



Institute for  
International  
Business



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C E M S

# MEASURING AND CONCEPTUALIZING INTERNATIONALIZATION

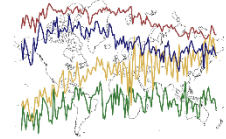
## *INNOVATIVE MEASURES AND EMPIRICAL APPROACHES*

Jakob Müllner & Harald Puhr

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# INTRODUCTION TO GOOGLE TRENDS

globaltrends



# Google Trends applications in other disciplines

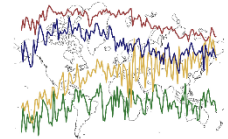
- Public health & epidemiology (symptom tracking, pandemic research)
- Economics (macro-level forecasting)
- Political science (polling, issue salience, public opinion)
- Finance (stock price volatility, trading behaviour)
- Social science (measuring cultural values like environmental awareness, religiosity or behaviour like sexual behaviour, suicide, or crime)
- Tourism (forecasting travel activity)
- Sports research (player/team performance/value)
- Meteorology & climate research (study extreme weather phenomena)
- Management (technology adoption)
- Marketing (advertising efficiency, brand value measurement)

We are not aware of a single application of Google Trends Data in IB

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# TECHNICAL DESCRIPTION

globaltrends



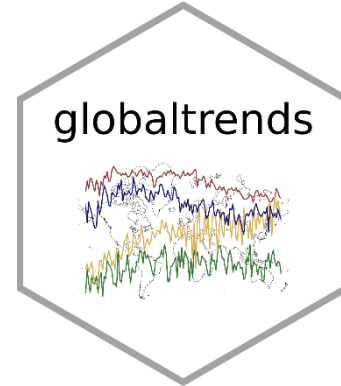
# The globaltrends package (Puhr, 2020)

The globaltrends R package allows the measurement of standardized indices of degree of internationalization (DOI) and volume of internationalization (VOI) for companies (or other terms).

Extensive documentation provided on [GitHub](#).

A discussion on usefulness in IB research is provided in Puhr, Müllner (2020) “Let me Google That For You”.

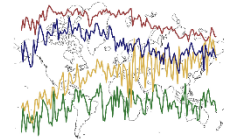
In this workshop we want to show some applications of globaltrends in IB.



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# GLOBALTRENDS MEASURES

globaltrends



# Globaltrends variables

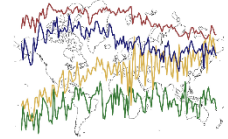
- Volume of Internationalization (VOI)  
*Absolute measure for global interest in a search term*
- Degree of Internationalization (DOI)  
*Measure for dispersion of global interest in a search term*
  - Gini coefficient (unweighted)
  - Inverted Herfindahl Index (unweighted)
  - Inverted Entropy (unweighted)
- Degree of national concentration (DOC)  
*Absolute measure for national/regional/local interest in a search term*
- Available adjustments
  - Observed
  - Season
  - Trend

Disclaimer: While globaltrends CAN be used as proxy for firm internationalization and alternative measure, we insist that globaltrends is conceptually different in that it captures a market-side type of internationalization. As such it is a valuable NEW measure rather than another DOI measure. In this section, however, we test for potential biases IF the globaltrends measure is used as an indistinguishable replacement of traditional DOI measures.

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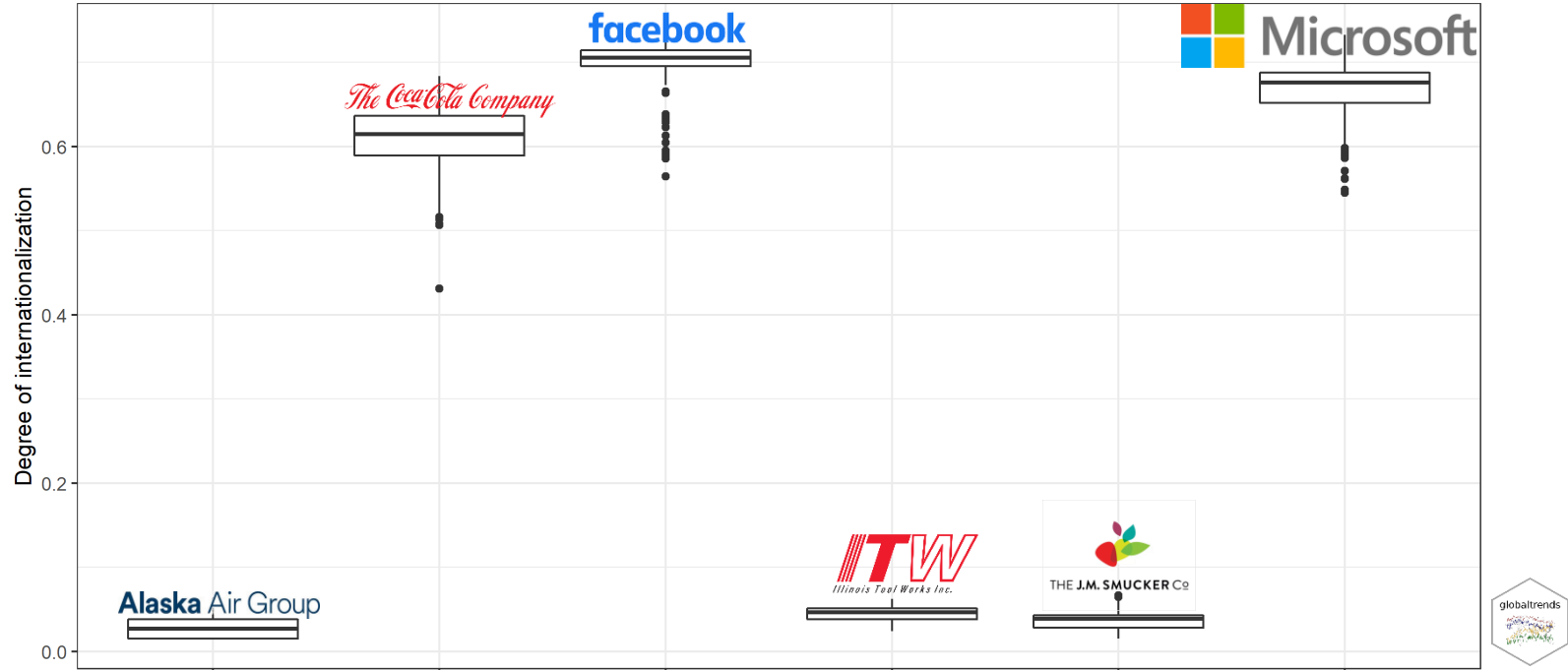
## EMPIRICAL VALIDITY

