

BUSINESS EXPECTATIONS & UNCERTAINTY IN DEVELOPING & EMERGING ECONOMIES*

Edgar Avalos^a Jose Maria Barrero^b Elwyn Davies^a
Leonardo Iacovone^c Jesica Torres^a

^aThe World Bank ^bITAM Business ^cThe World Bank & the Hertie School

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*The views expressed in this paper and presentation are solely those of the authors and do not necessarily reflect the views of the World Bank, its Executive Directors, or the countries they represent.

RESEARCH QUESTIONS

What do *business expectations and uncertainty* look like in developing and emerging economies?

Do they resemble those of businesses in *advanced economies*?

Are there systematic differences in the properties of expectations and uncertainty depending on a country's *level of development*?

MOTIVATION

Business dynamics are central to developing/emerging economies' lack of “convergence” with advanced economies:

- ▶ Lower growth rates and stagnation (e.g., Hsieh & Klenow, 2014)
- ▶ Underinvestment in managerial capital (Akcigit, Alp, & Peters, 2021)
- ▶ Volatility \Rightarrow static misallocation (Asker, Collard-Wexler, & De Loecker, 2014)
- ▶ Risky capital (David, Henriksen, & Simonovska 2016)

Q: What role do *business expectations* & *uncertainty* play?

- ▶ Do they reflect some of these facts?
- ▶ Could they themselves contribute to stagnation/failure to “converge”?

THIS PAPER

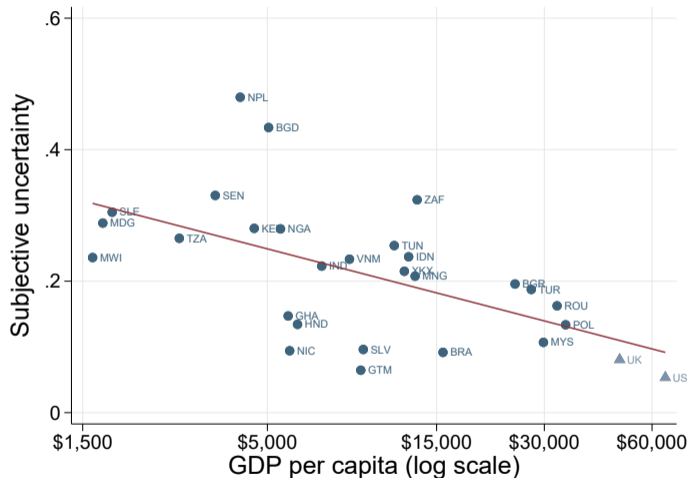
We examine the properties of business expectations & uncertainty among 14,000 businesses in 27 developing and emerging economies

1. **2020–2021 World Bank Business Pulse & Enterprise Surveys**
3-point subjective probability distributions for future sales at a 6-month look-ahead horizon (cf. Altig et al., 2020)
2. **Measures of business expectations and uncertainty**
First and second moments of those subjective distributions
3. **New facts about business expectations and uncertainty in developing/emerging economies**
Two dimensions of heterogeneity: across *firms* vs. across *countries*

KEY TAKEAWAYS

1. It's feasible and informative to elicit subjective probability distributions from businesses in developing/emerging economies
72% of firms provide usable distributions vs. **~85%** in US Census surveys
2. **Business expectations and uncertainty have “nice” properties**
Predict future sales & absolute forecast errors,
Reflect shifts in macroeconomic environment, idiosyncratic shocks
3. **NEW FACT: Businesses in poorer countries (GDP/person) are more uncertain than businesses in richer countries**
Even *controlling* for industry, firm size, idiosyncratic conditions...
Implications for static misallocation, efficiency, nature of macro policy

BUSINESS UNCERTAINTY vs. GDP/PERSON



Notes: This figure plots employment-weighted subjective uncertainty in each country averaging across waves of the World Bank Business Pulse and Enterprise Surveys against the country's 2019 GDP per capita on the horizontal axis. We weight firms by employment within each country. UK and US values for second quarter of 2020.

OUTLINE

Data & methodology

Features of expectations & uncertainty

- ▶ Firm level
- ▶ Across countries

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WORLD BANK GROUP

BUSINESS PULSE & ENTERPRISE SURVEYS

Goal: Information about firm operations, sales, employment, plus quantitative data on expectations and uncertainty about 6-months-ahead sales

Survey coverage: 60+ countries since COVID onset

- ▶ This paper: **27** countries from all WB lending regions, Apr. 2020–Mar. 2021
- ▶ *Registered firms* identified from Census listings, business registers
Should include informal employment at these businesses
- ▶ Small (5 to 10 employees) to large (100+ employees) firms
- ▶ Multiple waves per country \Rightarrow *panel dimension*

SURVEY DESIGN & COLLECTION

Survey design: Uniform by World Bank

Collection methodology: Phone interviews with an enumerator

Implementation: collaboration with statistical agencies, govt. departments, or business associations in each country

- ▶ In practice, implementation varies modestly across countries
- ▶ Note: During COVID, so not seamless

THE EXPECTATIONS & UNCERTAINTY MODULE

Looking ahead to the next 6 months, do you expect that your sales will increase, decrease, or remain the same, compared to the same period last year [in 2019]?

