Uncharted Uncertainty

Eric Bartelsman

Vrije Universiteit Amsterdam, Tinbergen Institute

ENRI Virtual Workshop
May 20, 2020

Outline

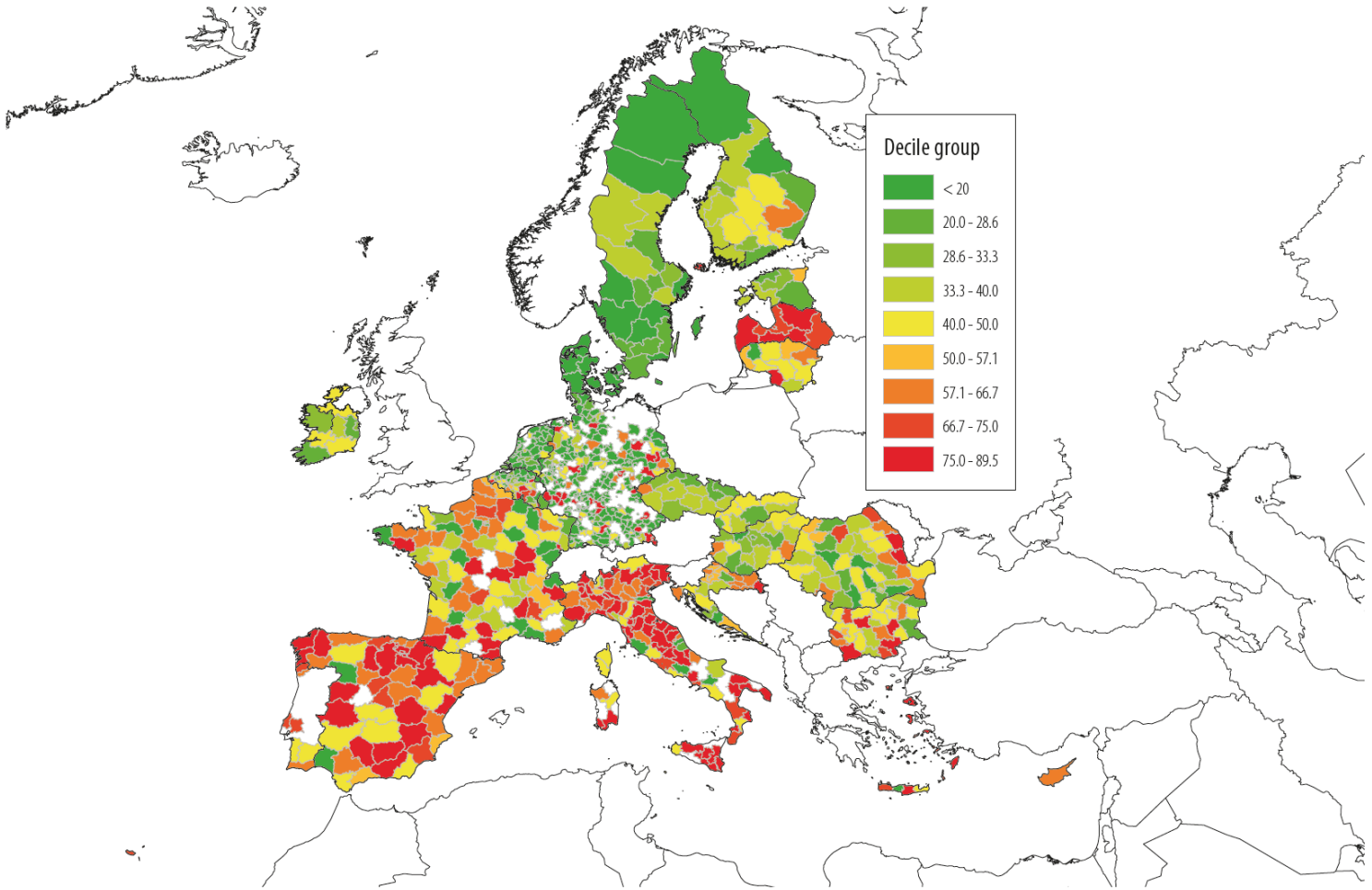
- Evidence from EIB survey
- Recent high frequency evidence
- What are we uncertain about
- Forward looking policy