globaltrends





# DOI of S&P 500 companies (cross-section)



DOI computed as GINI.

# Comparisons with traditional measures (S&P 500)

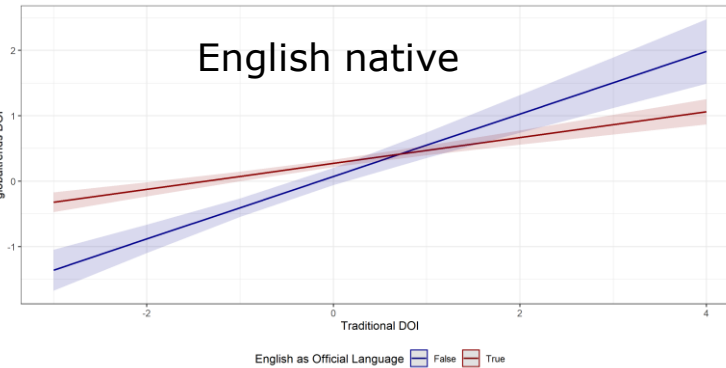
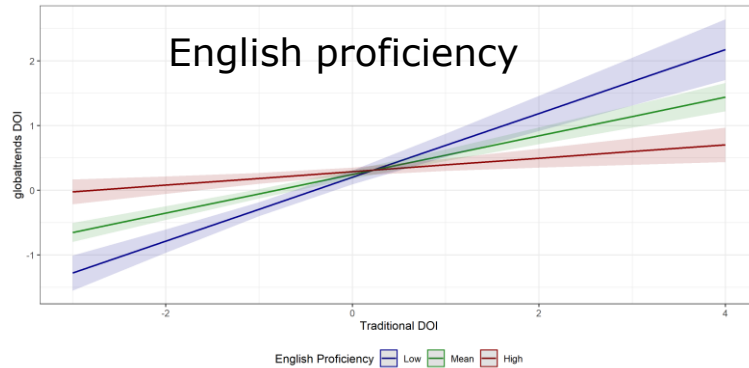
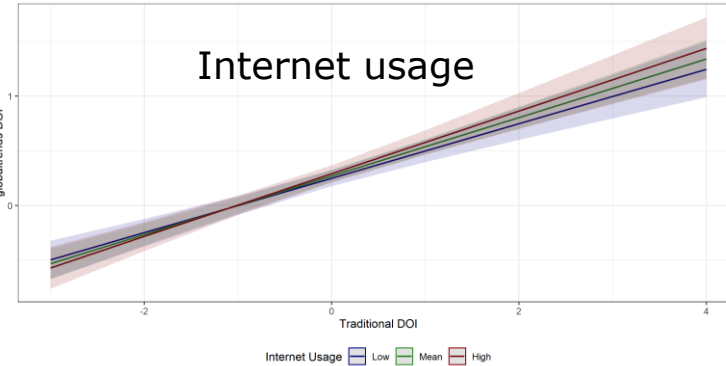
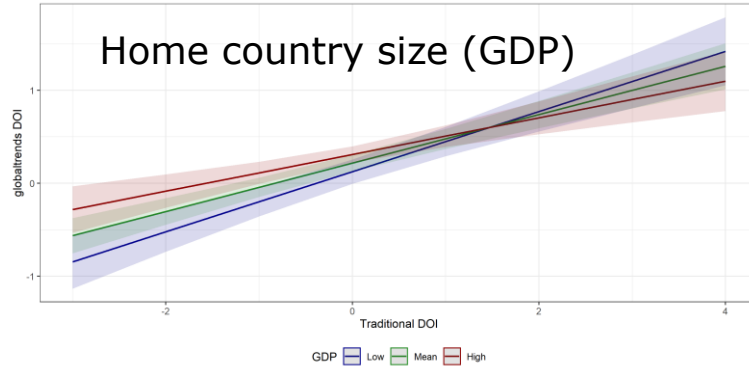
Parameter	8	7	6	5	4	3	2	1
1 DOI Gini <sub>OBS</sub>	<b>0.249</b>	<b>0.085</b>	<b>0.222</b>	<b>0.270</b>	0.666	0.983	0.994	1
2 DOI Gini <sub>SAD</sub>	<b>0.256</b>	<b>0.089</b>	<b>0.222</b>	<b>0.282</b>	0.676	0.994	1	
3 DOI Gini <sub>TRD</sub>	<b>0.271</b>	<b>0.094</b>	<b>0.228</b>	<b>0.302</b>	0.696	1		
4 DOI HHI <sub>OBS</sub>	<b>0.269</b>	<b>0.041</b>	<b>0.231</b>	<b>0.325</b>	1			
5 Foreign subsidiaries	0.585	0.117	0.429	1				
6 Foreign assets	0.502	0.152	1					
7 Foreign profits	0.117	1						
8 Foreign sales	1							

- Globaltrends measures of DOI are positively correlated with traditional measures indicating reliability as an internationalization proxy.
- At the same time, correlations are  $< .35$  indicating it may capture different facets of internationalization.