- ▶ *Increase [decrease] by how much?*

On a scale of 0 to 100, what is the chance (probability) you believe this will happen?

THE EXPECTATIONS & UNCERTAINTY MODULE

As you know, sometimes businesses don't go as we expect, given that businesses can go better or worse, let us talk about these possible alternative situations

In a more optimistic (better) scenario, do you expect that your sales for the next 6 months will increase, decrease, or remain the same, compared to the same period last year?

- ▶ *Increase [decrease] by how much?*
- ▶ *On a scale of 0 to 100, what is the chance (probability) you believe this will happen?*

Similar question for a *pessimistic (worse)* scenario

3-POINT SUBJECTIVE PROBABILITY DISTRIBUTIONS

For each firm j and scenario i : $\{g_{ij}, p_{ij}\}_{i=1}^3$

- ▶ g_{ij} = 6-months-ahead sales in scenario i (% relative to 2019)
- ▶ p_{ij} = probability of scenario i occurring
- ▶ Version of the methodology developed by Altig et al. (2020)

Sales expectation (1st moment) $\text{Mean}_j = \sum_{i=1}^3 g_{ij}p_{ij}$

Sales uncertainty (2nd moment): $\text{Uncertainty}_j = \left[\sum_{i=1}^3 p_{ij}(g_{ij} - \text{Mean}_j)^2 \right]^{1/2}$

HOW FEASIBLE IS IT TO ELICIT PROBABILITY DISTRIBUTIONS IN DEVELOPING & EMERGING ECONOMIES?

72% of firms provide usable distributions

- ▶ 41% of distributions add to 100% and have Uncertainty > 0
- ▶ 31% have 2+ scenarios and we impute or rescale missing probabilities
 - ▶ Altig et al. (2020): **support points** matter most for 1st & 2nd moments
- ▶ *Larger firms* are less likely to provide unusable distributions [▶ Detail](#)

For comparison: **~85%** of usable distributions in Bloom et al. (2021)

- ▶ Similar module from the 2015/2020 Annual Survey of Manufacturers in the US

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Features of expectations & uncertainty

- ▶ Firm level
- ▶ Across countries

OUTLINE

Data & methodology

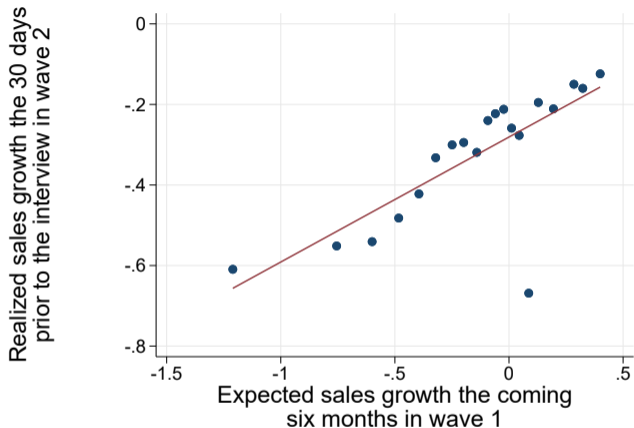
Features of expectations & uncertainty

- ▶ **Firm level**
- ▶ Across countries

FACTS ABOUT BUSINESS EXPECTATIONS & UNCERTAINTY

1. *Predictive power for future outcomes & absolute errors*
(Altig et al., 2020; Bloom et al., 2020; Barrero, 2021;)

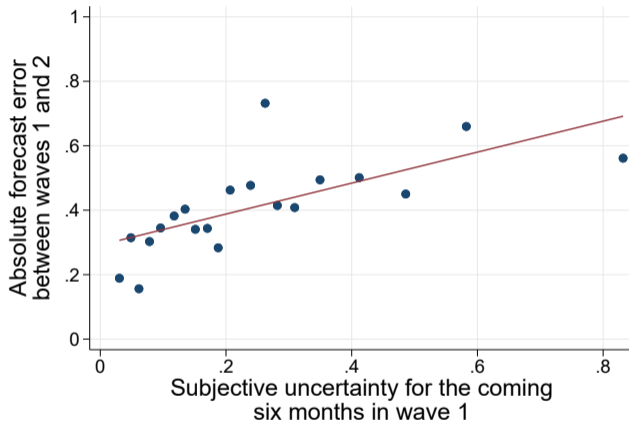
EXPECTATIONS PREDICT FUTURE SALES GROWTH



Coefficient: 0.31 with standard error of 0.063.

Notes: The figure shows a binned scatter plots of realized sales in the 30 days prior to the second-wave interview on the vertical-axis against sales expectations for the next six months on the horizontal axis. Both realized sales and future expected sales are expressed relative to the same periods of 2019. The sample includes only the firm-level balanced panel for the first two waves of the survey. See Table A4 in the appendix for a list of countries where a panel is available. We weight firms by employment within each country. The reported statistics below the figure correspond to the least squares regression in the underlying micro data and the corresponding robust standard error.

