



# Global Distribution of Economic Values of Cross-border Data Flows

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# Why Economic Values of Cross-border Data Flows Are Important?

Importance of cross-border data flows:

- Business operations
- Innovation
- Development

Importance of the economic values of cross-border data flows:

- International negotiations of agreement on data flows
- Global data governance
- Trade
- Investment
- Tax

# Research Questions

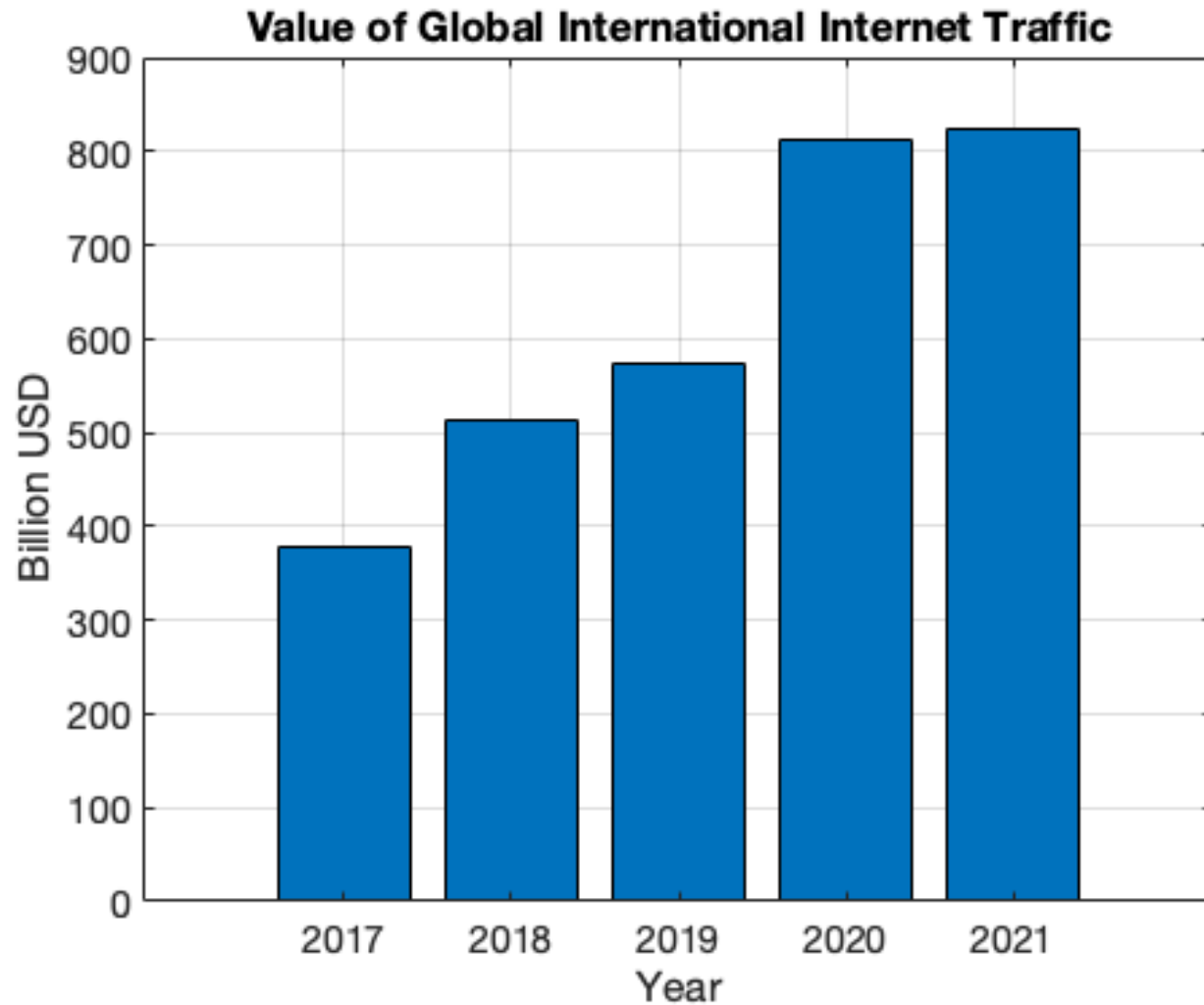
- How international data flows distribute around the world and how they grow across time?
- What economic values associated with each country's international data flows?
- How are cross-region data flows distributed and what economic values are associated with those cross-region data flows?
- What policy implications can we derive?

