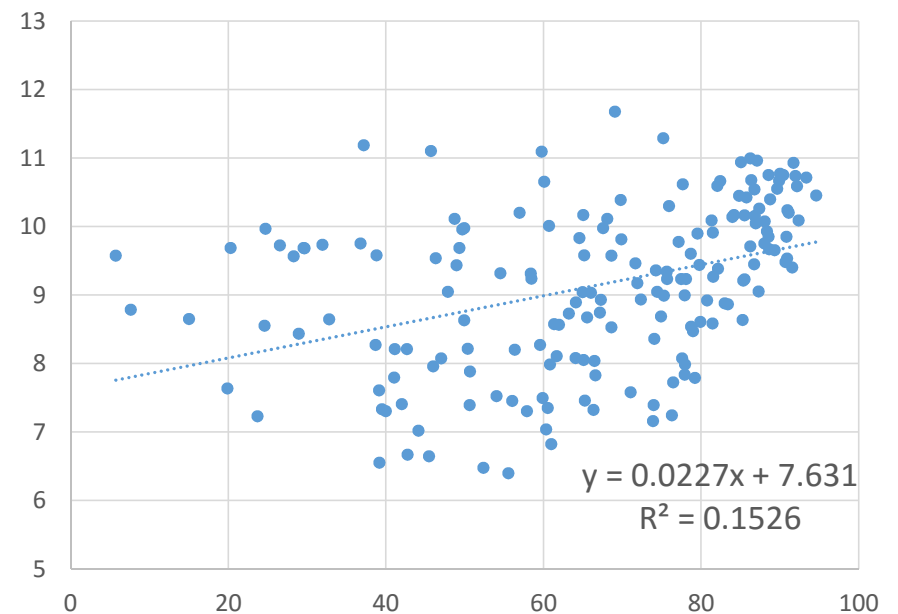
Note: Log of per capita GNI on vertical axes; export diversification index on horizontal axes.

Export dispersion (Herfindahl index) and economic growth

180 countries for which data are
available



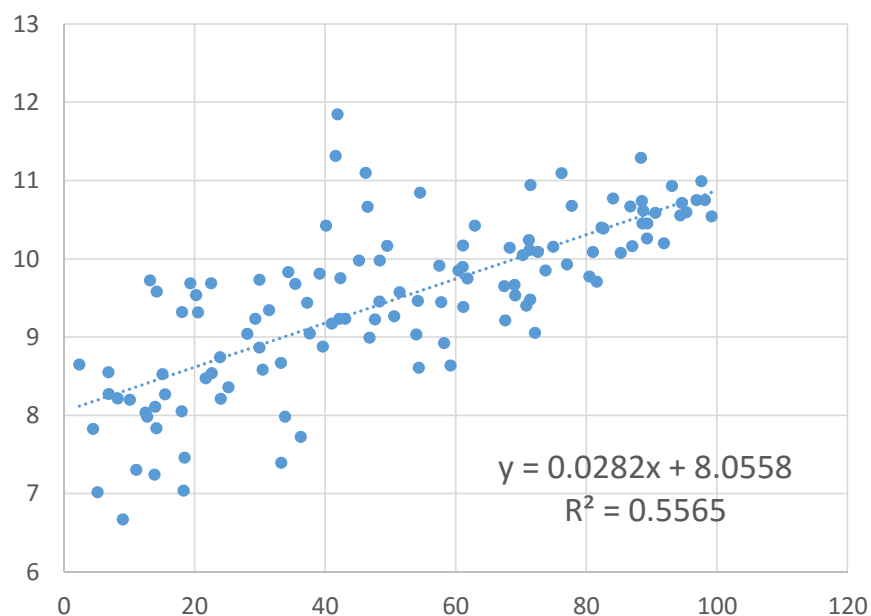
174 countries, all except six GCC
countries