UNCERTAINTY PREDICTS ABS. FORECAST ERRORS



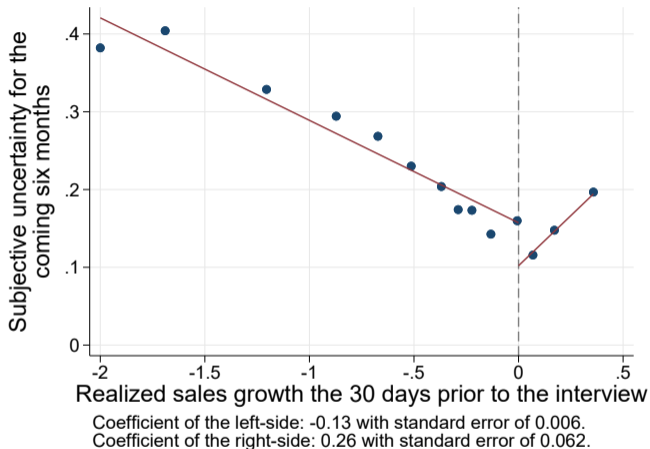
Coefficient: 0.48 with standard error of 0.104.

Notes: The figure shows a binned scatter plot of the absolute value of the error (difference) between six-months-ahead sales forecasts (expectations) elicited in wave 1 and realized sales in the 30 days leading to the wave 2 interview on the vertical-axis against subjective uncertainty about six-months-ahead sales elicited in wave 1 on the horizontal-axis. Sales expectations and realizations are all expressed relative to the same period in 2019. The sample includes only the firm-level balanced panel for the first two waves of the survey. We weight firms by employment in each country. The reported statistics below each figure correspond to the least squares regression in the underlying micro data and the corresponding robust standard error.

FACTS ABOUT BUSINESS EXPECTATIONS & UNCERTAINTY

1. Predictive power for future outcomes & absolute errors
(Barrero, 2021; Altig et al., 2020)
2. *Higher uncertainty in volatile and changing environments*
(Altig et al. 2020; Bloom et al., 2021; Bachmann et al., 2021)

UNCERTAINTY IS V-SHAPED IN SALES SHIFTS



Notes: The figure shows an employment-weighted binned scatter plot of subjective uncertainty about six-months-ahead sales on the vertical axis against realized sales the 30 days prior to the interview on the horizontal axis. The reported statistics below each figure correspond to the least squares regression in the underlying micro data and the corresponding robust standard error. Both realized sales growth and future expected sales growth are expressed relative to the same periods of 2019. The sample includes businesses from all countries and waves.

OUTLINE

Data & methodology

Features of expectations & uncertainty

- ▶ Firm level
- ▶ **Across countries**

FACTS ABOUT BUSINESS EXPECTATIONS & UNCERTAINTY

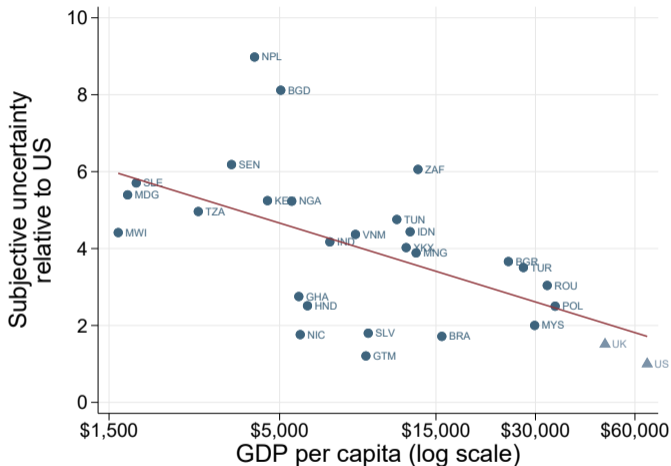
1. Predictive power for future outcomes & absolute errors
(Barrero, 2021; Altig et al., 2020)
2. Higher uncertainty in volatile and changing environments
(Altig et al. 2020; Bloom et al., 2021; Bachmann et al., 2021)
3. *Uncertainty decreases with GDP/person*
Forecast accuracy increases with GDP/person
(NEW FACT)

BUSINESS UNCERTAINTY VS. GDP/PERSON

	(1)	(2)	(3)	(4)
	Subjective Uncertainty			
GDP per capita (log)	-0.068*** (0.009)			-0.052*** (0.008)
Transit mobility		-0.003*** (0.001)		-0.002*** (0.001)
Absolute change in sales			0.108*** (0.012)	0.089*** (0.010)
Size	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes
Quarter dummies	Yes	Yes	Yes	Yes
Observations	8958	8958	8548	8548
Within R^2	0.105	0.073	0.138	0.195
No. of clusters	94	94	94	94

Notes: Linear regressions with subjective uncertainty about six-months-ahead sales (relative to the same period in 2019) as dependent variable. *Transit mobility* is the level of mobility around transit stations in the 30 days before the interview according to Google Mobility Trends. *Change in sales* is the arc change in sales in the 30 days before the interview. Heteroskedasticity-robust standard errors are clustered at the country-sector level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