Basic Facts from EIB Investment Survey

- Regional variation in uncertainty as an impediment is quite large
- In periphery countries, a high percentage of firms considers uncertainty to be a major impediment
- Uncertainty declines are similar across regions
- The variation across broad sectors is not as large,
- The improvement in uncertainty over time varies across sectors, with little improvement in manufacturing

Uncertainty as an Impediment 2015

Figure 2 **Uncertainty as a major impediment to investment activity by NUTS-3 region, 2015** (share of total answers)



Source: *EIBIS2016, authors' calculations*

Uncertainty as an Impediment

Uncertainty as Major Impediment to Investment (pct of firms)

Year	EU	North	East	South
2016	43	29	45	69
2017	37	22	40	64
2018	35	22	38	57
2019	37	23	39	60

source: EIB Investment Survey. (non-response, don't know excluded)

Uncertainty as an Impediment

Uncertainty as Major Impediment to Investment (pct of firms)

Year	Mfg	Cnstr	Hotel	ICT
2016	40	48	49	33
2017	37	40	40	25
2018	35	37	39	27
2019	39	37	38	28

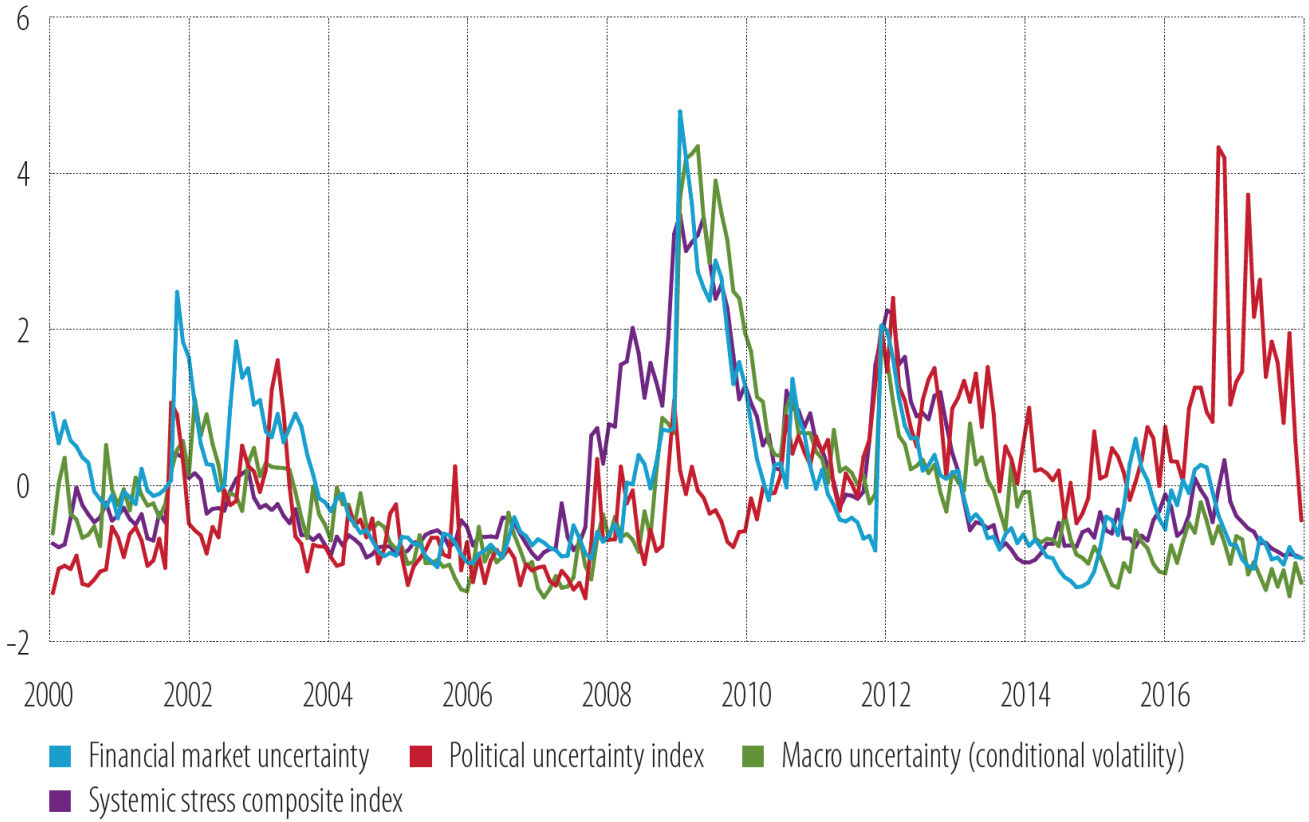
source: EIB Investment Survey. (non-response, don't know excluded)