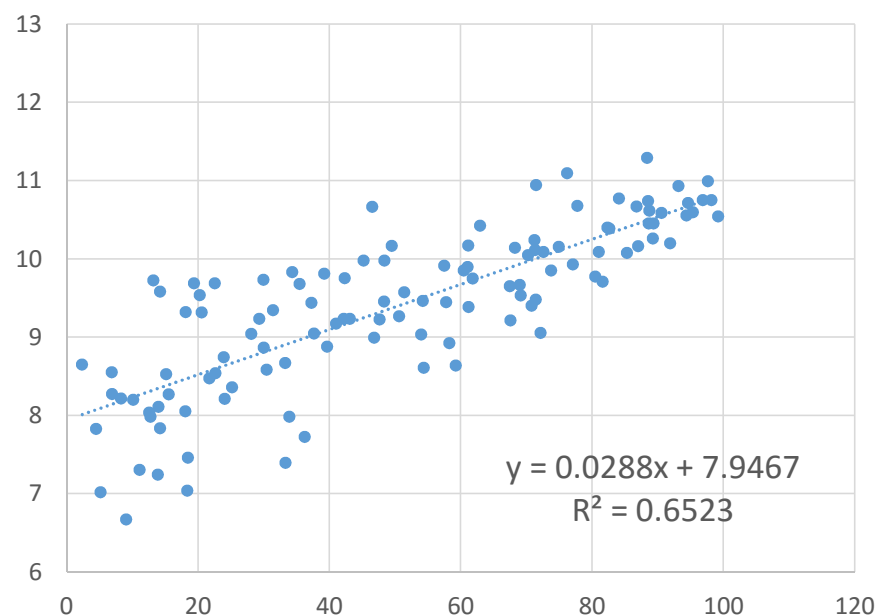
Note: Log of per capita GNI on vertical axes; export dispersion index on horizontal axes.

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.

Double diversification

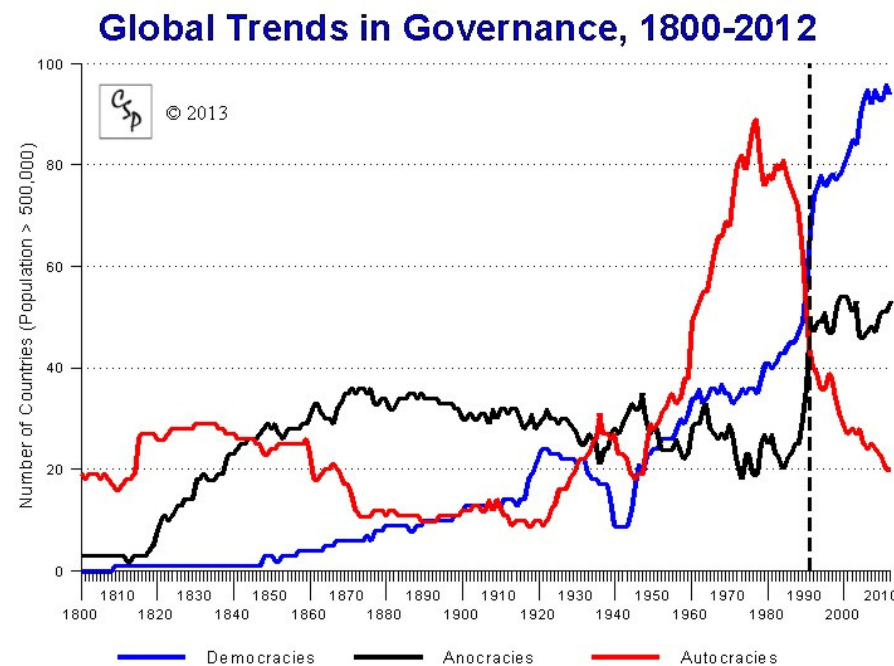
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- Economic diversification and political diversification as two sides of the same coin
 - Economic diversification means diversification of exports and output away from excessive dependence on a single dominant sector or a few typically natural-resource-based commodities as well as change toward increased complexity and quality of 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