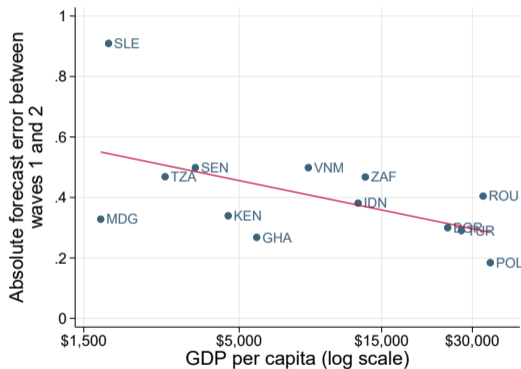
MAGNITUDE: 3–6× UK OR US UNCERTAINTY



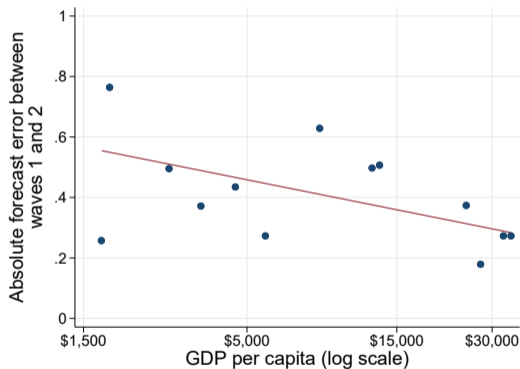
Notes: The figure plots employment-weighted average uncertainty at the country level divided by US uncertainty against GDP per capita. Expected sales corresponds to the next 6 months relative to the same period of 2019. Data for the UK come from the UK Decision Maker Panel (see www.decisionmakerpanel.co.uk and Bloom(2018)). Data for the US come from the US Survey of Business Uncertainty (see www.atlantafed.org/sbu and Altig et al., 2020).

FORECAST ACCURACY VS. GDP/PERSON

Raw Cross-Country Relationship



Firm Size, Sector, Time Controls



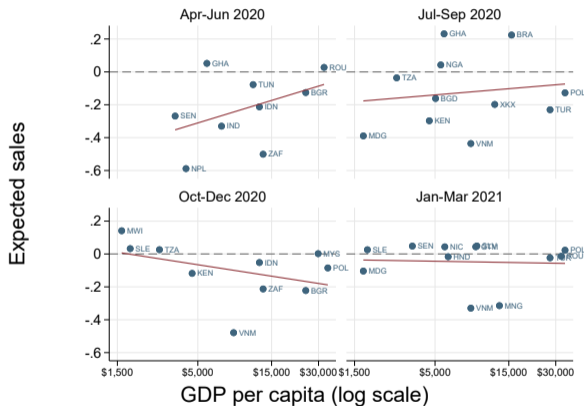
Notes: The left figure plots employment-weighted absolute forecast errors in each country-wave of the World Bank Business Pulse and Enterprise Surveys against the country's 2019 GDP per capita on the horizontal axis. The right figure shows the employment-weighted relationship across firms, controlling for firm size (log(employment)), sector fixed effects, and calendar quarter fixed effects.

FORECAST ACCURACY VS. GDP/PERSON

	(1)	(2)	(3)	(4)	(5)
	Absolute Forecast Error				
Uncertainty in wave 1	0.466*** (0.121)	0.356*** (0.126)	0.372*** (0.116)	0.287** (0.122)	0.285** (0.116)
GDP per capita (log)		-0.081** (0.037)		-0.072*** (0.025)	-0.038* (0.020)
World Uncertainty Index					-1.059** (0.421)
World Pandemic Uncertainty Index					0.760* (0.381)
Constant	0.250*** (0.072)	0.983*** (0.358)			
Size and sector			X	X	X
Quarter			X	X	X
Observations	2563	2563	2563	2563	2563
Within R^2	0.056	0.096	0.069	0.096	0.119

Notes: Linear regressions with absolute errors about six-months-ahead sales (relative to the same period in 2019) between waves 1 and 2 as dependent variable. Size is measured as log employment and all specifications are weighted by employment. Heteroskedasticity-robust standard errors are clustered at the country-sector level. All columns control for the the number of days between the wave 1 and wave 2 interviews. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

NO CONSISTENT PATTERN FOR EXPECTATIONS VS. GDP/PERSON



Notes: The figure shows employment-weighted binned scatter plots of expected six-months-ahead sales against 2019 GDP per capita (log scale). The sample includes all countries and survey waves. Six-months-ahead sales are expressed in relation to the same period of 2019.

IMPLICATIONS

Higher business uncertainty and lower forecast accuracy in developing/emerging economies could mean:

- ▶ *Depressed investment, excessive entry, and too little exit* (e.g. Hsieh & Klenow, 2014)
- ▶ More scope for *static misallocation* (e.g. David & Venkateswaran, 2019; Ma, Ropele, Sraer, Thesmar, 2020)
- ▶ More *overprecision* (Barrero, 2021) in developing/emerging economies ⇒ *efficiency losses* at the firm and macro levels

Expectations & uncertainty vs. hiring & mitigation decisions [▶ Detail](#)

CONCLUSION & KEY TAKEAWAYS

Measuring business expectations & uncertainty in developing & emerging economies is feasible and informative

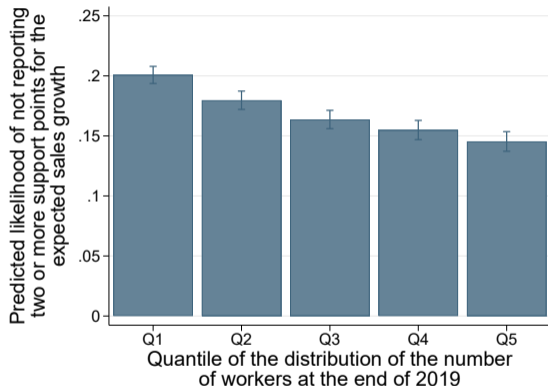
- ▶ **72%** of interviewed firms provide usable subjective distributions
- ▶ Timely, quantitative, bottom-up information for policymakers
- ▶ Becoming standard in advanced economies (US, UK, Germany, Japan,...)