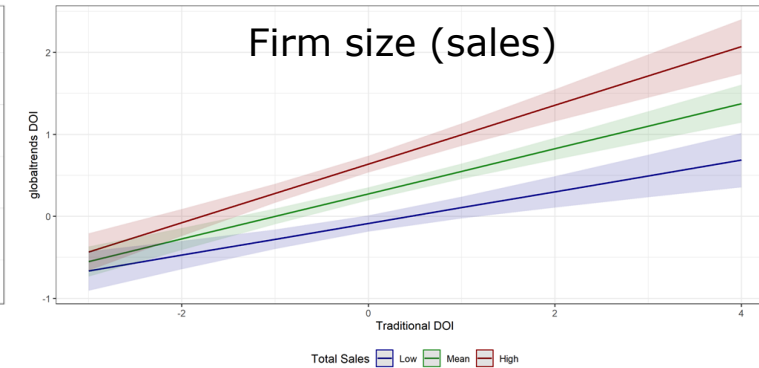
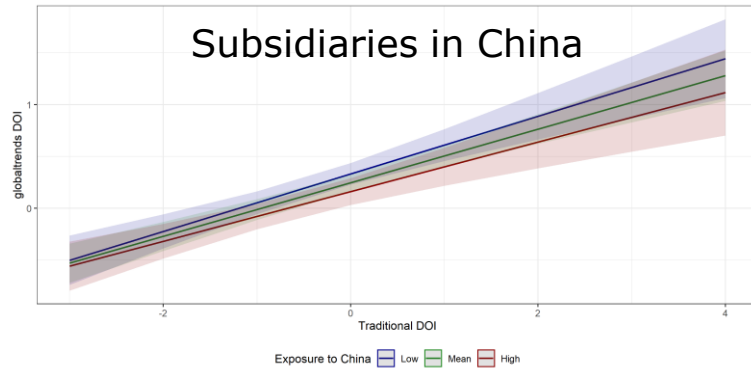
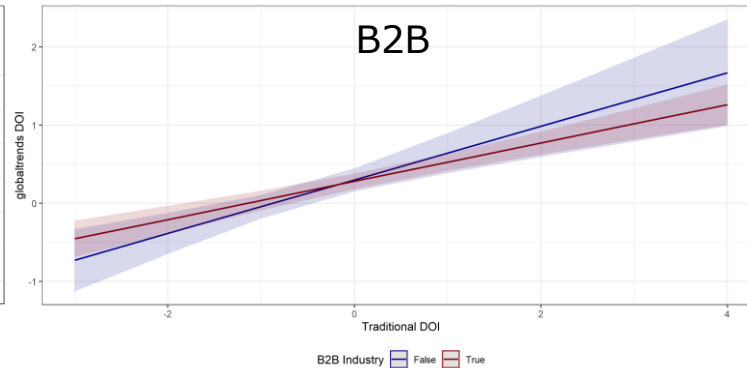
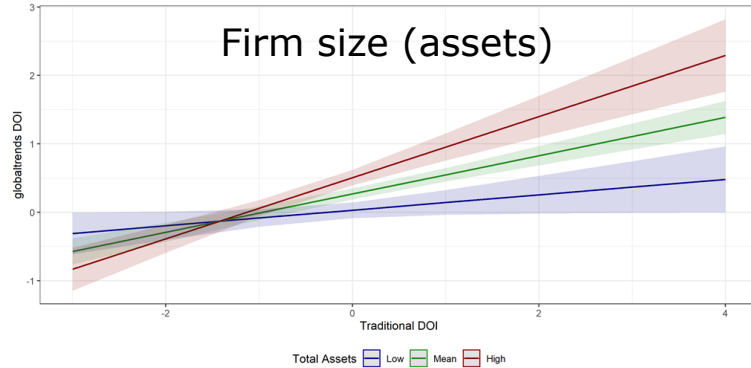
# Tests for potential biases

- Country biases
  - Home country size bias
  - Country characteristics biases (e.g., internet usage, english proficiency)
- Language
  - English as native language
- Firm
  - Firm size bias
  - B2B
  - China exposure

# Home country biases



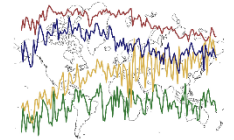
# Firm biases



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# CONCEPTUAL VALIDITY

globaltrends



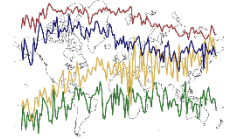
# Conceptual validity

- Reliability as a proxy for firm internationalization but low coefficient of determination suggests unique properties and a **distinct type of firm internationalization**
- Google Trends captures market-side exposure of a company well
  - public awareness
  - recognition
  - visibility
- Google Trends does not capture structure of a company well
  - operations
  - assets
  - sales

