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2.2a Diversification into New Sectors: Approaches and Mechanisms

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Content

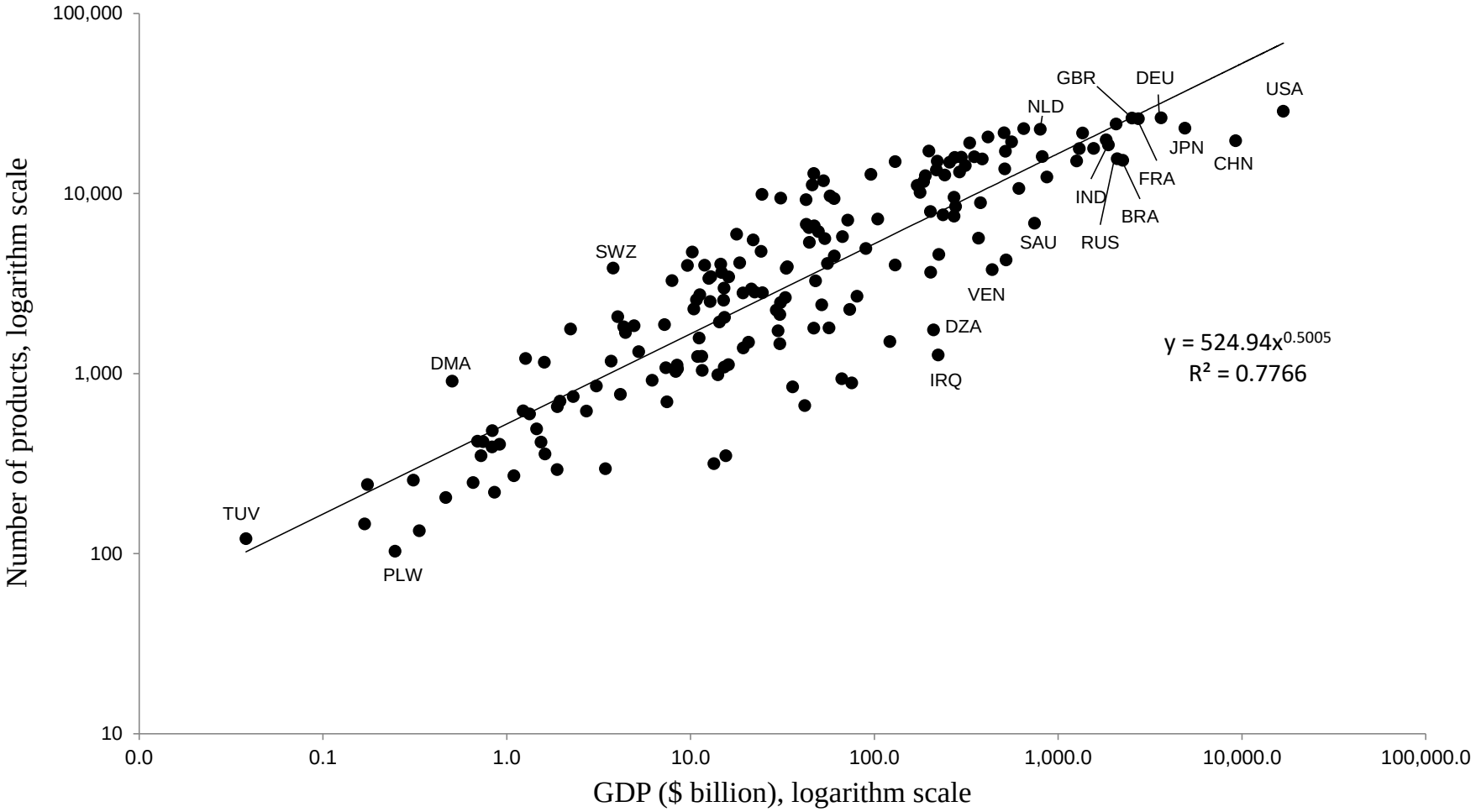
- Introduction
- Diversification: stylized facts
- Economic complexity tools and methods
- Potential new sectors for diversification

Introduction

- Why is diversification important?
- development-> diversification or diversification-> development?
- Previous experience with product space or diversification analysis?
- What is the objective of the session?

