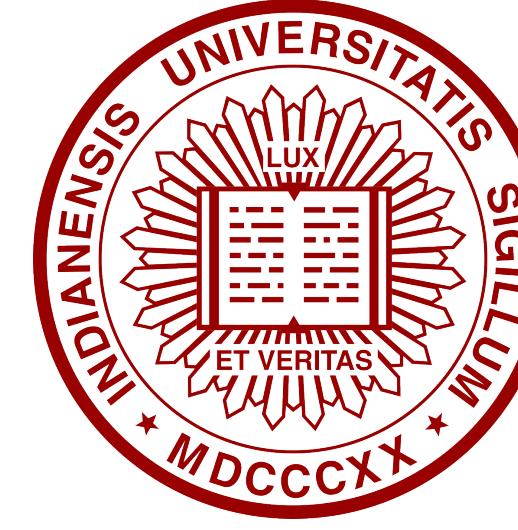


Labor flow network reveals the hierarchical organization of the global economy

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1. Motivation & Dataset



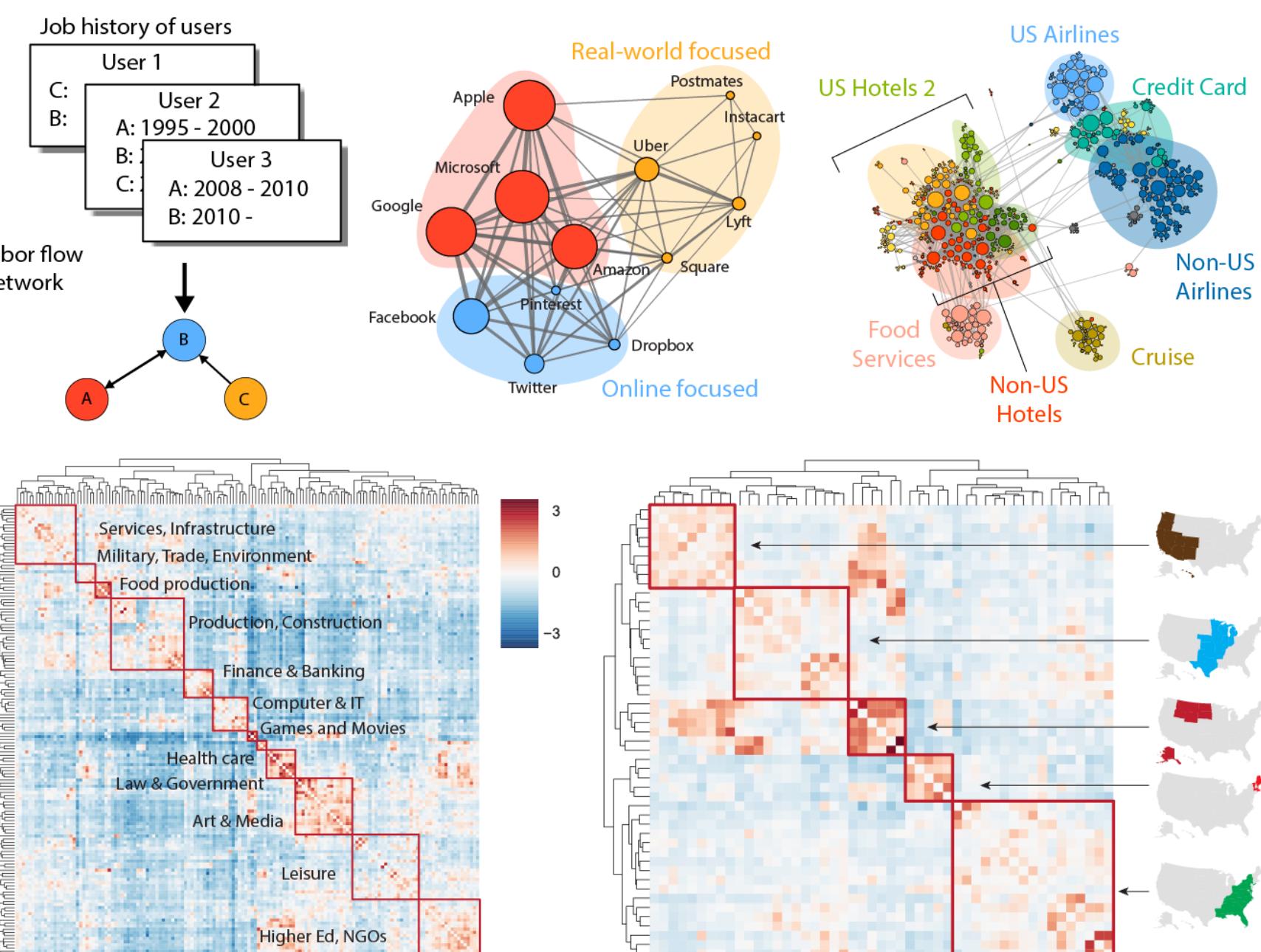
(1) Motivation

- Can **LABOR FLOW** show the structure of global economy?
- How is the global **INDUSTRIES** and **REGIONS** are **CLUSTERED**?
- Is there an association between the number of influx of **EDUCATED LABOR** to a company and the **FINANCIAL GROWTH** of the company?