Business uncertainty & forecast accuracy decrease with GDP/person

- ▶ Implications for investment, efficiency
- ▶ Macro & policy environment explain some of the relationship

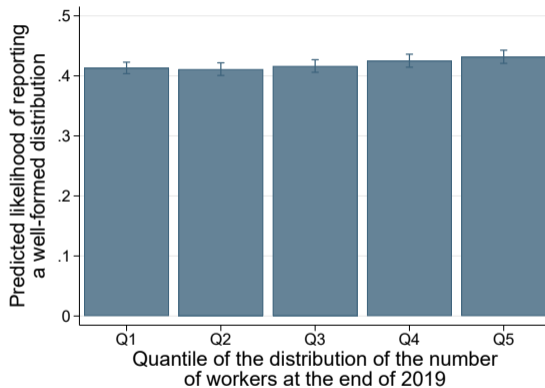
More to come: survey efforts continue through end of 2021 & some of 2022

LARGER FIRMS ARE LESS LIKELY TO PROVIDE UNUSABLE DISTRIBUTIONS



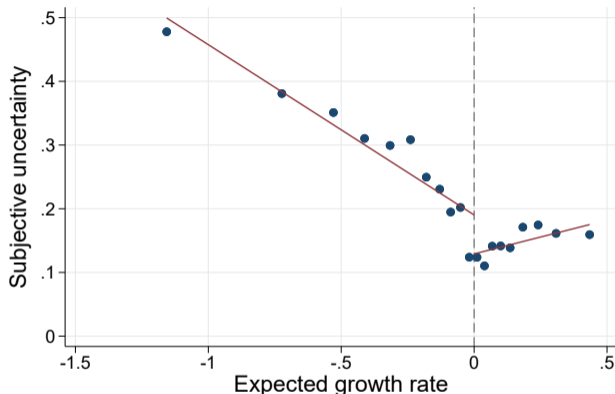
Notes: This figure plots the predicted likelihood of providing a distribution that does not have two or three support points. Each bar reports the average predicted probability across firms in a given quintile of the country-wave-sector size distribution. Our estimates come from a regression of an indicator variable for providing an unusable distribution that includes country, size, and quarter fixed effects. Size is measured using the number of workers at the end of December 2019 (the pre-pandemic baseline).

LARGER FIRMS ARE MORE LIKELY TO PROVIDE “WELL-FORMED” DISTRIBUTIONS



Notes: This figure plots the predicted likelihood of providing a distribution that is well-formed: it has 2 or 3 support points and the probabilities add to 100%. Each bar reports the average predicted probability across firms in a given quintile of the country-wave-sector size distribution. Our estimates come from a regression of an indicator variable for providing a “well-formed” distribution that includes country, size, and quarter fixed effects. Size is measured using the number of workers at the end of December 2019 (the pre-pandemic baseline).

UNCERTAINTY IS V-SHAPED IN $||$ EXPECTATIONS $||$

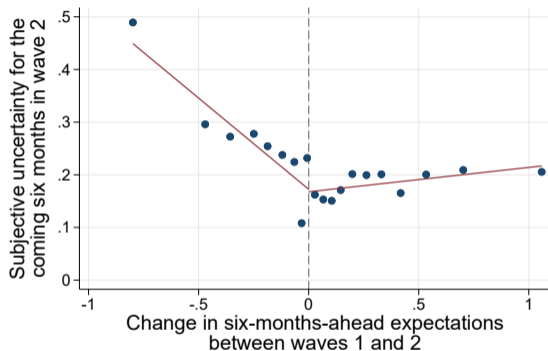


Coefficient of the left-side: -0.27 with standard error of 0.013.

Coefficient of the right-side: 0.11 with standard error of 0.027.

Notes: The figure shows an employment-weighted binned scatter plot of firm-level subjective uncertainty against sales expectations pooling the different country-wave cross-sections. Sales expectations and uncertainty concern the next 6 months relative to the same period of 2019. The reported statistics below the figure in panel b correspond to the least squares regression in the underlying micro data and the corresponding robust standard error. The sample includes businesses from all countries and waves.

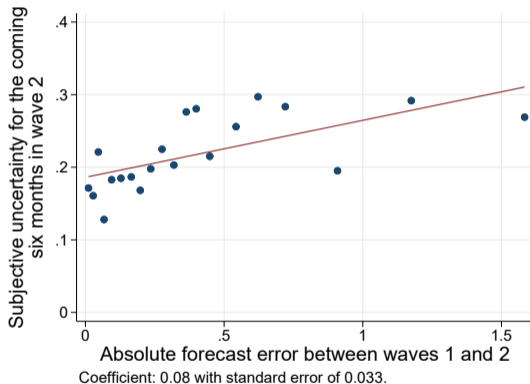
UNCERTAINTY IS V-SHAPED IN REVISIONS TO EXPECTATIONS



Coefficient of the left-side: -0.33 with standard error of 0.049.
Coefficient of the right-side: 0.05 with standard error of 0.019.