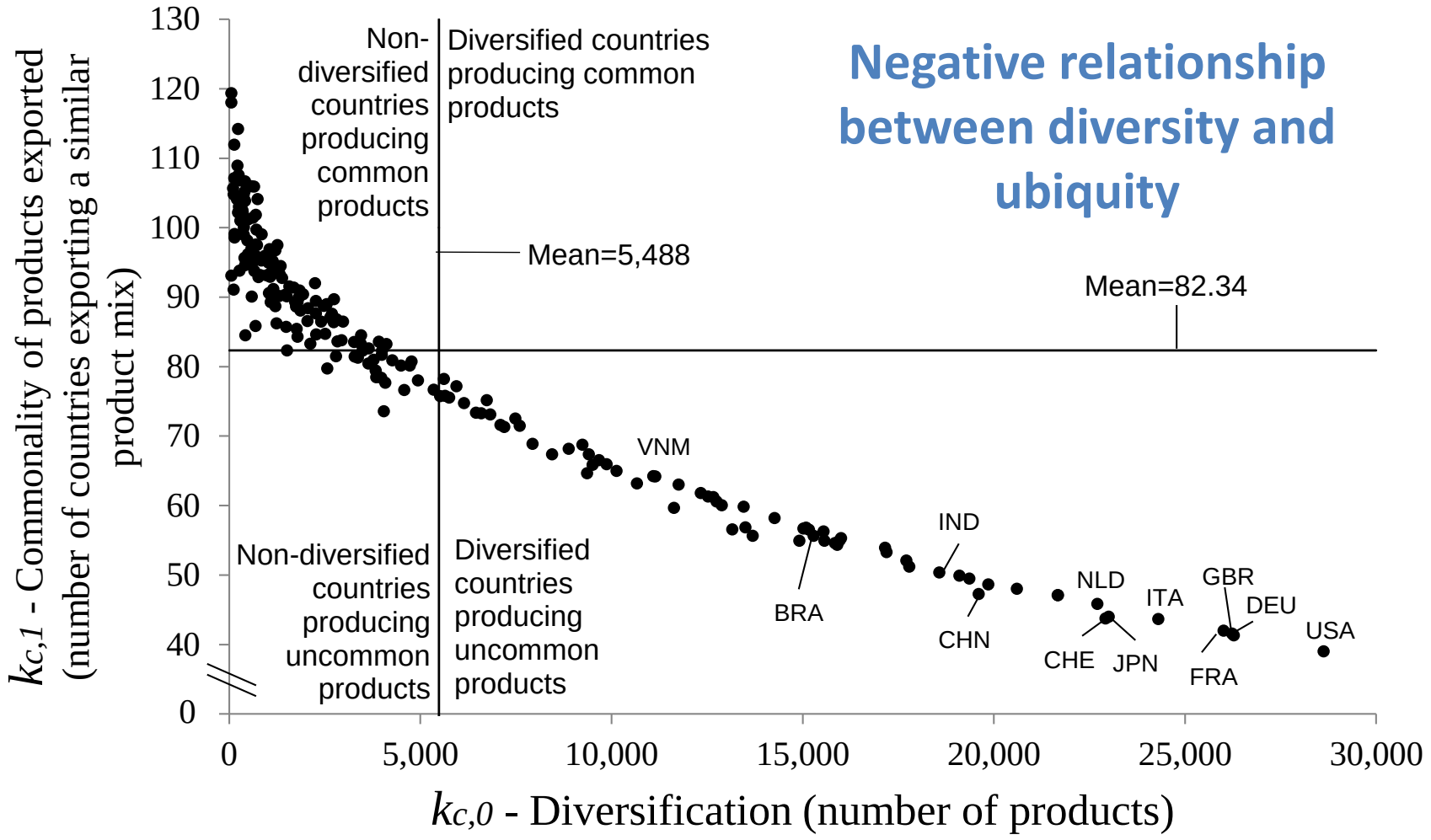
Diversification: stylized facts

Diversification is associated with higher total GDP



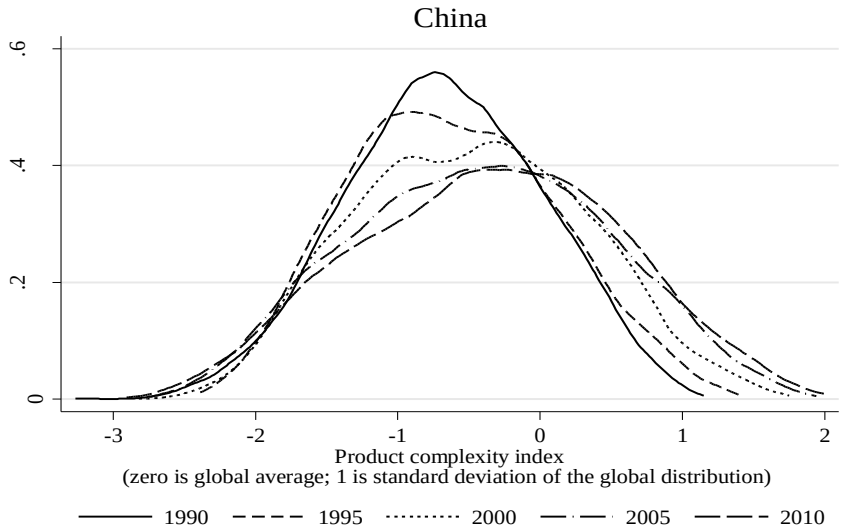
Source: Freire(2017).Diversification and structural economic dynamics.

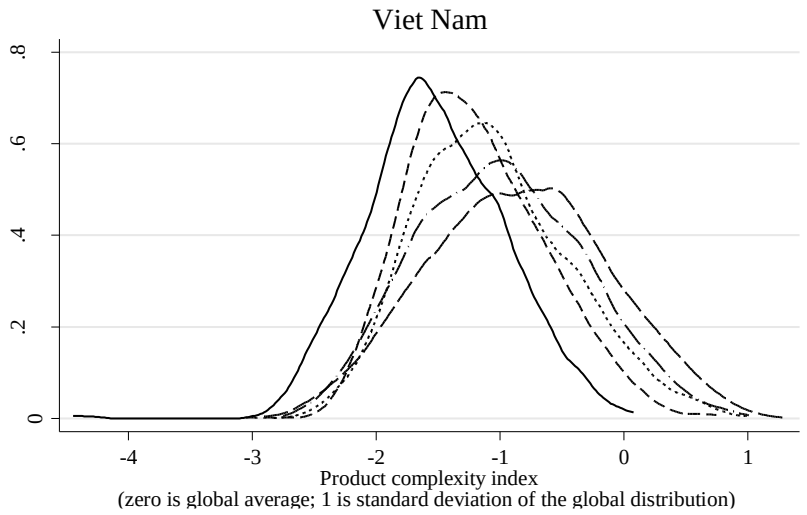
Diversification is associated with lower foreign competition regarding the exported products

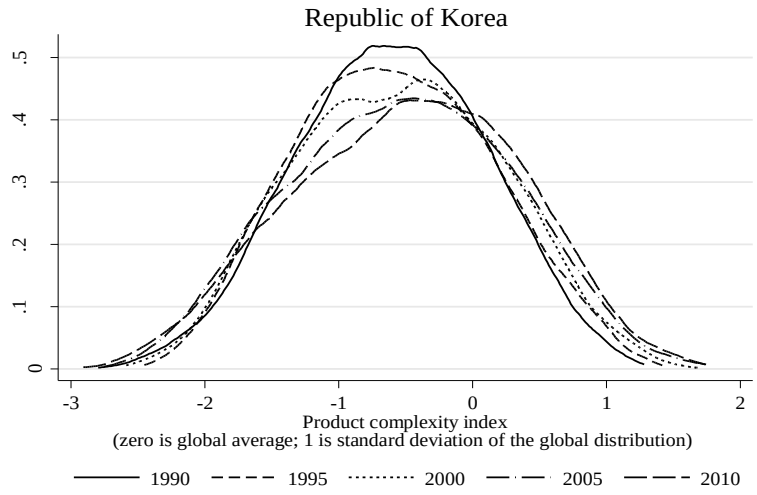


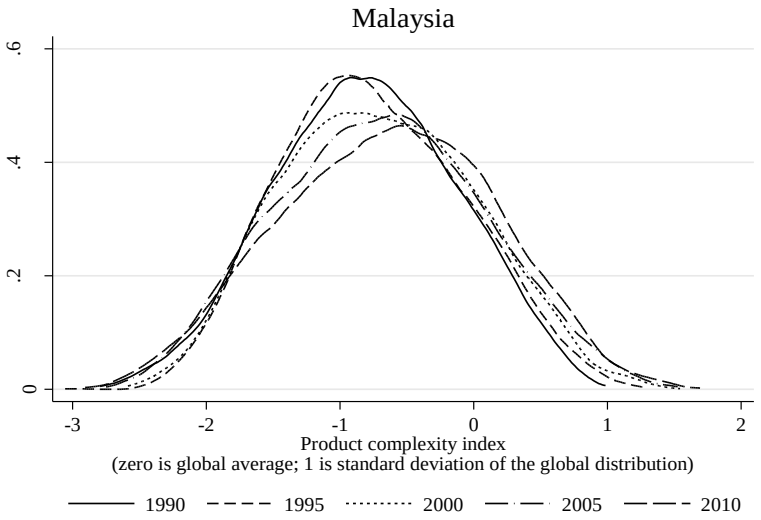
Source: Freire(2017).Diversification and structural economic dynamics.

