

Digging into Data: Atlas of Economic Complexity

Annie White

Tim Cheston

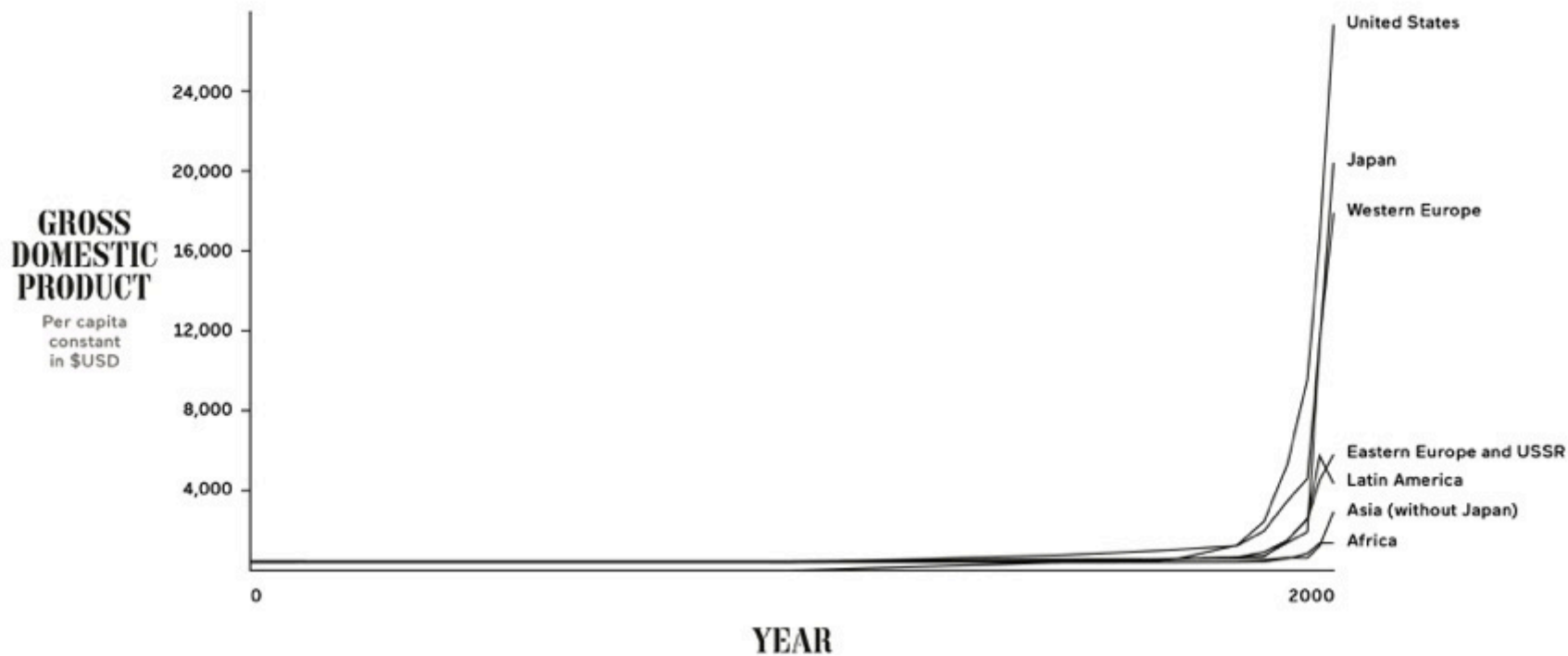
The Growth Lab at Harvard University

National Press Foundation

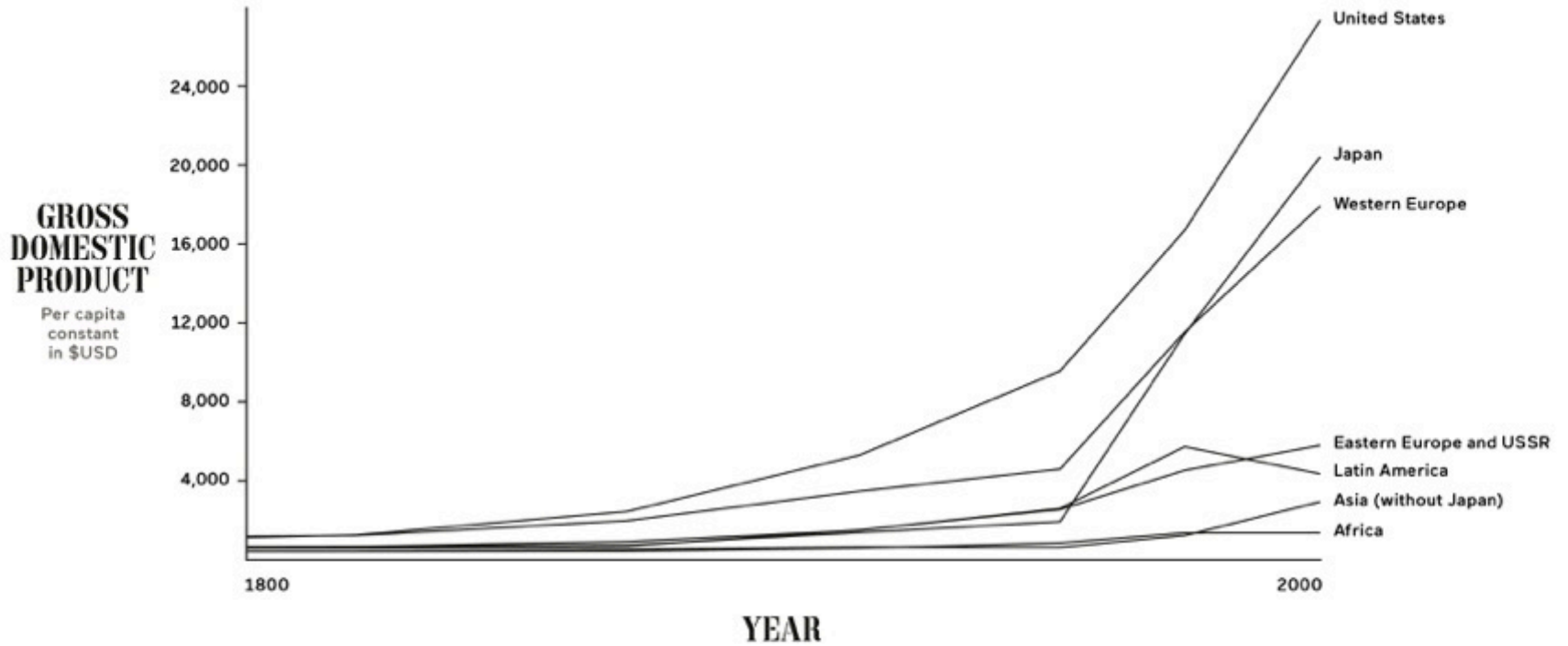
June 24, 2024



The Great Acceleration



The Great Divergence













HANJIN



WIKIPEDIA
The Free Encyclopedia

[Main page](#)
[Contents](#)
[Featured content](#)
[Current events](#)
[Random article](#)
[Donate to Wikipedia](#)
[Wikipedia store](#)

Interaction

[Help](#)
[About Wikipedia](#)
[Community portal](#)
[Recent changes](#)
[Contact page](#)

Tools

[What links here](#)
[Related changes](#)
[Upload file](#)
[Special pages](#)
[Permanent link](#)
[Page information](#)
[Wikidata item](#)
[Cite this page](#)

Print/export

[Create a book](#)
[Download as PDF](#)
[Printable version](#)

In other projects

[Wikimedia Commons](#)

Languages

[Afrikaans](#)
[العربية](#)
[Bân-lâm-gú](#)
[Беларуская](#)
[Български](#)
[Català](#)
[Čeština](#)
[Dansk](#)
[Deutsch](#)

Not logged in [Talk](#) [Contributions](#) [Create account](#) [Log in](#)

Article [Talk](#)

[Read](#) [Edit](#) [View history](#)

Lift (force)

From Wikipedia, the free encyclopedia

For other uses, see [Lift \(disambiguation\)](#).