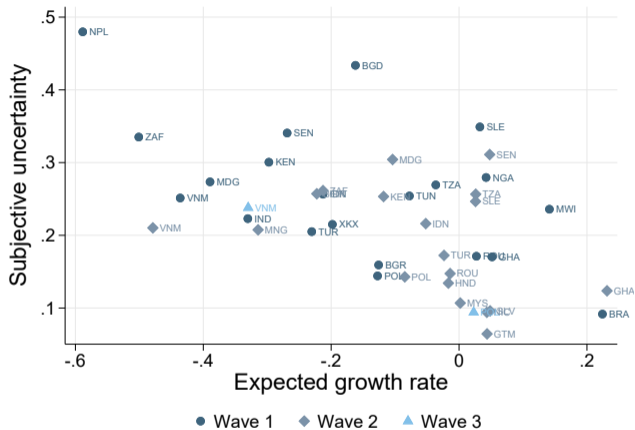
Notes: The figure shows an employment-weighted binned scatter plot of subjective uncertainty about six-months-ahead sales in wave 2 on the vertical axis against the change in expected sales growth between waves 1 and 2 on the horizontal axis. The sample includes only the firm-level balanced panel for the first two waves of the survey. The reported statistics below the figure correspond to the least squares regression in the underlying micro data and the corresponding robust standard error. Six-months-ahead sales are expressed in relation to the same period of 2019.

UNCERTAINTY RISES WITH LAGGED ABSOLUTE FORECAST ERRORS



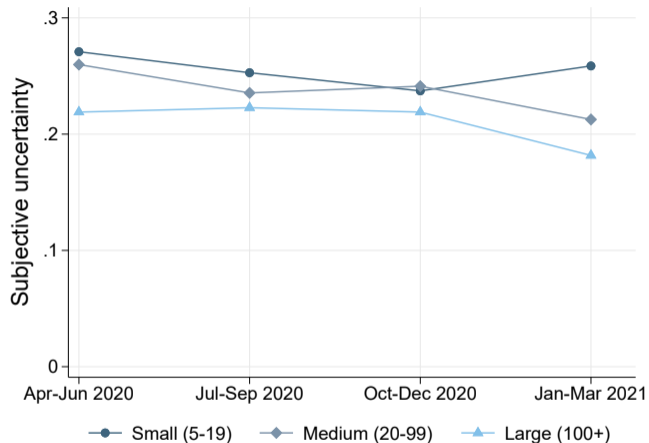
Notes: The figure shows a binned scatter plot of subjective uncertainty about six-months-ahead sales as expressed in wave 2 on the vertical axis against the absolute error (i.e. difference) between forecast six-months-ahead sales from wave 1 and realized sales in the 30 days prior to the wave 2 interview. The sample includes only the firm-level balanced panel for the first two waves of the survey. The reported statistics below the figure correspond to the least squares regression in the underlying micro data and the corresponding robust standard error. Both realized sales and future expected sales are expressed relative to the same periods of 2019.

UNCERTAINTY DECLINES WITH EXPECTED SALES



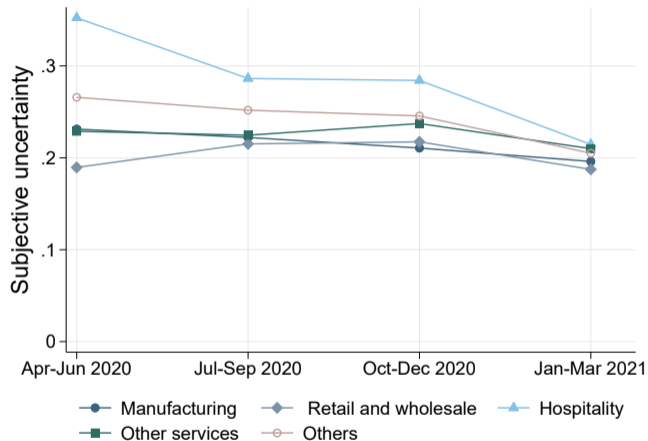
Notes: The figure plots country-wave employment-weighted average subjective uncertainty about six-months-ahead sales growth on the vertical axis against employment-weighted average expected sales growth on the horizontal axis. Sales expectations and uncertainty concern the next 6 months relative to the same period of 2019. The reported statistics below the figure in panel b correspond to the least squares regression in the underlying micro data and the corresponding robust standard error. The sample includes businesses from all countries and waves.

BUSINESS UNCERTAINTY VS. FIRM SIZE



Notes: The figure shows average uncertainty about six-months-ahead sales growth by firm size category and quarter after adjusting for country and sector effects. In each case, these averages correspond to the average prediction from a linear regression on dummies for country, sector, and the interaction of size and quarter and sector and quarter. Computations weighted by employment. The future sales horizon corresponds to the next 6 months and future sales are expressed relative to the same period of 2019.