As economies develop and diversify, they tend to add exports of higher complexity



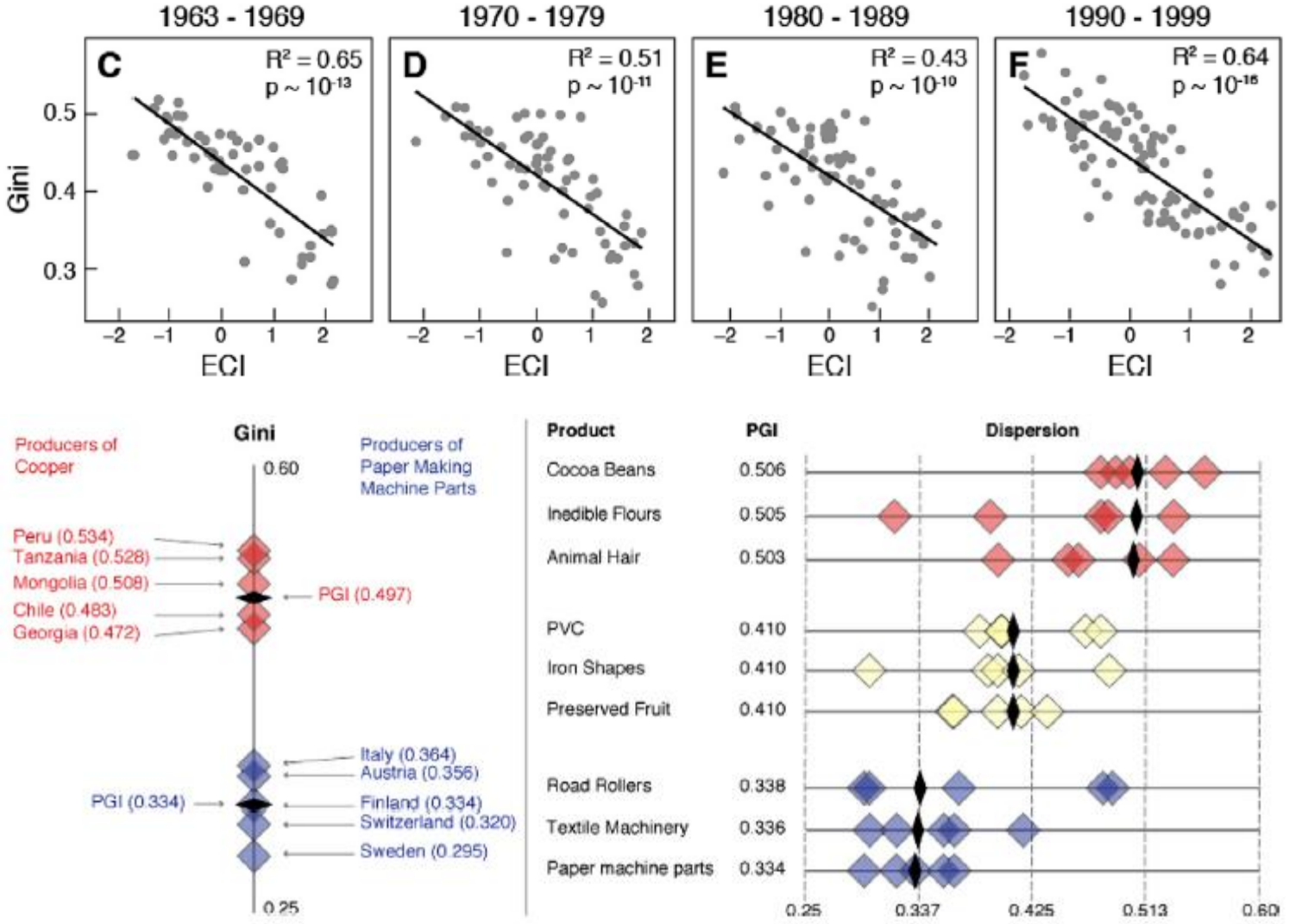






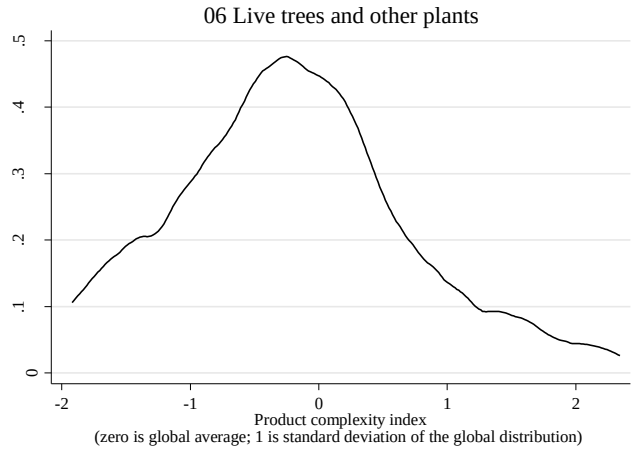
Source: Freire(2017).Diversification and structural economic dynamics.