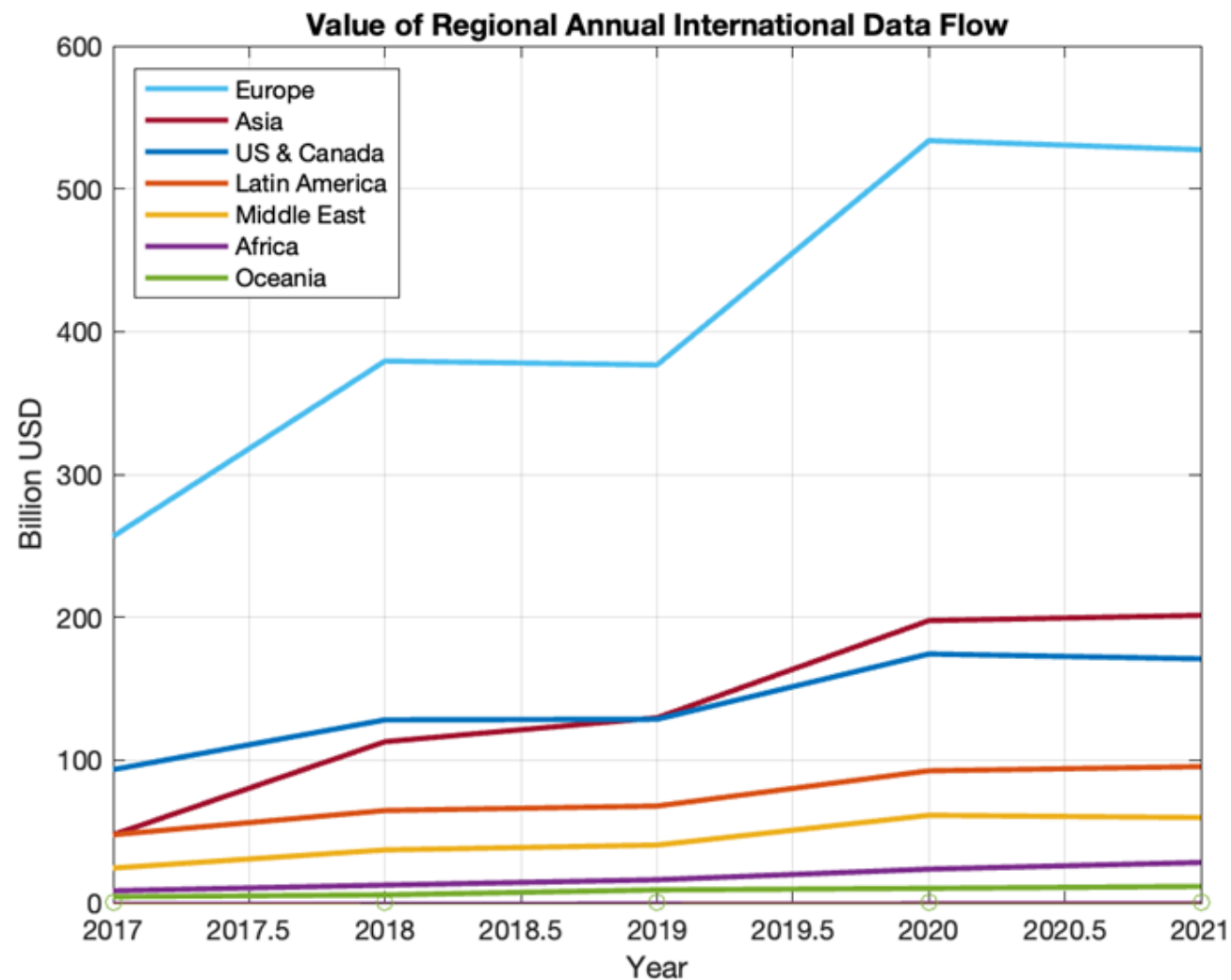
- Measuring economic values of data by organizational capital (Li and Chi, 2021; Li and Hall, 2020)
- Law of the value of data (Li and Chi, 2021)
- Economic values of global data flows (Li, 2022)
- Economic values of cross-border data flows (Li, 2022)