(2) Dataset

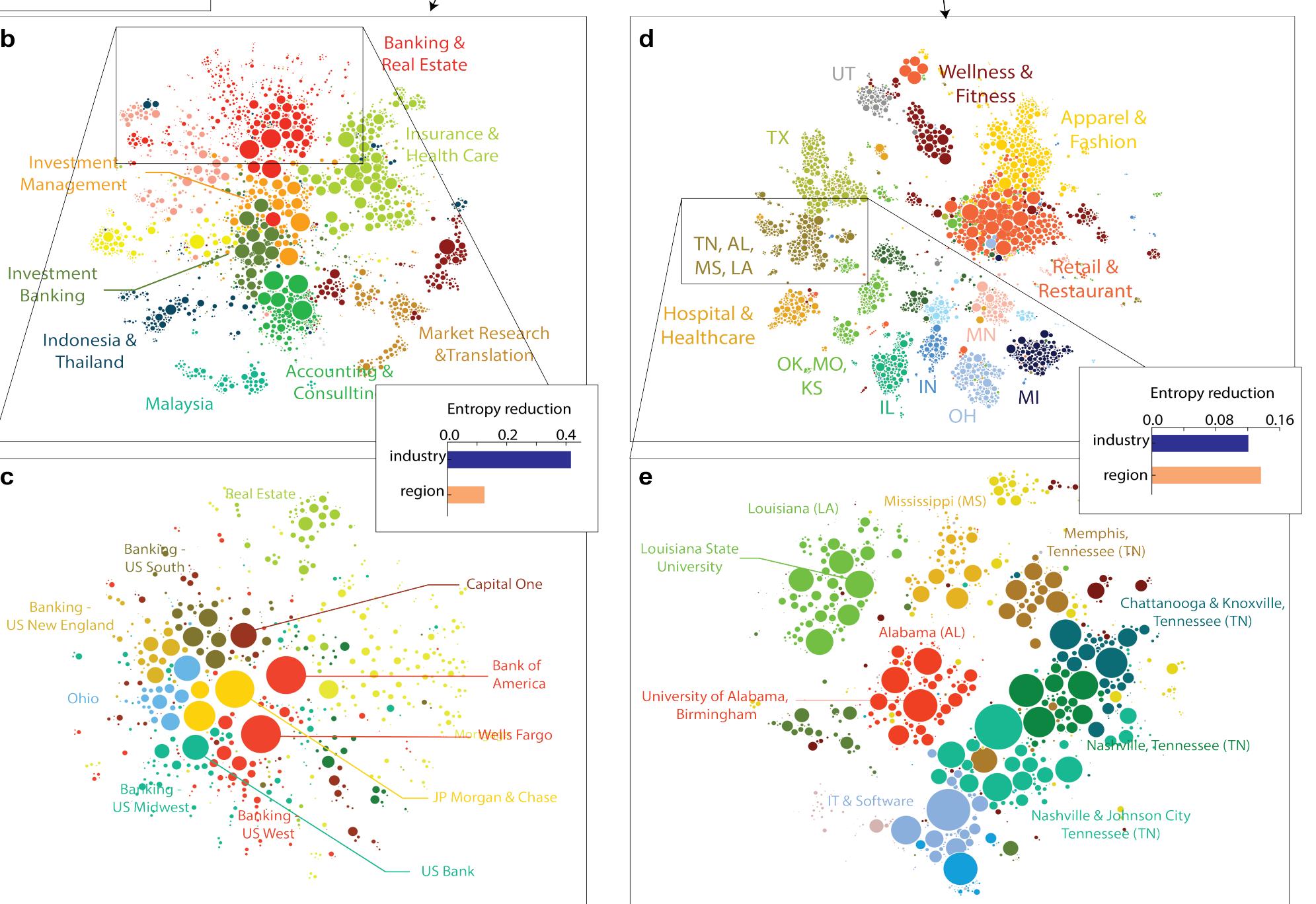
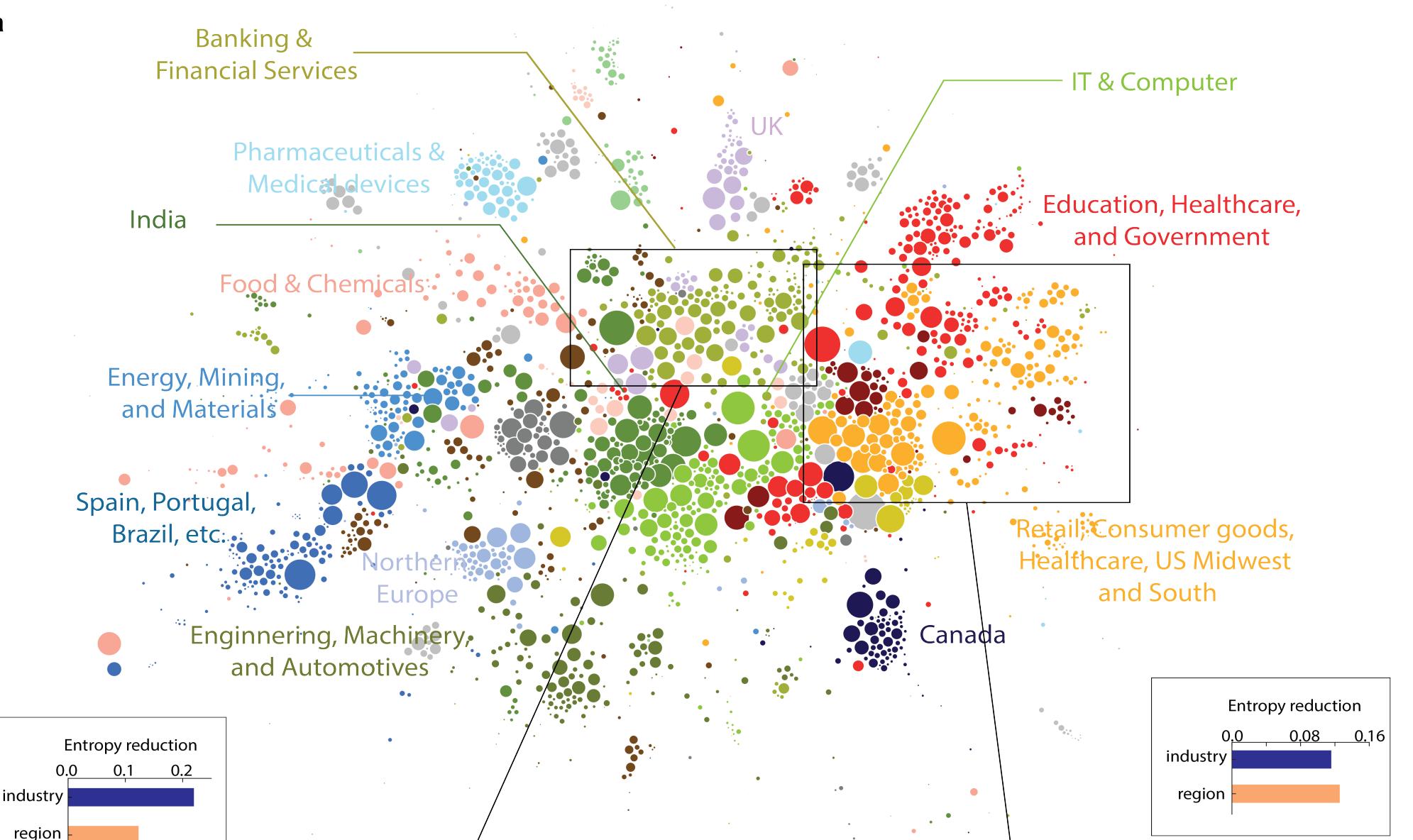
- About 130 MILLION JOB TRANSITIONS
- From more than 400 MILLION LINKEDIN MEMBERS
- Between about 4 MILLION COMPANIES
- During 25 YEARS (1990 ~ 2015)