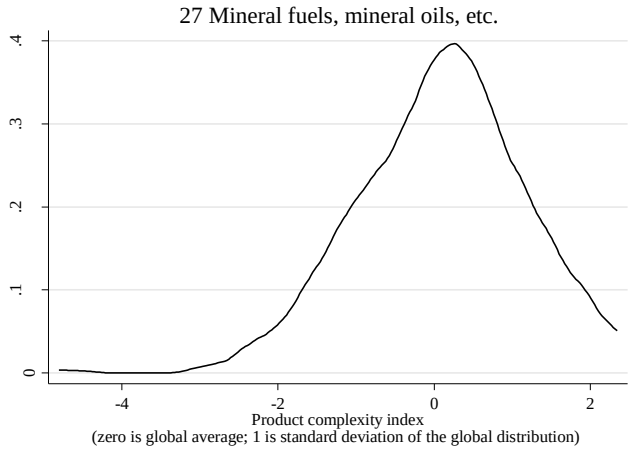
Countries exporting complex products have lower levels of income inequality

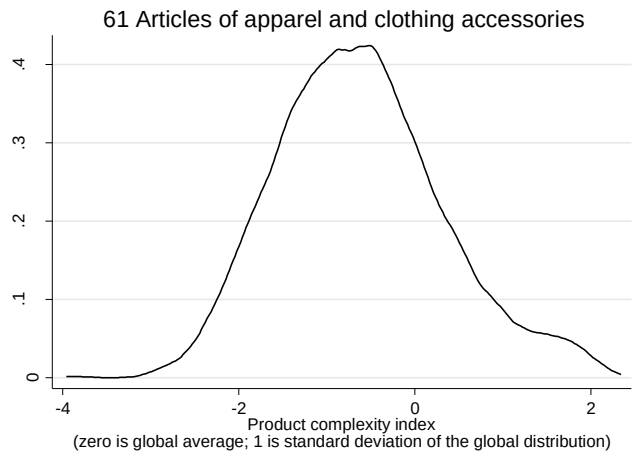


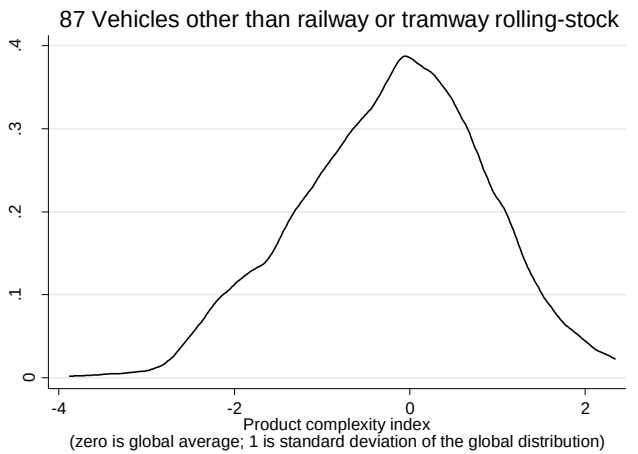
Source: Hartmann, D., Guevara, M.R., Jara-Figueroa, C., Aristaran, M., Hidalgo, C. (2017). Linking Economic Complexity, Institutions, and Income Inequality. World Development Vol. 93, pp. 75–93, 2017..

What matters in terms of product complexity is not the broad industry classification but the individual products within the industry





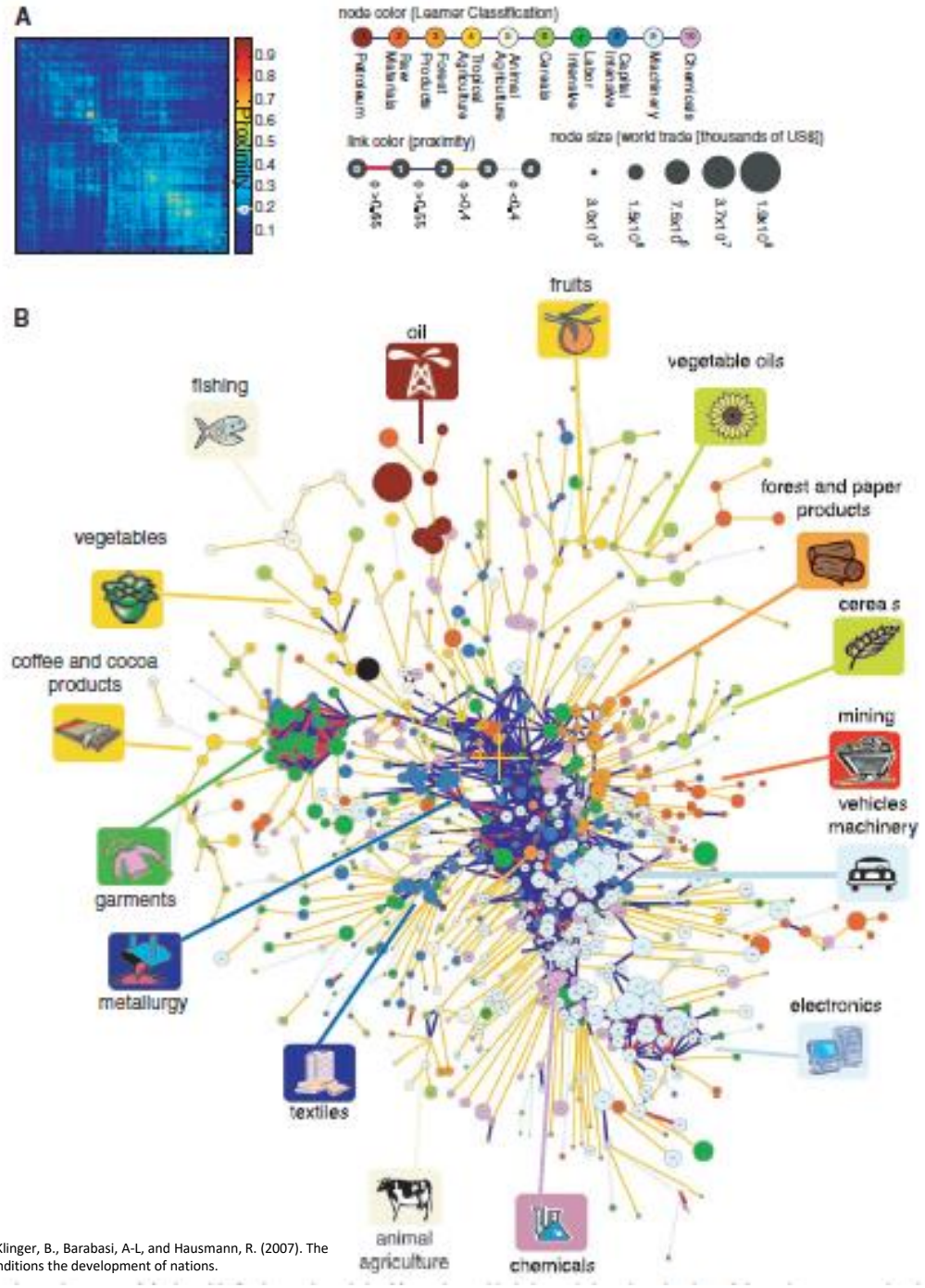




Source: Freire(2017).Diversification and structural economic dynamics.