Political diversification

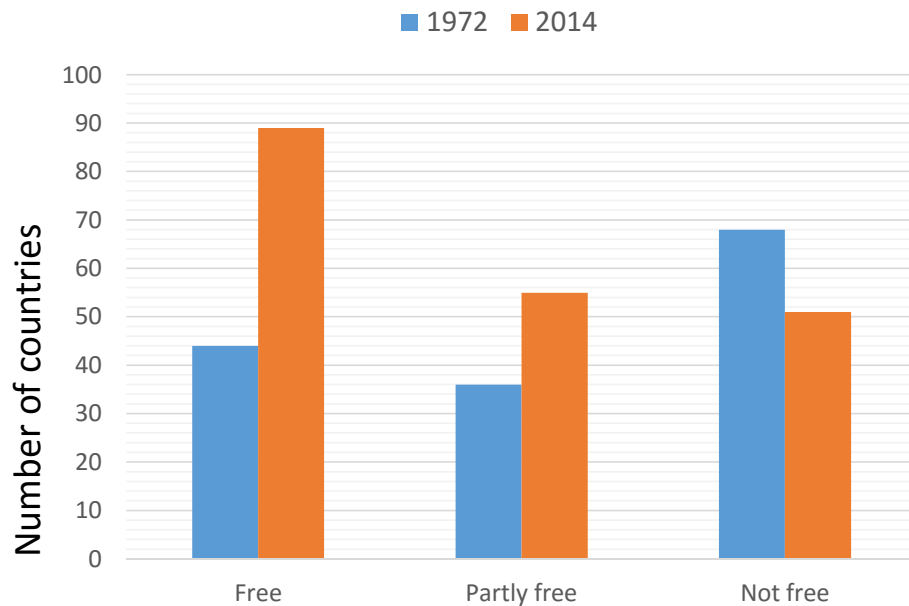
- Key variables
 - Polity2 index of democracy from University of Maryland
 - Freedom House index of democracy