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# NEW APPLICATIONS AND RESEARCH QUESTIONS

globaltrends



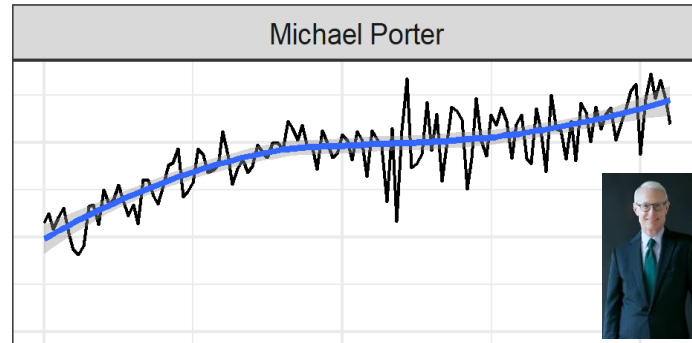
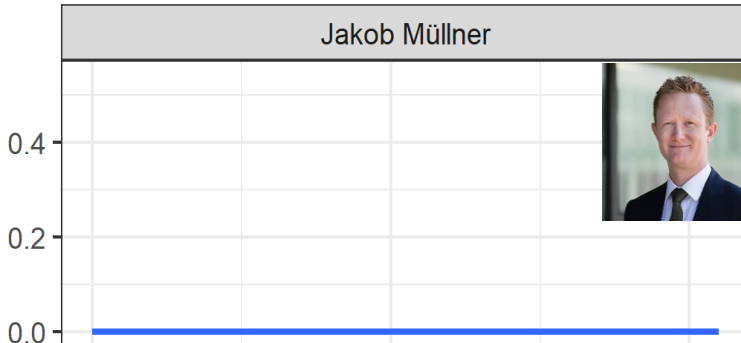
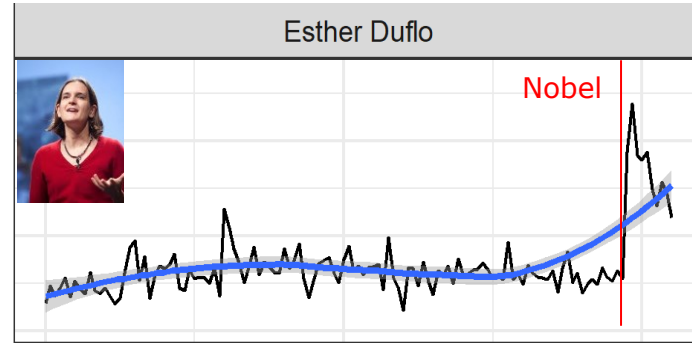
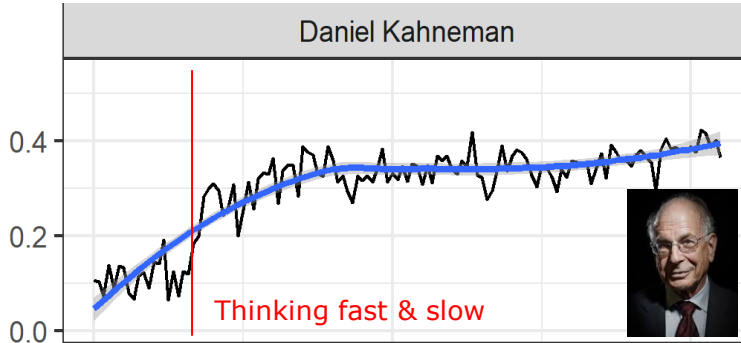


# Potential new applications

- Degree of internationalization (DOI)
  - Persons
  - Organizations (universities, sports clubs)
  - Products
  - Media
  - Trends (uncertainty, fads, cultural values)
- Degree of national concentration (DOC)
- Abnormal DOI returns
  - M&A or Market entry
  - Awards and other events

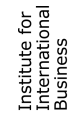
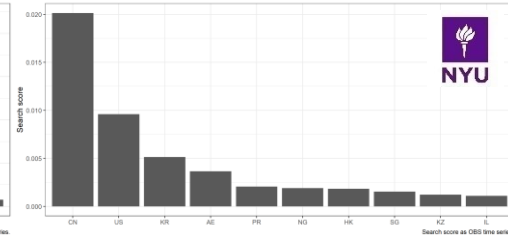
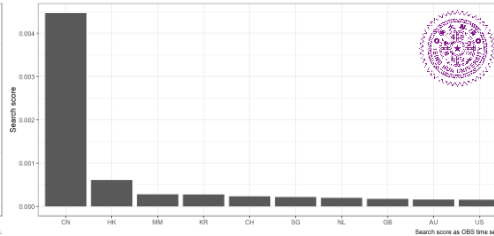
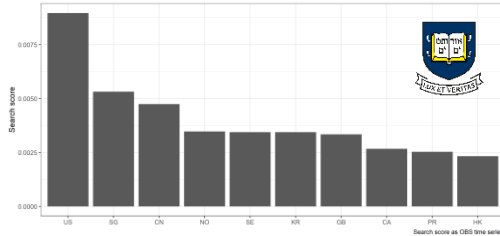
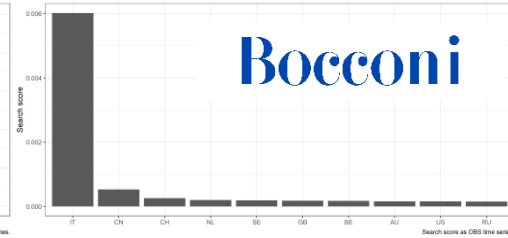
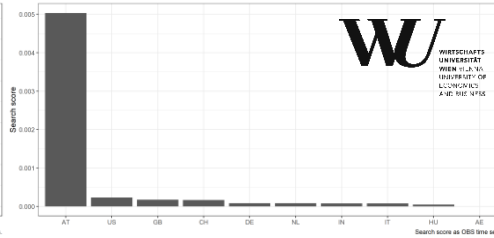
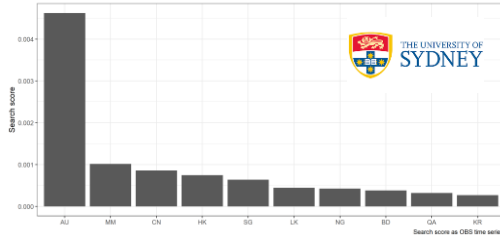
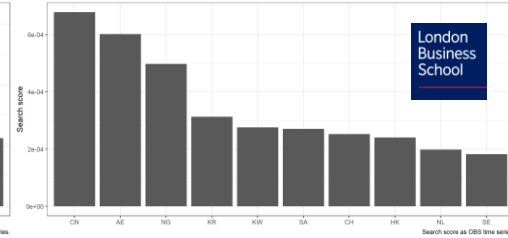
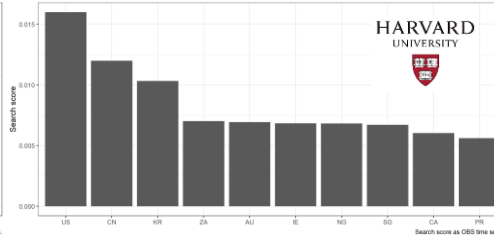
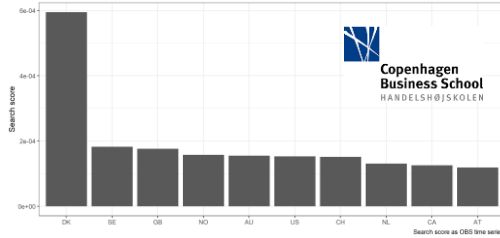
# Researchers & authors