High Frequency Evidence

- Baker et al. methodology and other indicators of high frequency, forward looking uncertainty
- When uncertainty is high, there is a value to waiting for new information before investing
- Source of uncertainty is varied: historically collected series may not be relevant going forward
- Timeseries of uncertainty indexes are hard to 'calibrate': We normalize on mean. What about variance and other moments?

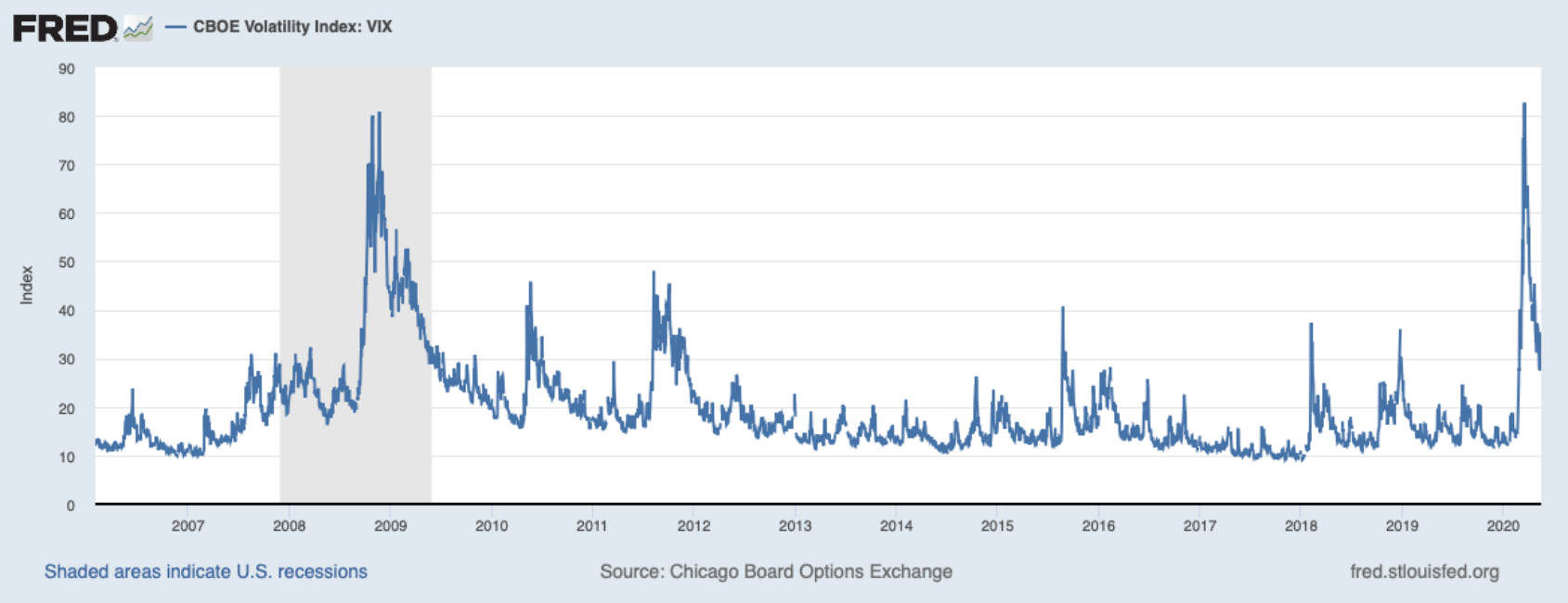
Uncertainty Indexes

Figure 1 **Measures of macroeconomic and financial market uncertainty**

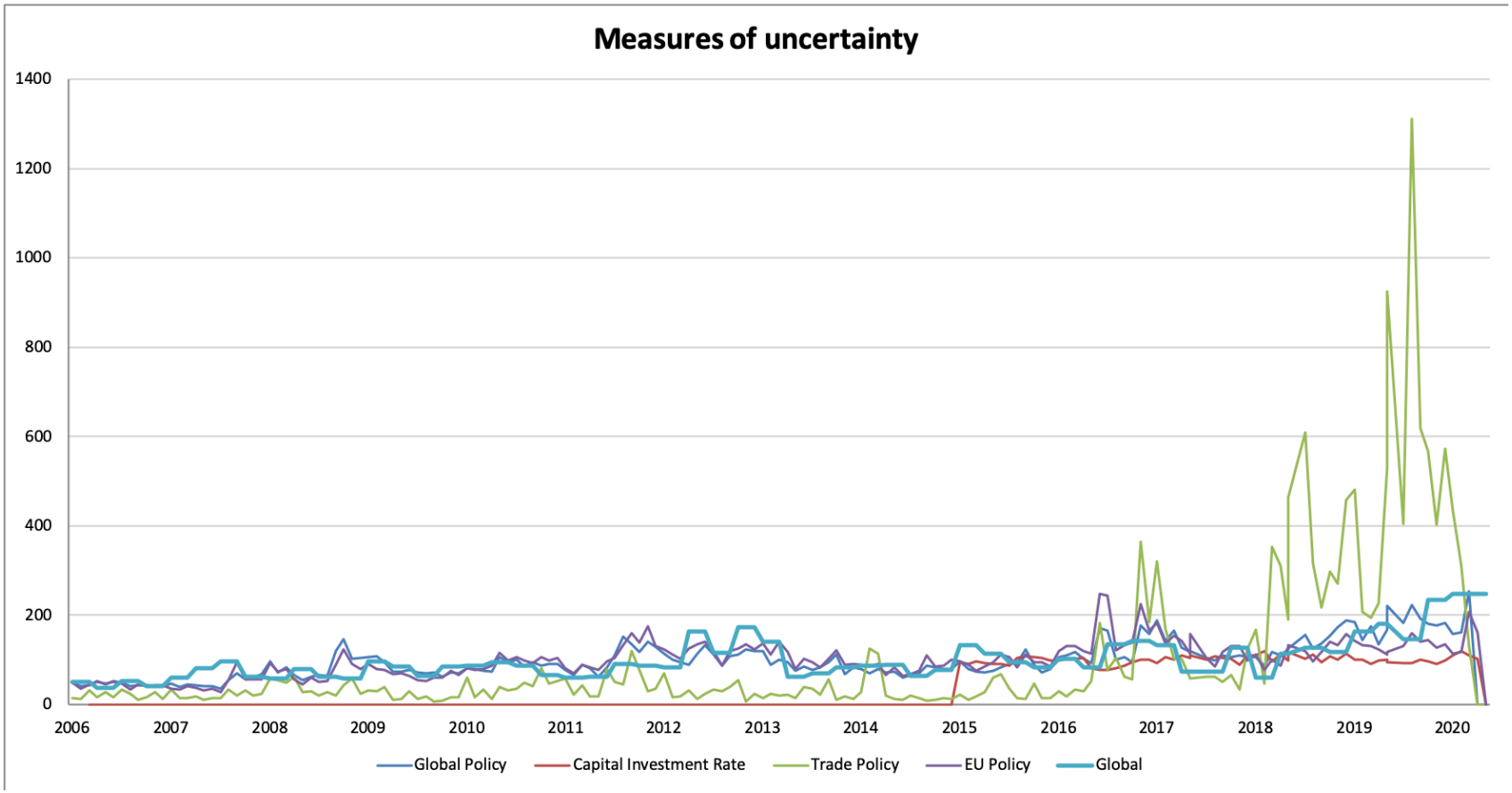


Source: *European Central Bank, Thompson Reuters, Eurostat; Baker, Bloom and Davis (2016), EIB staff calculations.*
Note: *Macroeconomic and financial market measures of uncertainty are described in ECB Economic Bulletin Issue 8, 2016.*