BUSINESS UNCERTAINTY VS. SECTOR



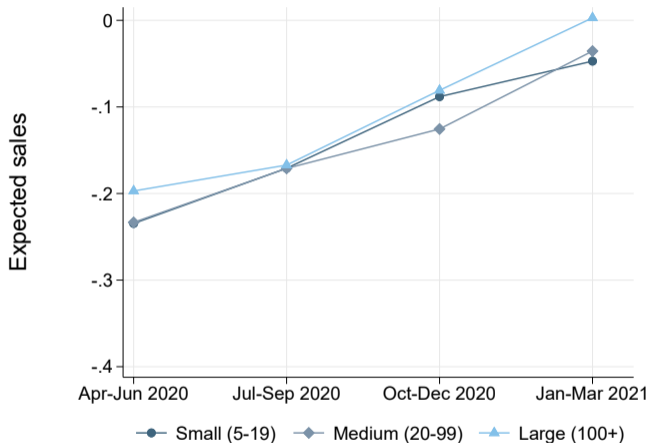
Notes: The figure on the right shows average uncertainty about six-months-ahead sales growth by sector and quarter after adjusting for country and size effects. In each case, these averages correspond to the average prediction from a linear regression on dummies for country, size, and the interaction of sector and quarter and size and quarter. Computations weighted by employment. The future sales horizon corresponds to the next 6 months and future sales are expressed relative to the same period of 2019.

BUSINESS EXPECTATIONS ACROSS COUNTRIES

	(1)	(2)	(3)	(4)
	Sales Expectations			
GDP per capita (log)	0.069*** (0.025)			0.036 (0.024)
Transit mobility		0.004* (0.002)		0.003 (0.002)
Absolute change in sales			-0.196*** (0.034)	-0.172*** (0.030)
Size	Yes	Yes	Yes	Yes
Sector dummies	Yes	Yes	Yes	Yes
Quarter dummies	Yes	Yes	Yes	Yes
Observations	8958	8958	8548	8548
Within R^2	0.027	0.029	0.097	0.112
No of clusters	94	94	94	94

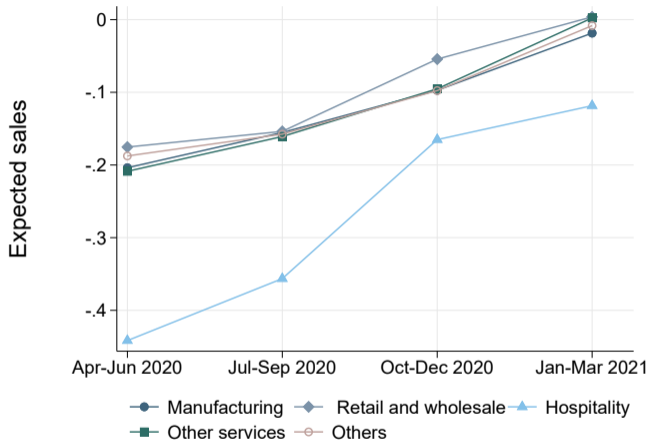
Notes Linear regressions with expectations about six-months-ahead sales (relative to the same period in 2019) as the dependent variable. *Transit mobility* is the level of mobility observed around transit stations in the 30 days before the interview according to Google Mobility Trends. *Change in sales* refers to the arc change in sales in the 30 days before the interview. Heteroskedasticity-robust standard errors are clustered at the country-sector level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

BUSINESS EXPECTATIONS VS. FIRM SIZE



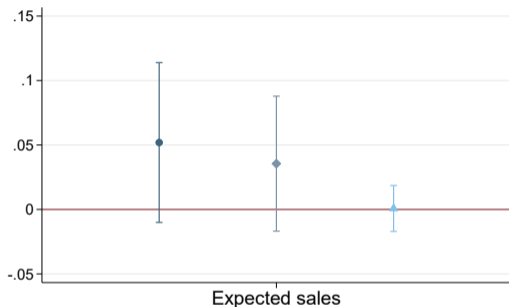
Notes: The figure shows the average expected six-months-ahead sales by firm sector and quarter after adjusting for country and size effects. In each case, these averages correspond to the average prediction from a linear regression on dummies for country, sector, and the interaction of size and quarter and sector and quarter. Computations weighted by employment. Expected sales corresponds to the next 6 months relative to the same period of 2019.

BUSINESS EXPECTATIONS VS. SECTOR

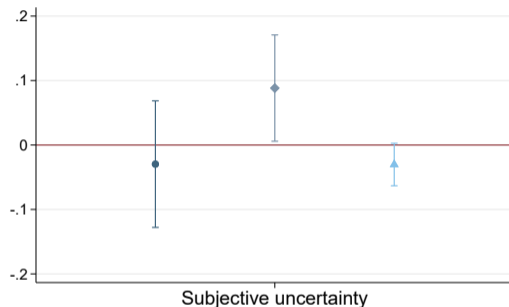


Notes: The figure shows average expected six-months-ahead sales by firm size category and quarter after adjusting for country and sector effects. In each case, these averages correspond to the average prediction from a linear regression on dummies for country, size, and the interaction of sector and quarter and size and quarter. Computations weighted by employment. Expected sales corresponds to the next 6 months relative to the same period of 2019.