Governance: Number of democracies, anocracies, and autocracies

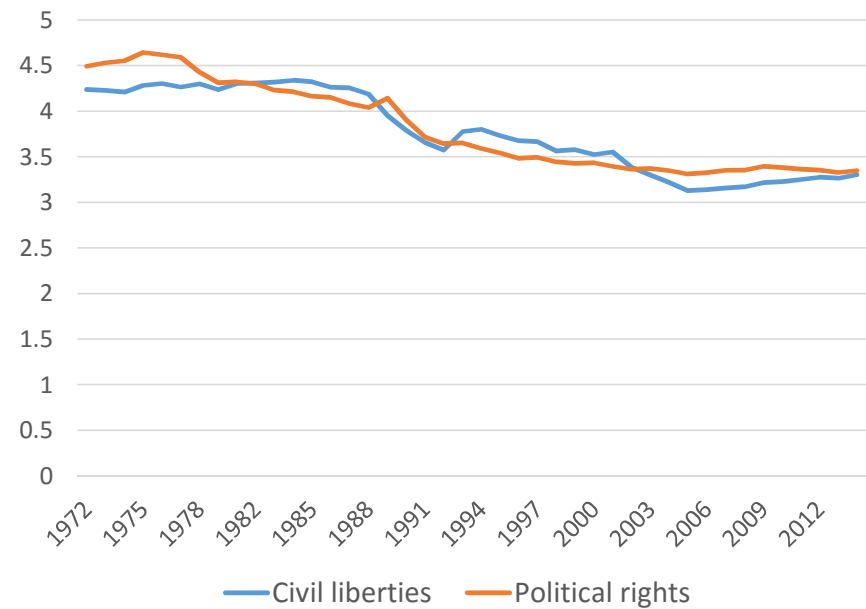


Civil liberties and political rights

Civil liberties and political rights 1972 and 2014

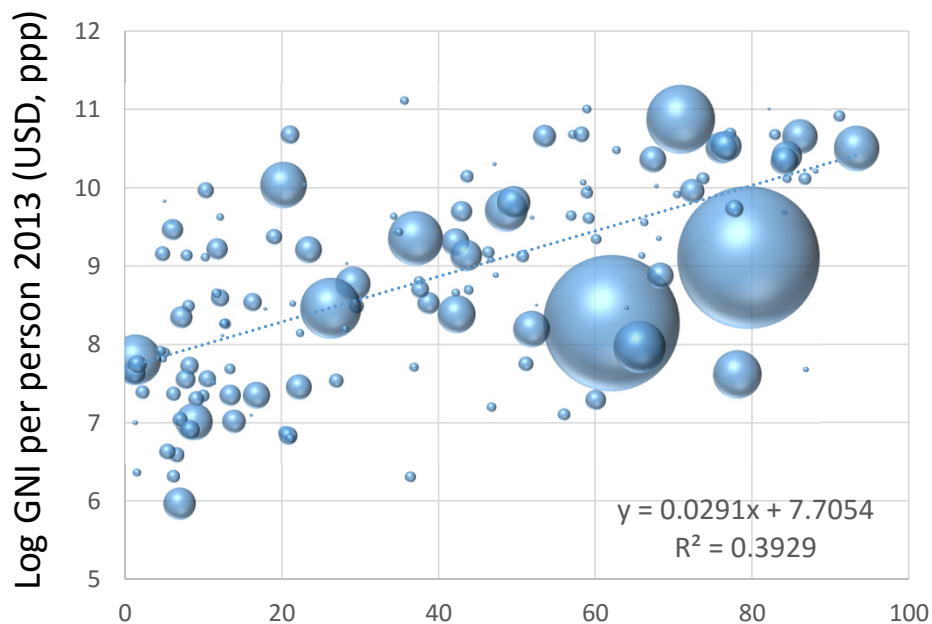


Civil liberties and political rights again 1972 and 2014



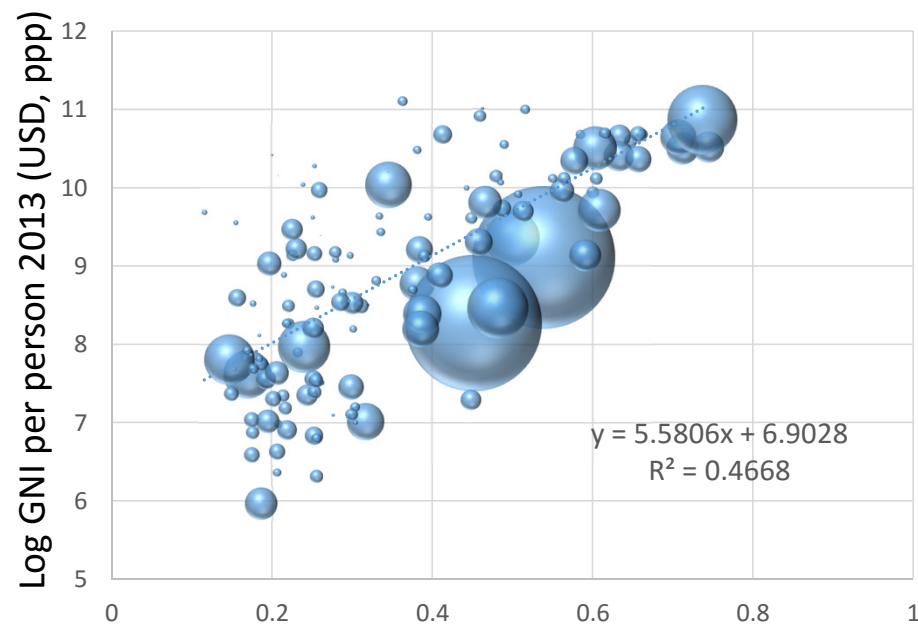
From economic diversification to growth

Manufactures exports and per capita GNI



Manufactures exports 1963-2012 (% of total exports)