A fluid flowing past the surface of a body exerts a **force** on it. **Lift** is the **component** of this force that is **perpendicular** to the **oncoming flow direction**.^[1] It contrasts with the **drag** force, which is the component of the surface force **parallel** to the flow direction. If the fluid is air, the force is called an **aerodynamic force**. In water, it is called a **hydrodynamic force**.

Contents [hide]

- Overview
- Simplified physical explanations of lift on an airfoil
 - Flow deflection and Newton's laws
 - Limitations of deflection/turning
 - Increased flow speed and Bernoulli's principle
 - Conservation of mass
 - Limitations of explanations based on Bernoulli's principle
- Basic attributes of lift
 - Pressure differences
 - Angle of attack
 - Airfoil shape
 - Air speed and density
 - Lift coefficient
 - Pressure integration
- A more comprehensive physical explanation
 - Lift involves action and reaction at the airfoil surface and is felt as a pressure difference
 - The airfoil affects the flow over a wide area around it
 - The pressure differences and the changes in flow speed and direction support each other in a mutual interaction
- The understanding of lift as a physical phenomenon
- Mathematical theories of lift
 - Navier-Stokes (NS) equations
 - Reynolds-Averaged Navier-Stokes (RANS) equations
 - Inviscid-flow equations (Euler or potential)
 - Linearized potential flow
 - Circulation and the Kutta-Joukowski theorem
 - Momentum balance in lifting flows
- Lift of three-dimensional wings
- Viscous effects: Profile drag and stalling



What do you do when your tooth hurts?

 [Log in / create account](#)



WIKIPEDIA
The Free Encyclopedia

Article **Discussion**

[Read](#) [Edit](#) [View history](#)





**It takes a great coder to serve 400 million users.
Sign up for the October 2011 coding challenge now.**



- [Main page](#)
- [Contents](#)
- [Featured content](#)
- [Current events](#)
- [Random article](#)
- [Donate to Wikipedia](#)

- Interaction
 - [Help](#)
 - [About Wikipedia](#)
 - [Community portal](#)
 - [Recent changes](#)
 - [Contact Wikipedia](#)

- [Toolbox](#)
- [Print/export](#)

- Languages
 - [Deutsch](#)
 - [فارسی](#)
 - [עברית](#)
 - [Italiano](#)
 - [Nederlands](#)
 - [Norsk \(bokmål\)](#)
 - [Polski](#)
 - [Slovenčina](#)
 - [Türkçe](#)
 - [Bân-lâm-gú](#)

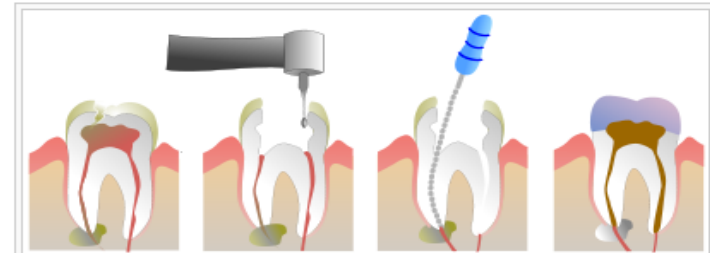
Endodontic therapy


From Wikipedia, the free encyclopedia

Endodontic therapy is a sequence of treatment for the **pulp** of a **tooth** which results in the elimination of infection and protection of the decontaminated tooth from future **microbial** invasion. This set of procedures is commonly referred to as a "**root canal**." **Root canals** and their associated **pulp chamber** are the physical hollows within a tooth that are naturally inhabited by **nerve tissue**, **blood vessels** and other **cellular** entities. Endodontic therapy involves the *removal* of these structures, the subsequent cleaning, shaping, and decontamination of the hollows with tiny files and irrigating solutions, and the *obturation* (filling) of the decontaminated canals with an inert filling such as **gutta percha** and typically a **eugenol-based cement**.

After endodontic surgery the tooth will be "dead," and if an infection is spread at apex, **root end surgery** is required.

Although the procedure is relatively painless when done properly^[*citation needed*], the root canal remains a stereotypically fearsome dental operation, and, in the United States, a common response to an unpleasant proposal is, "I'd rather have a root canal."

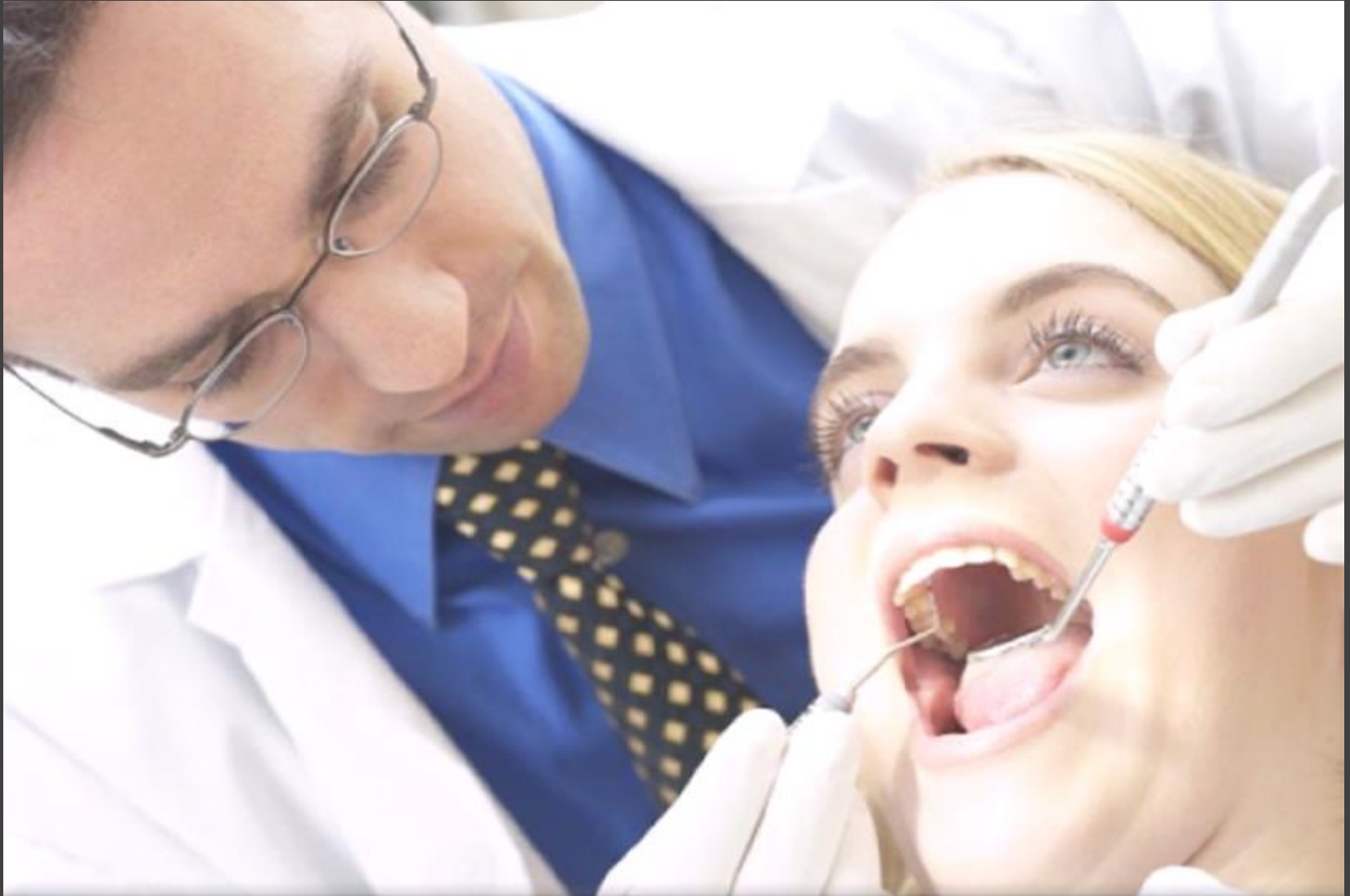


Root canal procedure: unhealthy or injured tooth, drilling and cleaning, **filling** with **endofile**, rubber **filling** and **crown** 

Contents [hide]

- [1 Root canal treatment](#)
- [2 Innovation](#)
- [3 Procedural accidents](#)
- [4 Success and prognosis](#)
- [5 Systemic issues](#)
- [6 Alternatives to root canal treatment](#)
- [7 See also](#)
- [8 References](#)
- [9 External links](#)

What do you do when your tooth hurts?