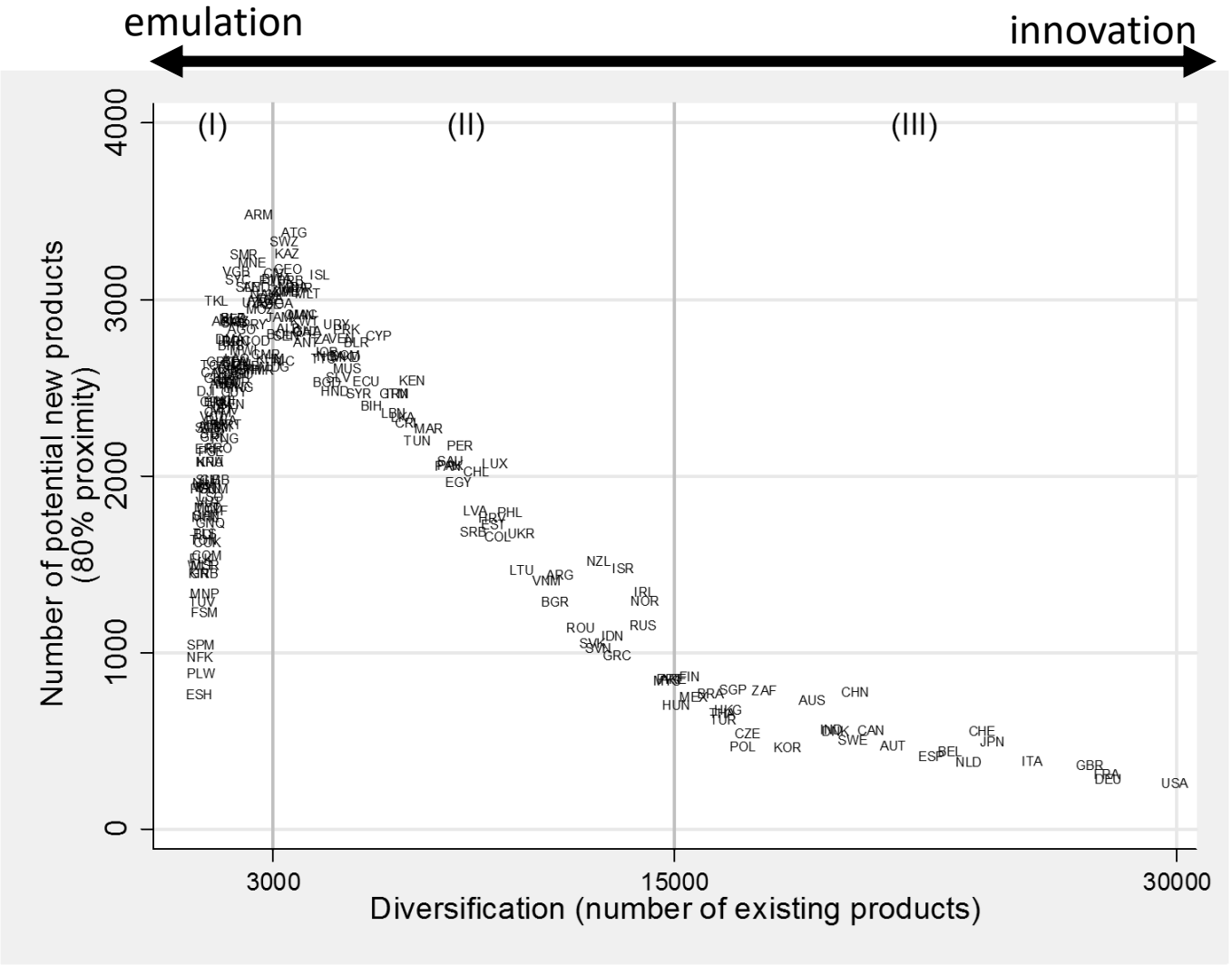
Diversification is path dependent:

What a country produces and exports matters more for long term economic development than the value that it gets out of that production. Because what a country is capable to produce in the present affects what it would be able to produce in the future.



Source: Hidalgo, Klinger, B., Barabasi, A-L, and Hausmann, R. (2007). The product space conditions the development of nations.

Less diversified countries benefit by focusing on emulation



Source: Freire(2017).Diversification and structural economic dynamics.