Globaltrends potentially allows measurement of research impact



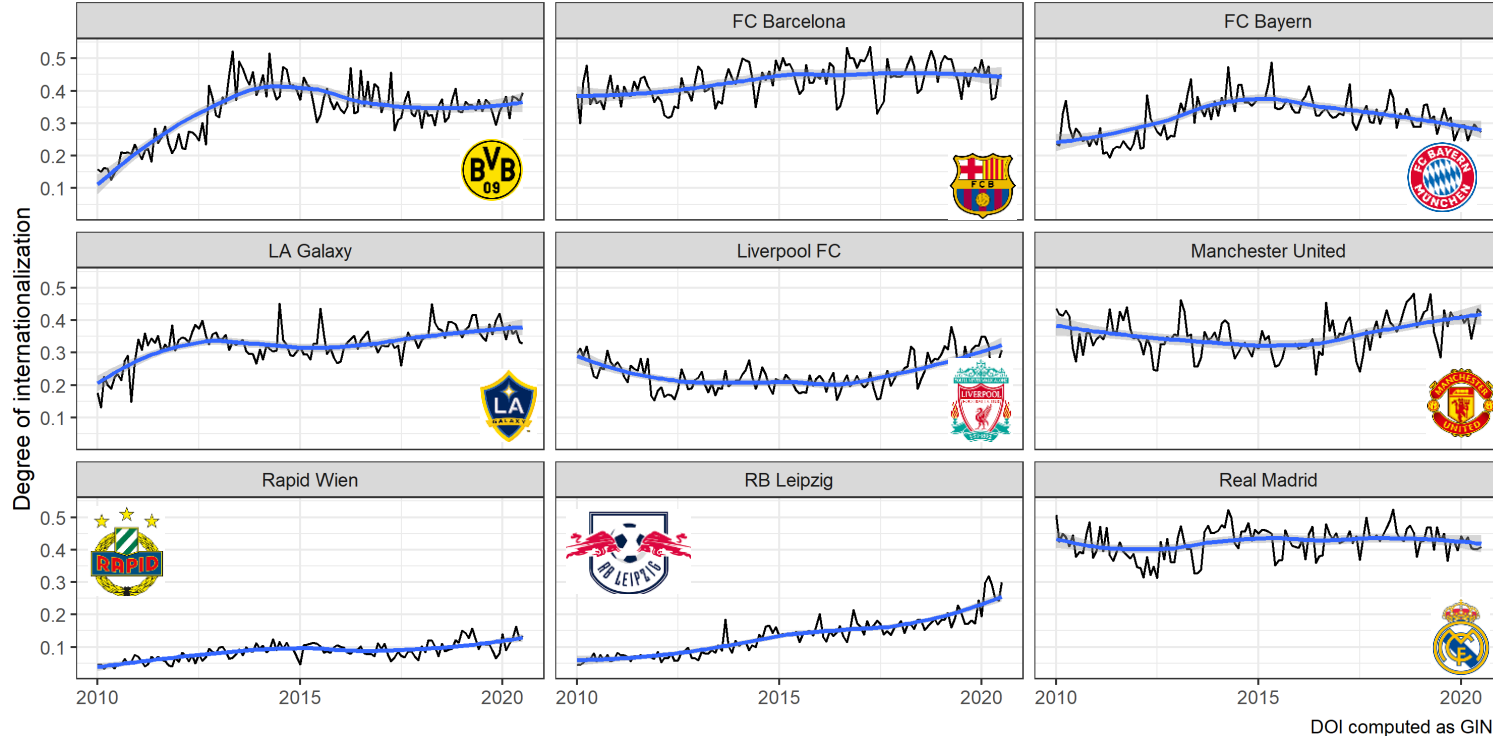
# Non-profit companies (e.g., universities)