...or look for a dentist?

Knowhow

= the ability to perform a task







Division of knowledge now



Collective Knowhow

*= the competence to do things that
can only be done by teams*





数量限定、先着順プレゼント!
Nikon
D200
感謝キャンペーン
D200をご購入の方にクリスマスプレゼント
お早め!
キャンペーンはスタッフ様も盛り
マルチがデパートのDPA

D200
D200
D200

Canon
EOS
EOS
EOS

SHIEF PENTAX
CASHIER

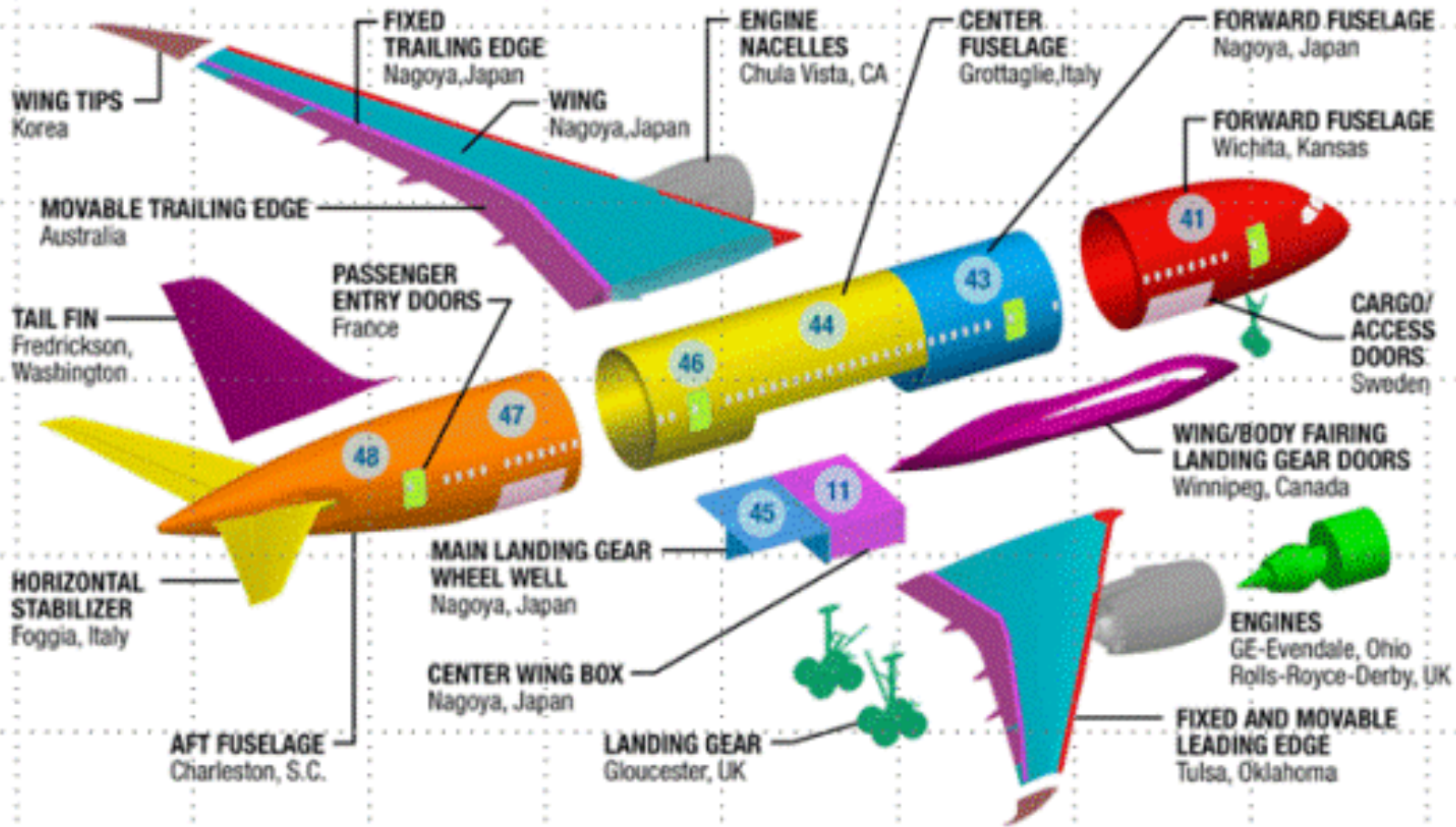
Nikon
Nikon
D70s
Niko

ヨドバシカメラ
D70s
¥83,800

Yodobashi-Camera

THE COMPANIES

U.S.	CANADA	AUSTRALIA	JAPAN	KOREA	EUROPE
Boeing	Boeing	Boeing	Kawasaki	KAL-ASD	Messier-Dowty
Spirit	Messier-Dowty		Mitsubishi		Rolls-Royce
Vought			Fuji		Latecoere
GE					Alenia
Goodrich					Saab









The *SCRABBLE* Theory of Economic Development

With **1** letter,



a

You can make **1** word, of **1** letter

With **3** letters,



a
at

cat
act

You can make **4** words, of up to **3** letters

With **4** letters,



a
at
cat

art
rat
car

act
tar
cart

You can make **9** words, of up to **4** letters

With **10** letters,



cilantros
contrails
gnostical
nostalgic
triclosan
agnostic
antilog
calorist
cantoris
carlings
caroling
carotins
castling
catlings
cilantro

clangors
clarinos
clarions
clarting
coasting
coatings
congrats
contrail
cortinas
cotingas
locating
oracling
organics
organist
rangolis

ratlings
roasting
saltoing
scarting
sclating
slarting
solacing
solating
starling
tonsilar
tracings
trigonal
actings
actions
agistor

agnosic
agonist
alnicos
alongst
angicos
anglist
antilog
arcings
argotic
aroints
atonics
caligos
cantors
carling
carlins