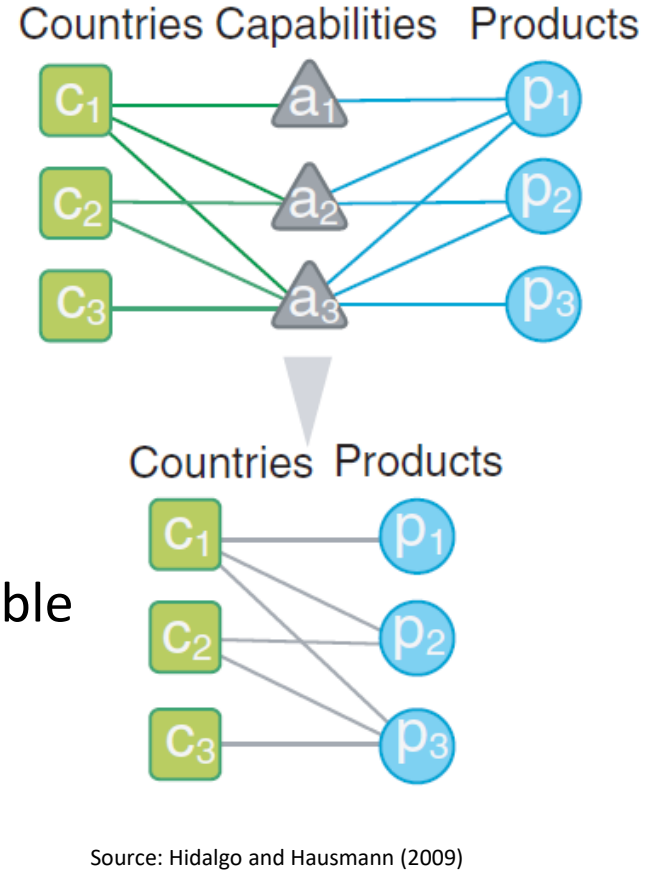
Q&A

Economic complexity tools and methods

Complexity Perspectives on Structural Change

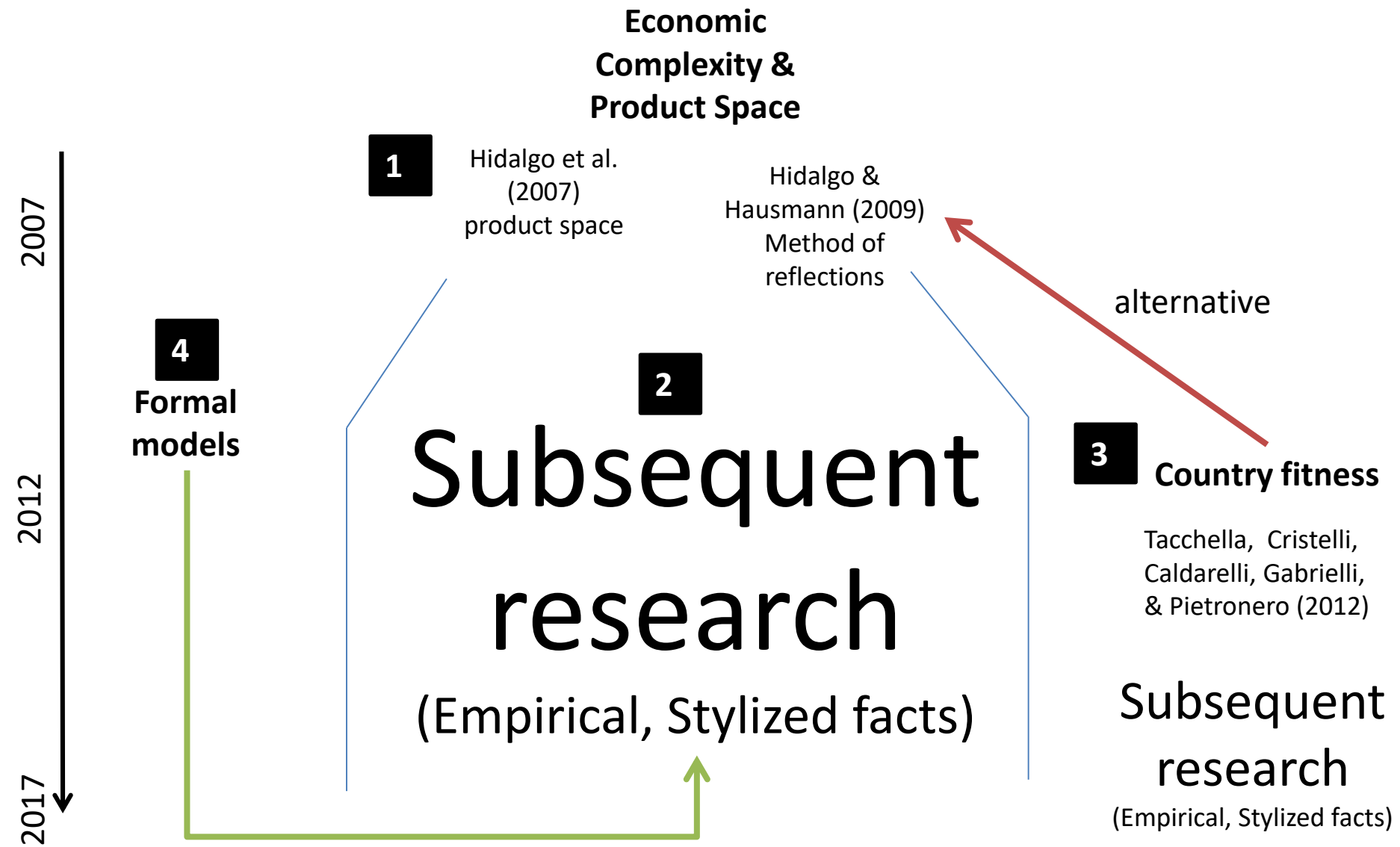
- Empirical literature (econophysics):
  - Trade data
  - Tools and methods of network theory and system dynamics
- Seminal work:
  - Hidalgo et. Al 2007
  - Hidalgo & Hausmann, 2009
- Key ideas:
  - Products that countries produce can tell us something about their productive non-tradable capabilities
  - More capabilities → more products (Diversification)

  Diversification ≈complex economy ≈ Development



Source: Hidalgo and Hausmann (2009)

Overview of the literature



Economic Complexity & Product Space

Hausmann , Hwang & Rodrik (2005, 2007) PRODY & EXPY

Hausmann & Klinger(2006) capabilities & product space

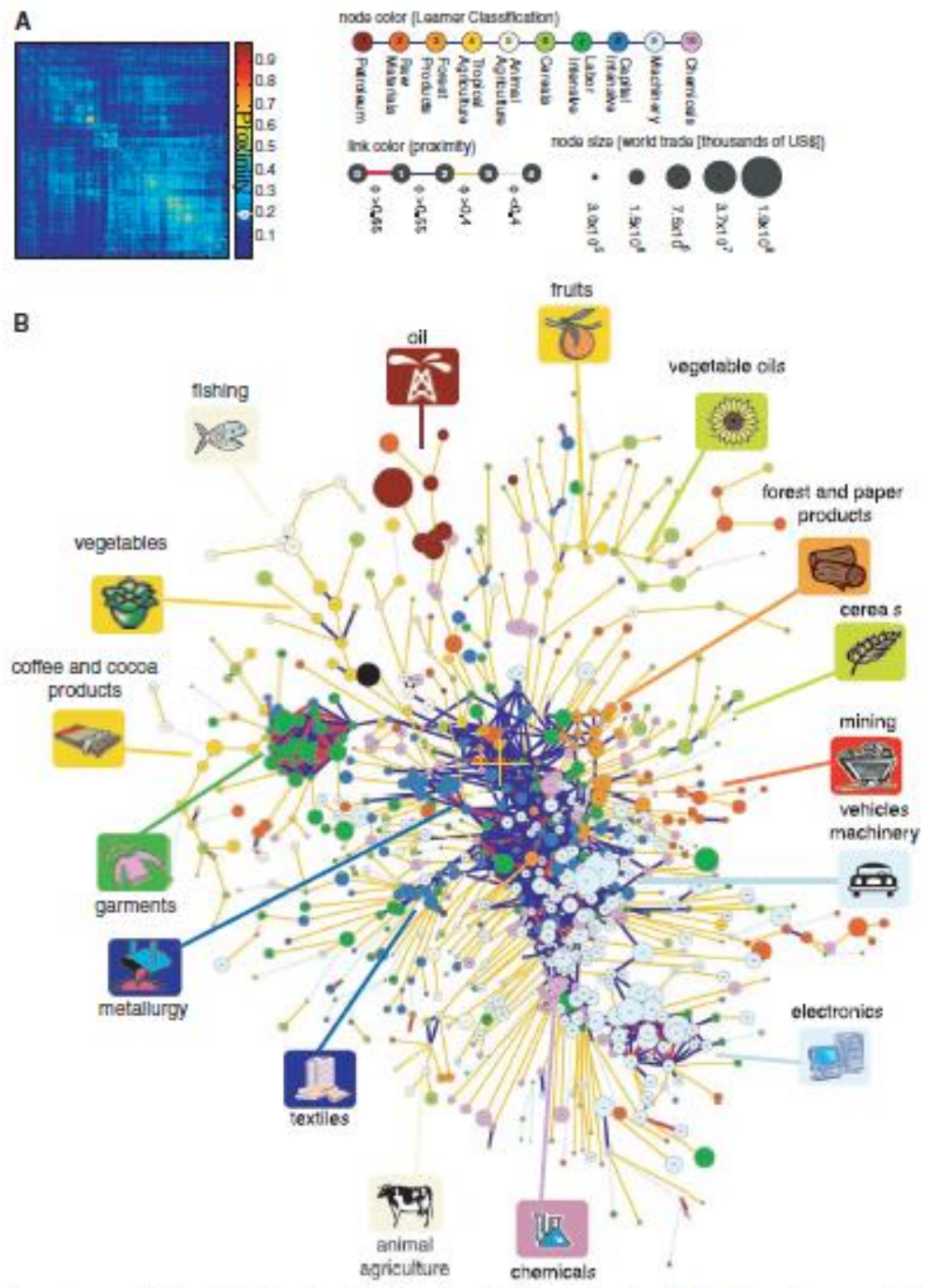
Hidalgo et al. (2007) visualization of product space & simulations