## Globaltrends potentially provides DOI for NPOs



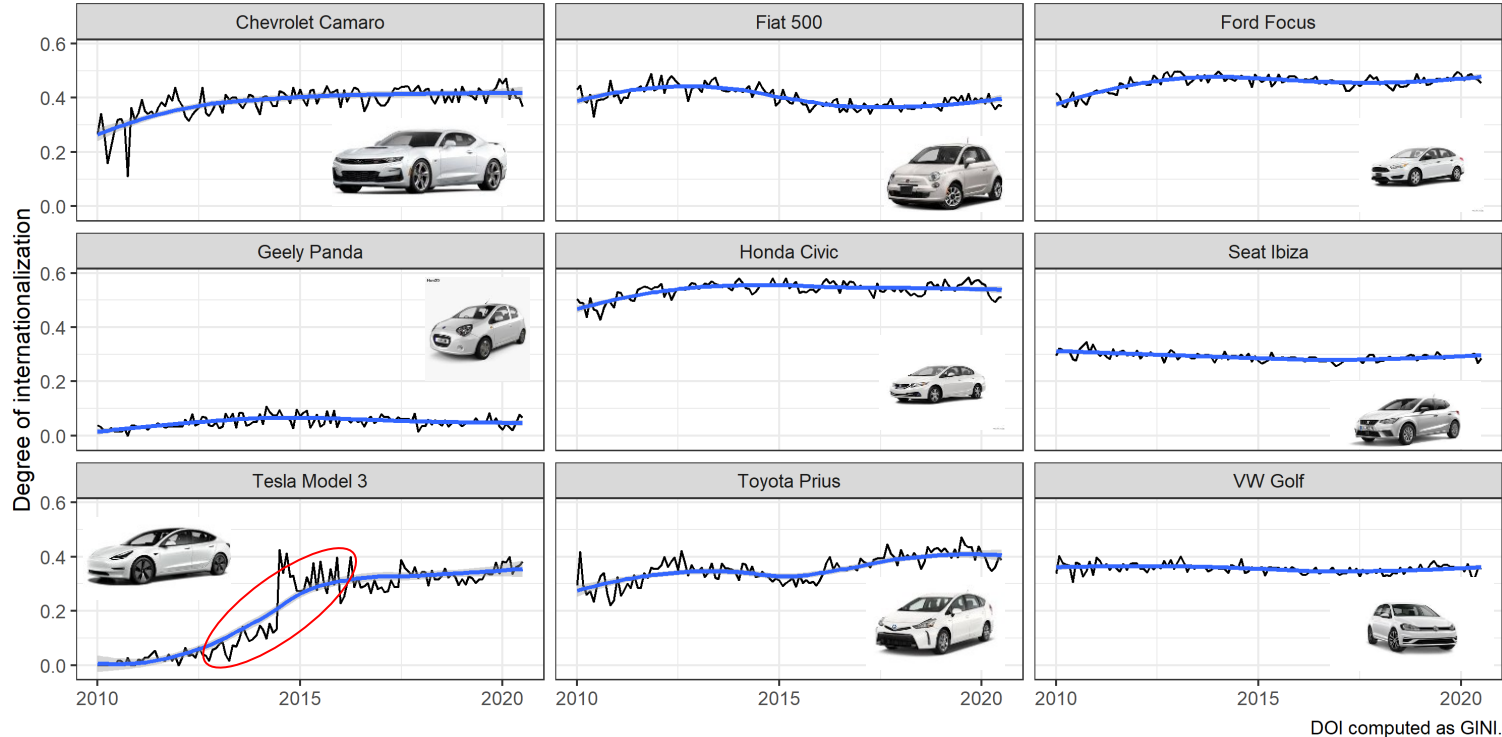
# Non-profit companies (e.g., sports clubs)