EXPECTATIONS & UNCERTAINTY VS. HIRING



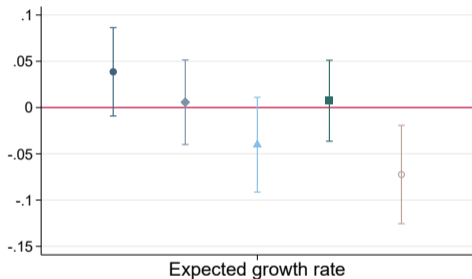
- Hiring employees
- ◆ Firing employees
- ▲ Change in employment last 30 days



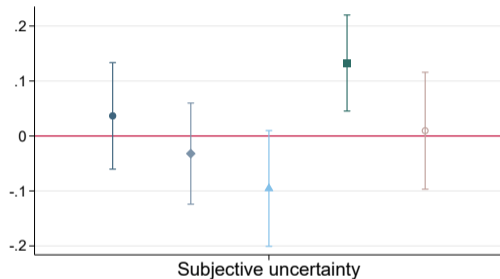
- Hiring employees
- ◆ Firing employees
- ▲ Change in employment last 30 days

Notes: The figure reports the coefficient on expected sales (panel a) and subjective uncertainty (panel b) from three linear regressions for each of the dependent variables mentioned, which also include dummies for country, quarter, size, and sector; the percentage change in sales the 30 days prior to the interview relative to the same period of 2019; the average mobility around transit stations the 30 days prior to the interview; and both mean sales forecast and uncertainty. All specifications are weighted by employment. Expected sales corresponds to the next 6 months relative to the same period of 2019.

EXPECTATIONS & UNCERTAINTY VS. MITIGATION MEASURES



- Use of digital technologies
- ◆ Investment in digital solutions
- ▲ Granting leave of absence
- Reducing wages
- Reducing working hours



- Use of digital technologies
- ◆ Investment in digital solutions
- ▲ Granting leave of absence
- Reducing wages
- Reducing working hours

Notes: The figure reports the coefficient on expected sales (panel a) and subjective uncertainty (panel b) from linear regressions for the five dependent variables mentioned on dummies for country, quarter, size, and sector; percentage change in sales the 30 days prior to the interview relative to the same period of 2019; average mobility around transit stations the 30 days prior to the interview; and both mean sales forecast and uncertainty. Computations weighted by employment. Expected sales growth corresponds to the next 6 months relative to the same period of 2019.

FACTS ABOUT BUSINESS EXPECTATIONS & UNCERTAINTY

1. Predictive power for future outcomes & absolute errors
(Barrero, 2021; Altig et al., 2020)
2. Higher uncertainty in volatile and changing environments
(Altig et al. 2020; Bloom et al., 2021; Bachmann et al., 2021)
3. Uncertainty (& forecast accuracy) decrease with GDP/person
4. *Policy support correlates with lower uncertainty, but less so with higher forecast accuracy*

UNCERTAINTY VS. RECEIVING POLICY SUPPORT

	log(Subjective Uncertainty) (Mean = -1.933; SD = 0.920)					
	(1)	(2)	(3)	(4)	(5)	(6)
Firm received support?	-0.428*** (0.060)	-0.336*** (0.052)	-0.330*** (0.076)	-0.370*** (0.058)	-0.149** (0.071)	-0.112* (0.067)
Size and sector		X				X
Severity of the shock			X			X
Quarter				X		X
Country					X	X
Observations	7,101	7,101	6,502	6,732	7,101	6,502
R^2	0.031	0.078	0.121	0.051	0.196	0.261

Notes: Heteroskedasticity-robust standard errors in parentheses (128 clusters at the country-sector level). The dependent variable is subjective uncertainty in logs. The analysis only includes firms receiving support or firms that indicated that they applied for support, but not received it (“I have applied but not received it”). The dummy “Firm received support?” is 1 when the firm reports receiving support (regardless of the instrument) and 0 for those that applied but did not receive it. The controls for severity of the shock are the percentage change in sales the 30 days prior to the interview (relative to the same period of 2019) and average mobility the 30 days prior to the interview around transit stations. Our sample considers only the latest data point available in the case of the panel observations. Mean and standard deviation (SD) of the dependent variables are computed over the sample in specifications (1). The mean of subjective uncertainty (in levels) is 0.212 with a SD of 0.194. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

FORECAST ACCURACY VS. GDP & POLICY

	(1)	(2)	(3)	(4)	(5)
	Absolute Forecast Error				
Uncertainty in wave 1	0.287** (0.122)	0.292** (0.120)	0.287** (0.123)	0.265** (0.123)	0.292** (0.124)
GDP per capita (log)	-0.072*** (0.025)	-0.076*** (0.028)	-0.074*** (0.027)	-0.043* (0.025)	-0.048 (0.048)
Access to government support, wave 1		0.051 (0.058)			
Access to government support, wave 2			0.036 (0.046)		
Share of firms w/ access to support,				-0.003*** (0.001)	
Govt. expenditure on relief measures/GDP					-0.008 (0.010)
Size and sector	X	X	X	X	X
Quarter	X	X	X	X	X
Observations	2563	2562	2563	2563	2563
R^2	0.136	0.140	0.138	0.150	0.138

Notes: All specifications control for the number of days between interviews. We obtain the share of firms with access to support based on wave 1 responses and measure it for each country-sector-size cell. Clustered standard errors country-sector. Size measured as log employment. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.