## Key Advantages:

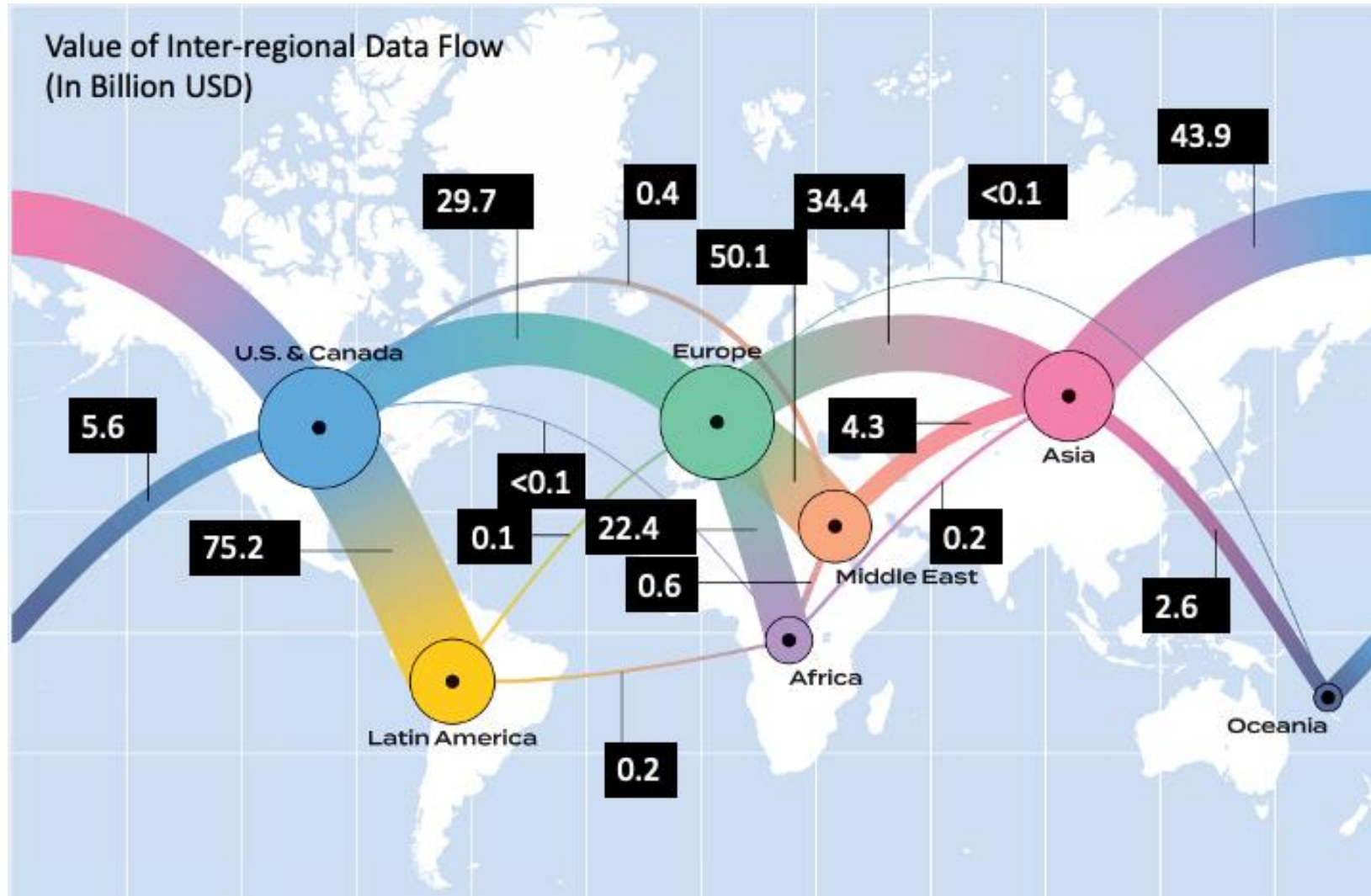
1. The only existing method that can estimate the depreciation rate without using an ad hoc approach.
2. The only existing method that can connect an economic value (organizational capital) to the volume of data (with “The Li’s law”).
3. The only existing method that can estimate the value of data flows.

- Investment in organizational capital:
  - [Selling, General and Administrative (SG&A) Expense]
  - [R&D Expense]
- Data Sources:
  1. Big Tech's public income statements. The data cover years from 2002 to 2017.
  2. Data source of global data flow is Cisco System and the period is from 2002 to 2017.
  3. The published International Telecommunication Union (ITU) data includes international Internet bandwidths of 236 reported economies between 2007 and 2021.
  4. The data for global and regional international data flows during 2017 and 2021 come from TeleGeography.