## Globaltrends potentially provides DOI for NPOs



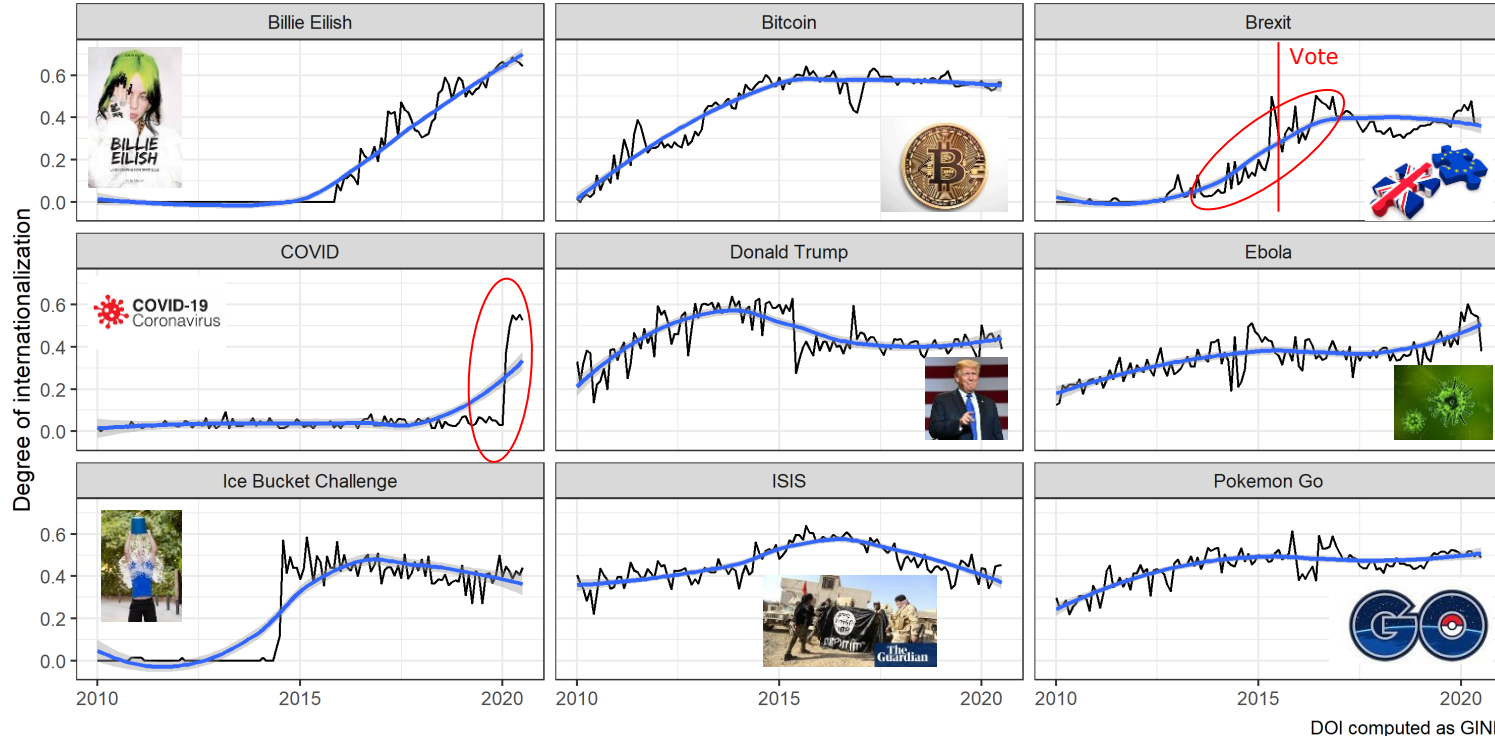
# Products

## Globaltrends allows product-level measures of DOI



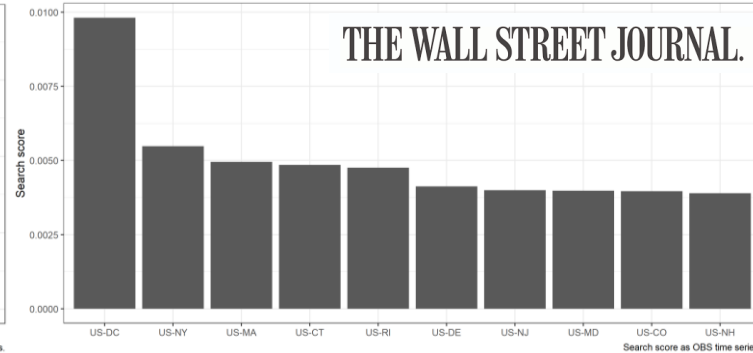
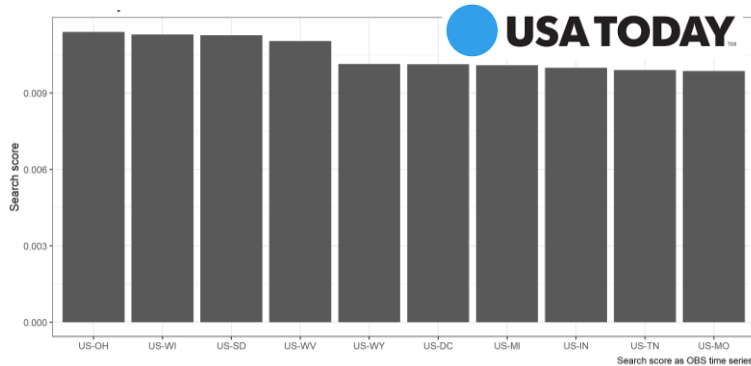
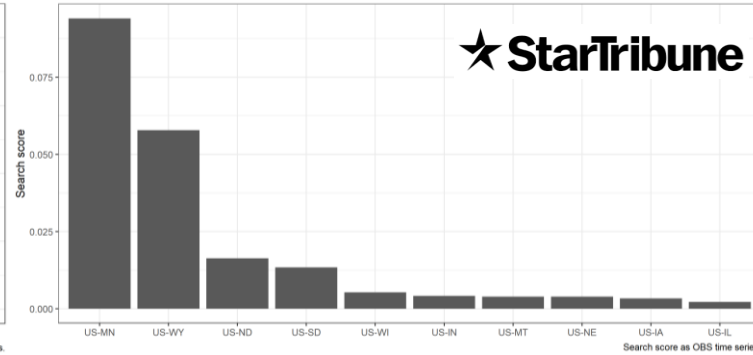
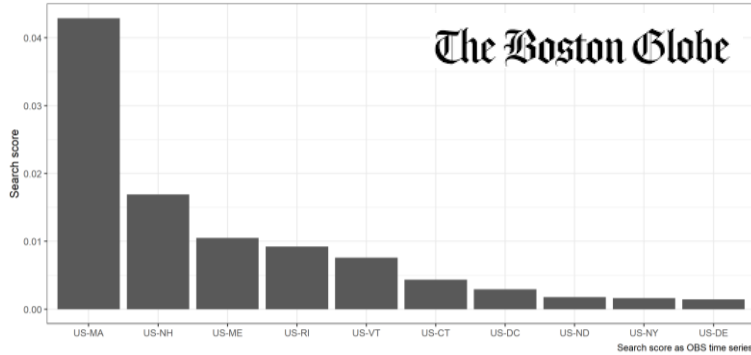
# Fads, sentiments and IB-relevant phenomena