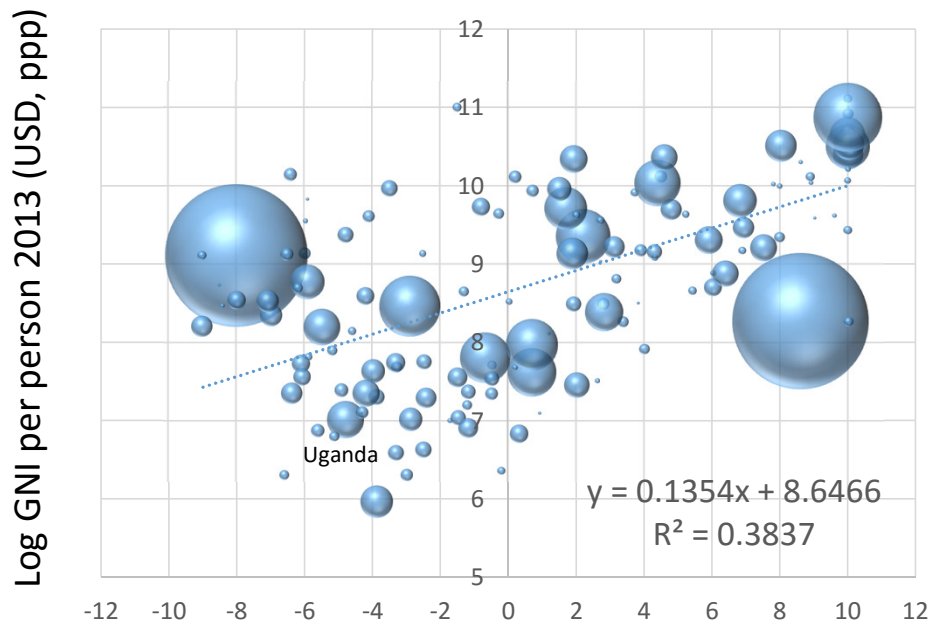
Export diversification and per capita GNI