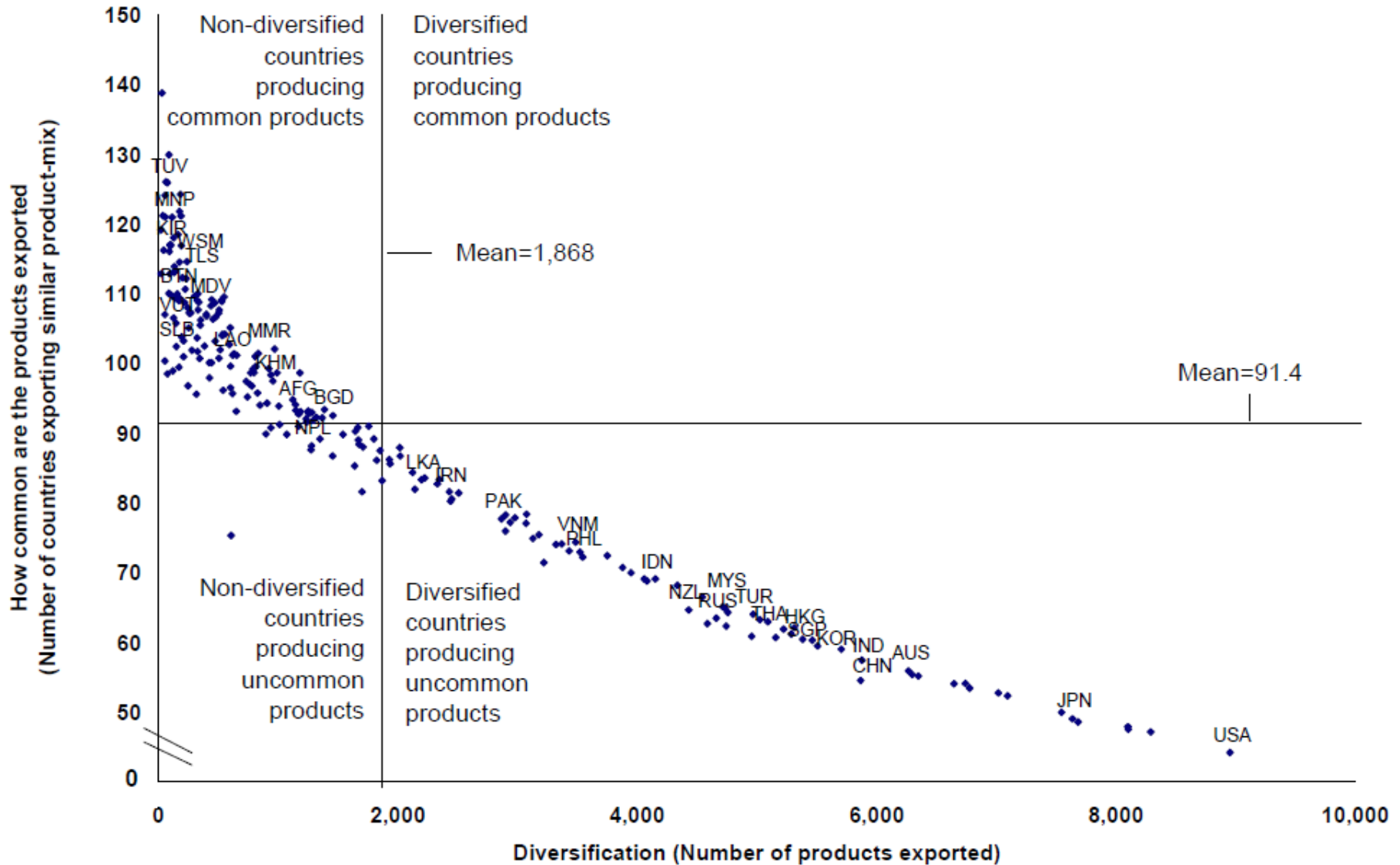
carlots
carotin
carting
cartons
casting
cations
catling
catlins
cistron
citolas
citral
citrons
clangor
clarino
clarino

closing
coaling
coating
coltans
colting
contras
cornist
cortina
cortins
costing
cotinga
crating
cratons
crotals
gallots

garcons
garlics
gastric
gastrin
girasol
gitanos
glorias
gnostic
gratins
ignaros
lacings
lasting
latigos
latinos
latrone

You can make **595** words, of up to **10** letters

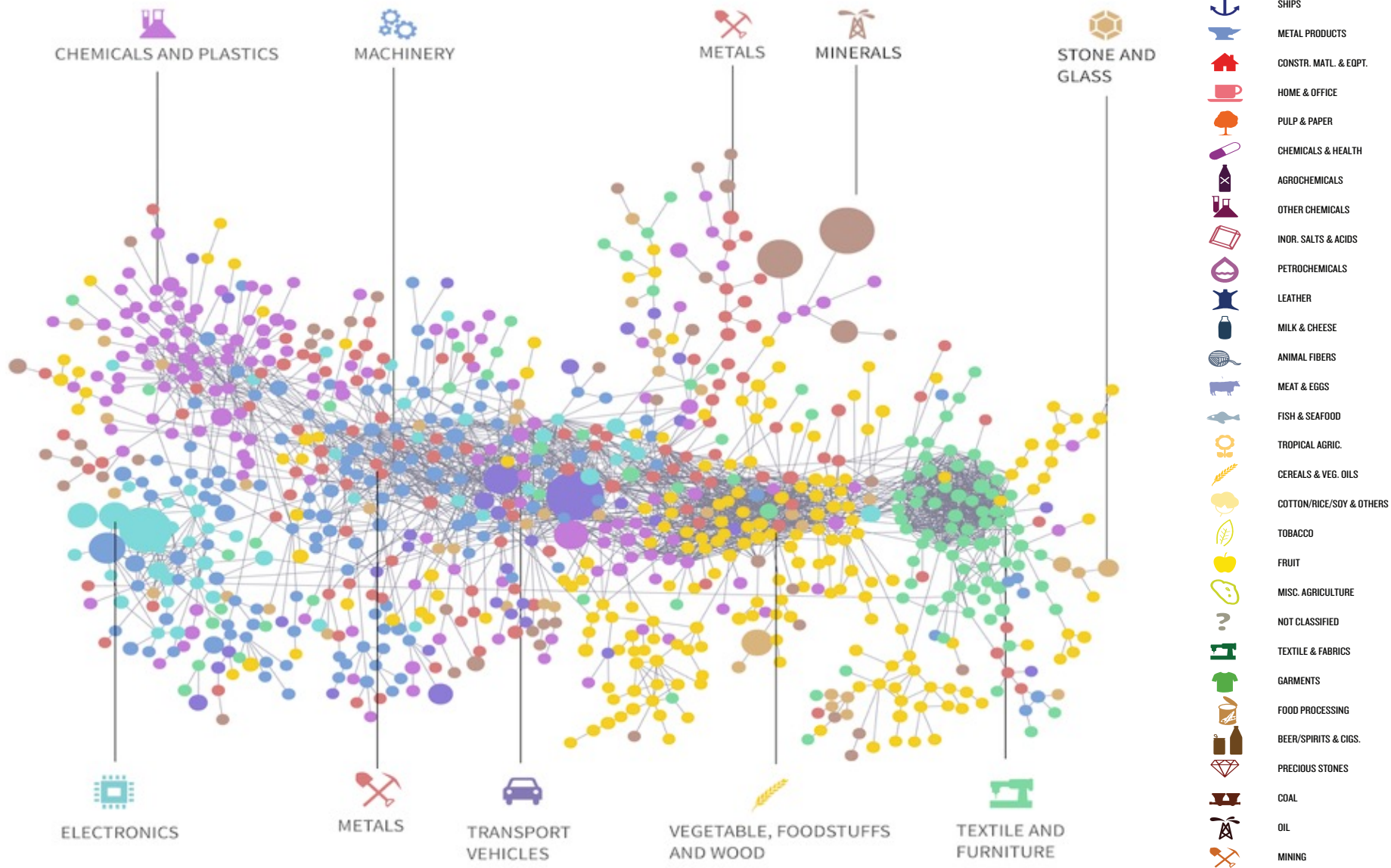
Diversification vs. Ubiquity



What explains these differences in productivity?

