

## ECONOMIC FINDING

# Business-Level Expectations and Uncertainty

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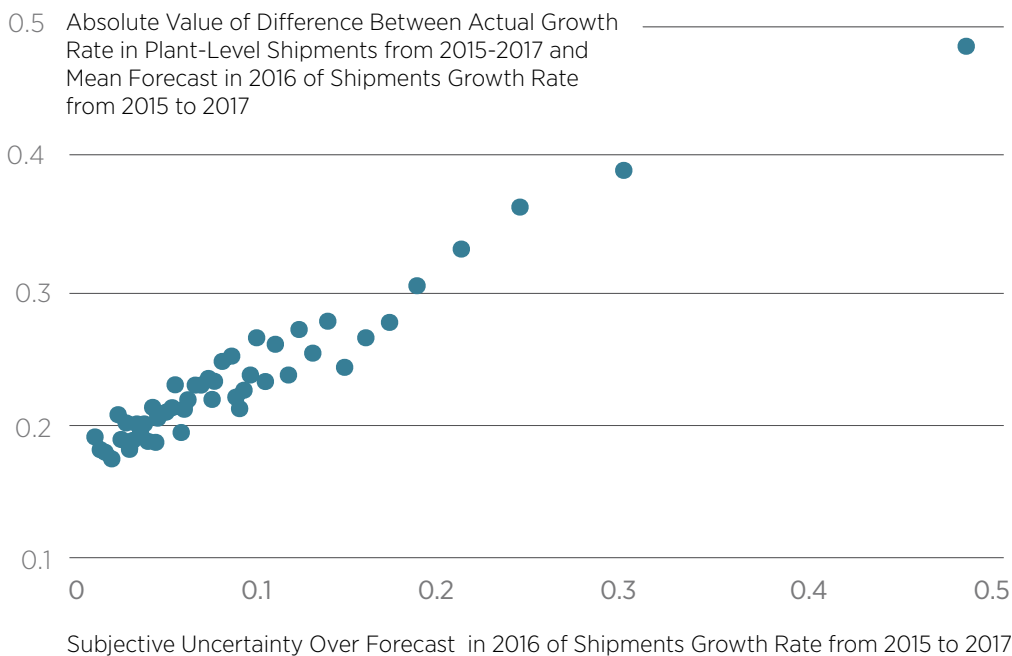
*Survey data reveal that subjective expectations of US manufacturers are highly predictive of actual outcomes and, in fact, are more predictive than statistical models fit to historical data.*

Economists have long strived to develop measures of business expectations, but those efforts have provided few direct measures of business-level expectations for real variables beyond qualitative indicators and point forecasts—at least till now.

This paper describes the first results of an ambitious survey of business expectations conducted as part of the Census Bureau's Management and Organizational

Practices Survey (MOPS), the first large-scale survey of management practices in the United States, covering more than 30,000 plants across more than 10,000 firms. Conducted in 2010 and 2015, the size and high response rate of the dataset, its coverage of units within a firm, links to other Census data, and its comprehensive coverage of manufacturing industries and regions makes MOPS a uniquely powerful source of data for analyzing business expectations.

**Figure 1** • Forecast Error Magnitudes Rise with Forecast Uncertainty



Notes: This figure shows a binned scatter plot of the absolute value of the difference between the actual growth rate in plant-level shipments from 2015 to 2017 using reported values from the ASM and CMF and the expected growth rate in plant-level shipments from 2015 to 2017 (vertical scale) against the standard deviation of the forecast growth rate in plant-level shipments from 2015 to 2017 (horizontal scale). Each point shows the bin-level means for about 500 plants.

As part of the 2015 MOPS, the authors asked eight questions about plant-level expectations of own current-year and future outcomes for shipments, employment, investment expenditures and expenditures on materials. The survey questions elicited point estimates for current-year (2016) outcomes and five-point probability distributions over next-year (2017) outcomes, yielding a much richer and more detailed dataset on business-level expectations than previous work, and for a much larger sample.

Importantly, 85% of surveyed firms provided logically sensible responses to the authors' five-point distribution questions, suggesting that most managers could form and express detailed subjective probability distributions. The other 15% were plants with lower productivity and wages, fewer workers, lower shares of managers with bachelor's degrees, and lower management practice scores and that were less likely to belong to multinational firms. First and second moments of plant-level subjective probability distributions covary strongly with first and second moments, respectively, of historical outcomes, suggesting that the subjective expectations data are well-founded. Aggregating over plants under common ownership, firm-level subjective uncertainty correlates positively with realized stock-return volatility, option-implied volatility, and analyst disagreement about the future earnings per share (EPS) for both the parent firm and the median publicly listed firm in the firm's industry.

Cross-checking MOPS data with other manufacturing datasets allowed the researchers to match the MOPS forecasts to realized outcomes. Using those realized values, the authors find that forecasts are highly predictive of outcomes. In fact, these forecasts are substantially more predictive than historical growth rates. They also find that forecast errors rise in magnitude with ex ante subjective uncertainty. Forecast errors correlate negatively with labor productivity. Forecast accuracy improves with greater use of predictive computing and structured management practices at the plant, and with a more decentralized decision-making process across plants in the same firm.