Export diversification index 1996-2012

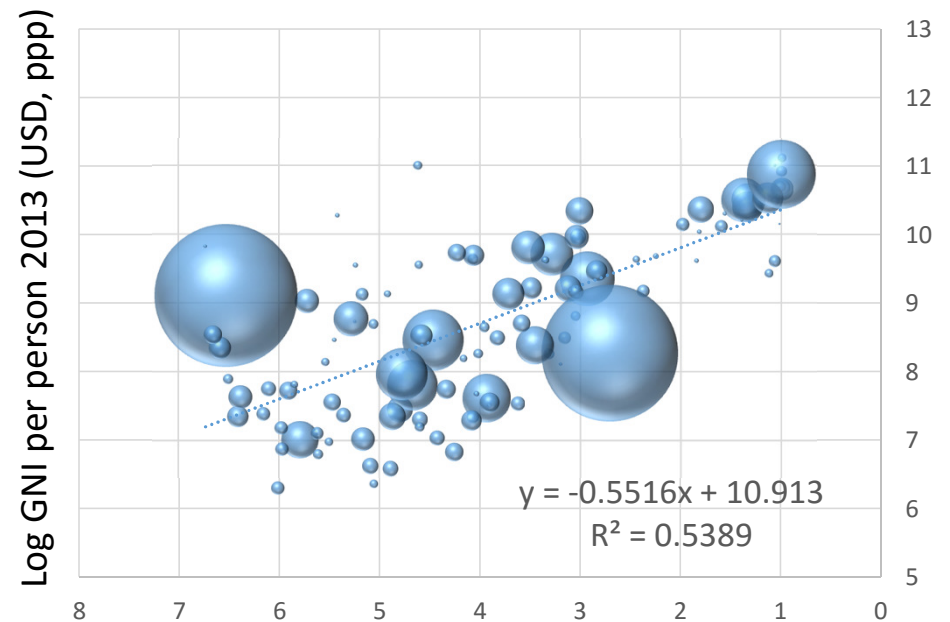
From democracy to growth

Polity2 index of democracy and per capita GNI



Democracy (Polity2) 1960-2012

Freedom House index of democracy and per capita GNI

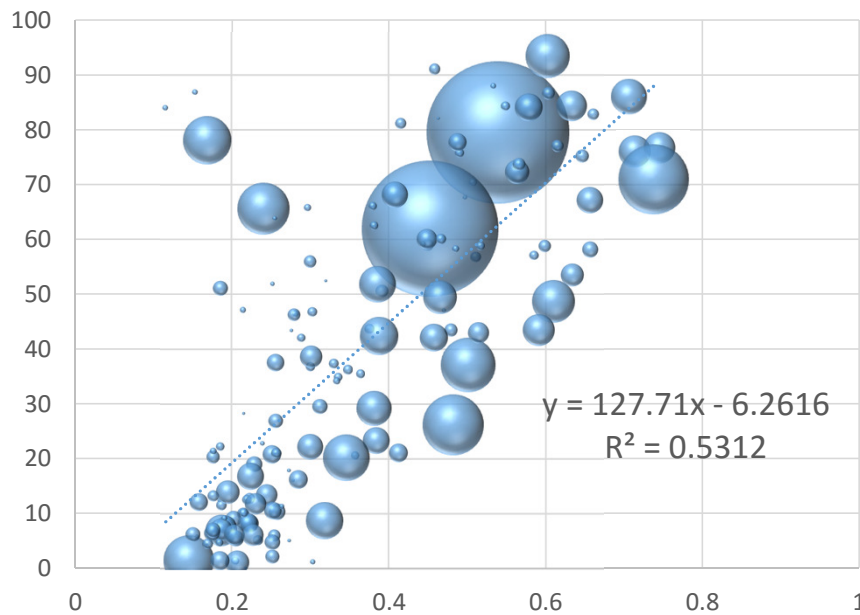


Democracy (Freedom House) 1972-2014

Side by side: Economic and political diversification

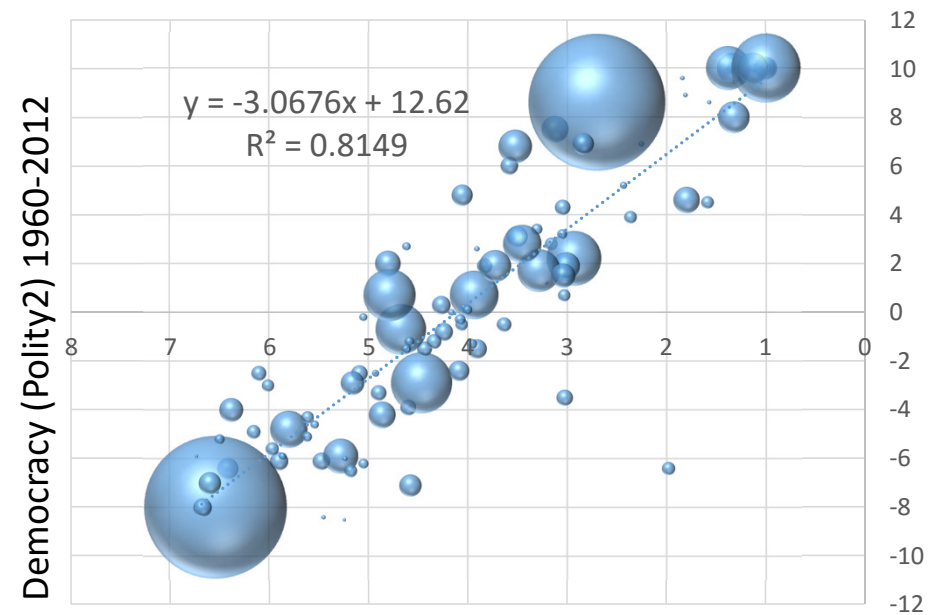
Manufactures exports 1963-2012 (% of total exports)