Hidalgo & Hausmann (2009) Method of reflections

Properties of the product space and country-product network	• Structure of the product space remains relatively constant over time (Hidalgo, 2009) • Nested structure(Bustos et al., 2012)
Assess & track economic complexity of countries	• (e.g. Hidalgo, 2009; ESCAP, 2011; Felipe et al., 2012; Hausmann and Hidalgo, 2013) • Complement qualitative analysis
New measures based on the product space	Freitas and Salvado (2008) measure of relatedness allows for negative values
Economic complexity & growth	Hidalgo & Hausmann (2009) Ozguzer and Binatli (2016) EU countries; above a certain threshold converge to income levels predicted by their complexity
Diversification patterns	• As countries got richer, they increase the exports of more complex products and decrease of the less complex ones (Felipe et al., 2012) • Countries diversify to a product with higher probability if a neighbouring country exports that product with RCA (Bahar, Hausmann and Hidalgo, 2014)
Identify products for Diversification	• Atlas: 128 countries (Hausmann et al., 2013) • De La Cruz and Riker, 2012; Neves, 2012; Hausmann and Klinger, 2008; Felipe and Hidalgo, 2015; Vitola and Davidsons, 2008; Ayres and Freire, 2014 • Initial list of products for further selection and promotion (industrial policy)
Diversification at regional level	• Economic geography: capabilities, related variety, and diversification through branching from related industries (e.g. Neffke and Henning, 2008) • New industries tend to emerge when they are related to existing industries in the region, which creates regional technological cohesion that increases over time (Neffke, Henning and Boschma, 2011)
Economic complexity & exchange rate	overvalued exchange rate has a negative impact on increasing export sophistication, but undervaluation has no effect (Anand et al., 2012)
Economic complexity & Institutions	Developed countries with coordinated market diversify to close in the product space, liberal markets diversify to distant (unrelated) products (Boschma and Capone, 2015)
Economic complexity & Inequality	Inequality is lower in countries exporting more complex products and increases in economic complexity are related with the reduction of inequality. (Hartmanet al., 2015)
Economic complexity & Sustainability	In China, export upgrade through change in product mix has had a greater effect on improving the environment than enhancements in efficiency in the production process (Mao and He, 2017)

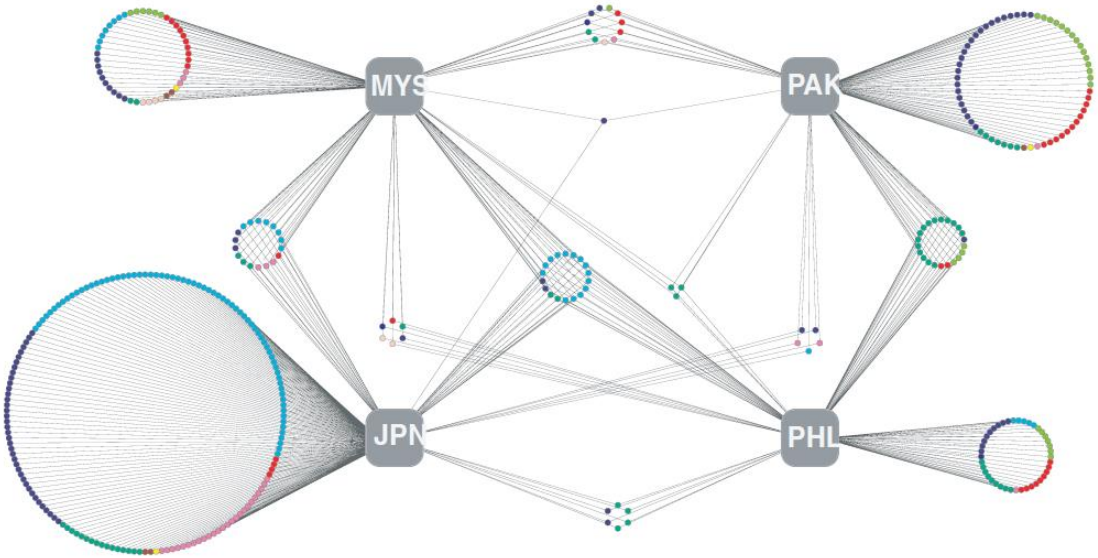
Product Space

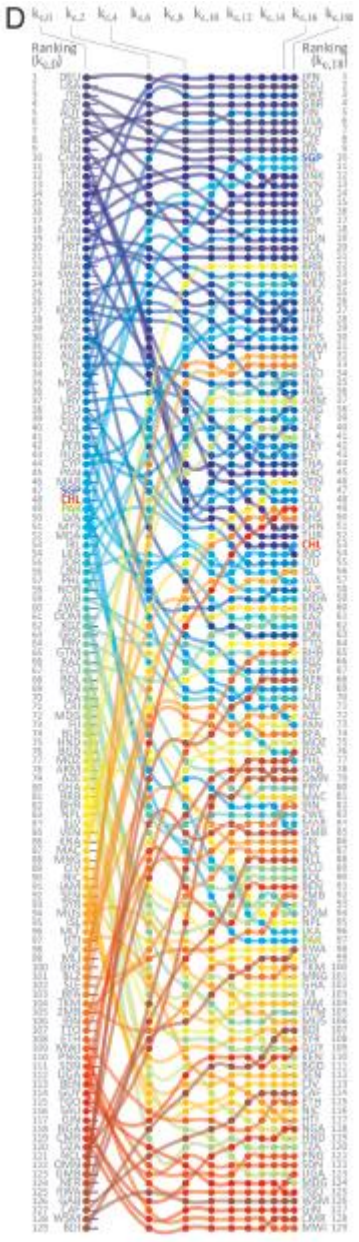
Hidalgo, Klinger, B., Barabasi, A-L, and Hausmann, R. (2007). The product space conditions the development of nations.