## Globaltrends allows tracing of fads and trends across the globe



# National concentration

## Globaltrends can measure national concentration

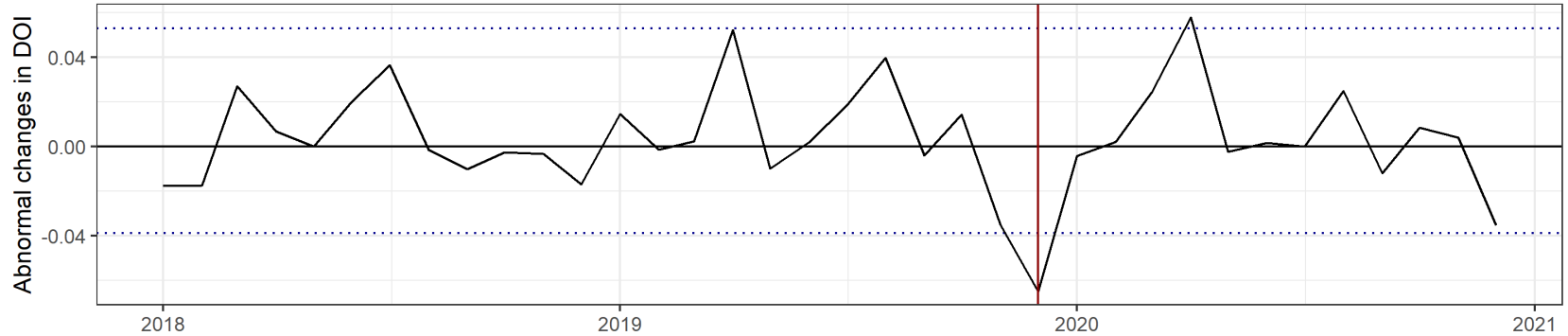


# Event study for DOI and VOI

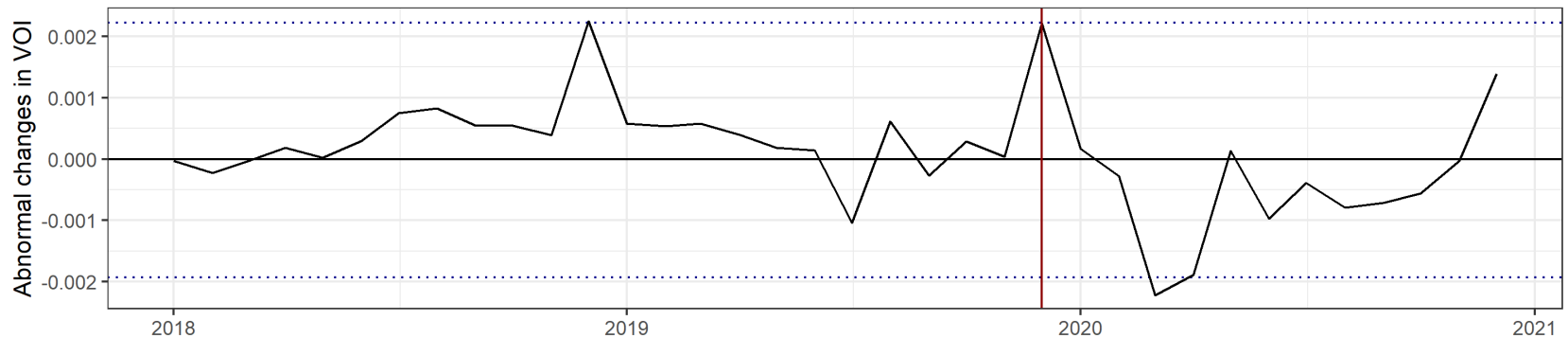
TIFFANY & CO.

# LVMH

Tiffany & Co.

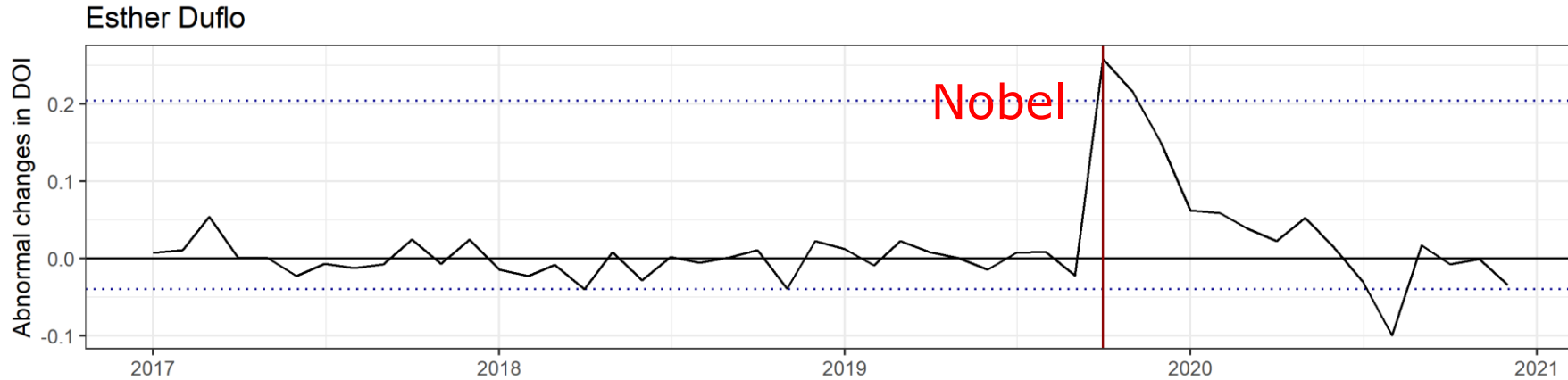


Tiffany & Co.





# Abnormal DOI returns



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# CONCLUSION

# Conclusion

- Advantages of globaltrends as a measure of DOI
  - Granularity across countries and over time
  - Availability
  - Accuracy
  - Standardization
  - Versatility (applications & methodologies)
- Validity of globaltrends
  - Globaltrends captures a different type of internationalization than traditional, accounting based measures
  - It is more suitable for market-side mechanisms:
    - Stock-price reactions
    - Brand reputation, visibility, recognition
    - Global stakeholder exposure, public scrutiny and risk salience



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