Two aspects of economic diversification



Export diversification index 1996-2012

Two aspects of political diversification

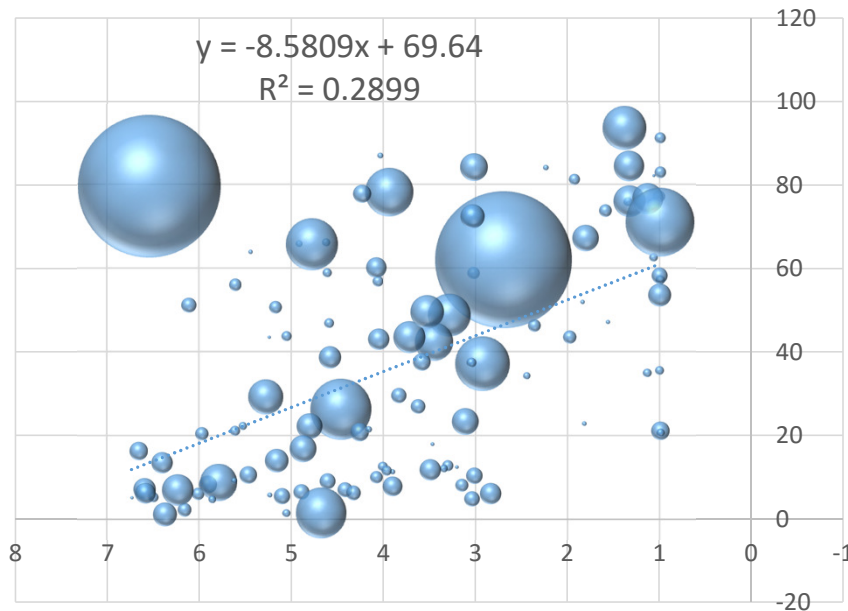


Democracy (Freedom House) 1972-2014

From democracy to diversification I

Manufactures exports 1963-2012 (% of total exports)

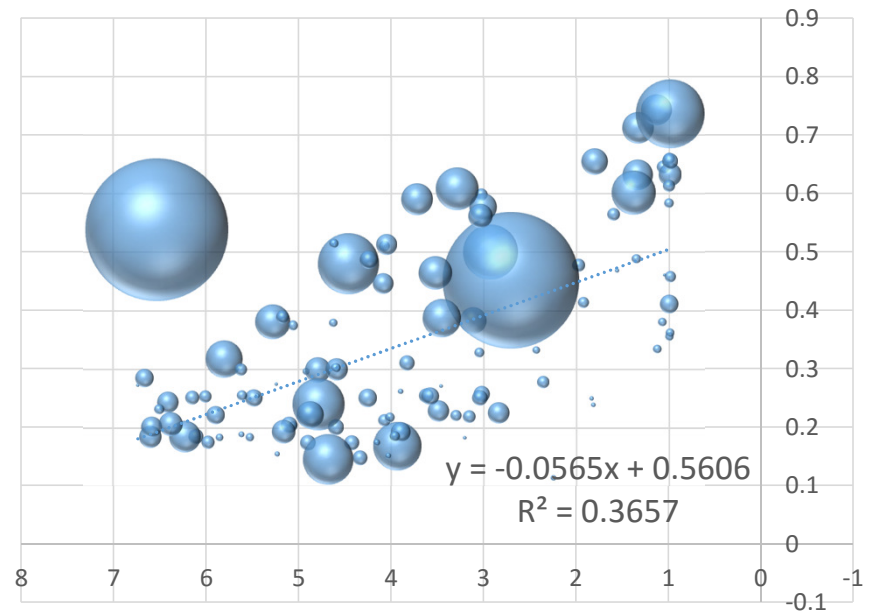
Freedom House index of democracy and manufactures exports