Method of reflections

Hidalgo and Hausmann (2009). *The building blocks of economic complexity*.





Definition	Working Name	**Description:** Short summary Question Form
$k_{a,0}$	Diversification	Number of products exported by country a. How many products are exported by country a?
$\kappa_{\alpha,0}$	Ubiquity	Number of countries exporting product α. How many countries export product α?
$k_{a,1}$	$k_{c,1}$	Average ubiquity of the products exported by country a. How common are the products exported by country a?
$\kappa_{\alpha,1}$	$k_{p,1}$	Average diversification of the countries exporting product α. How diversified are the countries that export product α?
$k_{a,2}$	$k_{c,2}$	Average diversification of countries with an export basket similar to country a How diversified are countries exporting goods similar to those of country a?
$\kappa_{\alpha,2}$	$k_{p,2}$	Average ubiquity of the products exported by countries that export product α. How ubiquitous are the products exported by product's α exporters?

Source: Hidalgo and Hausmann (2009)

Q&A

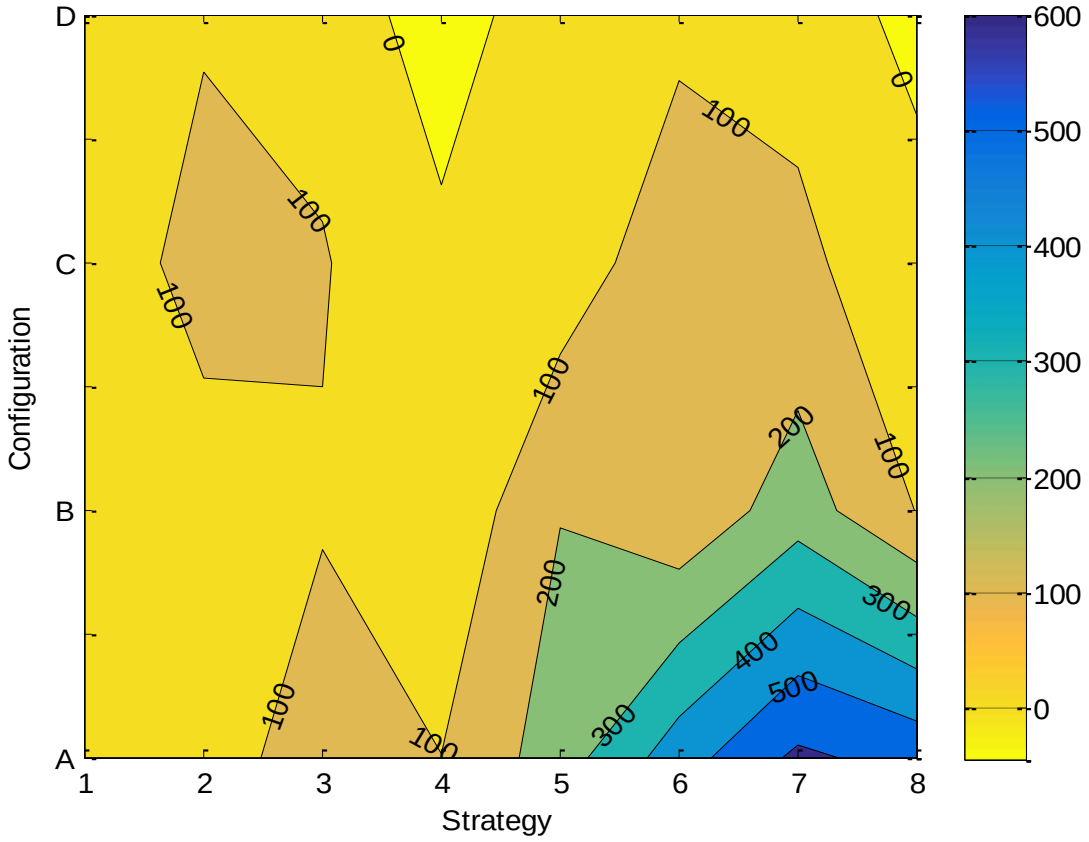
Potential new sectors for diversification

Use of product space to identify products for diversification

- Examples
  - Brazil (De La Cruz and Riker, 2012)
  - China and India (Neves, 2012)
  - Colombia (Hausmann and Klinger, 2008)
  - Kazakhstan (Felipe and Hidalgo, 2015)
  - Latvia (Vitola and Davidsons, 2008)
  - Myanmar (Ayres and Freire, 2014)
  - Portugal (Freitas et al., 2013, 2015)
  - South-Asian countries (Freire, 2013b),
  - Selected ASEAN countries (Bayudan-Dacuycuy and Lim, 2017)
  - Least developed, landlocked and small island countries (ESCAP, 2014, 2015; Freire, 2013a, 2017)
  - Atlas covering 128 countries (Hausmann et al., 2013)

Strategy for less diversified countries to catch-up: focus on emulation targeting products with above average complexity

Formal model: multi-country multi-sector model with endogenous diversification
Example of result of computer simulations: Comparison of catch up strategies, percentage increase in GDP



Strategies:

1 - Focus on process innovation
2 - Focus on product innovation
3 - Benchmark
4 - Undervalued currency by 10%
5 - Focus on product emulation
6 - Target more complex products
7 - **Focus on product emulation & Target more complex products**
8 - Focus on product emulation & Target more complex products & undervalued currency by 10%

Source: Freire(2017).Diversification and structural economic dynamics.

Practice

- http://atlas.cid.harvard.edu/
- http://globe.cid.harvard.edu/
- https://atlas.media.mit.edu/en/

Main Messages

- Economic development happens through the diversification of economies towards more complex products
- Development policies should be designed to facilitate that process
- Recent results on economic complexity can inform decision makers in developing countries on how to identify potential new sectors for economic diversification based on the productive structure of the country and changes in global demand

Thank you

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