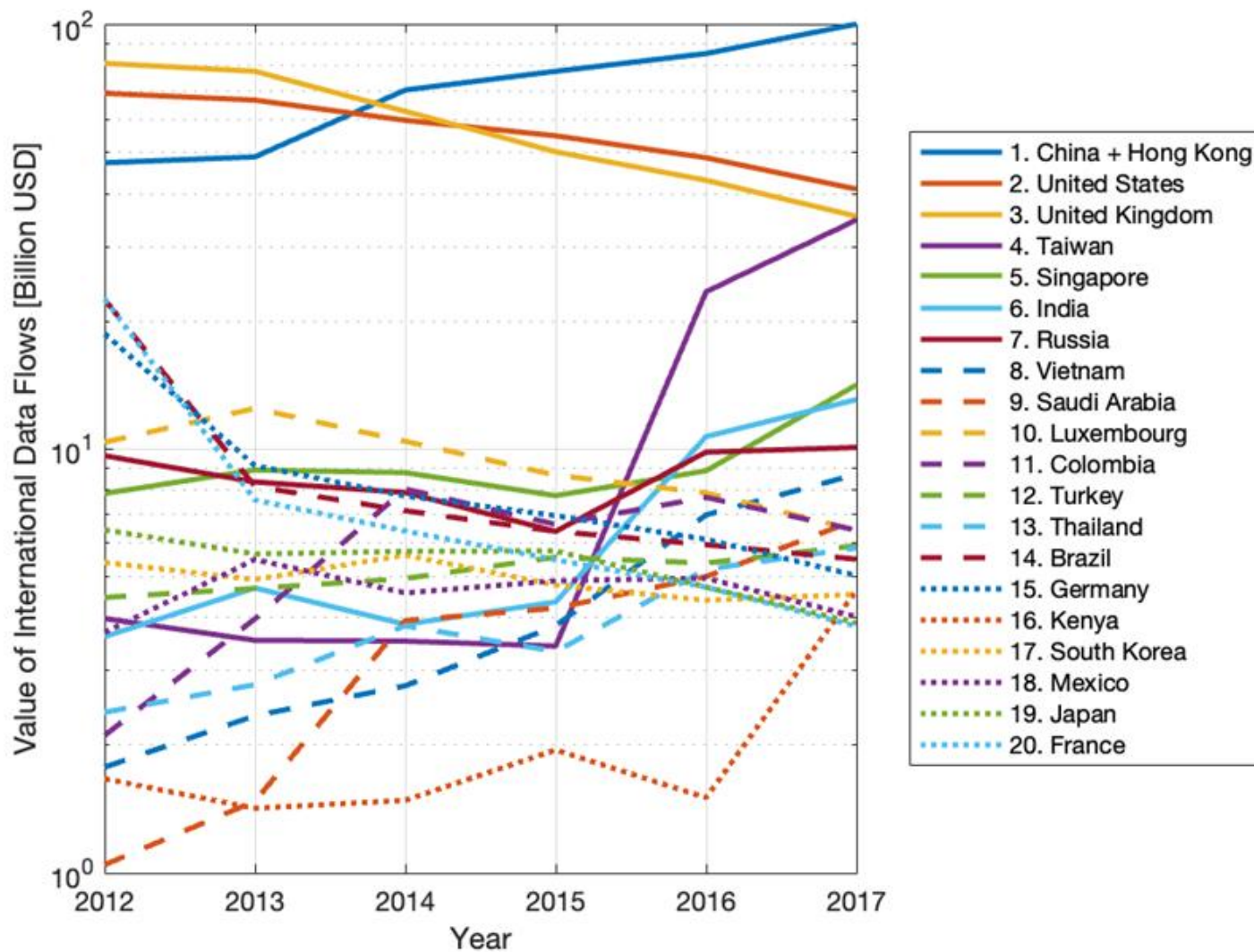
# Values of Cross-Region Data Flows



# Economic Values of Top Five Cross-region Data Flows

Cross-region	Value of International Data Flow in 2018 (Billion USD)	Value of International Data Flow in 2021 (Billion USD)	Average Annual Growth Rate during 2018 – 2021
Latin America – US & Canada	52.30	75.17	12.9%
Asia – US & Canada	30.53	43.91	12.9%
Europe – US & Canada	30.43	29.71	–0.8%
Europe – Middle East	29.46	50.11	19.4%
Asia – Europe	19.71	34.36	20.4%