2. Labor Flow Network

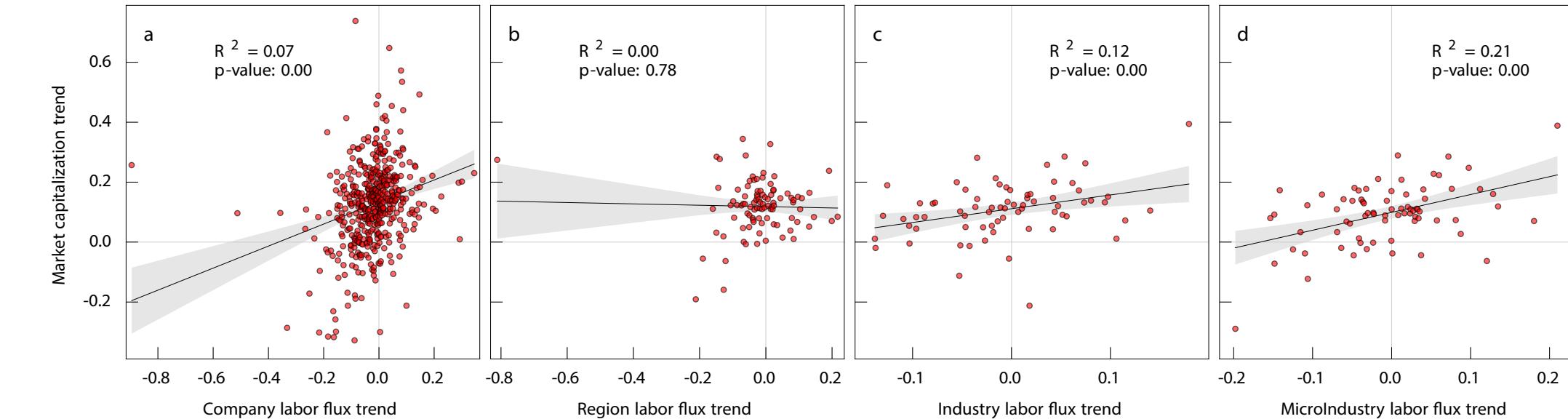


3. Hierarchical Structure of Global Economy

- (1) Each dot represents a microindustry (in a, b, d) or a company (in c, e), decided by our recursive community detection algorithm.
- (2) Each color represents higher level cluster.
- (3) Some industries are closely related to certain regions (e.g. Retail - US Midwest).
- (4) Some clusters have more **INDUSTRY-based** subclusters, while the other clusters have more **REGION-base** subclusters (e.g. Figure b vs. Figure d).



4. Correlation with Economic Growth



- (1) **LABOR FLUX** is linked to the **GROWTH** of microindustries.
- (2) The x-axis represents the 5-year trend in college-educated labor flux.
- (3) The y-axis represents the 5-year trend in log-scaled market capitalization.
- (4) Figure a: company level / Figure b: region level / Figure c: industry level / Figure d: microindustry level integration of S&P 500 companies
- (5) The **BEST** relationship we find is at the **MICROINDUSTRY** level.
- (6) When we organically cluster companies, we find the closest relationship between trends in time, which implies as microindustries increase in market valuation, they hire proportionally more labor than leaves the cluster.

5. Take Home Messages

- (1) Labor flow network show the structure global economy.
- (2) The global companies are clustered based on both their industries and their regions, at the same time.
- (3) In labor flow network, related industries, related regions, and related industry and region are close to each other.
- (4) Global companies are hierarchically structured.
- (5) Some clusters have more industry-based subclusters, while the other clusters have more region-based subclusters.
- (5) Labor flux is linked in the growth of microindustries.
- (6) At the microindustry level aggregation, the association between highly-educated labor flux towards a microindustry and the growth of the microindustry can be observed best, compared to industry level or region level aggregation.