Democracy (Freedom House) 1972-2014

Export diversification index 1996-2012

Freedom House index of democracy and export diversification

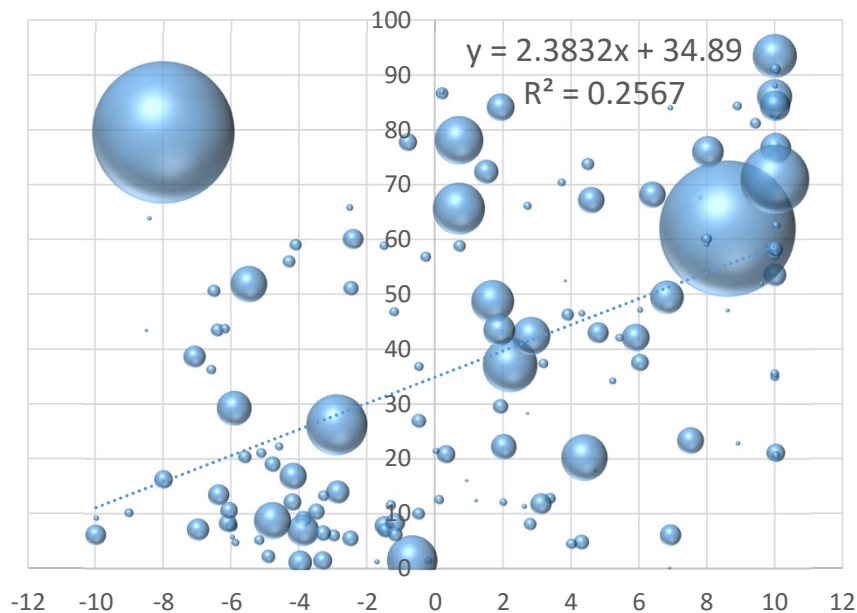


Democracy (Freedom House) 1972-2014

From democracy to diversification II

Manufactures exports 1962-2012 (% of total)

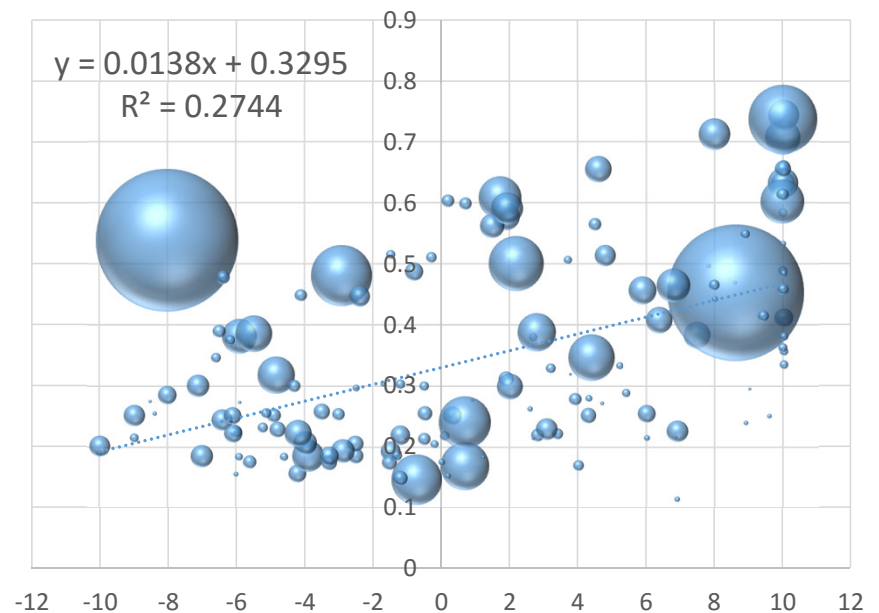
Polity2 index of democracy and manufactures exports



Democracy 1960-2012 (from -10 to 10)

Export diversification index 1996-2012

Polity2 index of democracy and export diversification



Democracy 1960-2012 (from -10 to 10)

Conclusion

- Diversification appears good for long-run growth
 - Data on economic diversification need to be
 - Extended from goods alone to include goods and services
 - Introduced into growth econometrics literature
- Main policy measures needed to mitigate climate change are intimately related to those measures that can be most effective as instruments of economic diversification
 - Natural capital and climate are common-property resources
 - Need efficient and reasonably 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