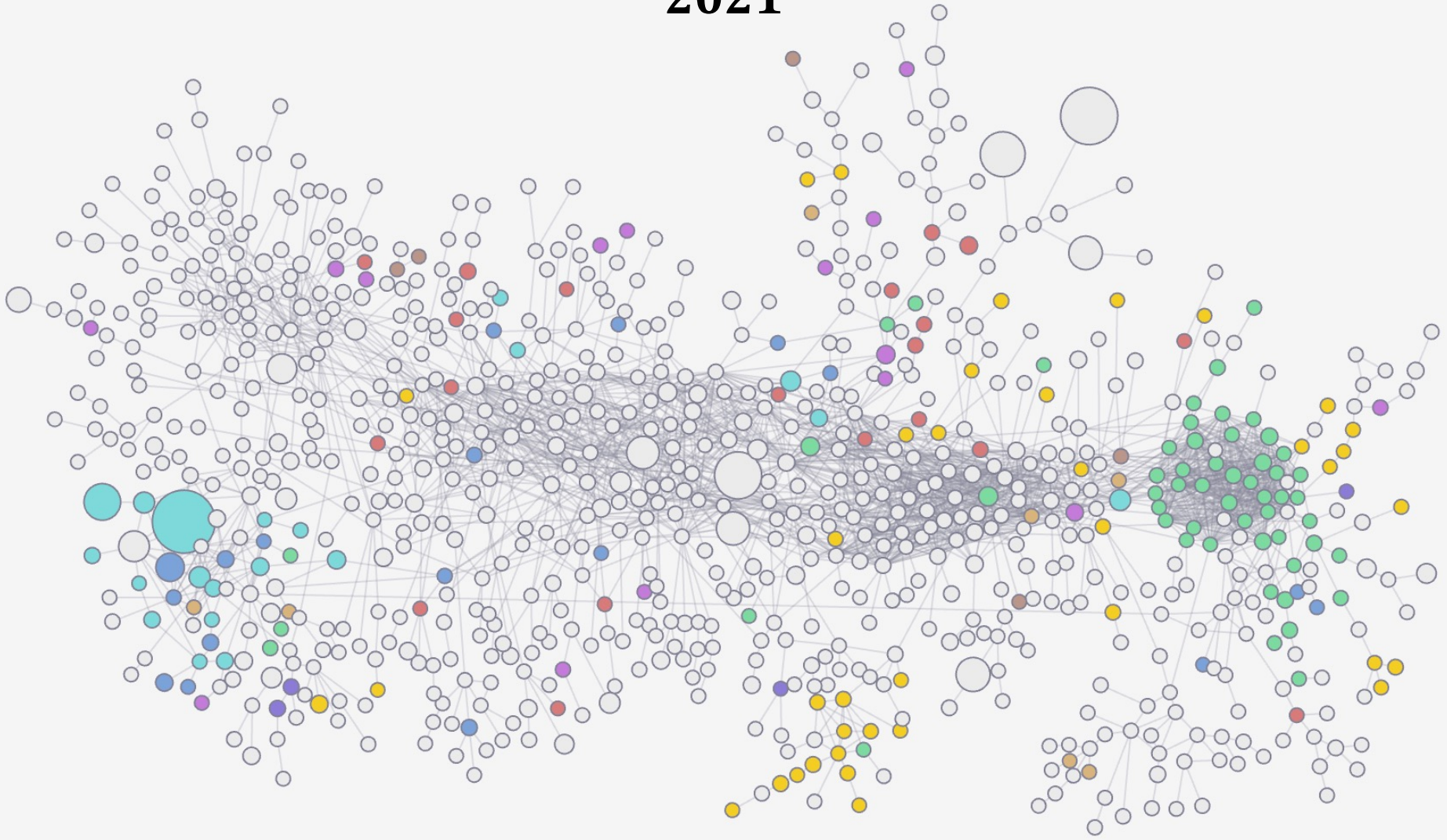


The Product Space



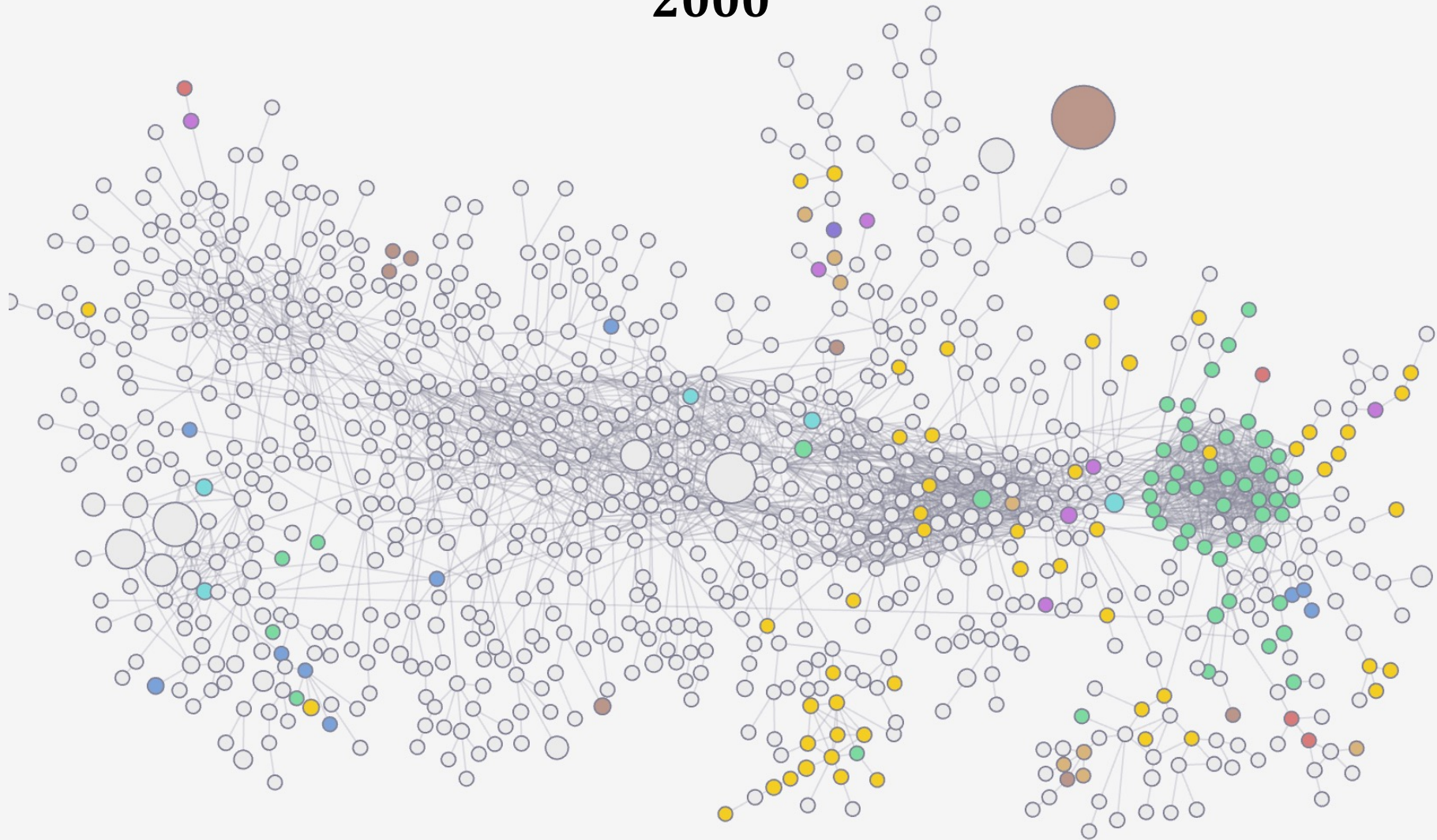
Vietnam

2021



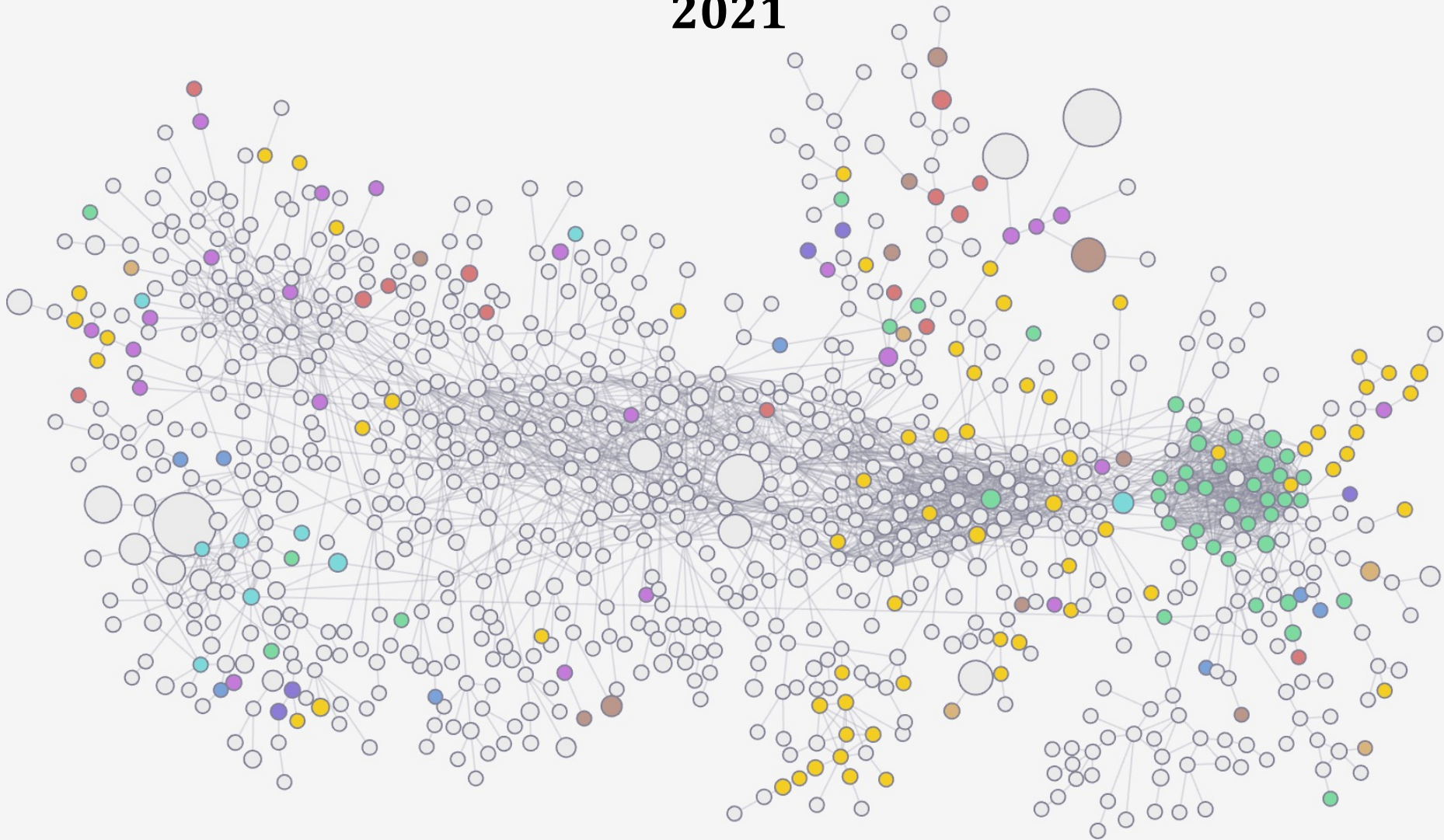
Vietnam

2000