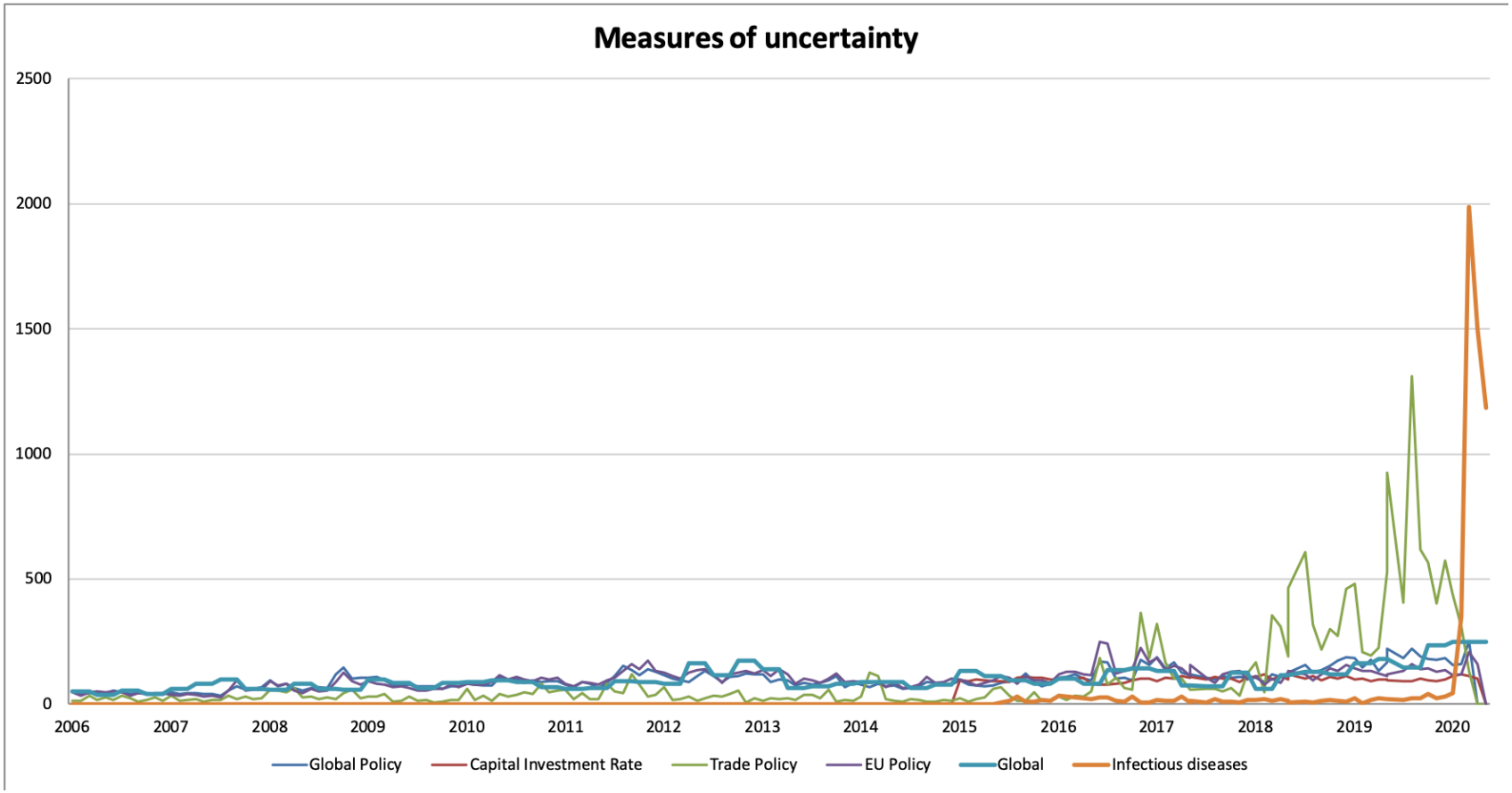
VIX


FRED
— CBOE Volatility Index: VIX
Index
90
80
70
60
50
40
30
20
10
0
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Shaded areas indicate U.S. recessions
Source: Chicago Board Options Exchange
fred.stlouisfed.org