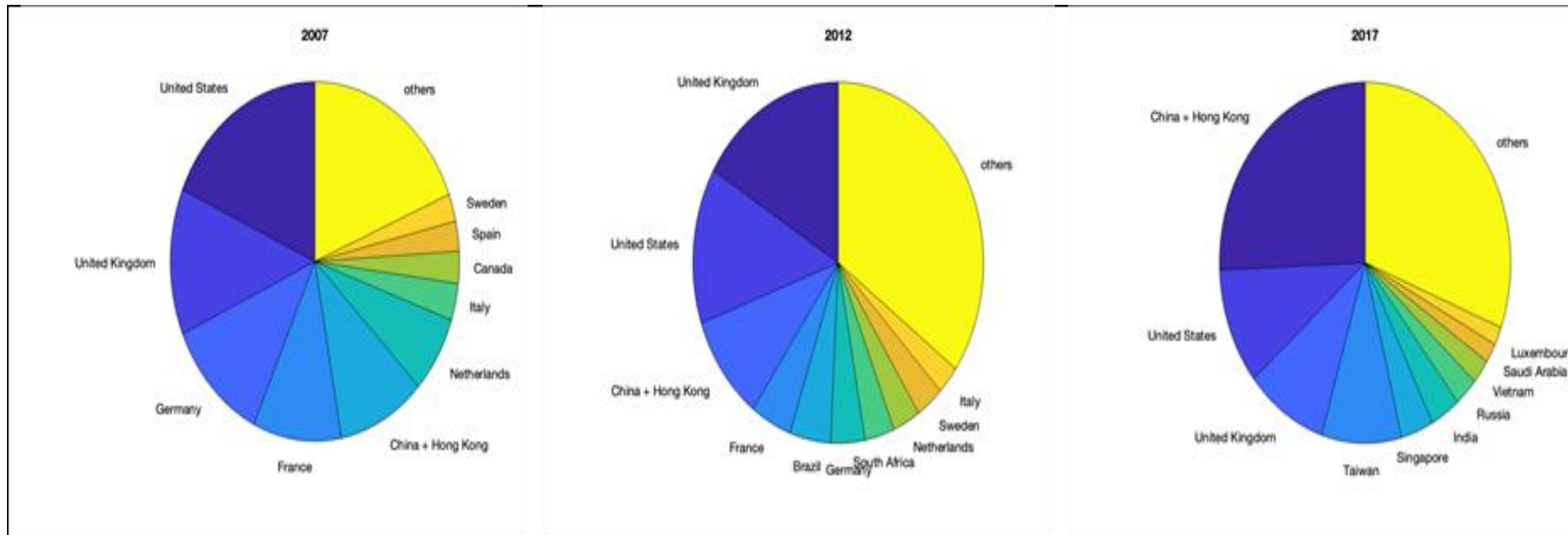
# Economic Value of International Data Flow for the Top 20 Countries



# Values of International Data Flows and Average Growth Rates for Top 20 Countries

Rank in 2017	Country / Economy	Value of International Data Flow in 2017 (Billion USD)	Annual Growth Rate of Value of International Data Flow (average value during 2012-2017)
1	China + Hong Kong	201	22.5%
2	United States	82	-8.1%
3	United Kingdom	70.8	-11.3%
4	Taiwan	69.4	154.2%
5	Singapore	28.4	16.1%
6	India	26.2	52.5%
7	Russia	20.2	0.9%
8	Vietnam	17.4	78.1%
9	Saudi Arabia	13.6	110.2%
10	Luxembourg	12.8	-7.6%
11	Colombia	12.8	41.0%
12	Turkey	11.8	6.5%
13	Thailand	11.6	28.9%
14	Brazil	11	-15.1%
15	Germany	10	-14.6%
16	Kenya	9.2	35.7%
17	South Korea	9	-3.2%
18	Mexico	8	1.8%
19	Japan	7.8	-7.9%
20	France	7.6	-16.6%

# Shares of 10 Leading Countries in the Value of International Data Flows



# Shares of Leading Countries in the Global Value of International Data Flows

	Share in global value of international data flows	Countries
Top 5	> 50%	China (including Hong Kong), United States, United Kingdom, Taiwan, and Singapore
Top 10	> two thirds (2/3)	The above and India, Russia, Vietnam, Saudi Arabia, and Luxembourg
Top 20	> 80%	The above and

- Because the value of data depreciates, the value of data flows grows at a slower rate than that of data flows.
- Data gap exists not only between firms but also between countries. I find that top ten countries “control” over two thirds of international data flows.
- The value of cross-region data flows distributes very unevenly across the globe.
- By adopting an open data policy, small countries can increase the growth rates of international data flows, their economic values, and investments.
- Future research:
  - 1) Need information on the flow directions between regions and countries, on the ownership of data flows at the firm-level
  - 2) Need microdata for the direction and ownership of Internet traffic