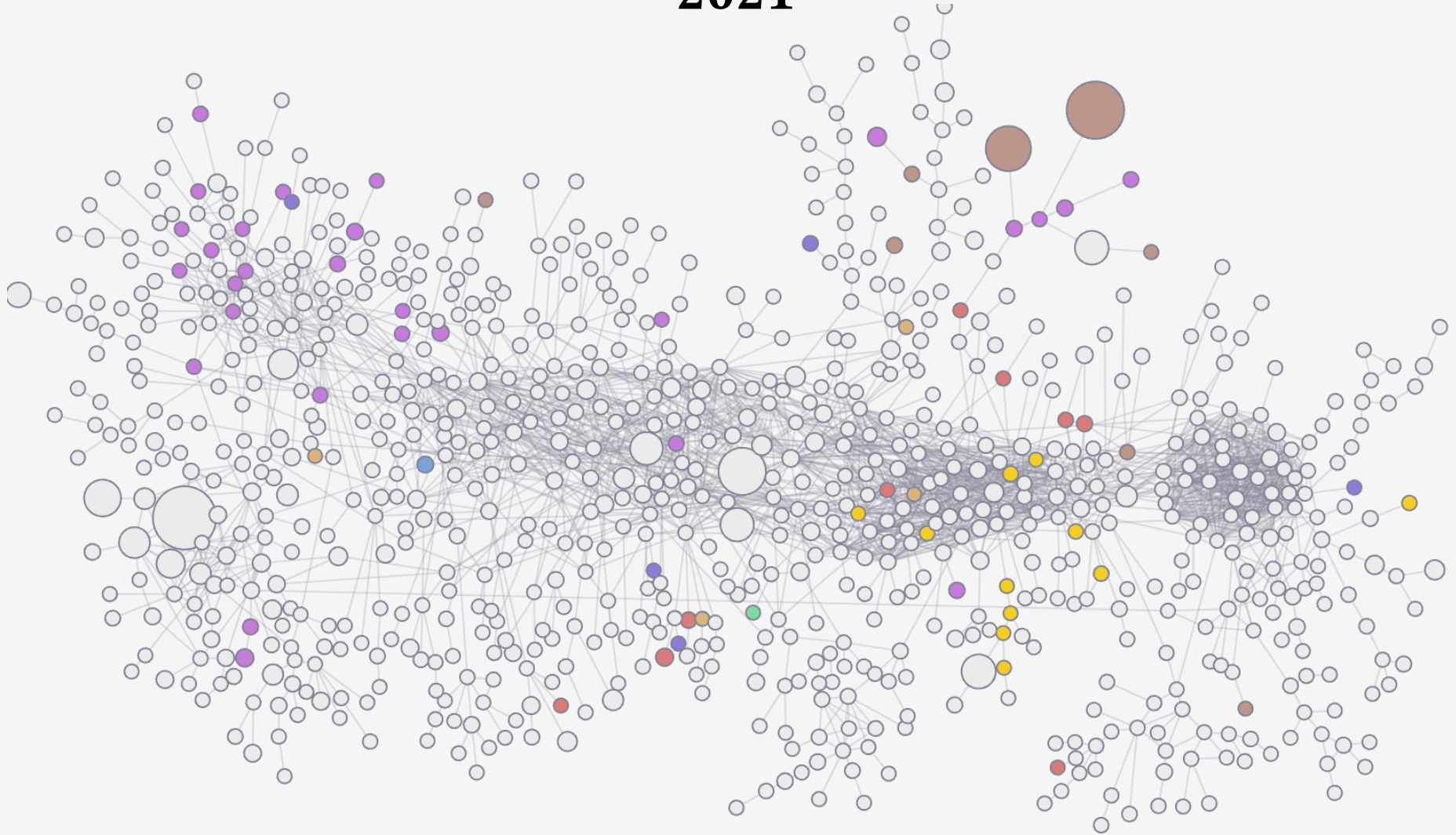
Indonesia

2021

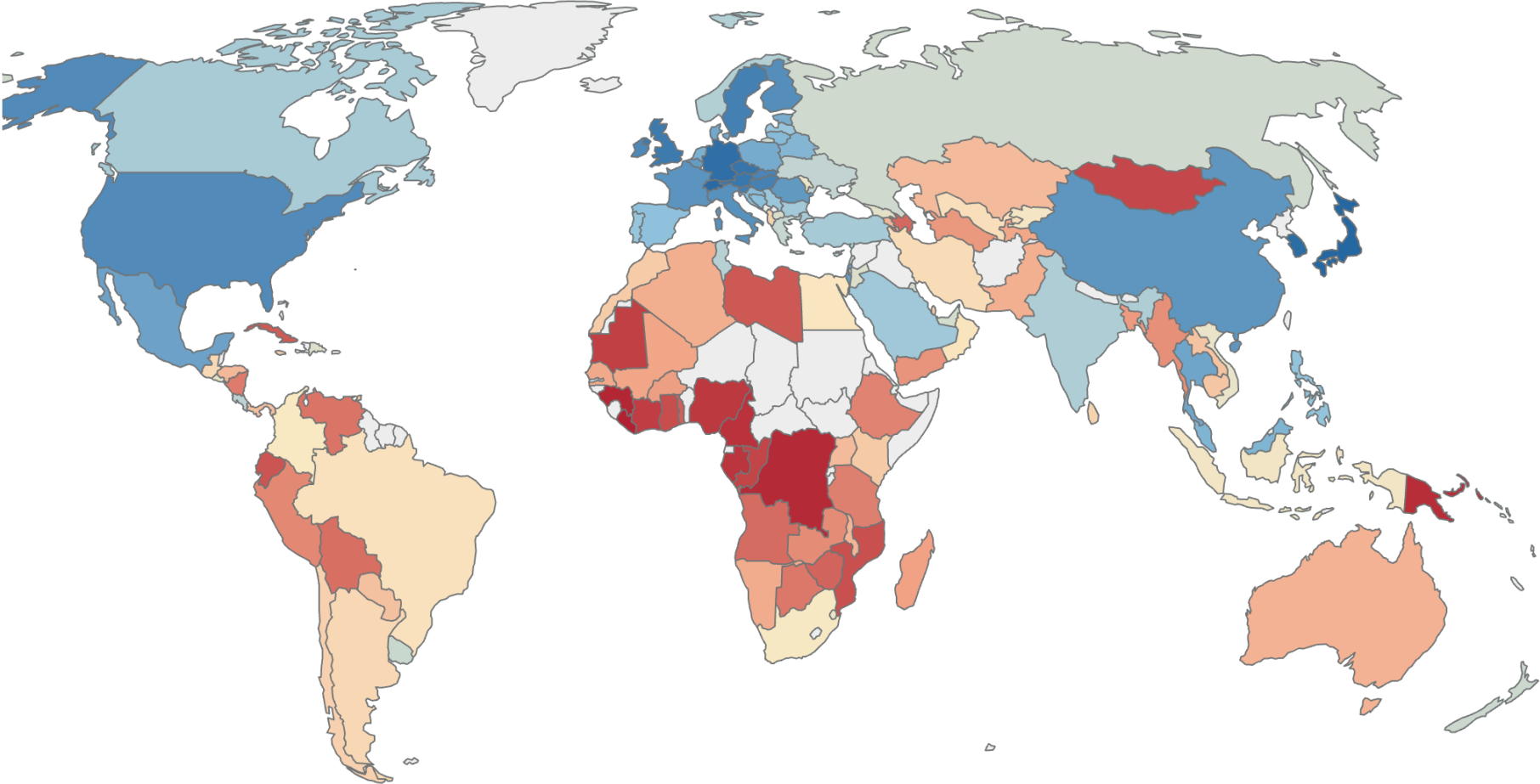


Saudi Arabia

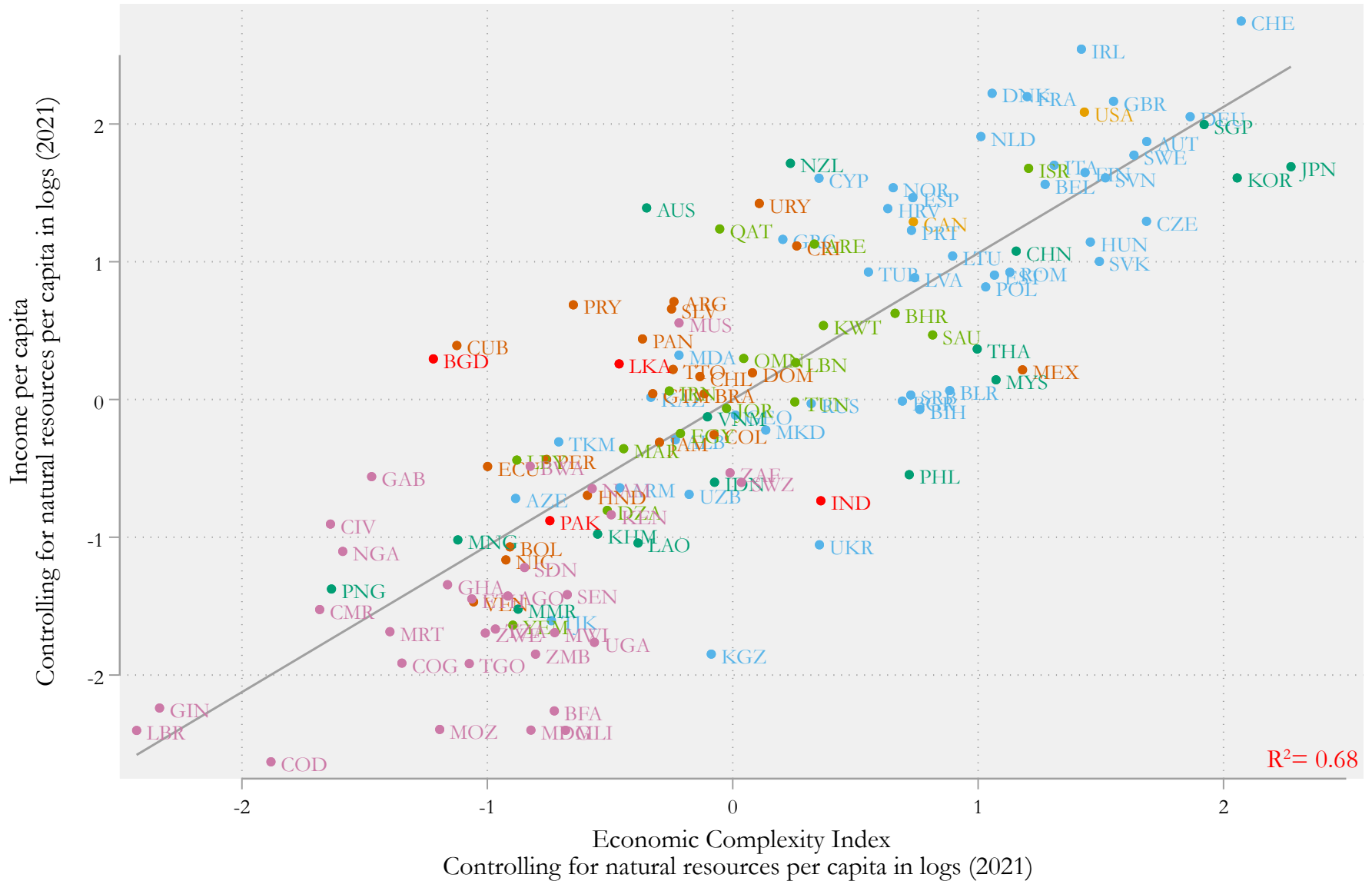
2021



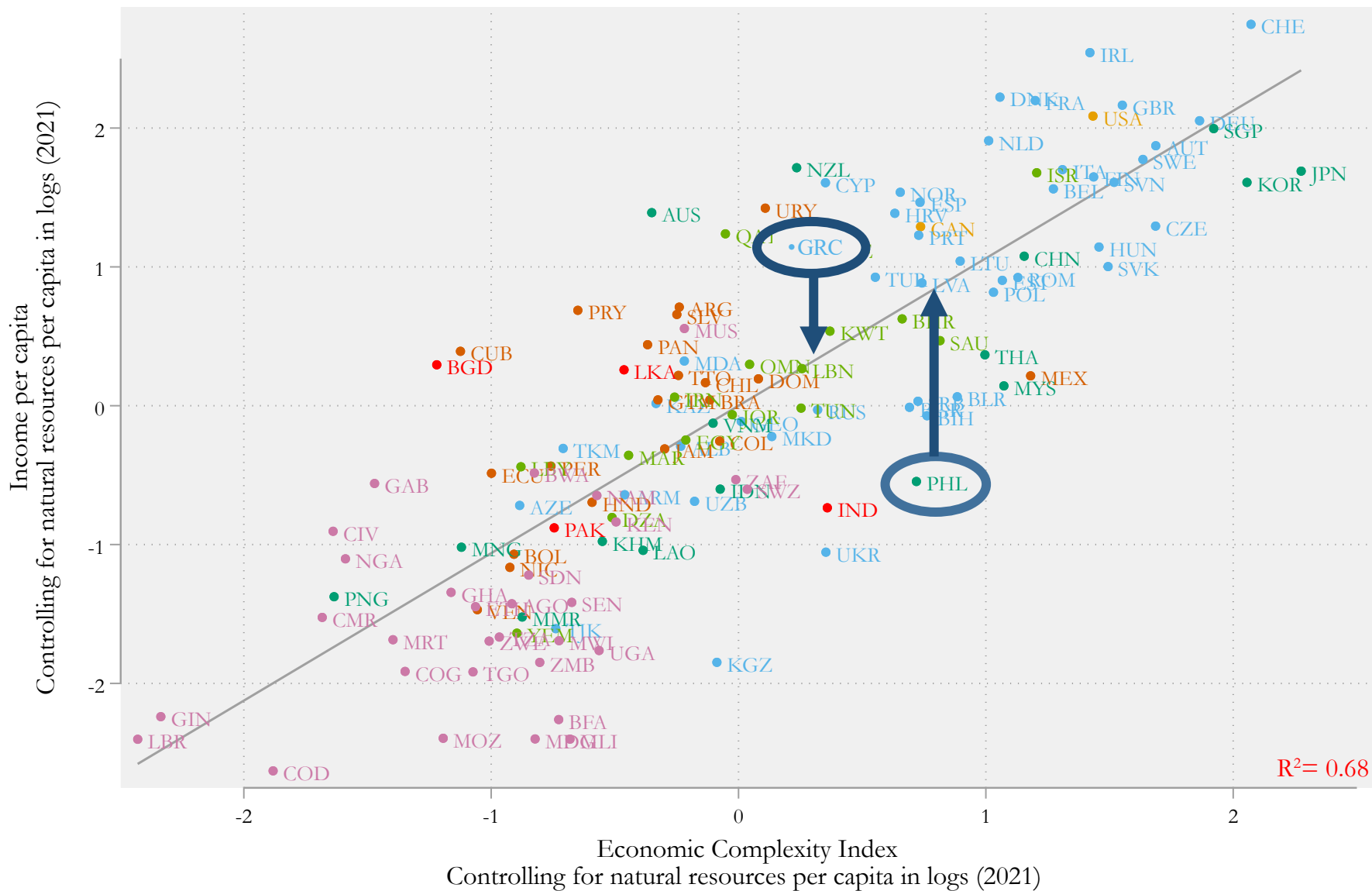