Uncertainty Indexes



Uncertainty Indexes



Uncertainty Index Properties

Table 1: Measures of Macro Uncertainty for the United States for the COVID-19 Crisis

Measure	Examples	Frequency	Time lag (days)	Forward Looking	Additional details	Fit for Real-Time COVID-19 Analysis
Financial Volatility	VIX, Realized Volatility (daily or intraday)	Daily	0	Yes	Implied vol available for horizons of 1 month to 10 years	
Newspaper-Based	EPU or EMV	Daily	1	Yes	Categorical detail	
Surveys of Business Expectations	DMP, SBU	Monthly	20	Yes	Sectoral, regional and firm-size	
Surveys of Professional Forecasters	SPF Disagreement	Quarterly	30	Yes	Multiple outcome variables (GDP, employment etc)	
Time-Series Models	GDP Garch JLN Macro	Monthly	60	No	Multiple outcome variables (GDP, employment etc)	

Notes: Frequency and time-lag refers to the most frequent and rapidly produced indicator amongst the examples. Forward looking means the measure at least partly reflects anticipations of future developments rather than historical data. EPU is the Economic Policy Uncertainty index of Baker, Bloom and Davis (2016), and EMV is the Equity Market Volatility Tracker of Baker, Bloom, Davis and Kost (2019). Both are available in daily and monthly versions. DMP is the U.K. Decision Maker Panel described in Bloom et al. (2019), and SBU is the U.S. Survey of Business Uncertainty described in Altig et al. (2020b). SPF is the Philadelphia Fed's Survey of Professional Forecasters described in Croushore and Stark (2019). JLN Macro refers to the forecast uncertainty measures based on time-series models developed by Jurado, Ludvigson and Ng (2015).

Current Uncertainty

- Virus (SIR-parameters, treatment, vaccine, next waves)
- Policy (lockdown, easing restrictions, smart lockdown, global coordination)
- Uncertainty about economics
  - Do our measurements still work? e.g. index number problems, survey participants, VAT tax registers
  - Do our measures still mean the same? What does -7.5% GDP and 20% unemployment in Q1, and even worse in Q2 mean
  - Do macro time series methods still provide any explanatory or predictive power?
  - What macro models can we use?

Micro-Macro models

- Old supply-vs-demand framework is not adequate for current situation
- Modernized input-output framework to deal with many shocks at once:
- Taste
  - temporary vs permanent: health care needs, distancing precautions, social pressure, greening
- Supply
  - lockdown characteristics: work-at-home, work-at-1.5m, deliver-in-person, deliver-online, inventories; age related lockdowns
- Technology
  - Productivity losses (temporary or permanent) from adjusting value chain; shifts in output share to chains with different productivity
- Demand: aggregate demand implications from income loss, credit constraints, animal spirits

Data Needs

- Mixing data of different frequencies
- Mixing data from different measurement methods
- Mixing data at different levels of aggregation, granularity
- Examples
  - for age-related lockdowns: age-by-occupation labor supply
  - for digital delivery: split industries by firm ability to deliver online
  - for trade disruptions: length and geography of supply chain by industry
  - for demand: by durability for goods, postponability and online-delivery for services

Thoughts on policy

- Prevent/mitigate spillover of shocks to aggregate demand
  - Tradeoff between income support vs job support (reallocation vs job-match-value)
  - Investment uncertainty: not just aggregate demand, but also on nature, timing and temporality of shocks
- Create confidence about permanence of shift to digital, shift to green, shift to inclusive
- Make immediate, bold, and irreversible policy moves in these directions