Economic Complexity Index (ECI)



Economic Complexity correlates to GDP per capita

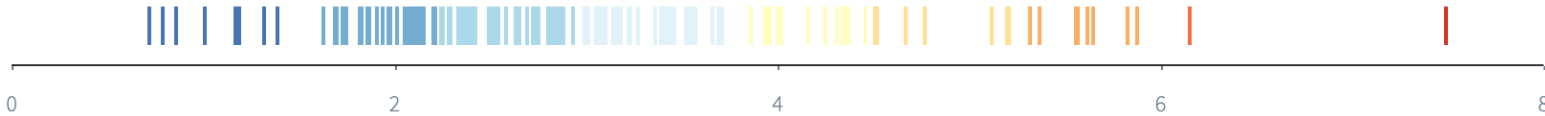
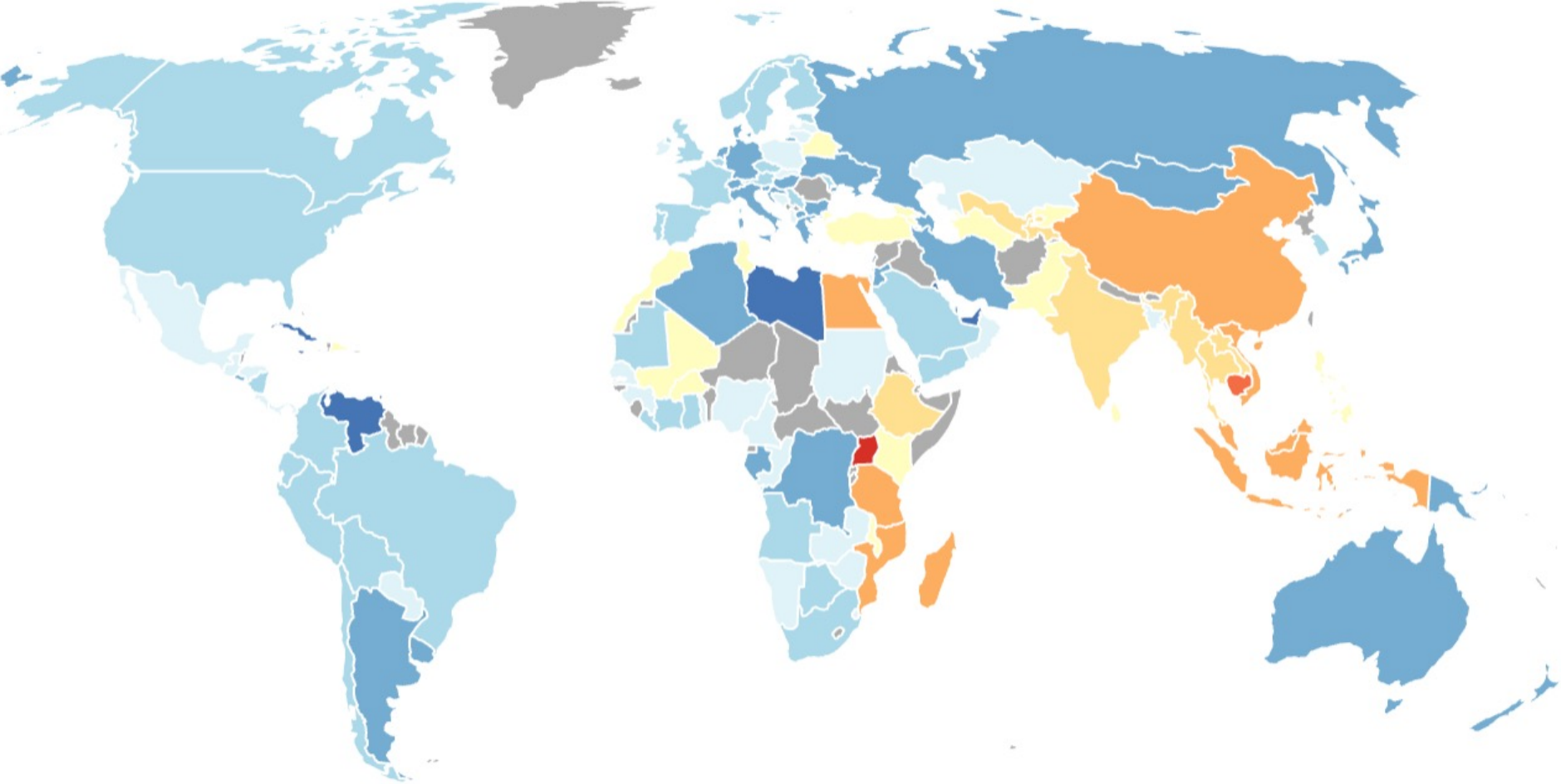


Economic complexity relative to GDP predicts future growth



Economic Complexity Growth Projections

Projected Annual Growth to 2031



Source: Atlas of Economic Complexity

THE ATLAS ONLINE

atlas.cid.harvard.edu

